Watershed Land Conservation Subcommittee Proposal

January 4, 2012

The proposed Integrated Water Resource Management Plan developed under the Yakima River Basin Water Enhancement Project (YRBWEP) represents a comprehensive approach to water management and habitat enhancement in the Yakima River basin. It is intended to restore ecological functions in the Yakima River system and to provide more reliable and sustainable water resources for the health of the riverine environment, as well as agriculture, municipal and domestic water users. The Integrated Plan offers a package of projects to meet these needs while anticipating changing water uses and effects of climate change on water resources in the basin.

Section 3.1.5 of the Integrated Plan identifies several Habitat Protection and Enhancement actions for the Yakima River Basin. In addition to floodplain and habitat restoration actions, this section of the Plan includes **Targeted Watershed Protections and Enhancements.** A Watershed Lands Conservation Subcommittee was established to advise the YRBWEP Workgroup on options for implementing the Targeted Watershed Protection and Enhancement element of the Integrated Plan. This document lays out those options. As with other actions in the Integrated Plan, some actions are funding dependent. Others would require political or administrative processes to modify Federal, State and Local land use plans or land management designations.

Healthy watersheds protect water quality, contribute to instream flows and cooler water temperatures, reduce sedimentation, and maintain aquatic habitat complexity. These benefits are widely recognized by water users and land managers across the West. As climate change places new stresses on water resources and aquatic habitats in the future, the Yakima River Basin's upper watersheds will become even more vital to ecosystem health and water supply.

Because increasing the populations of several salmonid species is a primary goal of the Integrated Plan, many of the watershed actions proposed are focused on fish habitat and are intended to complement proposed fish passage projects and river and floodplain habitat improvements that are also included in the Integrated Plan. Tributary habitat protection and enhancement supports steelhead and bull trout populations in the Yakima Basin both of which are listed as Threatened under the Endangered Species Act. It also supports spring and fall Chinook and naturally reproducing populations of reintroduced summer Chinook, coho, and sockeye salmon. Fish habitat generally will benefit from improved water quality and stream hydrographs within and downstream of the headwaters and high elevation streams protected by this proposal. Bull trout, with their

dwindling numbers, requirements for especially cold water and populations isolated by both temperature and dams were a special focus of this proposal. Land and river segment designations are designed, in part, to protect headwater streams and the ecological health of spawning and rearing habitats. Land acquisitions also aid in the protection of salmonid foraging, migration, and overwintering habitats at lower elevations. In addition to these benefits, headwater lands targeted for protection under the Integrated Plan will protect unique riparian areas and spotted owl habitat.

The watershed protections and enhancements proposal will also support the regional economy through protecting and expanding a wide variety of recreational opportunities for Washington State residents and visitors, including motorized and non-motorized activities. Further, it is desirable that some of these lands be maintained as working lands so they will continue to support the regional economy.

The Integrated Plan also calls for protection of shrub-steppe lands within the Yakima Basin. Shrub-steppe is an increasingly threatened and fragmented habitat type found in Central Washington that supports several declining species such as the greater sage grouse and ferruginous hawk that require large blocks of intact land. The efforts supported by the Integrated Plan will complement ongoing actions by a range of public agencies and private landowners to protect this vital landscape type.

This report summarizes the options for Targeted Watershed Protections and Enhancements identified by the Watershed Lands Conservation Subcommittee.

Conservation Actions:

Proposed actions include**:**

- **Land acquisitions from willing sellers** to protect and enhance ecological, recreational and traditional resource uses; to provide structure for improved land management; and in conjunction with other Integrated Plan components. In addition to fee-simple purchase, the term "acquisition" can include other techniques that offer a high degree of certainty over the long-term, such as conservation easements. Conservation groups working in parallel with the YRBWEP Workgroup identified and targeted three key areas in the Yakima and Naches River watersheds for land acquisition actions that would help improve watershed and ecosystem functions.
    - 45,000 acres as a Conservation Target for High Elevation Watershed Enhancement
    - 10,000 as a Conservation Target for Forest Habitat Enhancement.
    - 15,000 acres as a Conservation Target for Shrub-Steppe Habitat Enhancement

- **New designations on existing Forest Service lands** to improve watershed function and habitat protection while retaining access for recreational uses. Designations could include National Recreation Area (NRA), Wilderness Area or some combination of these. While these can be recommended, an Act of Congress would be required for NRA or Wilderness Area actions.
- **New designations of select river corridors** within the Yakima Basin under the Wild and Scenic Rivers Act to promote conservation in cooperation with public and private landowners and County governments. While Wild and Scenic River designations can be recommended, an Act of Congress would be required for implementation.

The table beginning on the following page summarizes the actions proposed by the Subcommittee.

Summary

Watershed Land Conservation Subcommittee Proposal

AREA	PROPOSED LAND ACQUISITIONS[1] FROM WILLING SELLERS	PROPOSED LAND DESIGNATIONS (ON EXISTING PUBLIC LANDS)	PROPOSED RIVER CORRIDOR DESIGNATIONS
Upper Yakima Basin Forest Lands	Preferred Options • American Forest Lands Co. (AFLC) Teanaway Tract. Offer to purchase lands for a Community Forest Trust or State ownership. • Taneum and Manastash Creek headwaters (with Little Naches lands, below). Offer to purchase lands inside National Forest boundary for Forest Service ownership. Alternatives • Plum Creek Co. lands in Big, Taneum, & Cabin Creek, and/or Cle Elum River basins. • AFLC lands, Swauk and First Creek areas • Additional private forest land holdings in Kittitas Co. Explore conservation easements and/or offer to purchase for public ownership.	• Create Upper Yakima National Recreation Area (NRA). Approximately 20 percent proposed as wilderness. • Create Manastash-Taneum National Recreation Area on Forest Service Lands. No wilderness designation.	• Wild and Scenic (W&S) River designations for Upper Cle Elum, Waptus and Cooper Rivers. • If AFLC Teanaway land tract is acquired, W&S River designation for portions of North, Middle and West Forks of Teanaway River.

For additional information, see Subcommittee report text and associated maps. As with other actions in the Integrated Plan, actions listed will be dependent on funding.

[1] In some circumstances, conservation easements may be used in place of fee-simple acquisition.

Summary (continued)

Watershed Land Conservation Subcommittee Proposal

AREA	PROPOSED LAND ACQUISITIONS FROM WILLING SELLERS[1]	PROPOSED LAND DESIGNATIONS (ON EXISTING PUBLIC LANDS)	PROPOSED RIVER CORRIDOR DESIGNATIONS
Middle Yakima and Naches Basin Forest Lands	Preferred Option • Little Naches River basin lands (with Taneum and Manastash lands, above). Offer to purchase lands inside National Forest boundary for Forest Service ownership. Alternatives • Various lands in Tieton, Cowiche, and/or Ahtanum Creek/Klickitat River basins. Explore conservation easements and/or offer to purchase for public ownership.	• Wilderness designation of lands in vicinity of Bumping Lake.	• W&S River designation of South Fork Tieton River, Indian Creek, and Rattlesnake Creek. • W&S River designation of Deep Creek (tributary to Bumping Lake). • W&S River designation of American River and Rainier Fork.
Shrub-Steppe Lands	Preferred Option • Eaton Ranch, adjacent to proposed Wymer Reservoir site. Explore conservation easements; or offer to purchase for State or Federal ownership. Alternatives • Rattlesnake Mountain site in Benton County • Cowiche Creek Basin lands in Yakima County. • For both properties, explore conservation easements and/or offer to purchase for public ownership.	Not applicable.	Not applicable.

For additional information, see Subcommittee report text and associated maps. As with other actions in the Integrated Plan, actions listed will be dependent on funding.

[1] In some circumstances, conservation easements may be used in place of fee-simple acquisition.

Program Principles:

The Subcommittee established a set of principles for each of these actions to be used to guide the program. The principles express the expectations of the subcommittee that actions under this program will improve watershed and ecosystem functions while supporting local economic conditions and traditional uses by the local communities.

The agencies involved in carrying out the targeted watershed protections and enhancements must actively consult with local landowners in carrying out the program and developing land management strategies. These actions must be integrated with existing or proposed future adjacent land uses and/or land management designations with a landscape level approach. Additional principles are listed as follows:

Principles for Forest Land Acquisitions:

- Acquire lands or easements only from willing sellers at fair market value.
- Maintain economic uses where lands have historically been used as working lands, where this is consistent with protection of key watershed functions and aquatic habitat. This will help to foster support from local communities as the watershed and ecosystem protection objectives are pursued. This will also assist in providing an ongoing funding source for managing the properties.
- Maintain and, where possible, improve access to lands and enhance opportunities for a variety of recreational uses, where this is consistent with protection of key watershed functions and aquatic habitat. This will also help to foster support from local communities as the watershed and ecosystem protection objectives are pursued.
- Restoration and management activities are essential and must be supported under the acquisition program, including long-term funding sources for these purposes.

Principles for Shrub-Steppe Land Acquisitions

- Acquire lands or easements only from willing sellers at fair market value.
- Land acquisitions will help to offset impacts of inundating shrub-steppe habitat from lowland reservoir projects such as Wymer Reservoir, and will complement ongoing efforts to protect shrub-steppe lands in Central Washington. Lands will be managed for habitat protection and restoration.
- Access and opportunities for recreation will be enhanced.
- A working lands outcome will be considered, where consistent with protection of habitat and sensitive wildlife species.

Principles for New Designations on Existing Public Lands

- New designations will enhance watershed and fish habitat protection and preserve or improve recreational opportunities.

- New designations will minimize negative effects on existing or reasonably foreseeable economic uses of the affected public lands that are consistent with protection of watershed functions and fish habitat.
- Public land designations will directly complement other actions in the Integrated Plan, including (but not limited to) fish passage and habitat restoration, land acquisitions, and river corridor designations.

Principles for River Corridor Designations

- New river corridor designations and associated management plans will be developed cooperatively with public and private landowners and the county having jurisdiction over local land use regulations.
- New river corridor designations will complement other actions in the Integrated Plan, particularly fish passage, habitat restoration, land acquisitions, and public land designations.
- New river corridor designation proposals and associated management plans on publicly-owned lands will be developed in close cooperation with affected entities and the County of jurisdiction. New designations which encompass private lands will be proposed only with substantial support from affected landowners. Management plans for designations on private lands will be developed collaboratively with the affected landowners and the County having jurisdiction over local land use regulations. This cooperation will recognize the rights and perspectives of the private and public landowners as well as the respective County.

Options for the Upper Yakima River Basin

Land Acquisitions

The Subcommittee has identified the following options for the Upper Yakima River Basin. These include options listed in the Integrated Plan, as well as alternatives in case those lands prove to be unavailable or too costly for acquisition.

- **Preferred Option:** Acquisition from a potential willing seller of a 46,000 acre tract in the middle and lower Teanaway River basin comprised of mid to high elevation mixed conifer forest and lower elevation grand fir and Ponderosa pine forest. The Teanaway River flows into the Yakima River and provides fish passage and connectivity to high elevation colder water. Protecting this area would provide significant ecosystem, water quality and quantity, and species benefits that complement the habitats and species protected by the Plum Creek Central Cascades Habitat Conservation Program (HCP), directly adjacent to the western portion of the proposed area. The Ponderosa pine forests are particularly significant due to their limited range and vulnerability to climate change. The Department of Ecology has recognized that:

"The Teanaway River system represents some of the highest quality streams and cold-water fish spawning and rearing areas in the Yakima River Basin."[1]

In addition, conservation of the Teanaway landscape fits well into the overall strategy of acquiring and protecting non-federal lands to ensure successful landscape-scale linkages.

- **Preferred Option**: Acquisition from potential willing sellers of lands at the headwaters of Taneum and Manastash Creeks in connection with acquisition of adjacent lands in the Little Naches Basin (see options for Naches Basin, below). Private lands in these watersheds are intermingled with National Forest land, generally in a checkerboard pattern. The land is primarily mid to upper elevation conifer forest. Most of the area has been logged and replanted, but some areas of old-growth forest remain. The upper reaches of Taneum, and Manastash Creeks are important for water quality (maintaining cool temperatures) and they also protect water supply and provide current or potential salmon and steelhead spawning grounds.
- **Alternatives:** If the lands in the Upper Yakima Basin identified above are not available or cannot be acquired at a reasonable cost, other options are available as well. All of these would also require willing sellers. These include:
  ① Acquisition of Plum Creek holdings in Big Creek, Taneum Creek, Cabin Creek and Cle Elum River watersheds. Kittitas County. 37,950 acres.
  ② Acquisition of American Forest Lands Resource holdings, Swauk and First Creek areas. Kittitas Co. 2,700 acres..
  ③ Acquisition of additional private land holdings. Kittitas County. Forest lands. 6,600 acres.

Public Lands Designations

The subcommittee proposes applying the National Recreation Area designation to lands in the upper Yakima Basin. This designation is flexible enough to provide protection for key habitat functions while preserving the overall theme of recreational use for these lands. National Recreation Area designation also raises the profile of these recreational lands and is, in essence, a powerful marketing feature that will attract more users who contribute to local economic vitality. It is important to note that private lands are not included in National Recreation Areas and will not be not bound by NRA rules.

- **Creation of the Upper Yakima National Recreation Area** on approximately 100,000 acres of existing US Forest Service lands in these areas. Within the proposed NRA, approximately 21,000 acres would be designated as Wilderness, approximately 6,000 acres would be designated for backcountry motorized recreational use, and approximately 1,000 acres would be designated for backcountry non-motorized recreational use. All of these proposed uses are

[1] http://www.ecy.wa.gov/programs/wq/tmdl/TeanawayTMDL.html (October 2011).

consistent with the uses identified in the current Okanogan-Wenatchee National Forest (OWNF) Plan Revision Proposed Action; however the forest plan does not propose NRA designation.

- **Creation of the Manastash-Taneum National Recreation Area** on approximately 41,000 acres of existing US Forest Service lands in these areas. Within the proposed NRA, approximately 35,000 acres would be designated for backcountry motorized recreational use. These proposed uses are consistent with the uses identified in the current OWNF Proposed Action and with current uses of this area.

River Corridor Designations

The Subcommittee proposes designations under the federal Wild and Scenic Rivers Act for rivers and reaches where designations will benefit directly the fisheries supported in the Yakima Integrated Plan. The intent is to protect spawning, and rearing habitats for salmonids. Bull trout can especially benefit from the cool, clean water that can result from protection of headwaters and high-elevation streams. All of the reaches proposed are designated critical habitat for bull trout, most are also critical habitat for steelhead.

The Subcommittee identified the following as high priority designations:

- **Wild and Scenic River Designations for Upper Cle Elum River, Waptus and Cooper Rivers**. In addition to documented or presumed bull trout habitat, these rivers and reaches above Cle Elum Reservoir will all receive increasing numbers of salmon and steelhead as fish are reintroduced and fish passage provided above Cle Elum Dam.
- **Wild and Scenic River Designations for Teanaway River**: North, Middle and West Forks. The Teanaway River and its tributaries currently provide some of the best quality spawning habitat for salmonids in the basin, with steelhead, bull trout, and spring Chinook present. The protection and management proposed through acquisition of the Teanaway forest lands and Wild and Scenic designation are central to the salmonid restoration efforts under the Yakima Integrated Plan. Designation would be linked to acquisition of the 46,000 acre Teanaway property. The lower limit of Wild and Scenic designation affects private property and will be determined in consultation with those property owners.

With the exception of the Teanaway River, these rivers are primarily or exclusively in the Wenatchee National Forest and have been proposed for Wild and Scenic designation in the 1990 Wenatchee Forest Plan or in the 2011 Okanogan-Wenatchee Forest Plan Revision Proposed Action. Where there are significant private property interests affected, such as for the middle and lower reaches of the Teanaway River, designations will be proposed only with substantial support by the affected landowners (see Principles section).

Options for the Naches and Middle Yakima River Basins

Land Acquisitions

- **Preferred Option.** Acquisition from a potential willing seller of land at the headwaters of the Little Naches River in combination with adjacent lands in the Manastash and Taneum basins, totaling up to 10,000 acres. Private lands in these watersheds are intermingled with National Forest land, generally in a checkerboard pattern. The land is primarily mid- to upper-elevation conifer forest. Most of the area has been logged and replanted, but some areas of old-growth forest remain. The upper reaches of the Little Naches River are important for water quality and maintaining cool temperatures for bull trout protection and restoration. They also protect water supply and provide current or potential salmon and steelhead spawning grounds.
- **Alternatives:** If the lands in the Little Naches Basin identified above are not available or cannot be acquired at a reasonable cost, other options are available as well. The Subcommittee has identified several forest land-holdings in the Tieton River, Cowiche Creek, and Ahtanum Creek watersheds that could potentially be acquired from potential willing sellers. All of these are in Yakima County.
  - ① Forest Acquisition Alternative 1. Tieton River watershed. ≈3,165 acres
  - ② Forest Acquisition Alternative 2. Ahtanum Creek and Klickitat River watersheds.. ≈10,200 acres.
  - ③ Forest Acquisition Alternative 3: 7 Forest lands in Cowiche Creek watershed. ≈5,700 acres.
  - ④ Forest Acquisition Alternative 4: Forested lands in the Cowiche Creek watershed. ≈4,700 acres

Public Lands and River Corridor Designations

The subcommittee proposes the following:

- **Wilderness Designation** of approximately 1,500 acres adjacent to and near the William O. Douglas Wilderness in the vicinity of Bumping Lake. In addition to the Preliminary Administratively Recommended Wilderness lands in the current Okanogan-Wenatchee National Forest Proposed Action, the Subcommittee proposes that the Wilderness boundary near Bumping Lake be adjusted to designate additional USFS land to the greatest extent practicable, consistent with the Wilderness Act, following the completion of any Bumping Lake Reservoir expansion as part of this project, and that there continue to be provision of road access to Wilderness trailheads above the lake and facilities for recreational boating on the reservoir.
- **Wild and Scenic River Designation** on S. Fork of the Tieton, Indian Creek and Rattlesnake Creek. Bull trout populations in the South Fork of the Tieton and Indian Creek are the strongest remaining in the Yakima basin. Rattlesnake Creek is also a bull trout stronghold.

- **Wild and Scenic River Designation** on Deep Creek. The Deep Creek bull trout population is one of the strongest remaining in the basin. While spawning grounds would be partially inundated by expansion of Bumping Reservoir, addition of fish passage at the new dam would allow both upstream and downstream passage, reconnecting the Deep Creek population with other populations and habitat. All of Deep Creek is identified for designation in the 2011 Okanogan-Wenatchee Forest Plan Revision Proposed Action; however, the Subcommittee proposes designation above the elevation of an expanded Bumping Reservoir, protecting the remaining bull trout habitat in the reach.
- **Wild and Scenic River Designation** on American River and Rainer Fork. These tributaries to the Bumping River provide steelhead, spring Chinook and bull trout habitat. The American River spring Chinook are a demographically and genetically distinct stock.

These land and river designations are primarily or exclusively in the Wenatchee National Forest and have been proposed for Wild and Scenic designation in the 1990 Wenatchee Forest Plan or in the 2011 Okanogan-Wenatchee Forest Plan Revision Proposed Action.

The forest lands discussed for potential acquisition are shown in Figure 1. Lands proposed for new designations are shown on Figure 2, and rivers proposed for Wild and Scenic designation are shown on Figure 3.

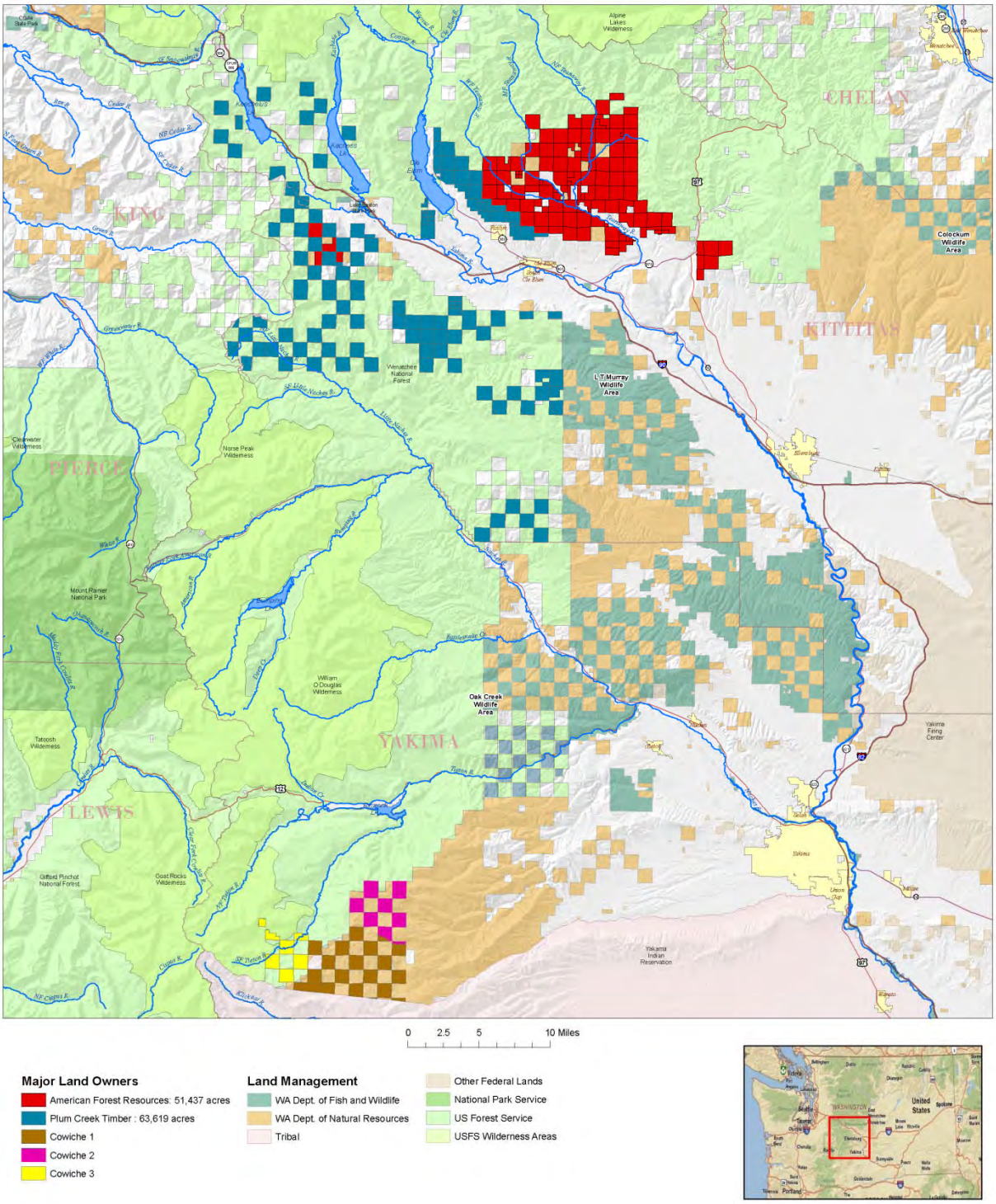


Figure 1. Options for Forest Land Acquisition.

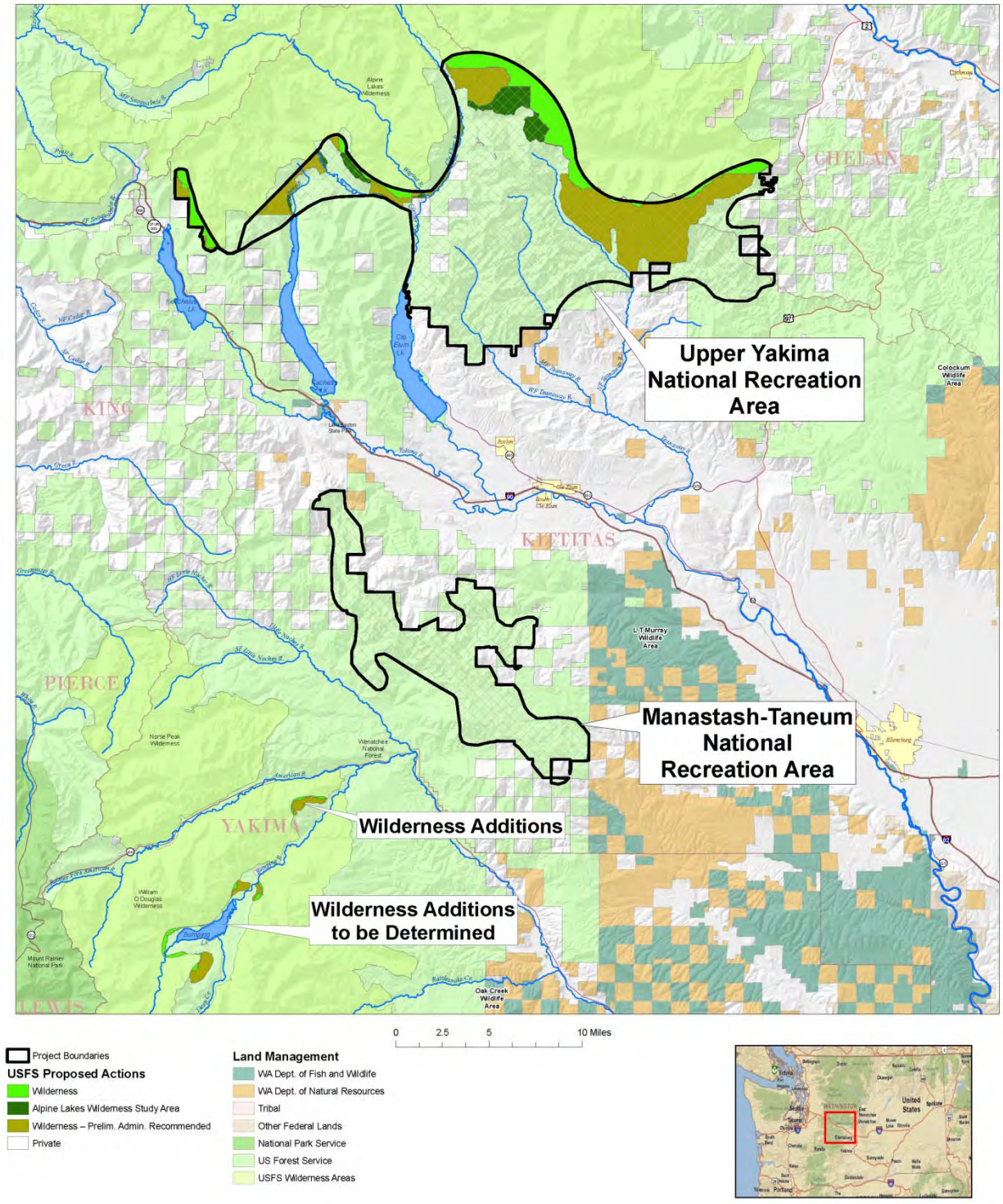


Figure 2. Options for National Recreation Area and Wilderness Designations

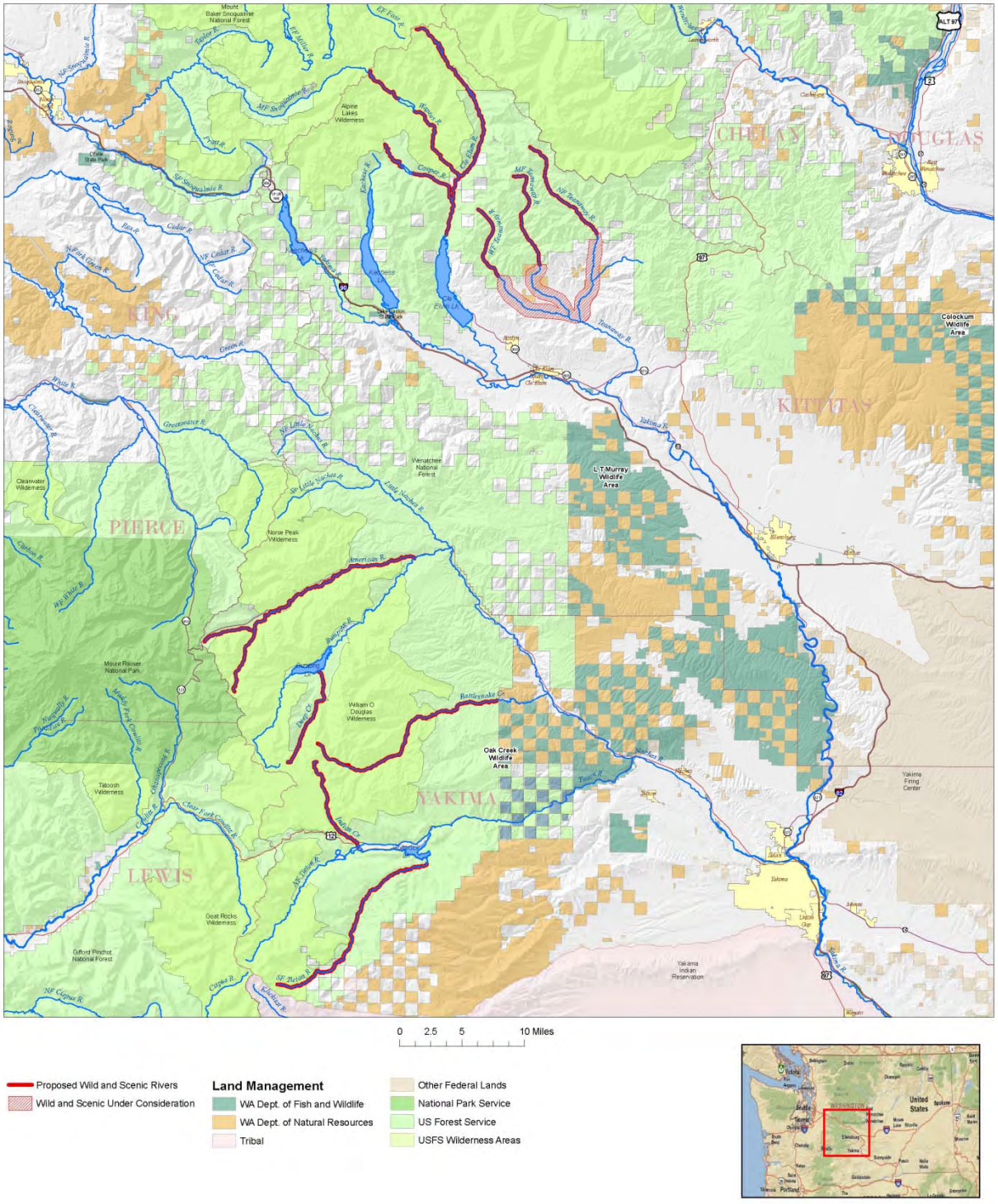


Figure 3. Options for Wild and Scenic River Designations

Options for Shrub-Steppe Protection

The shrub steppe ecosystem is extremely threatened in Washington and is a priority habitat for conservation for Washington State Department of Fish and Wildlife. Species that rely on this habitat in central Washington State include greater sage grouse, ferruginous hawks, black-tailed and white-tailed jackrabbits, burrowing owls, golden eagles, sage sparrow, sage thrasher, and sagebrush lizard.

Agricultural development was historically the most important cause of shrub steppe habitat loss, and myriad activities still threaten remaining shrub steppe. Construction of Wymer Reservoir under the Integrated Plan would inundate shrub steppe habitat adjacent to the Yakima River Canyon.

The Subcommittee identified the following options for protecting shrub-steppe habitat (see Figure 4):

- **Preferred option**: The Eaton Ranch, a 15,000 acre tract in the Yakima River canyon, has been identified as a preferred shrub steppe conservation option. The ranch includes lands in the valley bottom and eastern slopes of the Yakima Canyon, and extends eastward from the Yakima River to Interstate 82 (I-82). This is the number one priority for protection because of its immediate proximity to the proposed Wymer Reservoir, and because of documented sage grouse breeding areas and golden eagle nest sites. The tract is composed primarily of basalt cliffs and shrub- steppe vegetation, a critical habitat type. It is proposed that either the land or suitable conservation easements be acquired on a willing-seller basis.
- **Alternatives:** If acquisition of the Eaton Ranch or suitable conservation easements is not feasible, other options are available for shrub-steppe protection from potential willing sellers. These alternate sites include:
    - Shrub Steppe Alternative A: Rattlesnake Mountain (McWhorter Ranch). Benton Co. 14,000 acres. High priority for South Central Washington Shrub Steppe and Rangeland partnership. The McWhorter Ranch acquisition is the top ranked shrub-steppe project partially funded by the 2011 Washington Wildlife and Recreation Program and has long been sought by WDFW and Benton County.

- Shrub Steppe Alternatives B through E are in the Cowiche Creek watershed, and encompass 10,000 to 12,000 acres. Priority habitats present and in good-to-excellent condition include: stream, riparian, shrub-steppe, oak woodland, cliffs and talus.

There is a wide range of habitat quality on the lands under consideration for shrub-steppe conservation. Therefore, in addition to acquiring lands, identification of specific management measures and the funds to support them will be necessary in order to secure the desired habitat conditions.

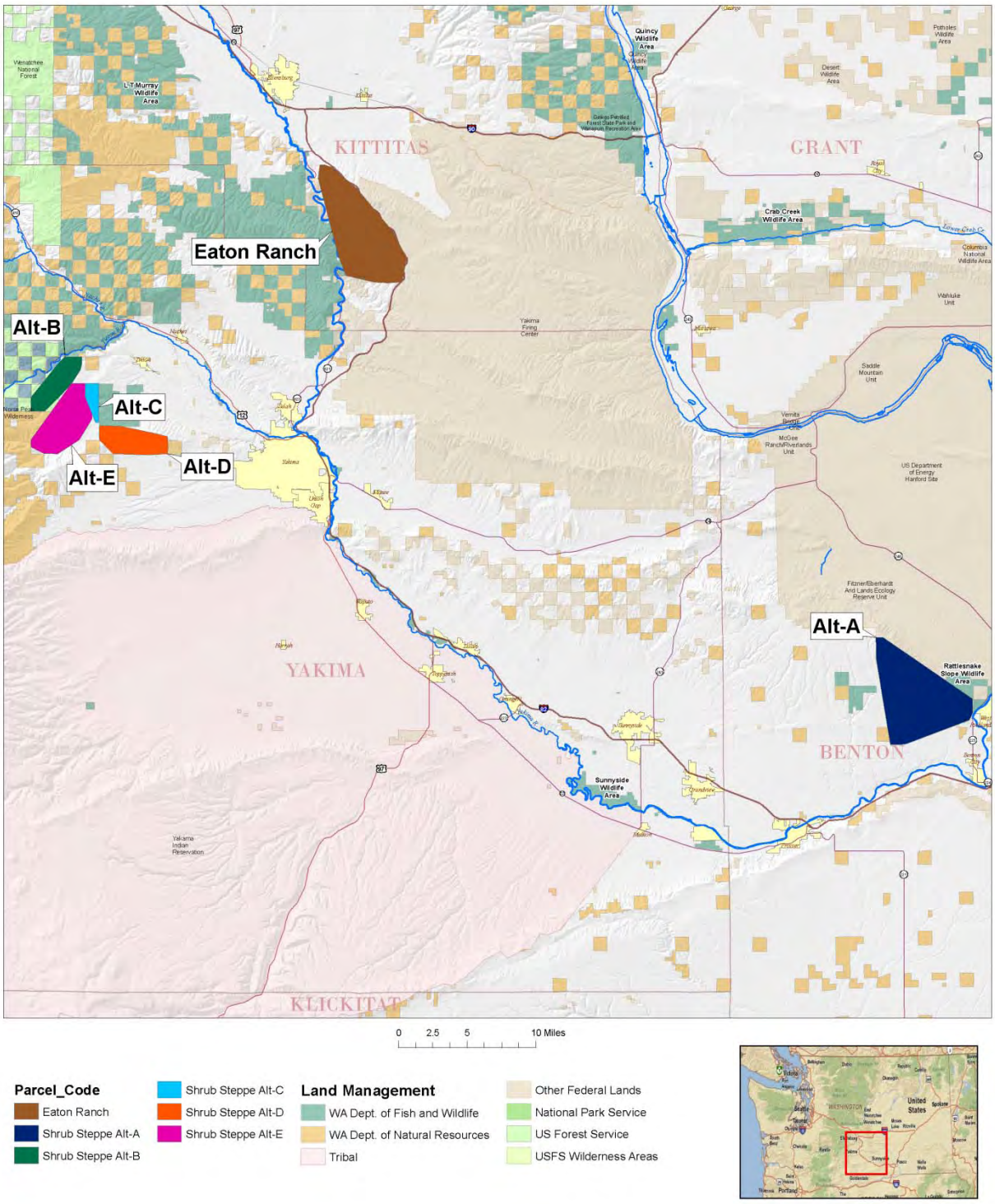


Figure 4. Options for Shrub-Steppe Habitat Acquisitions

Who Will Own and Manage the Lands Acquired?

There are a range of alternatives regarding who should own and manage the lands acquired. The following list describes several alternatives for potential land management scenarios.

- **Private ownership**, which may include acquisition of conservation easements from an existing private landowner, or outright ownership by a private, non-profit conservation organization.
- **Local ownership**. This may include ownership by a County government or a consortium involving stakeholder groups. This option may also include use of a new option for Community Forest Trusts under Washington State law (protocols for this program remain to be developed).
- **State ownership** by an agency such as Washington State Department of Natural Resources or Department of Fish and Wildlife.
- **Federal ownership** by the U.S. Forest Service or Bureau of Land Management. For example, any lands acquired within the existing boundaries of the Wenatchee National Forest would presumably be owned by the Forest Service.
- **Tribal ownership** by the Yakama Nation.

Conservation easements can provide a flexible tool to promote habitat and watershed protection and enhancement without converting private ownership to public ownership. Easements can be purchased for specific rights associated with a given land parcel. These may include development rights, access, or other rights. Any rights that are not included in the easement remain vested in the property owner.

The Subcommittee recommends that ownership options in specific areas be prioritized as follows:

- **All lands under consideration.** For every acquisition the option of keeping the land in private ownership coupled with a conservation easement or similar mechanism to support permanent watershed and habitat protection should be considered. The suitability of this approach will depend on whether the outcome can meet conservation objectives, recreational access objectives and the current landowner's needs.
- **Forested lands in the Teanaway Basin**: Consortium/ community ownership such as a Community Forest Trust. If this is not feasible, then the next best option is State ownership with strong participation by a stakeholder advisory committee.
- **Forested areas in the headwaters of the Little Naches River, Taneum and Manastash Creeks.** These are "checkerboard" lands where private lands are

intermingled with U.S. Forest Service Lands. The best option if these lands are acquired is Forest Service ownership.

- **Eaton Ranch shrub-steppe lands.** A variety of alternative conservation options, including state or federal ownership, could be pursued on these lands.
- **Additional forested and shrub-steppe land options.** The subcommittee has not reviewed ownership options in detail for the additional land options.

The particular conditions of each individual property, proximity to other large public land-holdings, funding sources used for land acquisition or conservation easements, and other considerations are important in assessing land ownership options. The Subcommittee has not explored all of these issues in detail for the properties identified. The Subcommittee intends that ownership decisions be determined property-by-property, in a manner that leads to outcomes matching the principles outlined in this report.

Watershed Land Conservation Subcommittee
Irene Davidson, U.S. Forest Service
Peter Dykstra, The Wilderness Society
Paul Jewell, Kittitas County Board of Commissioners
Steve Malloch, National Wildlife Federation
Tom Ring, Yakama Nation
Jeff Tayer (Chair), Washington State Department of Fish and Wildlife
Jeanne Williams, Washington State Department of Natural Resources

RECLAMATION
Managing Water in the West

WASHINGTON STATE DEPARTMENT OF ECOLOGY

Contact: Wendy Christensen, 509-575-5848, ext. 203 **Derek Sandison, 509-457-7120**

Agenda

Yakima River Basin Water Enhancement Project Workgroup

March 14, 2011, 9:30 AM to Noon Yakima Arboretum, 1401 Arboretum Dr., Yakima WA

Time

9:30 – 9:40	Welcome/Introductions and Agenda Overview - *Ben Floyd, Anchor QEA*
9:40 – 10:20	Final Programmatic EIS Framework for Implementation Early Action Funding - *Wendy Christensen, Reclamation and Derek Sandison, Ecology*
10:20 – 10:40	Implementation Subcommittee Update *Derek Sandison, Ecology and Dan Silver, Consultant*
10:40 – 10:50	Public Comment
10:50 – 11:05	Break
11:05 – 11:30	YRBWEP Phase 2 Program Implementation Status Report - *Tim McCoy, Reclamation YRBWEP Program Manager*
11:30 - Noon	Presentation from Reclamation Commissioner Michael Connor and PNW Regional Director Lorri Lee (by phone), and Washington Department of Ecology Director Ted Sturdevant

Adjourn

*Work Group facilitation by Ben Floyd, Anchor QEA as a subconsultant to HDR, under contract to US Bureau of Reclamation

RECLAMATION
Managing Water in the West

Contact: Wendy Christensen, Columbia-Cascades Area Office, (509) 575-5848, ext. 203
Derek Sandison, Washington State Department of Ecology, (509) 457-7120

Meeting Notes
March 14, 2012
Yakima Arboretum, Yakima WA

Yakima River Basin Water Enhancement Project (YRBWEP) Workgroup

Welcome/Introductions and Agenda Overview *by Ben Floyd, Anchor QEA*
Ben Floyd, meeting facilitator, welcomed the Workgroup members and public, led introductions, and provided an overview of the agenda.

Wendy Christensen, Reclamation, and Jeff Tayer, Washington State Department of Fish and Wildlife (WDFW), first took a moment to recognize the outstanding contribution by Charity Davidson with WDFW in coordinating the preparation of the Fish and Wildlife Coordination Act report for the Integrated Plan. An award was presented to Ms. Davidson for her excellent collaboration and coordination with U.S. Fish and Wildlife Service and other agencies involved with preparing the report.

Final Programmatic EIS, Framework for Implementation and Early Action Funding *by Wendy Christensen, Reclamation and Derek Sandison, Ecology*

Final Programmatic EIS
Wendy Christensen and Derek Sandison reviewed with the Workgroup the environmental review process for the Programmatic EIS (PEIS) including a general overview of comments to the Draft PEIS, how comments were responded to and next steps. *(For Workgroup meeting notes and information on all other topics discussed at the March meeting please see* http://www.usbr.gov/pn/programs/yrbwep/2011integratedplan/meetings/index.html*).*

The Final PEIS was released March 2, 2012. The PEIS was framed by comments received during the scoping period (spring 2011). Key comments and responses included the following:

- Many requested more detail on impacts be included in the EIS – *The programmatic EIS framework for the Integrated Plan was explained. The approach included considering a broad range of proposals and a wide range of elements over an extended time period and geographic area (Yakima Basin). This approach is effective in addressing cumulative effects of actions, and identifying mitigation strategies, and sets the framework for project-specific analysis in the future. By the very nature of the approach, it is designed for more general analysis. However,*

where more detail was readily available, it was incorporated, recognizing more detailed analysis will occur for individual projects as appropriate.

- More than one action alternative should have been considered – *After more than 30 years of studies and discussions and the work of the Workgroup, Reclamation and Ecology determined that the Integrated Plan Alternative was the only one that reasonably met the Purpose and Need of the project. Other alternatives that were proposed in the comments have been evaluated in the past and are included in the Alternatives Eliminated from Detailed Study section of the FPEIS.*

- Opposition to land acquisitions – *The land acquisition program is an integral part of the Integrated Plan's Watershed and Habitat Protection and Enhancement Element. All properties would be acquired from willing sellers.*

  The Columbia River Pump Exchange project should be included in the Integrated Plan – *Reclamation and Ecology have evaluated the potential for a Columbia River Pump Exchange in the past (Black Rock Reservoir and Wymer Dam Plus Pump Exchange as part of the Yakima River Basin Water Storage Feasibility Study (2008)) and determined that the high costs and environmental uncertainties associated with such projects did not warrant carrying a pump exchange project forward in the Integrated Plan. The Integrated Plan does include a study of a Columbia River Pump Exchange, which could be further evaluated if future conditions warrant.*

Framework for Implementation document

Wendy discussed the next step in the planning process for the Integrated Plan, which is preparing a Framework for Implementation document. Work is just beginning on this report. Additional engineering analysis and economic analysis (i.e., benefit/cost ratio) will occur. Cost estimates will be refined and cost risk analysis will be performed. Sequencing of projects and the implementation scheduling will be further evaluated. A plan is being developed to conduct further geological explorations for the Wymer and Bumping potential storage sites. A preliminary cost allocation for the entire plan is under development. The Framework for Implementation report should be available this summer.

For historical context, Wendy also handed out during this agenda item a 1967 report on Bumping Lake enlargement that included a Statistical Summary of costs, cost allocation, benefits and costs, and repayment.

Wendy also noted that interest in the Integrated Plan (IP) continues to grow. More agencies and organizations from the Pacific Northwest (Oregon and Idaho) are taking notice and are requesting presentations on the IP.

Early Action Funding Status

Wendy and Derek presented and discussed an early action funding status table. So far, approximately $6 million of the $21.9 million in early action items has funding in place or nearly in place. This is good

progress considering the short time that has passed since this request was approved by the Workgroup (October 2011 meeting). In addition to the $6 million in funding, the state has also contributed an additional $1.8 million to support the PEIS development and Framework for Implementation report preparation.

Workgroup Comment:

- Jeff Thomas – Is the K-to-K pipeline funding specific to construction under Interstate-90 (I-90)? *Yes.* Is it a good idea to build before conducting an environmental review? *Building will not begin until after environmental review has been completed.* Does the reported amount include a budget for environmental analyses? *Funds defined are inclusive of all analyses (environmental compliance) and construction.*
- Alex Conley – Would love to see the Habitat Subcommittee included in discussions regarding allocating funding identified for habitat restoration projects.
- Jeff Tayer – In reviewing the 1967 Bumping report (referenced above) several identified actions for Fish and Wildlife Enhancement at Bumping are still not completed, which is a testament to how challenging completing some of the larger actions can be.
- Mike Leita noted it is important for the Workgroup to remain united in support of the plan and continue to collectively support implementation of plan actions.
- Michael Garrity – Pleased to see flexibility in acquisitions and K-to-K funding approach, which will improve flows in upper Yakima.
- Kirk Cook – Nice to see the follow through of a balanced funding approach for the various actions in the Integrated Plan.
- Paul Jewell – How will K-to-K crossing affect the I-90 project? Will it cause a delay? *WSDOT latest plans for reconstructing this portion of the I-90 (2014/2015) should work with the implementation schedule for constructing the I-90 crossing of the K-to-K pipeline.*

This has been a challenging budget year at both the state and federal level, with a lot of scrutiny on proposed funding allocations. The significant support for the plan as reflected in the early actions being funded is a good sign of continued interest from the state and federal government that they have a continued commitment to solving problems in the basin.

Implementation Committee Update *by Derek Sandison, Ecology and Dan Silver, Consultant*
Dan Silver updated the Workgroup on progress made by the Committee since the last meeting. Two areas are being focused on:

1) Education and outreach through a communications consultant and
2) Communications with federal and state government and elected officials on how best to advance the plan within existing authorities while efforts are underway to provide additional authorizations and appropriations.

Working relations have been established in both Washington D.C. and within the Yakima basin. Implementation subcommittee members are heading back to Washington D.C. in mid-April. The committee is working to support the establishment of a coordinating group of federal agencies to collectively support implementation.

As part of the education and outreach effort, the Implementation Committee is also addressing recent communications related to off-road vehicle concerns for the land protection element of the plan, and continues to work on concerns expressed regarding Bumping Lake expansion.

Workgroup Comment:

- Charlie de la Chapelle – Is this typical for an agency to introduce a modified proposal during the EIS review process (i.e., introduce new information)? (Note: this comment is in reference to the modification of the watershed land protections action description revisions made between the draft and final PEIS, which was modified based upon input from a subcommittee working on fine tuning the watershed land protection recommendations and comments on the draft PEIS.) *From a NEPA and SEPA procedural process, this approach is sound. The two things that were considered included: (1) does the new information affect the original proposal; and (2) will the modification cause significant environmental adverse impact? Both these items were addressed in updating the watershed land protections actions and finalizing the programmatic environmental review. Procedurally, this approach is acceptable for meeting environmental review requirements.*
- Michael Garrity – Regarding the public lands piece, Kittitas County had concerns regarding additional Wild and Scenic designations; however, better funding and management were created with these designations. Concerns were also expressed on maintaining and enhancing recreational opportunities, which is one of the reasons why National Recreation Areas were identified.

In the near-term, land acquisition administrative steps are being implemented included property appraisals. The subcommittee will also continue to work on maintaining a balanced implementation approach for early actions.

Public Comment:

- Chris Maykut, President of Friends of Bumping Lake – I applaud the group for already taking into consideration certain issues with Bumping Lake. However, the dam will cause inundation of land and property that are important to several people including impacting pristine wilderness. It's hard to put a value on this area, and I encourage you all to visit the area (Mr. Maykut's complete statement is included with the March 2012 meeting materials posted on Reclamation's website).

- Rick McGuire, Alpine Lakes Protection Society – Concerned with the National Recreation Area (NRA) proposal included in the watershed lands protection action and encourage all to see the letters with comments on NRA concerns included in the meeting packet.
- Samantha Maykut, Friends of Bumping Lake – Bumping Lake is more than just an area; there are a lot of people who go there. I'm also saddened by water use practices observed in the basin (e.g., sprinklers running in mid-afternoon). Maybe changes in water conservation should be made instead of taking away Bumping Lake. We should all remember the communities that will be impacted.
- Chuck Klarich, YBSA – The early action group should review all the funding available/awarded this year by various agencies, including the Bonneville Power Administration.

YRBWEP Phase 2 Program Implementation Status Report *by Tim McCoy, Reclamation YRBWEP Program Manager*
Tim McCoy provided a presentation highlighting YRBWEP accomplishments including diversion reductions, land and habitat restoration, conservation, tributary enhancement and Yakama Nation projects. Significant water conservation savings have been realized with additional projects underway. The presentation was concluded with brief budget figures for the past 5 years.

Conference Call *by Reclamation Commissioner Michael Connor, Pacific Northwest Regional Director Lorri Lee, and Washington Department of Ecology Director Ted Sturdevant*
Michael Connor, Lorri Lee and Ted Sturdevant joined the Workgroup meeting by telephone. After introductions, Commissioner Connor applauded the Workgroup for their accomplishments to date. The federal funding allocation for some of the Yakima Basin early action items announced in early February provided Reclamation and the U.S. Department of the Interior the opportunity to express their interest and support for the Workgroup efforts and the Integrated Plan elements. Federal and state funding appear are in place to support the fish passage and water supply package early actions, and help in moving these actions forward. The 2013 budget currently has no specific funding identified because it was put together before the fall meeting with Secretary Salazar; however, priorities will be reshuffled to try to provide continued support for the Workgroup's efforts. Continued dialogue is occurring among Secretary Salazar, Ecology and the congressional delegation, including how to make the most of existing authorizations. There is broad support with moving forward, and he wants the Workgroup to be aware of the continued support of the federal leadership.

Director Sturdevant thanked Derek Sandison, Wendy Christensen and the Workgroup for continually producing good news, and shared that this forward momentum was well-received by the Governor and her administration. Mr. Sturdevant also emphasized the importance of maintaining this momentum in moving forward including upcoming discussion and decisions on funding and policy for implementing the Integrated Plan. Primary interest lies in maintaining momentum for advancing the plan.

Workgroup Comment:

- Jeff Tayer – Commissioner Connor and Dan Silver mentioned the importance of using existing authorization to get this plan on the President's agenda. Is it possible to develop close coordination with the leadership from the participating federal agencies like USFWS and USFS, etc., to support Reclamation in implementation? *The Yakima plan fits with the national Great Outdoors Initiative, and we plan to move forward with additional support. If Workgroup members see opportunities to further coordinate federal efforts, please pass these potential opportunities along so Reclamation and others can try to take action on them.*

Adjourn

Workgroup Members in Attendance
Alex Conley, Yakima Basin Fish & Wildlife Recovery Board
Kirk Cook, Washington State Department of Agriculture
Rick Dieker, Yakima-Tieton Irrigation District
Jeff Tayer, Washington Department of Fish and Wildlife
Urban Eberhart, Kittitas Reclamation District
David Fast, Yakama Nation - Yakima/Klickitat Fisheries Project
Paul Jewell, Kittitas County
Mike Leita, Yakima County
Charlie de la Chappelle/Sid Morrison, Yakima Basin Storage Alliance
Tom Ring, Yakama Nation
Derek Sandison, Washington State Department of Ecology
Jeff Tayer, Washington State Department of Fish and Wildlife
Jeff Thomas, US Fish and Wildlife Service
Jim Trull, Sunnyside Valley Irrigation District
Michael Garrity, American Rivers
Ron VanGundy, Roza Irrigation District
Dawn Wiedmeier, Bureau of Reclamation
Scott Revell, Kennewick Irrigation District
Bill Lover, City of Yakima

Other Attendees
David Bowen, American Forest Land Co.
Dave Brown, City of Yakima
Wendy Christensen, Bureau of Reclamation
Dan Church, Bureau of Reclamation
Mike Connor, Bureau of Reclamation, by phone
Stuart Crane, Yakama Nation
Charity Davidson, Washington State Department of Fish and Wildlife

Charlie de la Chapelle, Yakima Basin Storage Alliance
John Easterbrooks
Beneitta Eaton, Rancher
Jack Eaton, Rancher
Bill Eller, Washington State Conservation Commission
Bill Ferry, Bureau of Reclamation
Ben Floyd, Anchor QEA
Joel Freudenthal, Yakima County
Chuck Garner, Bureau of Reclamation
Don Gatchalian, Yakima County
Kristi Geris, Anchor QEA
Andrew Graham, HDR Engineering, Inc.
Lynn Holt, Bureau of Reclamation
Joel Hubble, Bureau of Reclamation
Eleanor Hungate
Jerry Kelso, Anchor QEA
Walt Larrick, Bureau of Reclamation
Lorri Lee, Bureau of Reclamation, by phone
David Lester, Yakima Herald
Edwin Lewis, Wapato Irrigation Project
Barb Lisk, Office of Representative Doc Hastings
Edward Lisowski
Chris Lynch, Bureau of Reclamation
Daniel Martinez, S. Martinez Livestock
Chris Maykut, Friends of Bumping Lake
Samantha Maykut, Friends of Bumping Lake
Tim McCoy, Bureau of Reclamation
Keith McGowan, Bureau of Reclamation
Rick McGuire
Candy McKinley, Bureau of Reclamation
Tom Monroe, Roza Irrigation District
Bob Montgomery, Anchor QEA
Bryan Myre, Yakama Reservation Irrigation District
David Ortman, Sierra Club
David Reeploeg, Office of Senator Maria Cantwell, by phone
Ann Root, ESA
Mike Schwisow, Schwisow & Associates
Teresa Scott, Washington State Department of Fish and Wildlife
Dan Silver, Consultant
Elaine Smith, League of Women Voters

Ted Sturdevant, Ecology, by phone
Rob Swedo, Bonneville Power Administration
Tom Tebb, Washington State Department of Ecology
Rebecca Thornton, Office of Senator Patty Murray
Cynthia Wilkerson, The Wilderness Society
Dave Kaumheimer, Consultant

Next Workgroup Meeting

The next meeting will be held June 13, 2012. Updates on implementation, status on early action items, information on additional funding (if secured), and an update from the Implementation Subcommittee will be covered at the June meeting. A meeting notice and agenda will be distributed in advance of the meeting.

Where to Find Workgroup Information

Meeting materials, notes, and presentations from the Workgroup meetings will be posted on the project website (http://www.usbr.gov/pn/programs/yrbwep/index.html). A bibliography of information sources, many of which are available online, is also posted on the website. If anyone needs help finding an information source, contact those listed at the top of page 1 or Ben Floyd at Anchor QEA, Richland office, (509) 392-4548, or bfloyd@anchorqea.com

FY 2012 Spending Plan - Distribution of Additional Funding

Rural Water Construction – In carrying out its mission, Reclamation has focused diligently on advancing the completion of all of its authorized rural water projects while remaining consistent with current fiscal and resource constraints. Some projects that ensure Reclamation meets its goal of delivering potable water to tribal and non-tribal residents within the rural water project areas include:

- **$10.9 million for the Garrison Diversion Unit (Pick-Sloan Missouri Basin Program) in North Dakota:** This will allow the Spirit Lake Tribe to replace an existing water storage reservoir, known as Spirit Lake-Tokio Tank & School Tank Projects, to ensure reliable water service to the West Fort Totten area of the reservation. The funding will also be used to replace poor quality private wells in Logan and McIntosh counties.
- **$9 million for the Fort Peck Reservation/Dry Prairie Rural Water System (Montana):** This project will enable the Assiniboine Sioux Tribe to complete the mainline pipeline from Brockton to the Big Muddy to facilitate the delivery of water to Dry Prairie. The funds will also allow for the completion of the mainline from Big Muddy to Culbertson so that a sufficient amount of water from the new treatment plant will be delivered to Dry Prairie.
- **$5 million for the Lewis and Clark Rural Water System (South Dakota, Iowa and Minnesota):** This project will allow for the purchase of water treatment plant tools, vehicles, maintenance equipment, security fencing and installation of approximately three miles of pipeline in Minnesota.
- **$3.9 million for the Rocky Boy's/North Central Montana Rural Water System (Montana):** This funding will allow the Chippewa Cree Tribe of the Rocky Boy's Indian Reservation to complete a portion of segment 3 of the core pipeline installation for the Rocky Boys Rural Water System. It will also help to provide an interim water system to three areas in Montana as part of the North Central Montana Rural Water System.
- **$1 million for the Eastern New Mexico Water Supply Project (New Mexico):** This funding will support the construction of an intake structure at Ute Reservoir that will supply water to eight municipalities and three counties in eastern New Mexico.
- **$200,000 for the Jicarilla Apache Rural Water System (New Mexico):** This project will assist the Jicarilla Apache Nation in continuing its on-going work related to the Jicarilla-Apache Water System. This rural water grant will allow construction of new water and waste water facilities in the town of Dulce, N. M.

Fish Passage and Fish Screens – Reclamation continually works to meet the increasing water demands of the West while protecting the environment and restoring aquatic habitat that has been impacted by historic development. Some projects that strive to ensure the western United States' rivers, streams and estuaries are environmentally healthy include:

- **$4.3 million for the Miscellaneous Project Programs (Central Valley Project) in California**: This funding will provide further design and construction work on fish screens for water diversions along the Sacramento River, including the Natomas Mutual Water Company to complete the Pritchard Lake pumping plant and with other water districts to advance work on other fish screen and fish passage facilities along the Sacramento River.
- **$700,000 for the Yakima-Cle Elum Fish Passage (Washington)**: These additional funds will complete hydrologic modeling and cultural surveys for Cle Elum fish passage facilities.

Water Conservation and Delivery Studies, Projects and Activities – In line with its mission statement and goals, Reclamation strives to promote water conservation and improved water management at all times. Some projects that make significant progress toward this goal include:

- **$2.5 million for the Miscellaneous Project Programs (Central Valley Project) in California:** This project will provide added funding opportunities within the CALFED Water Use Efficiency and Water Conservation Grant Program to complement/leverage Natural Resources Conservation Service funds for improving water supply reliability through water conservation or improved water management, improving energy efficiency and addressing endangered species and other environmental concerns.
- **$1.5 million for the Friant Division (Central Valley Project) in California:** This funding will reinforce users' water supply by enhancing such features as reliability, affordability, reducing aquifer overdraft, and improving groundwater quality by acquiring refuge water for the current water year. The water will be credited toward the long term agreement with Madera Irrigation District for acquisition of 10,000 acre feet of storage in the water bank should Reclamation's ongoing analysis show that the annual yield and cost per acre foot of banked water from the Madera Ranch Water Bank be competitive and justified in the current water market.
- **$950,000 for the Yakima River Basin Water Enhancement Project-Sunnyside (Washington):** This funding will allow for the completion of phase one of the Sunnyside Canal Improvement Project by completing the final automated check structures. The project improves both water reliability and instream flows for the benefit of Endangered Species Act listed steelhead and other aquatic species.
- **$500,000 for the Odessa Subarea Special Study (Columbia Basin Project) in Washington:** This funding will be used to complete the Environmental Impact Statement and associated analyses, such as hydrologic modeling, engineering and economic assessments, to complete the study on schedule.
- **$450,000 for the Yakima-Water Supply Studies (Washington):** This project will further fund one of the following water supply studies earlier identified: pipeline from Lake Keechelus to Lake Kachess; Lake Kachess inactive storage; or groundwater filtration.
- **$100,000 for the Lewiston Orchards Project (Idaho):** This funding will enable the installation of an additional 300 meters in an effort to meter the entire water delivery system. This is an overall effort in partnership with the Lewiston Orchard Irrigation District to address water conservation through demand management techniques.

Environmental Restoration and Compliance – Reclamation gives priority to projects that make significant progress toward species recovery and protection and that maximizes and stabilizes the water supply. Some projects that promote Reclamation's mission to protect and repair western water include:

- **$1.75 million for the Water and Power Operations (Central Valley Project) in California:** These funds will support the completion of the National Environmental Policy Act and Endangered Species Act environmental compliance processes to comply with federal district court rulings on both the U.S. Fish and Wildlife Service and National Marine Fisheries Service Biological Opinions. Funds will be used to support development and analyses of various actions and alternatives and facilitation of a stakeholder engagement process in the preparation of any required environmental documents associated with at-risk species.
- **$1 million for the Platte River Recovery Implementation Program (Nebraska):** The funds will be used to purchase land required for the J-2 re-regulation reservoir project, which will allow approximately 40,000 acre feet of excess flows for the benefit of target species.

- **$1 million for Price's Dairy (Middle Rio Grande Project) in New Mexico:** This project will allow the acquisition of senior water rights as an accompaniment to the purchase of Price's Dairy by others. The funds will support compliance activities under biological opinions.
- **$250,000 for the Talent Division (Rogue River Basin Project) in Oregon:** This project will benefit coho salmon habitat through planning, purchase and installation of large wood pieces in selected areas in the watershed.

Facility Operation, Maintenance and Rehabilitation – Reclamation recognizes the importance of maintaining infrastructure in the face of limited funding by creating innovative procedures and utilizing incentives that prioritize funding to those most urgent in need. Some projects that address aging infrastructure and strive to promote facility safety and reliability and support sustainable water management include:

- **$1.6 million for the Yuma Area Projects (Arizona):** These funds will allow for the replacement of 7,500 linear feet of lined canal that is old and has been damaged by floods.
- **$1.044 million is for Replacements, Additions and Extraordinary Maintenance (Central Valley Project) in California:** These funds will support the contract for system replacement of an insufficient switchgear/breaker system so that the Jones Pumping Plant can operate at full capacity without restrictions, ensure continuity of operations and make it more safe and reliable.
- **$1 million for the Leavenworth Water System (Columbia River Basin Projects) in Washington:** This project will replace the water delivery system that brings water to the Leavenworth hatchery for the production of salmon as part of the mitigation of Grand Coulee Dam.
- **$500,000 for the Pole Hill Canal (Colorado-Big Thompson Project) in Colorado:** These funds will enable the completion of the removal of the existing canal lining system and facilitate replacement with an enclosed canal made of box culverts. This replacement will prevent possible canal failure and assure the ability to deliver water and generate power.
- **$750,000 for the Pinto Dam (Columbia Basin Project) in Washington:** This project will fund modifications to the headgates that will prevent overtopping during high storm runoffs. Overtopping the canal could result in a breach of the canal and affect Pinto Dam.
- **$106,000 for the Palisades Spillway Repair (Minidoka Area Projects) in Idaho:** This project will fund emergency spillway repairs to damaged concrete within the stilling basin at Palisades Dam.

Yakima River Basin Integrated Water Resource Management Plan Early Action Items Funding Status			
Integrated Plan Actions/Projects	**Total Estimated Cost (million $)**	**Early Action Items (1-2 years) ($)**	**Early Action Funding Status ($)**
Tributary Habitat Enhancement Program	$180.0	$2,600,000	$225,000[1]
Fish Passage at Clear Lake Dam	$3.0	$400,000	
Subordinate Power Diversions, Roza & Chandler	TBD	$500,000	$225,000[2]
Fish Passage at Cle Elum Lake Dam	$87.6	$2,600,000	$700,000[2]
Cle Elum Dam Pool Raise	$16.8	$2,000,000	
Watershed Land Conservation - Land Acquisition	TBD	$2,000,000	$500,000[1]
Wymer Dam & Reservoir	$1,077	$3,000,000	
Bumping Lake Enlargement	$402.5	$1,200,000	$1,250,000[1]
Pipeline from Lake Keechelus to Lake Kachess	$190.7	$3,500,000	$2,500,000[3]
Lake Kachess Inactive Storage	$253.8	$1,500,000	$450,000[2]
Groundwater Infiltration (Pilot project)	$4.7	$1,600,000	$200,000[1]
TOTAL		$20,900,000	$6,050,000[4]

[1] Washington State-funded
[2] Reclamation, Yakama Nation, Irrigation Districts and USGS-funded
[3] Pending State supplemental appropriation
[4] This total does not include the additional state contribution to the Integrated Plan Programmatic EIS and Framework for Implementation document of $1.88 million.

Yakima River Basin Water Enhancement Project (YRBWEP)

Legislative History

- P.L. 96-162 Feasibility Study, December 28, 1979
- P.L. 98-381 Section 109 of Hoover Power Plant Act of 1984, August 17, 1984
- P.L. 103-434 Title XII Yakima River Basin Water Enhancement Project, October 31, 1994, as amended by P.L. 105-62, October 13, 1997, and P.L. 106-372, October 27, 2000

Purposes of YRBWEP

- To protect, mitigate, and enhance fish and wildlife through improved water management; improved instream flows; improved water quality; protection, creation and enhancement of wetlands; and by other appropriate means of habitat improvement
- To improve the reliability of water supply for irrigation
- To authorize a Yakima River Basin water conservation program
- To provide for implementation by the Yakama Nation of an irrigation demonstration project, Wapato Irrigation Project improvements and a Toppenish Creek Corridor enhancement project

YRBWEP Accomplishments

- **Diversion Reductions**
  - Sunnyside Valley Irrigation District (Phase I) – installed 30 automated check structures and built three reregulation reservoirs resulting in 19,450 acre-feet (54cfs) of water left in the Yakima River for the 2014 irrigation season (@ $28.5 million in YRBWEP funds FY04-FY12) [Most of this water, 17,078 acre-feet, is available for target flow enhancement in the 2012 irrigation season.]

  - SDBOC Phase I Diversion Reduction Agreement - Gives Reclamation control of 9,712 acre-feet (27cfs) to enhance Yakima River instream flows. (@ $8.0 million in YRBWEP funds FY10-FY13) [7,563 acre-feet of this water is applied to target flows already in the 2012 irrigation season.]

  - Benton Irrigation District - converting from open canal and laterals to a new pumping plant and pressurized pipe system; created a downstream change in the point of diversion; will keep 21,000 acre-feet (58cfs) in a 72 mile stretch of the Yakima River and will reduce overall diversions by about 5,500 acre-feet (15cfs) at the completion of the project in 2014. (@ $22.2 million in YRBWEP funds; FY09-FY13)

  - Sunnyside Valley Irrigation District (Phase II ARRA) – converting from open lateral to a closed piped system; will reduce diversions by over 3,810 acre-feet (11cfs) in the Yakima River (@ $21.4 million in American Recovery and Restoration Act (ARRA) funds). The project includes installing nearly 49 miles of pipeline to irrigate 11,800 acres. [3,404 acre-feet of this water is applied to target flows already in the 2012 irrigation season.] ARRA

funds were spent in February 2012 and SVID agreed to fund the remaining $2.7M without cost share.

- Sunnyside Valley Irrigation District (Phase II B) – Five year three-party agreement between Reclamation, Ecology and SDBOC to begin a 20 year project converting 65 open ditch laterals to a closed piped system; will reduce diversions by over 13,130 acre-feet (36cfs) in the Yakima River (@ $52.0 million in YRBWEP funds)

- YRBWEP funds used to purchase the power water right formerly owned by Pacific Corps; power plant was decommissioned resulting in 260,000 acre-feet (360cfs) of water being left in a critical reach of the Naches River.

- YRBWEP funds used to purchase land and water in locations throughout the basin resulting in an additional 5,000 acre-feet of water being left in the Yakima River and some of its tributaries.

- **Land/Habitat Restoration**
  - Land Acquisition - YRBWEP funds used to purchase almost 2,000 acres of ecologically significant lands for restoration. Lands are being restored to native grasses, forbs, trees, and shrubs; on some lands levees will be set back and side channels established or reinvigorated to restore the natural floodplain of the Yakima River.

  - KOA levee setback and Greenway high water terracing – A 2012 emergency funding grant from Army Corps allowed Yakima County to coordinate levee setback on the former KOA property purchased by YRBWEP coupled with levee removal and creation of high water terraces on the Greenway Property north of the Terrace Heights bridge – both projects were completed February 2012. Levee setback south of Hwy 24 is anticipated in the near future allowing Reclamation's 600 acres to interact with the Yakima River.

  - Schaake Restoration – 285 acres near Ellensburg along the Yakima River. Restoration of former spray fields and feedlots; native vegetation re-establishment. Phase I Report of Habitat Enhancement Designs was completed in 2010. Beginning Phase II in 2012. This restoration project will include levee setback, side channel establishment, and side channel reinvigoration for improved fish and wildlife habitat and flood control.

- **Tributary Enhancement**
  - Bruton Fish Passage – Multi-partnership effort to increase flows and fish passage in Taneum Creek. Bruton diversion dam was removed which opened up 30 miles of critical habitat. Area was identified by NOAA and YN as a very critical reach for steelhead.

  - Taneum Canal Company Diversion – Kittitas Conservation Trust sponsored the removal of the Taneum Canal diversion dam on Reclamation's Heart K property and replacement with a new diversion and adjacent roughened channel to improve migration to upstream habitat on Taneum Creek.

- Monitoring of Tributary Enhancement – YRBWEP staff (USFWS liaison) worked with WDFW and YN to develop PIT tag monitoring sites to monitor fish use of Taneum Creek following the implementation of enhancement measures.

- **Yakama Nation**
  - Wapato Irrigation Project - YRBWEP funds (@$6.1 M FY05-FY11) have been granted to the YN for construction of ramp flume measuring devices in the WIP canals and drains and installation of flow monitoring equipment to provide for improved management of irrigation water.

  - Toppenish Creek Corridor Enhancement Plan - YRBWEP funds (@$815K FY05-FY11) have been granted to the YN for the Toppenish Creek Corridor Enhancement Plan to identify measures to integrate management of agricultural, fish, wildlife, and cultural resources to meet tribal objectives. The Toppenish Creek Corridor Enhancement Plan is expected to be completed in spring 2012.

Out Year Projects

- **Diversion Reductions**
  - Roza Irrigation District – construction of reregulation reservoir and conversion from open lateral to closed pipe system; project is still being designed so diversion reductions and costs are still estimates (estimate up to 10,000 acre-feet in diversion reductions and possibly about $27 million in YRBWEP funds).

  - Kennewick Irrigation District – project is still being planned but will likely include a downstream change in point of diversion, electrification of a pumping plant, construction of 4 reregulation reservoirs and conversion of open laterals to a closed pipe system; no firm acre-feet of conserved water or cost data are available yet.

- **Land/Habitat Restoration**
  - Gap to Gap reach – cooperative effort with Yakima County, Yakama Nation, US Army Corps of Engineers, Washington State Department of Transportation, and others to set back levees along the Yakima River, restore the natural floodplain and reduce risk of damaging floods. YRBWEP funds have been used to buy land, reduce weeds and restore natural vegetation. Other entities are contributing funds to move levees. Most of the YRBWEP funds for land acquisition in this reach have been expended.

  - Schaake – Moving into Phase II of Habitat Enhancement Design for restoration of former spray fields and feedlots; work will include levee setback, floodplain restoration, side channel development and restoration, and native vegetation re-establishment. Phase two will determine preferred alternatives and design.

  - Wenas – ongoing vegetative restoration. Since thousands of trees and shrubs were planted in 2003 approximately 25 beaver dams (counted in 2010) have been built allowing the creek to return to a more natural condition.

- Heart K – ongoing vegetation restoration. Enclosures will be constructed to prevent the overgrazing from elk in meadows and riparian areas. These enclosures will stay in place until adequate tree and shrub habitat has been restored.

- **Yakama Nation**
  - WIP implementation (Satus) – construction of pumping plant, pressurized pipe delivery system and measuring devices; costs may be up to $5 million per year.
  - Toppenish Creek – construction to separate creek from irrigation canals and restore floodplain habitat; planning work in process so no estimate yet on costs.
  - Demonstration Project – still in beginning stages to improve irrigation efficiencies; will apply for a planning grant in FY12 or FY13.

- **Cle Elum fish passage**
  - Future construction of permanent upstream and downstream fish passage; @ $96 million estimate.

- **Tributaries**
  - Working with local, state, and federal partners to develop tributary enhancement plans identifying projects in other tributaries such as Manastash and Cowiche creeks.

- **Wapatox Canal**
  - Reclamation owns and maintains this late 1800s canal to deliver water to Lower and Upper Wapatox water users. Original wood stave pipe; YRBWEP plans to address critical restoration needs beginning in 2013 to significantly reduce chance for failure that could damage orchards and interrupt ability to deliver water. Eventual piping or relining of the system will result in additional diversion reductions of up to 13,000 acre-feet (30 cfs).

YRBWEP Budget

- YRBWEP budget has averaged @ $11.5 million/year for past 5 years

Tim McCoy, YRBWEP Manager
509-575-5848 Extension 209

U.S. Department of Interior
Bureau of Reclamation

U.S. Department of the Interior
Bureau of Reclamation

Yakima River Basin Water Enhancement Project Phase II

RECLAMATION
Managing Water in the West

Yakima Project

RECLAMATION

Yakima River Basin Water Enhancement Project

- **YRBWEP Legislative History**
- P.L. 96-162 Feasibility Study, December 28, 1979
- P.L. 98-381 Section 109 of Hoover Power Plant Act of 1984, August 17, 1984
- P.L. 103-434 Title XII Yakima River Basin Water Enhancement Project, October 31, 1994, as amended by P.L. 105-62, October 13, 1997, and P.L. 106-372, October 27, 2000

- **YRBWEP Phase II Authorized 1994**
- To protect, mitigate, and enhance fish and wildlife through improved water management, instream flows, and water quality; to protect, create and enhance wetlands; and other habitat improvements
- To improve the reliability of water supply for irrigation
- To authorize a Yakima River Basin water conservation program
- To provide for implementation by the Yakama Nation of an irrigation demonstration project, Wapato Irrigation Project improvements and a Toppenish Creek Corridor enhancement project

RECLAMATION

YRBWEP Accomplishments

- Water Conservation Plan
- Land and Habitat Restoration
- Tributary Enhancement
- Yakama Nation Planning

Yakima River Basin Water Conservation Plan

- Implementation:
  - SDBOC Phase I – Sunnyside Canal Improvement Project
  - SDBOC Phase I Diversion Reduction Agreement
  - Benton Irrigation District Pressurized Piping System
  - SDBOC Phase IIA (ARRA) – Enclosed Lateral Improvement Projects
  - SDBOC Phase II B
- Cost Share – BOR 65%; State 17.5%; District 17.5%
- Conserved Water: District retains 1/3; BOR 2/3

RECLAMATION

SVID Phase I
Sunnyside Canal Improvement Project

- @ $28.5M, FY04-FY12 – (Total Project $44M)

Construction will be completed in FY13

- 33 automated check structures
- 3 re-regulation reservoirs
- Supervisory Control and Data Acquisition System (SCADA)

- Retains 19,450 acre feet (54 cfs) conserved water in the Yakima River over Parker

- 17,078 acre-feet available in the 2012

RECLAMATION

Sunnyside – Old Check Structure

Sunnyside – New, Automated Check Structure

SVID 59.29 Re-regulation Reservoir

RECLAMATION

37.10 Re-reg Lining

SVID 23.70 Re-regulation Reservoir

Phase I - Diversion Reduction Agreement

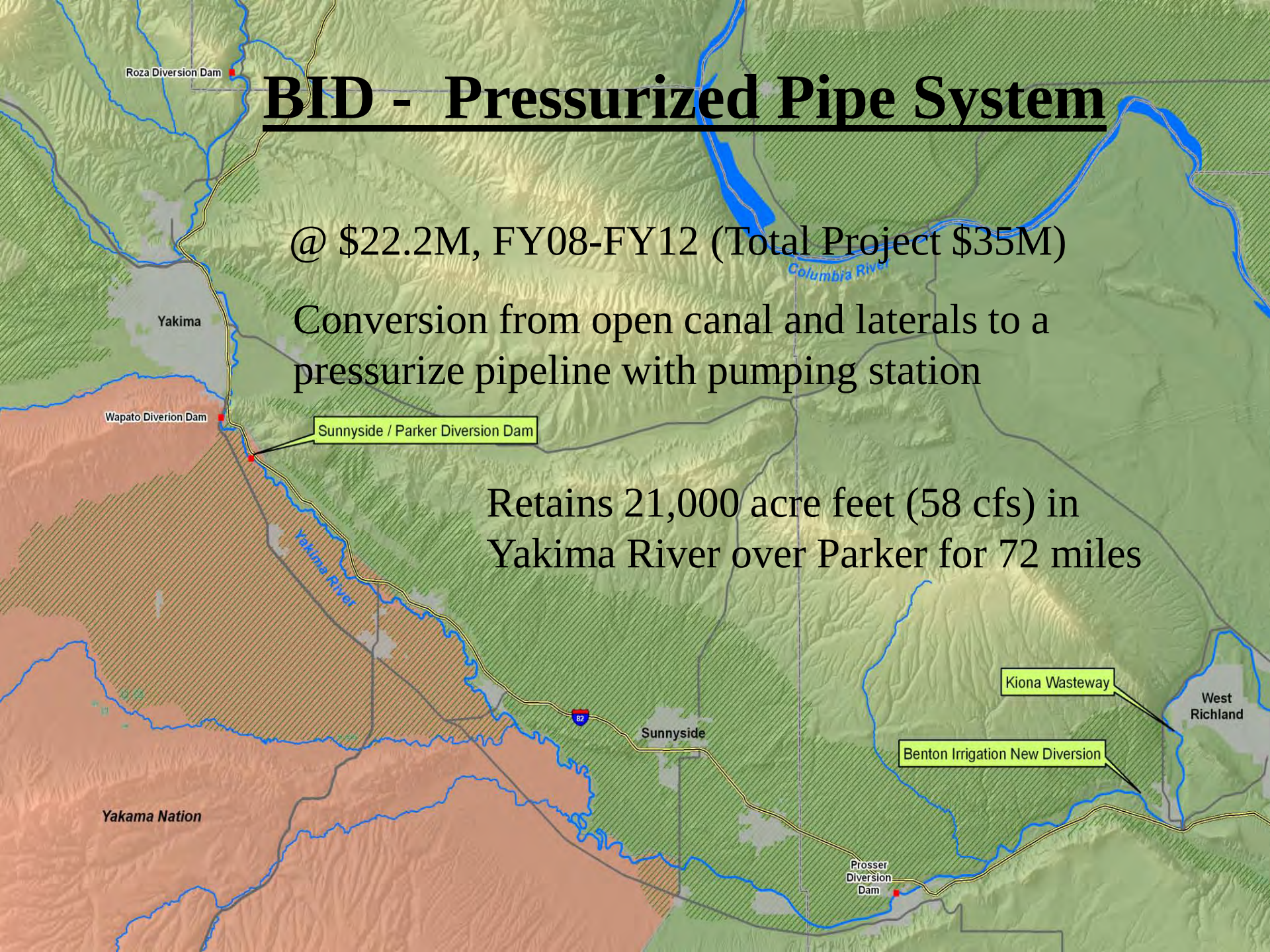
- @ $8.0 million in YRBWEP funds FY10-FY13 ($1.77 M to pay)
- Gives Reclamation control of 9,712 acre-feet (27cfs) to enhance Yakima River instream flows.
- 7,563 acre-feet of this water is applied to target flows in the 2012 irrigation season.

BID - Pressurized Pipe System

@ $22.2M, FY08-FY12 (Total Project $35M)

Conversion from open canal and laterals to a pressurize pipeline with pumping station

Retains 21,000 acre feet (58 cfs) in Yakima River over Parker for 72 miles



Benton Pump Site

RECLAMATION

BID Pump Station

RECLAMATION

SDBOC Phase IIA (ARRA)
Enclosed Lateral Improvement Projects

- @ $21.4M American Recovery and Reinvestment Act (ARRA) funds (FY09-FY12). (Total Project $35.5M)
- Convert 49 miles of open lateral to a closed piped system serving 11,800 acres;
- Reduce diversions by over 3,810 acre-feet (11cfs) in the Yakima River

RECLAMATION


U.S. Department of the Interior
Your Recovery Dollars at Work
WWW.RECOVERY.GOV
RECLAMATION
Managing Water in the West
SUNNYSIDE
VALLEY
IRRIGATION
DISTRICT
SERVING AGRICULTURE SINCE 1906
Sunnyside Division
Board of Control
YRBWEP
Sunnyside
Conduit


KOMATSU
PC1100LC


MK4
P-1032
MK3
P-1076


48.00 MILE


No.824/630
FM03

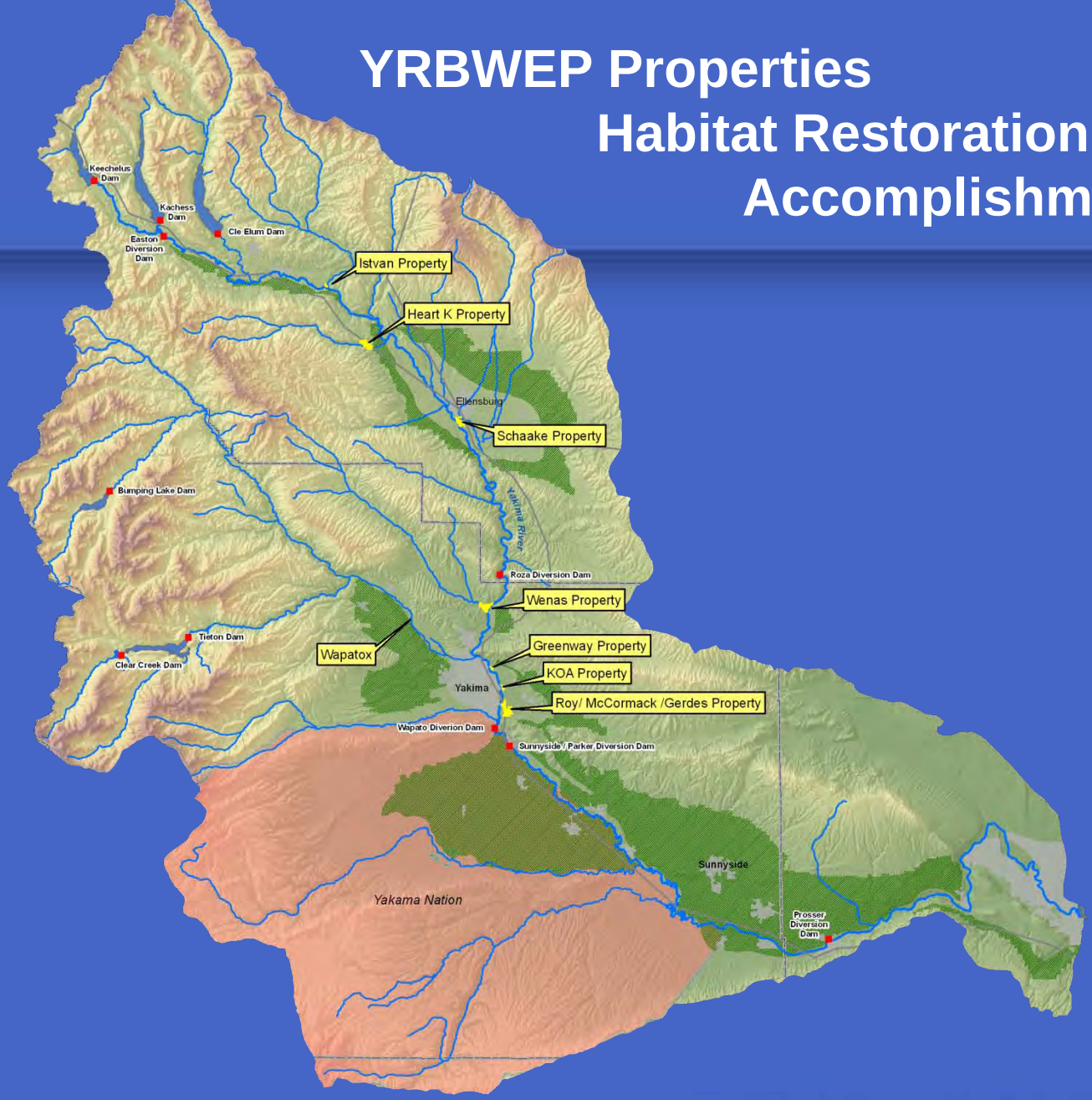
Instream Flows at Parker

YRBWEP Legislation – 300 cfs base flow

Additional Flows Due to Conservation

- FY 2010 – 32 cfs
- FY 2012 – 117 cfs
- Potential – 238 cfs (20 years)

YRBWEP Properties
Habitat Restoration
Accomplishments

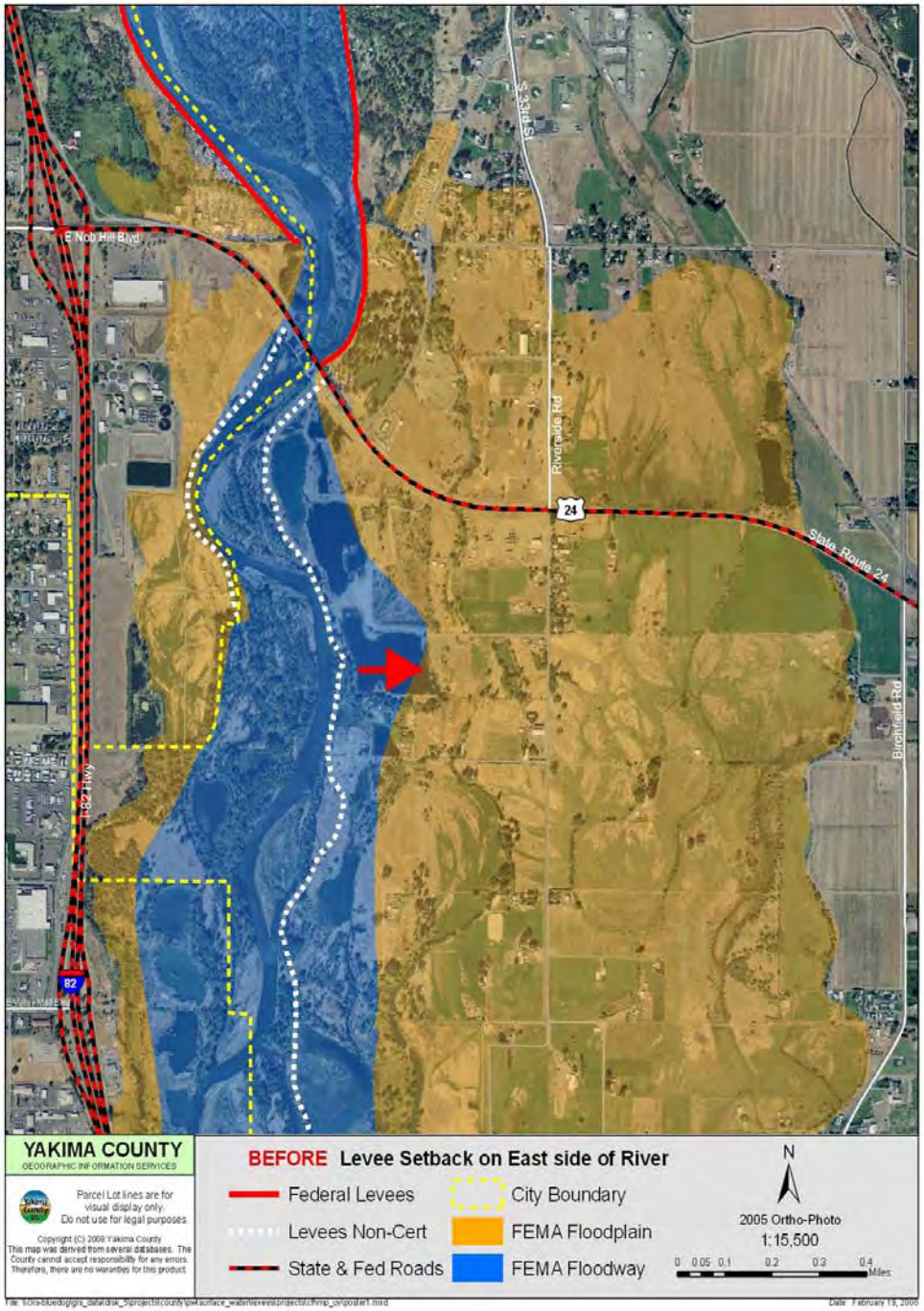


RECLAMATION

Gap to Gap Properties and Levee Relocation: Relocation Partners

- Yakama Nation
- Diking District #1
- Reclamation
- WDFW
- WSDOT
- Yakima Basin Fish and Wildlife Board
- Yakima Basin Water Resources Agency
- Ecology
- NOAA/NMFS
- USFWS
- Washington State Senator Curtis King

RECLAMATION

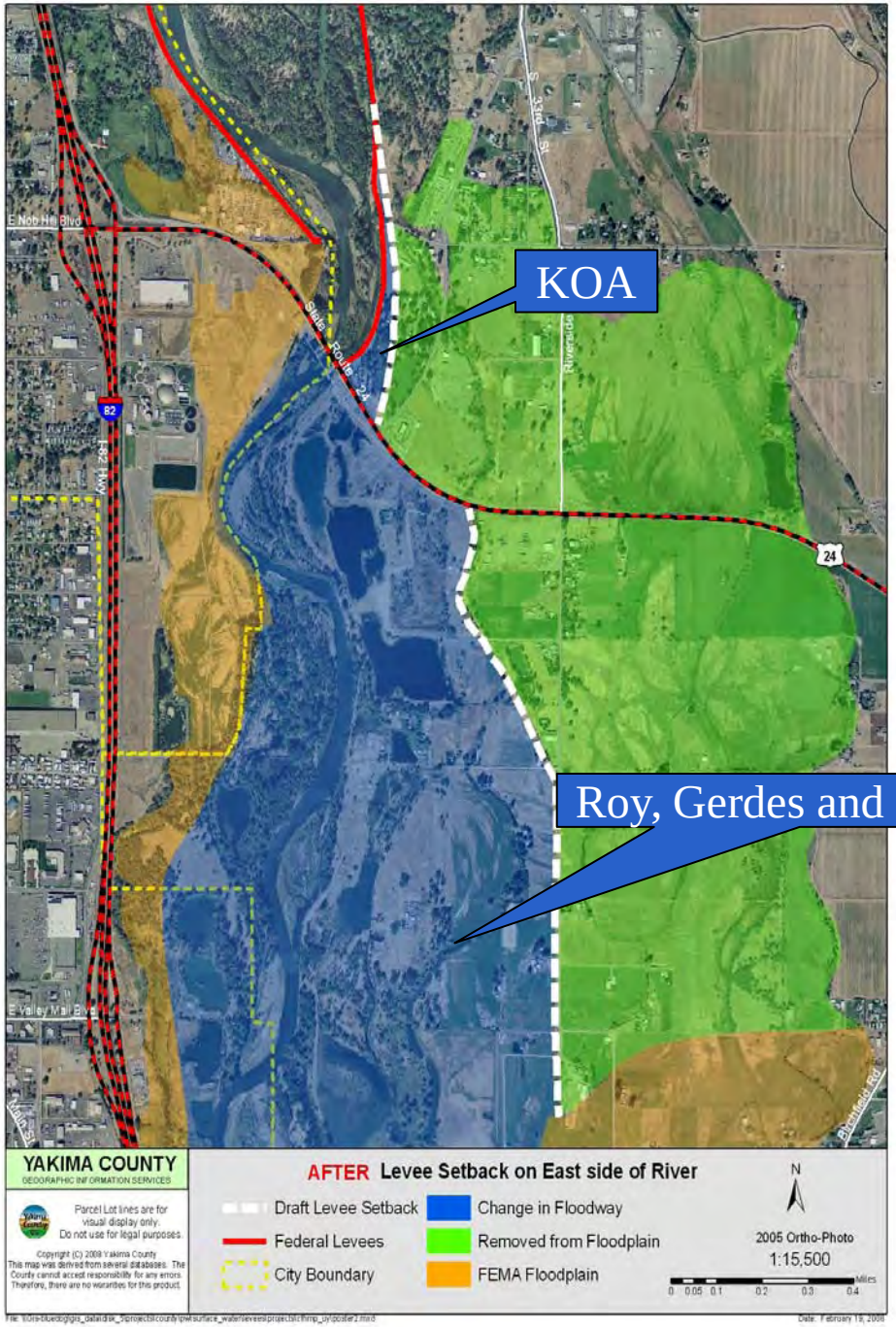


Before Proposed Levee Setback on East Side of River

- Existing FEMA Flood Map

RECLAMATION

YRBWEP Acquisitions



After Proposed Levee Setback on East Side of River

RECLAMATION

KOA Acquisition – FY08

Acres – 20 On both sides of the Yakima River

Water – 2.8 cfs from Blue Slough, year-round

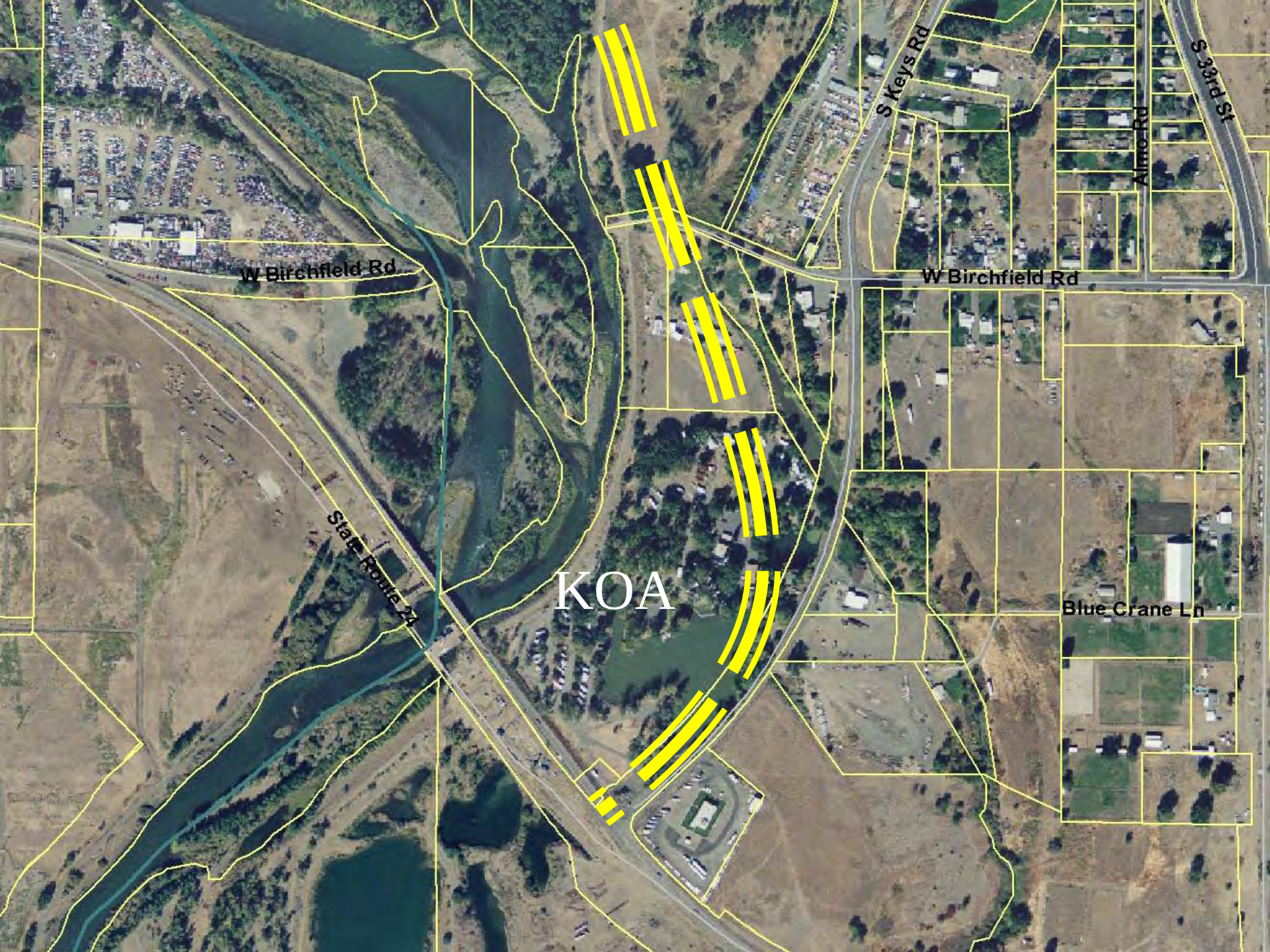
Key acquisition for levee setbacks north and south of Hwy 24 Bridge

Ties into the new, expanded Hwy 24 Bridge that cost DOT $9 million +.

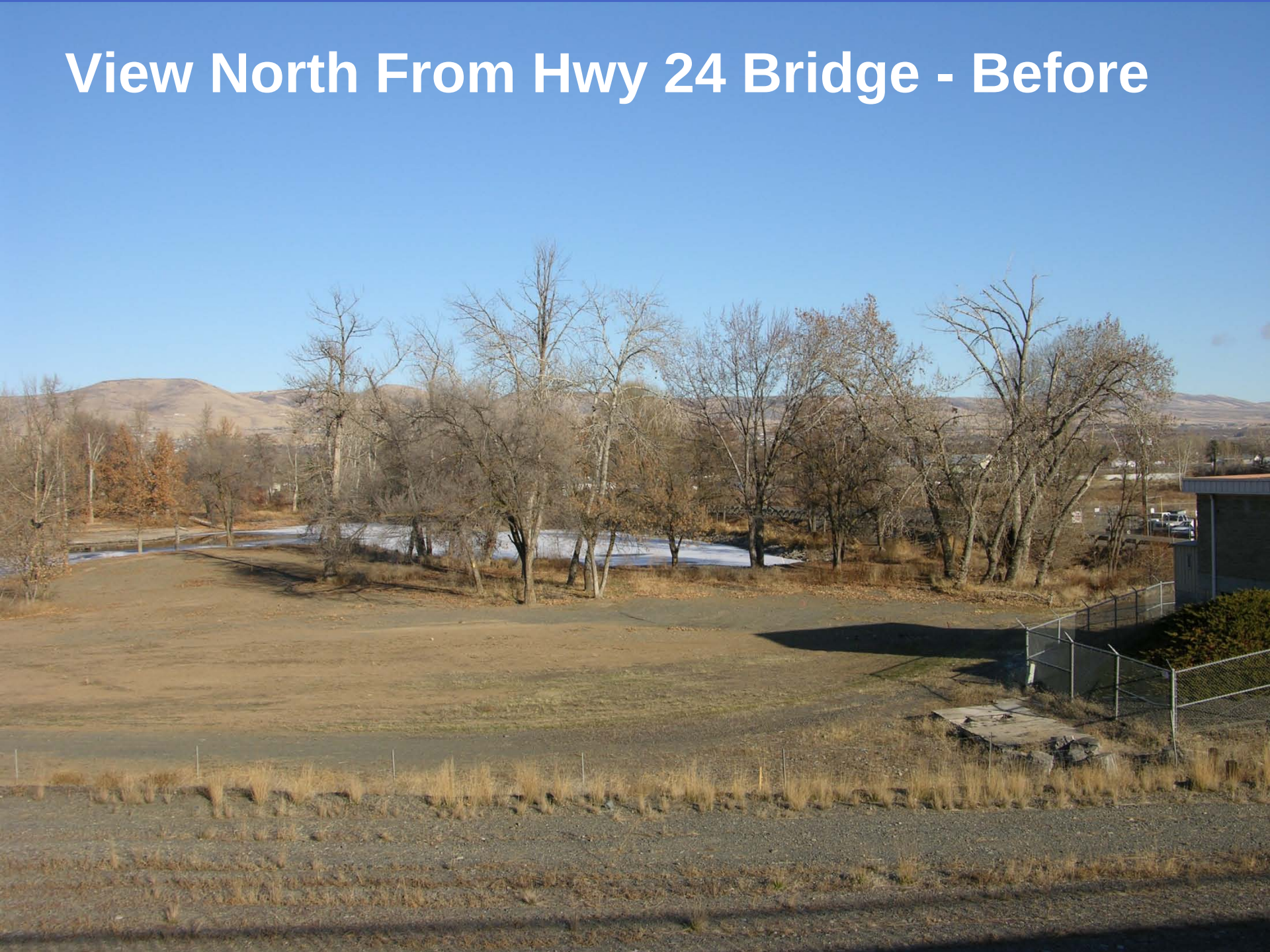
KOA CLEAN-UP – Job Corps Crew

RECLAMATION

January 2011 High Water Event


W Birchfield Rd
W Birchfield Rd
S Keys Rd
Almo Rd
S 33rd St
State Route 24
KOA
Blue Crane Ln

View North From Hwy 24 Bridge - Before




CAT

View From Hwy 24 Bridge - After

Roy Property

- Acres - 434
- Water – 169 Ac. Ft., Ecology – 363.35 Ac. Ft.

McCormack Property

- Acres – 145.93
- Water – 60 Ac. Ft.

Gerdes Property

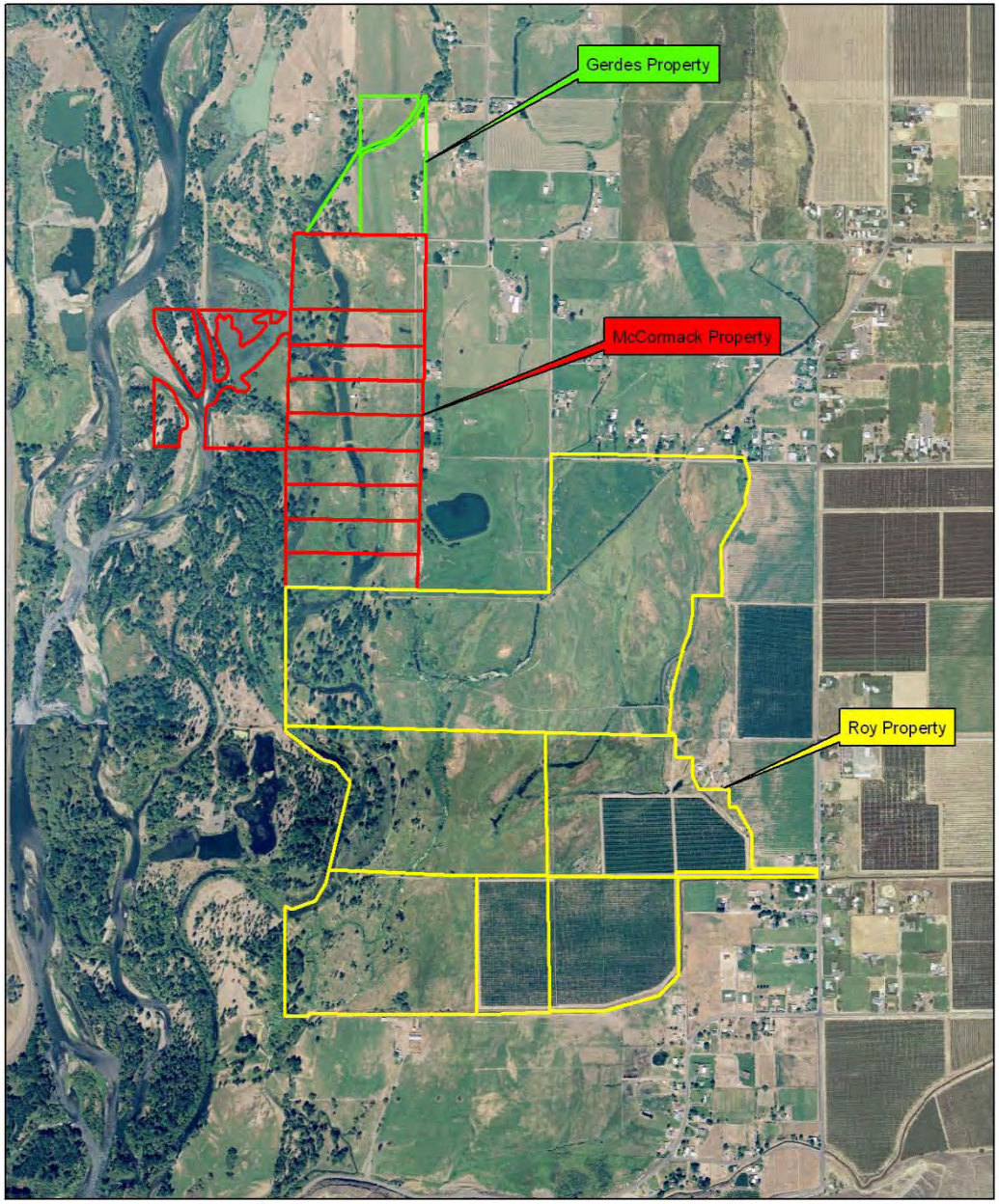
- Acres – 25
- Water – None – coordinated a sale to a private party, changed the point of diversion to approx. 100 miles down stream

Available for future levee setbacks, side channel establishment and reconnecting floodplain

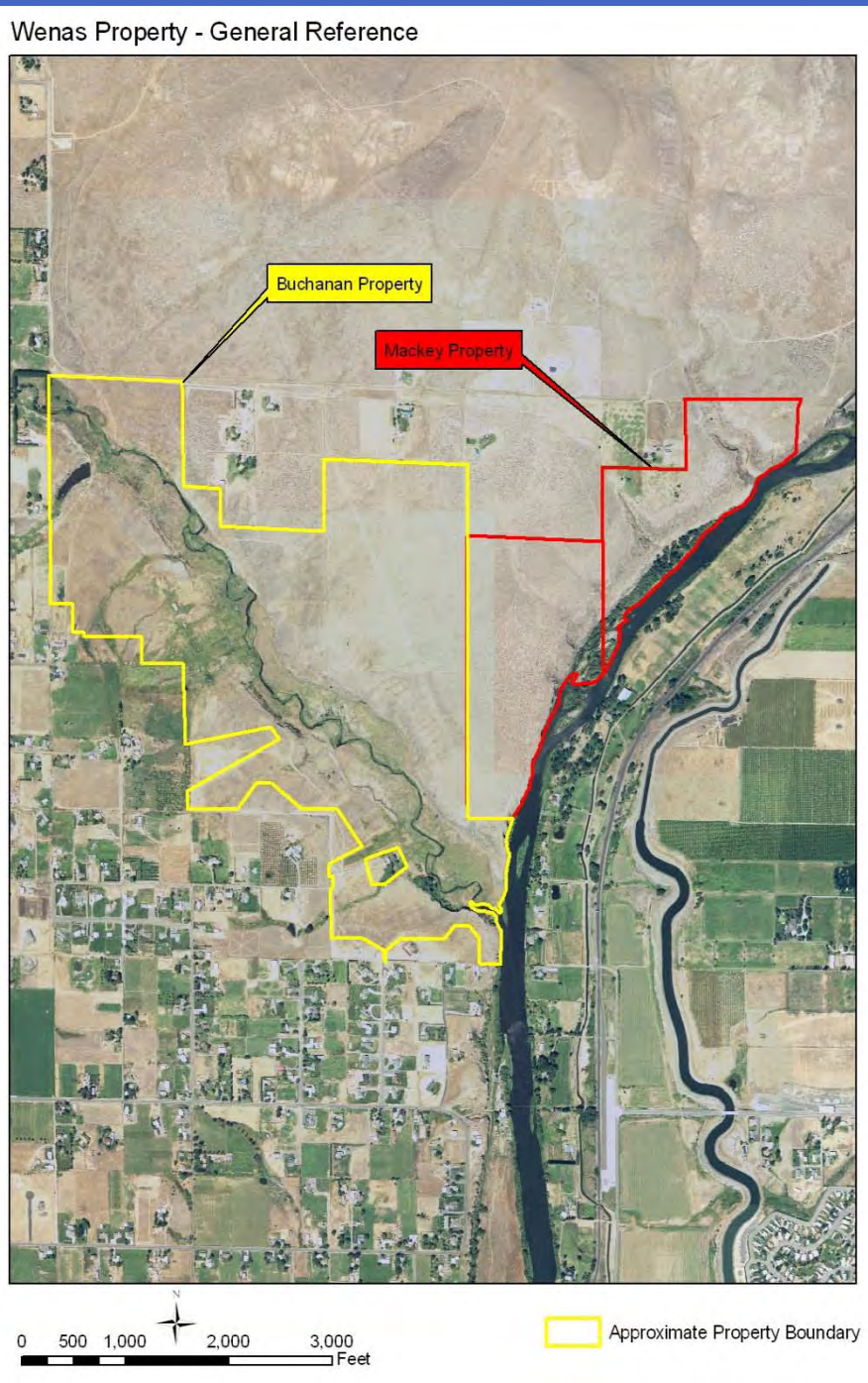
Ongoing work includes weed control and establishment of native grasses, forbs, trees and shrubs.

RECLAMATION

Union Gap Property - General Reference



RECLAMATION



Wenas Property

Acres – 429

Water – 888.1 Acre Feet

RECLAMATION

Schaake Property

Acres – 285

Water – 625.8 Acre Feet

Planning:

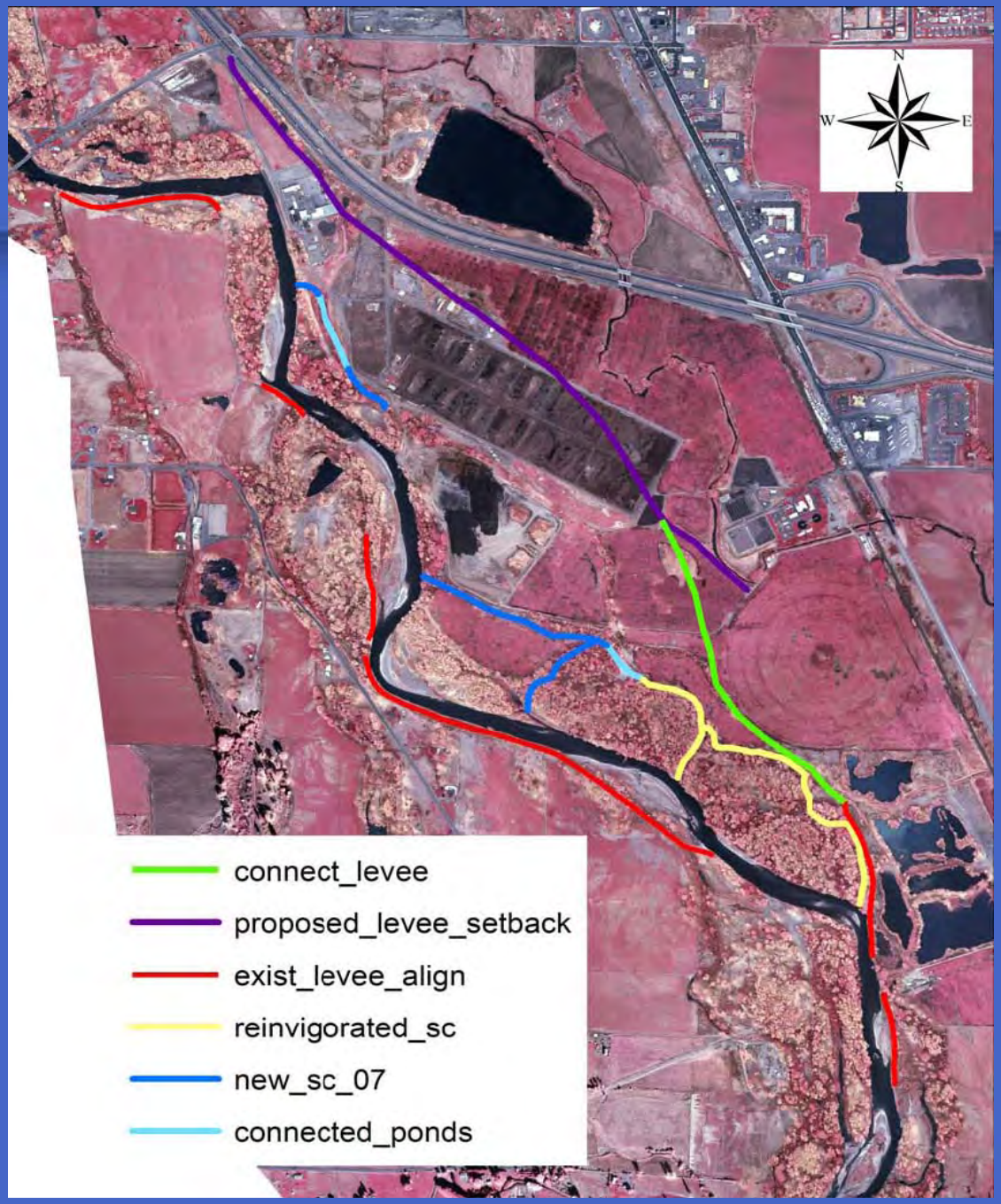
Initial modeling completed by Rob Hilldale, Bureau of Reclamation, Denver, Co. Developed alternatives for enhancing fish habitat.

Land Profile Inc. completed an initial study of the soil and water quality

Phase I Schaake Property Habitat Improvement Designs completed by CH2MHILL – June 2011

RECLAMATION


REG. RED ANGUS.
YRLING BULLS
4-SALE 509 925 4176
CELL 899 3246
UNITED STATES GOVERNMENT
BUREAU OF RECLAMATION
NO TRESPASSING
NO HUNTING



- Schaake proposed levee setback and side channel restoration from Phase I Design Report

- Phase II Design beginning in FY12 Restoration work to begin in FY14 subject to available funding

RECLAMATION

Tributary Enhancements: Taneum Creek

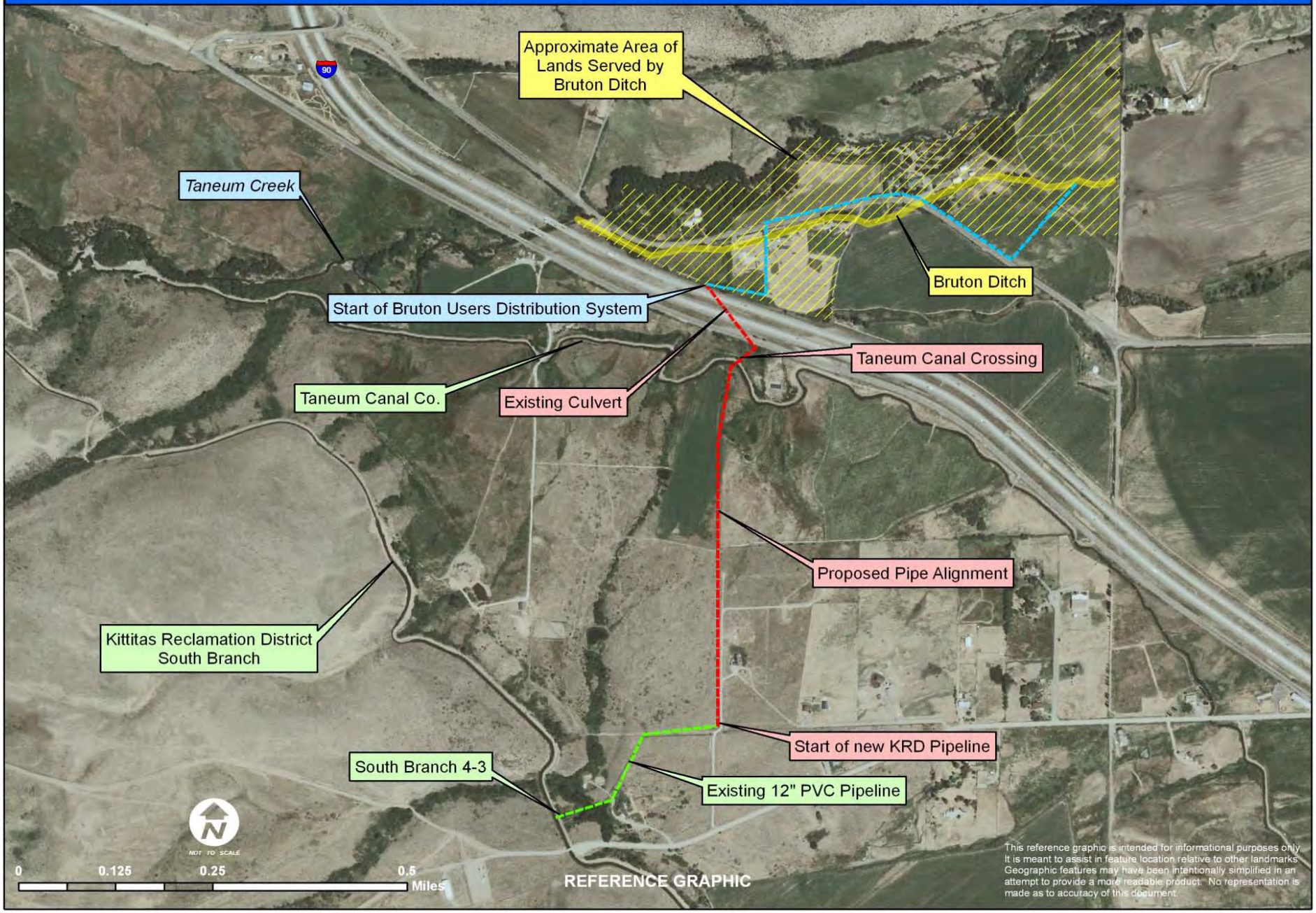
Multi-partnership effort to increase flows and improve fish passage in Taneum Creek

- KRD-Bruton Lateral pipeline constructed ($500K FY09) Taneum Creek rights in trust.
- Bruton diversion dam removed ($250K FY09)
- Taneum Canal Co. diversion reconstructed with roughened channel fish by-pass (FY11)
- Opened up 30 miles of critical habitat for steelhead

RECLAMATION
Managing Water in the West

Conceptual Bruton / KRD Water Supply Route

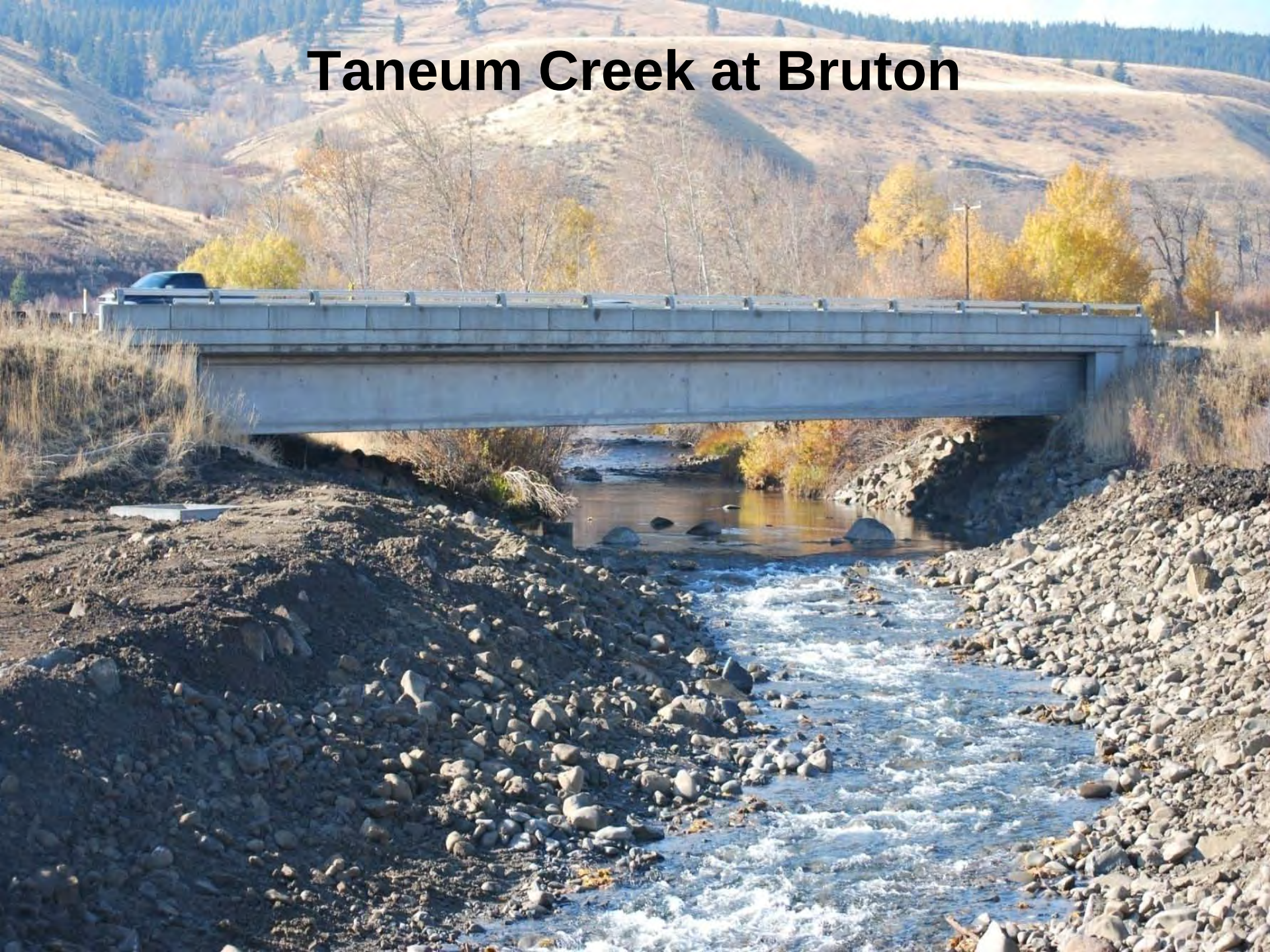
U.S. Department of the Interior
Bureau of Reclamation
Pacific Northwest Region
Columbia-Cascades Area



This reference graphic is intended for informational purposes only. It is meant to assist in feature location relative to other landmarks. Geographic features may have been intentionally simplified in an attempt to provide a more readable product. No representation is made as to accuracy of this document.


Taneum Creek at Bruton Diversion
09/22/2008

Taneum Creek at Bruton



Old Taneum Canal Diversion Dam

New Taneum Canal Dam Structure

New Diversion With Fish By Pass

PIT Tag Antenna in Place

Yakama Nation YRBWEP

- Wapato Irrigation Project Plan (@$6.1M)
  - Installation of Ramp Flume and Measuring Devices
  - Identification of Implementation Measures
    - Satus Pump Station and improvements
    - Irrigation Demonstration Project
- Toppenish Creek Enhancement Plan (@$815K)
  - Final Draft 3/30/2012

RECLAMATION

YRBWEP FY2012

SDBOC Phase I -	$ 300,000
SDBOC Diversion Reduction Agreement -	$ 650,000
Benton Irrigation District -	$ 4,000,000
SDBOC Phase IIB -	$ 1,500,000
Habitat Restoration -	$ 950,000
Tributaries Enhancement -	$ 200,000
Wapatox	$ 500,000
YRBWEP Administration	$ 1,700,000
	$ 9,800,000

RECLAMATION

Potential YRBWEP Outyears FY2013 thru FY2014

- Yakama Nation Projects
  - Site study and design for Satus pumping plant
  - 50 cfs in critical reach of the Yakima River
  - Toppenish Creek Corridor Enhancement implementation
- Wapatox Restoration
  - Address Priority items - convert open main canal to enclosed pipe
  - Reduced O&M and 30 cfs in the Naches River
- Schaake construction
  - Flood plain restoration and levee setback
- Tributary enhancement planning/implementation
  - Manastash, Naneum and Wilson Creeks, and Cowiche Watersheds
- Roza Irrigation District
  - Re-regulation reservoir
  - 26 cfs in critical reach of the Yakima River

RECLAMATION

Integrated Plan Projects Authorized under Title XII YRBWEP Phase II

- Cle Elum Fish Passage
- Additional Storage Capacity at Cle Elum
- Wapatox Efficiency Improvements
- Habitat Protection and Enhancement

RECLAMATION

Thank You

Tim McCoy
YRBWEP Manager
Bureau of Reclamation
Office – (509) 575-5848, ext 209
tmccoy@usbr.gov

RECLAMATION

LAW OFFICES
ROGER M. LEED P.S.
A PROFESSIONAL SERVICE CORPORATION
1826 E. Hamlin St.
Seattle, Washington 98112

RECEIVED
DEC 28 2011
DEPARTMENT OF ECOLOGY

Telephone: (206) 443-9911
Facsimile: (206) 330-2131
Email: rmleed@pipeline.com

December 22, 2011

Public Disclosure Officer
WA Dept. of Ecology
PO Box 47600
Olympia, WA 98504-7600

RE: Public Records Act Request

On behalf of the North Cascades Conservation Council, the Sierra Club Columbia River Future Project, and the Yakima Basin Storage Alliance, this is a request under Chapter 42.56 RCW for copies of the following public records:

1. All documents including, but not limited to: emails, notes, phone conversation records, agendas, public notices, or other written documents generated or received by Derek Sandison, Ecology Director, Office of the Columbia River, and/or Dan Silver, Ecology consultant, regarding the Yakima River Basin Water Enhancement Project Workgroup's Implementation Subcommittee,

2. All documents including, but not limited to: emails, notes, phone conversation records, agendas, public notices or other written documents generated or received by Derek Sandison, Ecology Director, Office of the Columbia River, and/or Dan Silver, Ecology consultant, regarding the decision by Ecology and the Bureau of Reclamation in the Draft Programmatic EIS for the Yakima River Basin integrated Water Resource Management Plan (Sec. 2.4.5.4, page 2-20) to declare the Columbia River Pump Exchange with Yakima Storage a study that does not require additional analysis in the DPEIS.

3. All documents including, but not limited to: emails, notes, phone conversation records, agendas, public notices, or other written documents generated or received by Derek Sandison, Ecology Director, Office of the Columbia River, and/or Dan Silver, Ecology consultant, regarding the decision by Ecology and the Bureau of Reclamation to deny the November 23, 2011, request for an extension of the comment period on the Draft Programmatic EIS for the Yakima River Basin integrated Water Resource Management Plan, submitted by The Endangered Species Coalition, Federation of Western Outdoor Clubs, Kittitas Audubon Society, Lower Columbia Basin Audubon Society, The Mazamas, The Mountaineers, Seattle Audubon Society, Sierra Club Washington State Chapter, Western Lands Project, Western Watersheds Project, and Wild Fish Conservancy.

We understand that if a list of individuals is provided by the Department of Ecology, it will neither be used to promote the election of an official or to promote or oppose a ballot proposition as prohibited by RCW 42.17.130 nor for commercial purposes or to give or provide access to material to others for commercial purposes as prohibited by RCW 42.56.070(9).

To the extent that these documents are available in electronic format, paper copies (photocopies) are not required. Electronic copies of these documents may be emailed to: rmleed@pipeline.com

This request does not authorize the Department of Ecology to charge search or copy costs that exceed $50.00, without contacting the Law Offices of Roger M. Leed P.S.

Yours very truly,

Roger M. Leed

cc: clients via email

Yakima County Republican Central Committee

P.O. Box 1583
Yakima WA, 98907-1583

Office: (509) 972-0631
yakima-gop@charterinternet.com

Support for Yakima Basin Integrated Water Resource Management Plan

WHEREAS the Integrated Plan includes seven elements collectively essential for realizing the plan goals: 1) fish passage, 2) structural and operation changes, 3) surface water storage, 4) groundwater storage, 5) habitat protection and enhancement, 6) enhanced water conservation, and 7) market-based reallocation;

WHEREAS the Yakima River Basin is affected by a variety of water resource constraints that adversely impact ecosystem functions for endangered fish and other aquatic species, and water supply for agriculture, municipal and domestic uses;

WHEREAS demand for irrigation water cannot always be met in years with below-average runoff, leading to reduced (pro-rationed) irrigation water for junior water-right holders that in turn reduces farm and related income, and put the basin's perennial crops at extreme risk;

WHEREAS five drought years have occurred in the Yakima Basin since the early 1990s that have severely impacted the basin economy and ecosystem functions, and the potential for future climate change would likely increase the frequency and severity of future droughts;

WHEREAS surface water rights are fully appropriated in the basin, and groundwater pumping for irrigation, domestic and municipal uses can reduce surface water flows in many locations, and hydraulic continuity between groundwater and surface water in the basin creates uncertainty over the status of groundwater rights, with most of these right junior to surface water rights;

WHEREAS the goals of the Integrated Plan are to improve the reliability of water supply for irrigation, municipal supply and domestic uses; and to protect, mitigate and enhance fish and wildlife habitat; provide increased operational flexibility to manage instream flows to meet ecological objectives;

WHEREAS dams, changes in water temperatures, other obstructions and inadequate stream flow block fish passage to Yakima tributaries and spawning grounds;

WHEREAS floodplain modifications and riparian habitat degradation prevent proper floodplain functions;

WHEREAS flow modifications and river operations have affected flows for smolt outmigration, rearing habitat for juvenile salmonids, and other key habitat functions;

WHEREAS the Integrated Plan also includes an adaptive management framework to address potential future changes in water needs or hydrology, including potential climate change effects;

WHEREAS in March 2011 after 21 months of planning, the Yakima River Basin Water Enhancement Project (YRBWEP) Workgroup, comprised of representatives of the Yakama Nation, federal agencies, Washington State and local governments, an environmental organization, a local business group and irrigation districts unanimously approved the Integrated Plan elements and actions;

THEREFORE BE IT RESOLVED that we, the Washington State Republican Central Committee, endorse the Yakima River Basin Integrated Water Resource Management Plan;

THEREFORE BE IT FURTHER RESOLVED that we call on our elected state and federal officials and government agency leaders to fully support authorization and appropriations necessary to implement the Integrated Plan, including associated environmental reviews, technical analyses, refinements to specific actions, project designs and program development/implementation, and project permitting and construction.

Max Golladay, Chairman
Yakima County Republican Central Committee
PO Box 1583
Yakima Washington 98907

Resolution in Support of the Yakima Basin

WHEREAS the Yakima River Basin is affected by a variety of water resource constraints

WHEREAS the Integrated Plan includes seven elements collectively essential for

---

Submitted by the 14th Legislative District Democrats to the Washington State Democratic Central Committee for consideration at its January 28, 2012 meeting in Shelton. (Date Submitted 1/17/2012)

The WSDCC Resolutions Committee "RECOMMENDED A PASS" at its January 28, 2012 meeting in Shelton.

The WSDCC "PASSED" this resolution at its January 28, 2012 meeting in Shelton.

From: Karl Forsgaard [mailto:karlforsgaard@comcast.net]
Sent: Sunday, March 11, 2012 5:29 PM
To: dsan461@ecy.wa.gov; gchristensen@usbr.gov; dale.bambrick@noaa.gov; aconley@ybfwrb.org; rickdieker@yvn.com; mgarrity@americanrivers.org; krdoffice@fairpoint.net; paul.jewell@co.kittitas.wa.us; fast@yakama.com; mike.leita@co.yakima.wa.us; bill_lover@ci.yakima.wa.us; mrsidwmorrison@aol.com; districtmanager@kid.org; prigdon@yakama.com; tayerjjt@dfw.wa.gov; jeff_thomas@fws.gov; trullj@svid.org; dwiedmeier@usbr.gov; Ben Floyd; Andrew.Graham@hdrinc.com; tmccoy@usbr.gov; Ron@bentonrea.com
Subject: motorized National Recreation Areas proposed in the Yakima, Teanaway, Taneum and Manastash basins
Importance: High

Dear Yakima River Basin Water Enhancement Project Workgroup members,

Attached is a letter signed by 26 local, regional, state and national organizations opposing the National Recreation Area (NRA) Proposal adopted and published by the YRBWEP Workgroup's Watershed Lands Subcommittee on January 4,2012.

While this letter was being finalized, the U.S. Forest Service published a March 6, 2012 "fact sheet" on the Yakima "Integrated Plan," stating that "the NRA designations have potential to increase recreational impacts to ecosystems and affect wildlife corridors that pass through these areas because the designation would likely attract more of the recreating public."

Also while the letter was being finalized, the proposed NRAs were incorporated into the Yakima "Integrated Plan" and its Final Programmatic EIS on March 2, 2012. However, the NRAs were not mentioned in the Draft EIS, and the NRA Proposal was not published until the day after the Draft EIS public comment period closed, so the public was denied the opportunity to comment on the NRA Proposal. This violated NEPA and SEPA.

Thank you for considering these comments.

Karl Forsgaard

on behalf of:

Alpine Lakes Protection Society (ALPS)
Aqua Permanente
Center for Biological Diversity
Center for Environmental Law & Policy
El Sendero
Endangered Species Coalition
Federation of Western Outdoor Clubs
Friends of Bumping Lake
Friends of the Earth
Friends of the Teanaway
Friends of Wild Sky
Issaquah Alps Trails Club
Kittitas Audubon Society

Kittitas County Conservation Council
Mazamas
Middle Fork Outdoor Recreation Coalition (MidFORC)
North Cascades Conservation Council
Olympic Forest Coalition (OFCO)
Seattle Audubon Society
Sierra Club
Washington Native Plant Society
Wenatchee Mountains Coalition
Western Lands Project
Western Watersheds Project
Wilderness Watch
Wildlands CPR

Alpine Lakes Protection Society Aqua Permanente Center for Biological Diversity
Center for Environmental Law & Policy El Sendero Endangered Species Coalition
Federation of Western Outdoor Clubs Friends of Bumping Lake
Friends of the Earth Friends of the Teanaway Friends of Wild Sky
Issaquah Alps Trails Club Kittitas Audubon Society
Kittitas County Conservation Coalition Mazamas
Middle Fork Outdoor Recreation Coalition North Cascades Conservation Council
Olympic Forest Coalition Seattle Audubon Society Sierra Club
Washington Native Plant Society Wenatchee Mountains Coalition
Western Lands Project Western Watersheds Project
Wilderness Watch Wildlands CPR

March 11, 2012

TO: Yakima River Basin Water Enhancement Project (YRBWEP) Workgroup

RE: **Proposed National Recreation Areas**

The undersigned non-motorized recreation and conservation organizations strongly oppose the National Recreation Areas (NRAs) as proposed in the "Watershed Land Conservation Subcommittee Proposal," a 19-page report dated January 4, 2012.[1] The NRAs would jeopardize the Yakima River basin's ecology and water quality, and would also have negative impacts outside the Yakima River basin.

In the Land Subcommittee's report, the proposed NRAs are described in text on pages 3-4 and 8-9 (section entitled "Public Lands Designations") and in the map on page 13. We use the term "NRA Proposal" to refer to these portions of the Land Subcommittee's report.

The scope of this letter is limited to the NRA Proposal; this letter does not address other aspects of the Land Subcommittee's report or the Yakima Basin Integrated Plan.

This letter first provides a summary, then it describes the NRA Proposal, then explains our substantive objections, and then our procedural objections.

Executive Summary

Our substantive objections to the NRA Proposal include the following:

- Off-road vehicles (ORVs) have significant environmental impacts.
- The proposed NRAs would increase ORV use, which would increase impacts.

[1] The Land Subcommittee report (entitled "Proposal") is posted on the Bureau of Reclamation website at: http://www.usbr.gov/pn/programs/yrbwep/2011integratedplan/meetings/wtrlandssubfinal.pdf

- Advances in technology allow ORVs to access formerly inaccessible places, and this increases the likelihood of trespass off of the designated routes that would be open to use.
- It is unclear how the proposed NRAs would protect key habitat functions, and it seems unlikely that they could do this with their limited budgets and staffing, especially for enforcement.
- ORVs cause user conflicts with non-motorized users and displace people and wildlife.
- A statutory designation is radically different from an administrative designation.
- Problems with a statutory designation include:
    - Executive Orders governing ORV use of federal lands can't be enforced.
    - The designation is redundant and unnecessary because ORV use does not need Congressional authority and designation; the use can and does occur all over Washington State.
    - The NRA Proposal would overrule current resource protections that many conservation groups have worked hard to obtain, such as Late Successional Reserve (LSR) and Adaptive Management Area (AMA) protections.

Our procedural objections to the NRA Proposal include the following:

- The Yakima Integrated Plan Draft Programmatic Environmental Impact Statement (DPEIS) failed to analyze the NRA Proposal.
- There was no extension of the DPEIS comment period, but the NRA Proposal was published the day after the DPEIS comment period closed.
- Workgroup subcommittee meetings were held without notice to the public and/or were closed to the public.
- The Land Subcommittee published the NRA Proposal without conducting due diligence, and without adequately analyzing the impacts of the NRA Proposal.
- The Land Subcommittee published the NRA Proposal without consulting or even notifying the many conservation and non-motorized recreation organizations working on these issues in the same geography.
- The Land Subcommittee published the NRA Proposal without even notifying the National Forest District personnel who would be required to manage this land and the increased number of ORV users NRAs would bring.

The NRA Proposal

The NRA Proposal characterizes the NRAs as providing "protection for key habitat functions." The NRA designation also "raises the profile of these recreational lands and is, in essence, a powerful marketing feature that will attract more users…"

The NRA Proposal describes two NRAs that would be created:

The proposed Upper Yakima NRA on about 100,000 acres of National Forest lands would include about 21,000 acres that would be designated Wilderness, 6,000 acres that would be designated for "backcountry motorized recreational use," and about 1,000 acres that would be designated for "backcountry non-motorized recreational use." The map shows that this NRA is entirely within the Cle Elum Ranger District and its boundaries stretch along the south side of the existing Alpine Lakes Wilderness, from the Snoqualmie Pass area on the west, to the Blewett Pass area on the east; the proposed NRA would include almost all of the public land in the upper Teanaway River basin, as well as upper portions of the Cle Elum, Cooper and Kachess Rivers.

The proposed Manastash-Taneum NRA on about 41,000 acres of National Forest lands would include about 35,000 acres that would be designated for "backcountry motorized recreational use." There would be no Wilderness designation, and there is no indication of any designation of "backcountry non-motorized" area within the Manastash-Taneum NRA, i.e., it would be primarily dedicated to "backcountry motorized" use. The map shows that this NRA is mostly within the Cle Elum Ranger District, with small portions in the Naches District, and its boundaries include Windy Pass and upper portions of Taneum Creek and Manastash Creek.

Although the NRA Proposal does not identify the types of machines that are used in "backcountry motorized" recreation, they are commonly understood to be off-road vehicles (ORVs), including but not limited to 2-wheeled motorcycles, 4-wheeled "all-terrain vehicles" (ATVs), and 4x4 jeeps in summer, and snowmobiles in winter.

Substantive objections

The NRA Proposal says (at page 8) that the NRA designation will "attract more users," i.e., more "backcountry motorized" users with their machines (ORVs) and the resultant damage they bring.

ORVs (also known as off-highway vehicles or OHVs) are a growing problem in many parts of the Cascades, damaging wildlife habitat and creating use conflict with non-motorized recreationists who seek peace and quiet. In 2003, Forest Service Chief Bosworth identified unmanaged ORV use as one of the greatest threats to America's National Forests. We have worked to protect the remaining pristine portions of the Cascades from undue developments that would affect the non-motorized recreation experience and recovery of our endangered native wildlife and fish species and the long-term survival of all native flora and fauna. Some of us have also fought to reform disproportional funding of ORV construction projects that converted former hiker-horse trails into ORV trails, displacing hikers and equestrians.

ORVs have significant environmental impacts. ORVs pollute air and water, and degrade wildlife habitat. When ORVs leave legally designated routes, they carve new unauthorized routes through sensitive habitats, erode and compact soils, degrade habitat and water quality, and spread invasive weeds. Many species of wildlife are affected by the noise as well as the sight and smell

of ORVs, and will leave an area where ORV use is occurring. Erosion caused by ORV use can fill streams with sediment, choking out popular fish species such as salmon, steelhead and trout, and harming aquatic plants.

ORV use also impacts the experience of other users of the forest, such as non-motorized recreationists, including hikers, snowshoers, backcountry skiers, equestrians, mountain bikers and climbers. "In the minds of the individuals who commented on the issue, the noise, dust, trail damage, exhaust, and safety concerns caused by ORV use significantly reduces, or eliminates, the experience they seek while in the forest." *Northwest Motorcycle Association v. USDA*, 18 F.3d 1468, 1476 (9th Cir. 1994) (upholding Wenatchee National Forest Plan exclusion of ORVs from the North Fork Entiat area).

A March 31, 2004 letter to the U.S. Forest Service signed by 75 scientists from 25 universities (attached) identified negative environmental impacts of ORVs, such as:

- *It is well established by a large body of published scientific literature that off-road vehicles, including all-terrain vehicles (ATVs), dirt bikes and jeeps quickly strip vegetation and rut the land, leading to erosion of soil at rates much greater than are natural.*
- *Off-road vehicles crush, bruise, shred and otherwise destroy trees, shrubs, and other plant life.*
- *Off-road vehicles can disturb and be used to harass wildlife.*
- *Vehicle noise can directly impede the ability of wildlife to find prey, avoid predators, and successfully reproduce.*
- *Off-road vehicle engines, especially two-stroke engines, are highly polluting. Emissions of carbon monoxide, polycyclic aromatic hydrocarbons, MTBE, particulate matter, and other pollutants seriously degrade the quality of the air, soil, snow, and water, and have demonstrated adverse human health effects.*

The NRA Proposal says (at page 8) that it would provide "protection for key habitat functions," but it does not describe how this could occur. On the contrary, key habitat functions would be impaired by the NRA Proposal, as increased ORV use would further damage soil, water, vegetation, and wildlife habitat suitability within the NRAs and surrounding areas.

Advances in ORV technology in recent years allow riders to more easily drive these machines illegally off of county and forest roads and trails, and to drive snowmobiles into increasingly remote areas (including trespass into Wilderness), creating a growing burden on law enforcement officials. ORVs are also increasingly causing damage to private and public lands and waters, creating a noise nuisance in neighborhoods and rural areas, and increasing the public safety risk on our roads.

Changing ORV technology was illustrated in Washington State after the Mt. St. Helens National Monument's original management plan did not prohibit snowmobiles at the summit rim of the volcano – because nobody thought snowmobiles could go up there. A few years later the newer

machines became powerful enough to go there, causing conflicts between snowmobiles and roped climbers. In the Cle Elum District there have been increasing incidents of snowmobile trespass into Alpine Lakes Wilderness from the Teanaway basin, and it is difficult for law enforcement officials to apprehend them unless the snowmobilers injure themselves and need to be rescued at public expense. The machines' ability to reach ever-more remote areas results in harassment of vulnerable wildlife, vegetation damage, pollution, and noise that degrades the natural soundscape.

Even many law-abiding ORV advocates are concerned about the growing problem of ORV damage to our public lands and waters, fearing that the increasing degradation of public resources will lead to more restrictions on ORV use. Incidents of costly ORV damage to wetlands, meadows, and streams that often take decades to recover have grown steadily in recent years in Washington, as have other incidents of ORV conflict with hikers and horseback riders. Backcountry motorized use does not mix with non-motorized use, particularly on shared trails.

ORV-caused damage is evident in the areas proposed for NRA designation, where we must now bear the cost of restoring areas that have been damaged by ORV use. At Windy Pass, for example, the deep ruts carved by ORVs in subalpine meadows (see attached photo[2]) need to be filled and planted with native vegetation.

ORV users are continuing to lobby for expanded ORV use of public lands. There is pressure on many fronts, including site-specific ORV construction proposals, Forest-wide route designation processes on both trails and roads, and State legislation. Recent State legislative sessions have included new bills to require "no net loss" of motorized access to State DNR lands; to require National Parks to allow ORV use or lose trail maintenance grants; to study ways to "increase" ORV "access" to public lands throughout Washington; and to allow ORVs on more types of local streets, roads and highways.

In the unprotected roadless areas, increased ORV use continues to displace hikers. Those who seek peace and quiet will be driven away by those who make noise, and it's never the other way around. This fairness issue is compounded by the fact that quiet recreation participants greatly outnumber ORV users in Washington. The State RCO's 2002 SCORP report included the following participation numbers for outdoor recreation in Washington:

[2] Ironically, this photo of an ORV-carved ditch in a subalpine meadow at the headwaters of Taneum Creek in the proposed Manastash-Taneum NRA was published by Land Subcommittee member organization TWS in its Annual Report for 2007-2008, with the caption "ATVs and other off-road vehicles are damaging our national forests, but staff and funding are too limited to adequately handle this problem. Dirt bikes created this crevice at Windy Pass in Washington's Wenatchee National Forest."

- Walking / Hiking - 53 %
- Nature Activities - 43 %
- Sightseeing - 23 %
- Bicycle Riding - 21 %
- Fishing - 13 %
- Camping - 13 %
- Off-Road Vehicles - 8.9 %

The NRA proposal says (at page 9) that its proposed uses "are consistent with the uses identified in the current OWNF Proposed Action and with current uses of this area," but that is inaccurate. First, the Okanogan-Wenatchee National Forest (OWNF) Forest Plan Revision Proposed Action is essentially a scoping phase of that forest planning process, which has yet to reach the Draft EIS stage, let alone Final EIS, and many organizations have submitted comments asking the Forest Service to change the Proposed Action in order to reduce the number of trails designated open to ORV use and to increase protections for wildlife habitat. Second, OWNF's current and proposed use designations are administrative, while the NRA Proposal's use designations would be statutory, which is a critical difference.

The current OWNF Travel Management process is the long-delayed implementation of Executive Orders 11644 and 11989 issued by Presidents Nixon and Carter. They provide that in locating and designating ORV routes, agencies must minimize resource damage, minimize wildlife harassment, minimize use conflict, and close trails to ORV use whenever there are considerable adverse effects. The NRA Proposal would statutorily "lock in" ORV use, so that the land managers would no longer have the administrative discretion to minimize resource damage, minimize wildlife harassment, minimize use conflict, and close trails to ORV use whenever there are considerable adverse effects. The NRA proposal would set a poor precedent of legislatively locking in motorized use on federal lands in places where habitat degradation has already been widely documented. Additionally, by legislating ORV use, the NRA Proposal would favor recreation over ecosystem protection, and all ORV routes would be required to stay open, regardless of how badly resources are damaged.

That is one of the reasons that the Okanogan-Wenatchee National Forest opposes the NRA Proposal, as we were told in conversations with the OWNF Forest Supervisor, Cle Elum District Ranger, and Cle Elum District ORV manager. As the NRA Proposal states, the NRA designation would "attract more users"; it would cause an increase in visitation and public expectations for on-site facilities, infrastructure and agency personnel presence, thus increasing the management burden on the agency. Unfortunately, the Forest Service would not have a commensurate increase in resources (including law enforcement personnel) to deal with the increased use levels, so the NRA would be a "resource sink" for the Forest Service. The proposed increase in motorized use is especially concerning in wildlife corridors or locations

adjacent to roadless or Wilderness areas, particularly in light of the discovery of a wolf pack[3] living in the Teanaway, within the boundaries of the proposed Upper Yakima NRA. Many administrative problems would arise for the Cle Elum Ranger District personnel who would be required to manage these lands, and as the Forest Service staff is stretched thinner and thinner, areas will not be monitored, and ORV use rules will not be enforced, leading to increased degradation. With the statutory mandate to provide "backcountry motorized" recreation, the agency would have limited or no authority to close areas that become badly damaged and/or unmanageable.

Washington State recently examined this scenario at Reiter State Forest in Snohomish County, managed by State DNR. Notorious unmanaged ORV use caused extensive damage to the trees, soil and water quality, bleeding sediment into salmon streams, to the consternation of the Tulalip Tribes, State DOE and State DFW. The Commissioner of Public Lands visited the site and was appalled at the damage, DNR closed the entire 10,000-acre Reiter Forest to motorized use, and it remains closed to motorized use more than two years later. Carefully designed ORV routes are now being constructed in a more limited 1100-acre motorized area, where all stream crossings must have bridges or culverts. DNR personnel are stretched thin to manage this, and a dedicated team of local conservation volunteers is also stretched thin to monitor the 1100-acre motorized area at Reiter. Yet in the Yakima Basin, the NRA proposal's 41,000-acre "motorized backcountry" areas would be thirty-seven (37) times the size of the motorized area at Reiter, and the NRA designation would increase the current levels of ORV use in the NRAs. How will the agency be able to manage such a large motorized area with increased user numbers and expectations? How will the agency or volunteers be able to monitor that area? We believe the agency will not be able to adequately manage or monitor these large motorized areas, especially with increased user numbers. In conversations with us, Land Subcommittee members admitted they have not considered the capacity of the agency to manage or monitor the NRAs.

We also agree with the view that the Forest Service expressed in conversations with us that the goals of protecting headwaters and providing for recreation are already covered in the Forest Plan and its overlays such as the Snoqualmie Pass AMA, Alpine Lakes Land Management Plan and Teanaway Special Area, so the NRA designation is not necessary and has few measurable benefits but significant measurable costs. To the extent that the NRA Proposal conflicts with those plans, it takes away resource protections that our conservation organizations worked hard to obtain. The Snoqualmie Pass AMA and the I-90 wildlife corridor project emphasize the critical role of watersheds and wildlife, and they include sensitive places to which we do not want to draw more recreational impacts.

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[3] The discovery of this new wolfpack in the Teanaway was reported in the Seattle Times in a July 5, 2011 article entitled "New wolf pack confirmed — a short drive from Seattle."
http://seattletimes.nwsource.com/html/localnews/2015516994_wolves06m.html

The NRA Proposal would also cause negative impacts outside the Yakima River basin, potentially throughout Washington State. As DNR well knows, events at Reiter had spillover effects on other lands managed by DNR, and the same would happen here. Increased recreational expectations caused by the designation of two new motorized National Recreation Areas catering to ORVs in the I-90 corridor would drive increased sales of ORVs, and increased numbers of novice ORV users looking for new places to try out their new machines, including public and private lands along the highways they travel to get to and from the new NRAs, regardless of whether those places are legally open to ORV use. Even in areas that were previously open to ORV use, the increased levels of use will cause higher levels of damage and impacts not previously experienced by those sites and the wildlife living there, for whom the habitat may change from suitable to unsuitable.

We question whether it is good public policy for the Workgroup to decide that it must lobby for motorized recreation on National Forests as a means to solve irrigation problems in the Yakima River Basin.

Procedural objections

On November 16, 2011, the Bureau of Reclamation and Department of Ecology issued the draft Programmatic Environmental Impact Statement (DPEIS) on the Integrated Water Resource Management Plan (also known as the Yakima Basin Integrated Plan), with a 49-day comment period that ended on January 3, 2012. This "Integrated Plan" was the product of a "Workgroup" made up of 20 members, including five irrigation districts, but only one conservation organization, and no representative of the U.S. Forest Service, which manages the forests that would be inundated if Bumping Lake is expanded. An extension of the comment period was requested by a coalition of local, regional and national conservation organizations, but an extension was denied. As a result, the public was denied the opportunity to comment on the NRA Proposal, since the Watershed Land Subcommittee did not release the NRA Proposal until January 4, the day after the DPEIS comment period ended. The DPEIS failed to mention the NRA Proposal in its analysis, and thus failed to analyze the costs and effects of designating lands as NRAs within the Okanogan-Wenatchee National Forest including 41,000 acres of "backcountry motorized" areas within the NRAs. We are assessing the ways in which this process may have violated the National Environmental Policy Act (NEPA) and the State Environmental Policy Act (SEPA).

Certain meetings of Workgroup subcommittees have been held without notice to the public and/or have been closed to the public. Workgroup votes have been taken without first allowing for public comment. Although the Workgroup was not set up under the Federal Advisory Committee Act (FACA), it appears to have all the features of a Federal Advisory Committee. We are assessing the ways in which this process may have violated FACA or other statutes relating to governmental agencies' meetings.

The Watershed Land Subcommittee members made a deal intended to statutorily "lock in" motorized use of these backcountry areas on National Forest lands, and they put their organizations' names on the NRA Proposal, a public document on the Bureau of Reclamation website. Certain Subcommittee members lobbied our Senators and Congressional Representatives to support the NRA Proposal. They did all of this without consulting or even notifying the many other conservation and non-motorized recreation organizations working on these issues in the same geography, and without even notifying the National Forest District personnel who would be required to manage this land and the increased number of motorized users NRAs would bring (again, the Forest Service opposes the NRA Proposal).

They did not even consult or notify the off-road motorcycle, ATV and 4x4 organizations that supposedly will be moved to support the Yakima Basin Plan as a result of the NRA Proposal.

Subcommittee members finalized and published the NRA Proposal without conducting due diligence. They did not consider:

- Whether or how the NRA Proposal would impact the Mountains to Sound Greenway Trust's National Heritage Area (NHA) bill in the same geography;
- Whether or how the NRA Proposal would conflict with existing National Forest management direction in the area including the Alpine Lakes Land Management Plan, the Snoqualmie Pass AMA Plan, and efforts to enhance wildlife corridors across I-90;
- Prior NRA proposals in other states with statutory designations of motorized use on National Forest Lands;
- The history of the conservation community's long and deep opposition to statutory designation of ORV use on National Forest lands throughout the USA;
- The management problems commonly experienced with dispersed ORV use on large acreages of remote public lands, and resultant damage to soil, water, vegetation, and wildlife habitat suitability;
- The views of the non-motorized recreation and conservation organizations; or
- The views of the Cle Elum District Ranger, District biologists and District law enforcement personnel who are responsible for managing wildlife, wilderness, trails, roads and ORV use on this land.

Backcountry motorized use of these National Forest lands is currently being addressed with public input in the Forest Plan Revision and Travel Management processes of Okanogan-Wenatchee National Forest. That is where these issues of motorized backcountry use should be processed by the public.

For all of these reasons, we oppose the motorized NRA Proposal, and we urge you to reject it.

Thank you for considering these comments.

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Alpine Lakes Protection Society

Melissa Bates, President
Aqua Permanente

Kieran Suckling, Executive Director
Center for Biological Diversity

Suzanne Skinner, Executive Director
Center for Environmental Law & Policy

Gus Bekker, President
El Sendero

Brock Evans, President
Endangered Species Coalition

Joan Zuber, President
Federation of Western Outdoor Clubs

Chris Maykut, President
Friends of Bumping Lake

Erich Pica, President
Friends of the Earth

Chuck Adams, President
Friends of the Teanaway

Mike Town, President
Friends of Wild Sky

Ken Konigsmark, Vice President of Advocacy
Issaquah Alps Trails Club

Gloria Baldi, President
Kittitas Audubon Society

Marge Brandsrud, Chair
Kittitas County Conservation Coalition

Doug Couch, President
Mazamas

Mark Boyar, President
Middle Fork Outdoor Recreation Coalition

Marc Bardsley, President
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John Woolley, President
Olympic Forest Coalition

Shawn Cantrell, Executive Director
Seattle Audubon Society

Mark Lawler, National Forests Chair, Washington State Chapter
Sierra Club

Dean Longrie, President
Washington Native Plant Society

Rob Mullins, President
Wenatchee Mountains Coalition

Janine Blaeloch, Director
Western Lands Project

Katie Fite, Biodiversity Director
Western Watersheds Project

George Nickas, Executive Director
Wilderness Watch

Bethanie Walder, Executive Director
Wildlands CPR

Attachments

cc (w/attachs):

US Senator Patty Murray
US Senator Maria Cantwell
US Rep. Richard "Doc" Hastings
US Rep. Dave Reichert
US Rep. Jay Inslee
US Interior Secretary Kenneth Salazar
US Bureau of Reclamation Commissioner Michael Connor
Okanogan-Wenatchee National Forest Supervisor Becki Heath
Cle Elum District Ranger Judy Hallissey
Governor Christine Gregoire
Commissioner of Public Lands Peter Goldmark

© Karl Forsgaard

ATVs and other off-road vehicles are damaging our national forests, but staff and funding are too limited to adequately handle this problem. Dirt bikes created this crevice at Windy Pass in Washington's Wenatchee National Forest.

cited a report by Public Employees for Environmental Responsibility (PEER), which found that there were more than 5,400 law enforcement incidents in 2005 involving off-road vehicles on BLM lands compared to roughly 900 incidents involving drug violations. The Forest Service is developing plans to keep ORVs on routes designated for their use, but the agency needs to find the will and the money to enforce its policy.

To help compensate for shortages of money and staff, the agency has made extensive efforts to develop partnerships with groups, such as the Backcountry Horsemen and the Boy Scouts, that can provide volunteers for trail maintenance and other needs. The Forest Service estimates that in 2006 volunteers contributed $45 million worth of effort, 80 percent of it focused on recreation, trails, and wilderness tasks. "Volunteers play an increasingly important role in taking care of the national forests," says Mike Anderson, a senior analyst with The Wilderness Society. "It's important to remember, though, that volunteers are generally not professionals, and they are only a partial solution to the problem. Washington needs to provide the money needed for our national forests to live up to their potential."

More and more conservationists are advocating greater emphasis on restoration. Decades of extensive logging and road building seriously damaged the national forests, so there is a real need to properly maintain or decommission some logging roads, restore streams, and thin areas where the suppression of natural fires has left heavy brush and other fuel for future fires. Such projects also can pay financial dividends for local economies and save taxpayers money in the long run. However, the restoration activities' direct economic impact on local communities will be limited, because the value of the timber cut tends to be low, and local economies are more strongly influenced by national and international trends.

"The reality is that we will have limited seed money for restoration—and declining funds for other forest priorities—if we don't solve the fire expense problem," said Jaelith Hall-Rivera, a budget analyst with The Wilderness Society. One option is to fight fewer fires in the backcountry that pose little threat to people and homes and instead manage them to help restore those landscapes. These fires will reduce the flammable material that has built up due to decades of suppression, so future fires will be smaller and less costly. The most expensive fires to fight are those near communities, and it is imperative that preventive steps be taken to reduce the risk to homes, Hall-Rivera said. Another option is to move the fighting of major wildfires out of the Forest Service budget, treating such fires the way we do floods and hurricanes.

The national forests make up eight percent of the country. "What a special inheritance!" said Jim Furnish, deputy chief of the Forest Service under President Clinton and now with Rangers for Responsible Recreation, a group of retired federal land managers. "But we are squandering it. Healthy fisheries, wildlife, world-class recreation, and watersheds that provide clean drinking water are in jeopardy. It's not too late to take a page from Theodore Roosevelt's book and protect these forests for future generations."

***Jim Robbins** lives in Helena, Montana, and writes science and environmental stories for* The New York Times, Conde Nast Traveler, *and other publications.*

March 31, 2004

Mr. Dale Bosworth
Chief
U.S. Forest Service
Washington DC 20250

Dear Chief Bosworth:

As professional scientists, we applaud you for recognizing that unmanaged off-road vehicle use is one of the great threats to the long-term health of our Forests and Grasslands. We appreciate the opportunity to express our concern about motorized recreation impacts on the 192 million-acre National Forest System. As the agency develops new management policies, we strongly encourage you to ensure that those policies are based on valid scientific research and are focused first and foremost on natural resource protection.

It is well established by a large body of published scientific literature that off-road vehicles, including all-terrain vehicles (ATVs), dirt bikes and jeeps quickly strip vegetation and rut the land, leading to erosion of soil at rates much greater than are natural. Soil eroded into streams and rivers can dramatically reduce the quality of native fish habitat as well as that of most other aquatic life. Declining soil quality and quantity cannot support vegetation, thus harming wildlife, and degrading entire ecosystems. Off-road vehicles can also negatively impact wetlands. For example, damage caused by "mud bogging" can take decades to recover.

Off-road vehicles crush, bruise, shred and otherwise destroy trees, shrubs, and other plant life. Soil and vegetation disturbances create ideal conditions for invasive weeds and other exotic plants, such as knapweed, to become established. Damage to native vegetation only makes it easier for exotic invaders to out compete native plants. Furthermore, off-road vehicles can spread invasive weeds across pristine wildlife habitat when traveling cross-country and along unplanned routes.

Wildlife are also jeopardized by unmanaged off-road vehicle use. Off-road vehicles can disturb and be used to harass wildlife. These adverse effects are exacerbated during winter when wildlife are already stressed by weather conditions and low food supplies. Poorly planned and user-created routes fragment and degrade wildlife habitat. Vehicle noise can directly impede the ability of wildlife to find prey, avoid predators, and successfully reproduce.

Off-road vehicle engines, especially two-stroke engines, are highly polluting. Emissions of carbon monoxide, polycyclic aromatic hydrocarbons, MTBE, particulate matter, and other pollutants seriously degrade the quality of the air, soil, snow, and water, and have demonstrated adverse human health effects.

In the above description, you may recognize that many of the environmental impacts caused by off-road vehicles are cumulative, and sometimes synergistic, combining to produce impacts that are greater than the sum of their parts. In fact, you alluded to this in your speech last April. When one considers the role that dirt bikes, ATVs and other off-road vehicles play in fragmenting wildlife habitat and spreading invasive weeds—two of the major threats you

identified—the far reaching nature of negative impacts from uncontrolled off-road vehicle use come into focus. This can be particularly significant if off-road vehicles are allowed in roadless areas, which act as important refuges for wildlife. Additionally, off-road vehicles are a potential ignition source for fires, which is also a great concern to the Forest Service.

By enhancing controls and regulations on off-road vehicles in National Forests, the Forest Service would minimize adverse effects on soil, vegetation, wildlife, ecology, and other forest users. As scientists who have studied this or related issues for many years, we urge the Forest Service to ensure that new regulations governing off-road vehicle use on National Forests are based on the abundant peer-reviewed scientific research available, and resource protection. To meet this goal, the Forest Service must:

- Permit off-road vehicle uses only under conditions that protect natural resources, environmental values (e.g. quiet, landscape character), public safety, and the experience of other forest users.

- Analyze new recreational technologies/activities before permitting their use, to determine whether or not those activities are appropriate or, if environmentally harmful, necessary; and if allowed, control the level and restrict the sites of use.

- Designate roads and routes for off-road vehicle travel through full and public environmental analysis processes under the National Environmental Policy Act.

- Designate off-road vehicle routes based on specific ecological criteria, including, but not limited to: prohibiting designation of routes in sensitive habitat areas; and locating routes to minimize erosion, wildlife harassment, impacts to natural wildlife behavior (e.g. feeding, breeding, resting) and habitat fragmentation.

- Permit off-road vehicle use only if monitoring and enforcement are annually funded, implemented, and used to determine appropriate levels of continued off-road vehicle use.

Developing policy using these considerations will help safeguard the environmental quality of our National Forest for the benefit of the millions of Americans who presently enjoy them, and for future generations.

Sincerely,

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Board Chairman
Public Employees for Environmental Responsibility

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March 13, 2012

Michael Garrity
Yakima River Basin Water Enhancement Project Work Group
15 West Yakima Ave, Suite 200
Yakima, WA 98902

Dear Work Group Members:

As organizations that have worked hard over the last decade to build and enhance support for the protection of Washington's wild lands and waters, we are writing to express our concerns about the recent proposal including congressional designations put forward by the Watershed Lands Subcommittee (WLS) of the Yakima River Basin Water Enhancement Project (YRBWEP) Work Group.

History of Engagement in Past Public Lands Legislative & Administrative Proposals

Our organizations have committed substantial capacity and resources over the past five years into two significant and historic administrative public processes associated with the Okanagan-Wenatchee National Forest (OWNF), the Forest Plan and the Motorized Travel Management Plan revisions. The OWNF forest plan revision, which began in 2005, marks the first opportunity (and obligation) by the Forest Service to engage the public in a public process to recommend roadless areas as wilderness and evaluate rivers for wild and scenic eligibility within the forest planning process. Further, the forest plan affords an opportunity to designate large tracts of inventoried roadless areas for non-motorized backcountry recreation. The WLS proposal would essentially stunt this process by legislating land management designations before the public process is complete.

Pursuant to the 1994 Off Highway Vehicle (OHV) Planning Rule, for the first time all national forests are required to proactively designate authorized off road vehicle routes (i.e., trails) for summer motorized recreation in order to address the problem of unmanaged off road vehicle use. The draft plan (EIS) for the motorized travel management plan for the Okanagan-Wenatchee National Forest is scheduled for later this year, offering a historic opportunity to direct sustainable OHV use on the forest as part of a public process.

Additionally, our organizations have all been involved in the strategic planning and implementation of recent public-lands legislative proposals in Washington State. Our coalition-based efforts succeeded in establishing the Wild Sky Wilderness, the first designated wilderness on national forest lands in Washington State in a quarter century, under the leadership of Senator Patty Murray and Congressman Rick Larsen in 2008. Our organizations have also played a leadership role in efforts to designate additions to the Alpine Lakes Wilderness and Wild and Scenic River protections for the Middle Fork Snoqualmie and Pratt Rivers, currently moving through Congress under the leadership of Senator Murray and Congressman Dave Reichert.

For the last three years, most of our organizations have been working with local stakeholders on the Olympic Peninsula to advocate for additional wilderness and wild and scenic rivers designations as well as willing-seller additions to Olympic National Park. Last year, Senator

Murray and Congressman Norm Dicks put forward their own congressional proposal for the Wild Olympics to solicit additional feedback from local stakeholders before introducing legislation.

And finally, our organizations are each involved in a more recent campaign, Cascades Wild, a Puget headwaters initiative which seeks to advocate for wilderness and wild and scenic river protections for the upper watersheds of the west slope of the North Cascades and the rivers that connect these special areas to the ailing Puget Sound.

Response to the Watershed Lands Subcommittee Report

On January 4, 2012, the Watershed Lands Subcommittee of the YRBWEP published on the U.S. Bureau of Reclamation Pacific Northwest Region's web site a report outlining elements of a proposal including congressional designations such as proposed wilderness and wild and scenic river designations and motorized and non-motorized backcountry elements of two National Recreation Areas (NRA).

We were disappointed that none of our organizations were asked to review or give formal input to the proposal nor were we informed about the report before or when it was made public. Based on our history and experience in working on wilderness and wild and scenic proposals statewide, we feel that broader input would have been helpful to the Subcommittee. If this proposal is to move forward, a clear process for stakeholder input needs to be defined that addresses the issues below.

Our organizations are writing to express a several concerns about the process, strategic approach and content of that proposal.

- The proposal undermines two long awaited administrative processes that the broader conservation and recreation communities are engaged in and have committed significant resources and time. The first is the Okanagan-Wenatchee National Forest Plan Revision which offers the first opportunity to advocate through a public process for the agency recommended wilderness and wild and scenic rivers. The second is the Okanagan-Wenatchee National Forest Motorized Travel Management Plan which, for the first time would designate suitable off road vehicle routes on the forest – a key step toward the broader goal of balancing motorized and non-motorized recreation management. Both of these processes are only at the scoping stage and draft plans (in the form of an EIS) are expected out later this year. The WLS proposal would freeze the current scoping level of recommended wilderness, and backcountry motorized recreation without the benefit of the draft plan or subsequent stakeholder feedback through this process.

- The two National Recreation Areas in the WSL proposal fall short of striking a balance between motorized and non-motorized recreation management. As a whole, the WLS plan proposed 41,000 acres to be legislatively designated for backcountry motorized recreation while only managing 1,000 acres for non-motorized recreation. While the proposal recommends 21,000 acres of wilderness (which, if added to the non-motorized total, is still almost half the motorized area) these acres would necessarily exclude some non-motorized users such as mountain bikers, who do not seem to be accounted for in the

WSL proposal. In addition, the proposal fails to address the current lack of winter travel planning. Our organizations have advocated for four-season non-motorized backcountry recreation areas.

- Our experience tells us that stakeholder outreach and collaboration on a proposal *before* releasing it publicly with boundaries and maps will foster the most productive and informed feedback to move a proposal successfully forward. We are concerned about the strategic approach to make detailed legislative proposal recommendations (i.e., wilderness and motorized and non-motorized NRA acreages, and wild and scenic river boundaries) without direct formalized stakeholder outreach on the proposal itself to key organizations representing hikers, climbers, paddlers, mountain bikers, equestrians and motorized users. In our experience on campaigns like Wild Sky, Alpine Lakes and Wild Olympics, we have made it a point as a community to do significant direct stakeholder outreach on a proposal before releasing it publicly with boundaries and maps in order to foster the most productive and informed feedback moving forward. The concerns expressed by our organizations as well as many of our partners in the conservation and recreation community and the U.S. Forest Service reflect a lack of stakeholder engagement in the development of the WSL proposal.

Thank you for your consideration of these comments as you contemplate the next steps of the broader initiative.

Sincerely,

Nancy Osborn Nicholas
Interim Executive Director
Washington Wild

Martinique Grigg
Executive Director
The Mountaineers

Thomas O'Keefe, Ph.D
Pacific Northwest Stewardship Director
American Whitewater

CC: Senator Patty Murray
Senator Maria Cantwell
Governor Christine Gregoire

USDA Forest Service
Okanogan-Wenatchee N.F. Fact Sheet

Date: March 6, 2012

Topic: Yakima River Basin Integrated Water Resource Management Plan—Okanogan-Wenatchee N.F. Response to Draft Programmatic Environmental Impact Statement

Issue: The Okanogan-Wenatchee N.F. was a cooperating agency that responded to a request for comments to the Yakima River Basin Integrated Water Resource Management Plan Draft Programmatic Environmental Impact Statement (PEIS) in late 2011. The U.S. Department of Interior's Bureau of Reclamation and State of Washington Department of Ecology jointly prepared the plan, which would impact the Yakima River Basin in Benton, Kittitas, Klickitat and Yakima Counties.

The two lead agencies released a final PEIS on March 2, 2012. The final PEIS evaluates two alternatives to meet the water supply and ecosystem restoration needs in the Yakima River Basin: a no action alternative and the Yakima River Basin Integrated Water Resource Management Plan Alternative. The integrated plan is identified as the preferred alternative (http://www.ecy.wa.gov/programs/wr/cwp/YBIP.html).

The U.S. Forest Service's role is to ensure underlying resource issues affecting the Okanogan-Wenatchee N.F. will be addressed. The national forest encompasses much of the Upper Naches River drainage and the entire area of the existing and proposed enlargement of Bumping Lake. The proposal to enlarge the dam and lake has several potentially-adverse effects on national forest resources. Recreational facilities at Bumping Lake would also be impacted by eliminating shoreline facilities and access to trails.

The current water resources infrastructure of the Yakima River Basin has not been capable of consistently meeting aquatic resource demands for fish and wildlife habitat, dry-year irrigation demands, and municipal water supply demands. The plan includes seven elements: reservoir fish passage, structural and operational changes to existing facilities, surface water storage, groundwater storage, habitat/watershed protection and enhancement, enhanced water conservation, and market reallocation.

Questions and Answers:

What role will the U.S. Forest Service have in any decisions related to this project that have potential to affect lands it manages?

The U.S. Forest Service has been invited to participate as a cooperating agency in the planning report and programmatic environmental review processes. The Bureau of Reclamation has the primary responsibility to ensure environmental commitments are met if any action is implemented. In the three-year period prior to the start of construction, site-specific and detailed environmental review processes would be conducted. The U.S. Forest Service would be involved in these activities.

What effect will National Recreation Area (NRA) proposals in project plans have on land the Forest Service manages?

The Watershed Land Conservation Subcommittee Proposal from January 2012 that is tied to the Yakima River Basin Integrated Water Resource Management Plan proposes applying NRA designations to lands in the Upper Yakima Basin. The NRA designation is for protected areas often centered on large reservoirs and emphasizing water-based recreation for many people. Congress must establish all NRAs.

The proposal includes creation of the Upper Yakima National Recreation Area on about 100,000 acres managed by the Forest Service. About 21,000 acres within the proposed NRA would be designated as a wilderness area, about 6,000 acres would be designated for backcountry motorized use and about 1,000 acres would be designated for backcountry non-motorized use.

In addition, the proposal includes creation of the Manastash-Taneum NRA on about 41,000 acres managed by the Forest Service. About 35,000 acres within this proposed NRA would be designated for backcountry motorized use.

The NRA designations have potential to increase recreational impacts to ecosystems and affect wildlife corridors that pass through these areas because the designation would likely attract more of the recreating public

Who operates the Bumping Lake dam and manages the reservoir?
The U.S. Bureau of Reclamation operates the dam and reservoir. Reclamation and the Forest Service have mutual jurisdiction over the land around the reservoir. Reclamation holds the land around the reservoir as "withdrawn land" and it is represented as a strip of land which surrounds the lake one mile in width from the normal high water line. The lands around the lake are jointly managed by both agencies, with Reclamation's Yakima Field Office operating the dam and reservoir, and the Forest Service managing the recreation and land use around the reservoir.

How would the plan affect the Bumping Lake ecosystem?
Enlarging the Bumping Lake dam and raising the water level would flood considerable forest area, some of which may include critical habitat for the northern spotted owl. Removal of this habitat could also have an adverse effect on species dependent upon similar conditions. Deer, elk and numerous other species inhabit this area. Flooding of habitat and wildlife corridors could have adverse impacts on them.

Deep Creek and the Upper Bumping drainage are two of the few remaining areas that have truly significant old growth. What will happen to these trees? Will they be harvested?
The mouth of Deep Creek would be inundated with the enlargement and subject to fluctuations. The old growth trees would be harvested in areas where they would be inundated by water or conflict with the location of the new dam and related features. Mitigation measures would be implemented.

What will happen to the summer homes on Bumping Lake? What about Bumping Lake Marina?
The PEIS states summer homes would be subject to in-kind exchanges or an offer of a similar lot elsewhere. The marina would be inundated and potentially relocated.

If the lake is enlarged, what impact will it have on the William O. Douglas Wilderness Area boundary accessibility to the public?
The enlarged reservoir level would remain outside the wilderness area boundary. But, some access points to the wilderness area might be affected and this could be mitigated by providing replacement access. Such impacts would be identified and evaluated during the site-specific and more detailed environmental reviews that would occur before a decision is made to begin construction of a new dam.

If a decision is made to expand the dam, what effect will this have on local recreational activities and traffic along SR-410, Chinook Pass? Will construction crews be working during the winter and, if so, what will this do to winter recreation in the area?
Construction of the new dam would cause increased traffic on roadways with worker traffic and equipment material hauling that could have short-term impacts on SR-410 and Forest Service Road 1800. Construction activities would likely proceed at a lower level during the winter. Traffic would increase on Highway 12. Effects on local recreation, including winter recreation and use of campgrounds along area roads, would be determined and appropriate mitigation measures would be identified during site-specific and environmental analyses conducted before the start of construction. The construction contract would include any identified mitigation measures that may be related to daily construction activities.

Are there potential ecosystem benefits if Bumping Lake were expanded?
The PEIS states the integrated plan would contribute to more conditions resembling natural flows and the creation of habitat conditions more capable of supporting fish populations throughout the Yakima River Basin. However, negative effects on habitat could occur because of flooding of some areas such as Deep Creek.

The surface water and groundwater storage elements of the integrated plan would provide greater benefits to riparian and wetland vegetation in comparison to programs that would implement elements separately throughout the Yakima River Basin.

What would the impacts to cultural resources and recreation be with a Bumping Lake expansion?
Historic and pre-historic cultural resources would be affected. Most of the recreation residences on the north shore of Bumping Lake were constructed more than 50 years ago and might be suitable for listing in the National Register of Historic Places.

Other facilities and improvements are within the footprint of the proposed expansion or would have their access cutoff by the lake. Fifteen cabins and the Bumping Lake Marina on the north shore would likely be inundated. It is unlikely a comparable replacement location on Bumping Lake could be provided for these facilities, given their proximity to the William O. Douglas Wilderness Area boundary. The same is true for the Forest Service campgrounds and day use area on the south shore of the lake.

In addition to effects to lakeside facilities, Forest Roads 1800, 1808 and 1809 provide access to popular trailheads that serve hikers and equestrians using the wilderness area.

The U.S. Bureau of Reclamation would coordinate with the Okanogan-Wenatchee N.F. to determine appropriate mitigation for impacted recreational facilities. Many of the proposed projects in the integrated plan would improve riparian and fish habitat, according to the PEIS.

Contacts:
Naches District Ranger Irene Davidson, 509-653-1415, idavidson@fs.fed.us
Okanogan-Wenatchee N.F. Public Affairs Officer Roland Giller, 509-664-9314, rgiller@fs.fed.us
Okanogan-Wenatchee N.F. Res./Planning Group Leader Stuart Woolley, 509-664-9332, swoolley@fs.fed.us

-End-

Yakima River Basin Water Enhancement Project Workgroup Meeting
March 14th, 2012

Statement From: Chris Maykut, President
Friends of Bumping Lake
organicmaze@gmail.com
(206)818-9778 (cell)

From a personal perspective, I applaud the Yakima Workgroup for thinking ahead and working to try and head off future issues we may all face in the state of Washington with regards to irrigation and crop viability. As the owner of two restaurants I depend on produce from the Yakima Valley and proudly communicate that we use truly local produce to our customers. My close relationships with these farmers are vital to my understanding of their hardships, booms and busts. The availability of water is something that is imperative to the past, present and future of our state economy as well as our state identity – and it is something that merits thoughtful consideration, legislation, collaboration and implementation.

Also from a personal perspective come my objections to certain parts of the plan. The Yakima River Basin Water Plan includes the construction of two massive dams in an era where dam removal is publicly lauded as a true renewal of the environment. One of those dams, at Bumping Lake, would cause the inundation and destruction of the cabin my great grandfather Ben Nutley and my grandfather Van Nutley built in 1938. This cabin is –without hyperbole – the heart and soul of our family.

Our family is not alone, as there are 14 other historical cabins, a boathouse, and an extensive campground on the shores of Bumping Lake. Generations of families by the thousands have enjoyed this extraordinary area for nearly 8 decades. I have spent the better part of my life there in this electronics-free paradise, and proposed to my wife there in a blizzard on New Year's Day 2004 under a massive 200-year old cedar.

Bumping is tucked in between high ridges surrounded by huge old growth trees and is the only true wilderness left in Central Washington. Trading something pristine and beloved to preserve far-flung areas and potentially replace water that could be conserved does not meet the needs of people in Central Washington: the trade-off is not equal. Since the dam would only be filled several months out of the year, this would transform a beloved pristine lake into a massive, stump-filled mudflat.

Bumping Lake is well loved by many in this region for the recreation it offers: swimming, fishing, kayaking, canoeing, hiking, cross-country skiing, snowmobiling and just soaking up the mountains far away from freeways. The area was an inspiration to William O. Douglas himself and this wilderness is named for him. This is an atrocious thing to do to this legacy and the area he most loved. How can one put a value on that?

Thank you for your time today,

Chris Maykut

Friends of Bumping Lake

RECLAMATION
Managing Water in the West

WASHINGTON STATE DEPARTMENT OF ECOLOGY

Contact: Wendy Christensen, 509-575-5848, ext. 203 **Derek Sandison, 509-457-7120**

Agenda

Yakima River Basin Water Enhancement Project Workgroup

June 20, 2012, 2:00 to 4:00 PM at Yakima Arboretum, 1401 Arboretum Dr., Yakima WA

Time

2:00 – 2:05 Welcome/Introductions and Agenda Overview
Ben Floyd, Anchor QEA

2:05 – 2:15 Early Action Items Status
Wendy Christensen, Reclamation and Derek Sandison, Ecology

2:15 – 2:35 Framework for Implementation Report Update
- Cost allocation
- Cost/risk analysis
- Economics
- Report outline

Andrew Graham, HDR

2:35 – 3:10 Okanagan-Wenatchee National Forest Travel Management Plan and Forest Plan Revision Process/Schedule
Stuart Woolley, US Forest Service

3:10 – 3:30 Implementation Subcommittee Update
- Special announcement!
- Education and outreach
- Initial funding requests

Derek Sandison, Ecology and Dan Silver, Consultant

3:30 – 3:40 Watershed Lands Protection – Proposed Approach for Additional Refinements
Andrew Graham, HDR

3:40 – 3:50 Yakima Integrated Plan – Programmatic EIS Update
Wendy Christensen, Reclamation

3:50 Public Comment

Next meeting – September 12, 9:30 AM at Yakima Arboretum

Adjourn

*Work Group facilitation by Ben Floyd, Anchor QEA as a subconsultant to HDR, under contract to US Bureau of Reclamation

RECLAMATION
Managing Water in the West

Contact: Wendy Christensen, Columbia-Cascades Area Office, (509) 575-5848, ext. 203
Derek Sandison, Washington State Department of Ecology, (509) 457-7120

Meeting Notes
June 20, 2012
Yakima Arboretum, Yakima WA

Yakima River Basin Water Enhancement Project (YRBWEP) Workgroup

Welcome/Introductions and Agenda Overview *by Ben Floyd, Anchor QEA*
Ben Floyd, meeting facilitator, welcomed the Workgroup members and public, led introductions, and provided an overview of the agenda. US Forest Service (USFS) representative Stuart Woolley, Resources and Planning Staff officer for the Okanogan-Wenatchee National Forest, was introduced. He was attending as an alternate for Clint Kyhl, Acting Forest Supervisor for the Okanogan-Wenatchee National Forest. Jerry Kelso was also introduced as the new Area Manager for Reclamation's Columbia-Cascades Area Office.

Early Action Items Status *by Wendy Christensen, Reclamation and Derek Sandison, Ecology*
Wendy updated the Workgroup on early actions progress. The Cle Elum fish passage multilevel intake structure physical model construction at the Reclamation Technical Service Center in Denver, Colorado, is nearly finished. Modeling is expected to start in July 2012 and run through August 2012. Additionally, geologic explorations will be conducted later this year for Wymer and Bumping proposed dam sites, the Keechelus-to-Kachess conveyance route, and for the Kachess Inactive storage project. This will provide more detailed information on subsurface rock conditions to inform the project designs. (*For Workgroup meeting notes and information on topics discussed at the June meeting, please see* http://www.usbr.gov/pn/programs/yrbwep/2011integratedplan/2012meetings/index.html).

Derek updated the Workgroup on the state supplemental capital budget, including $2.5 million for the Keechelus-to-Kachess pipeline I-90 crossing. Derek noted that this project may change from a pipeline to a tunnel to help avoid surface impacts to a wetland complex downstream of Keechelus Dam and other forest habitat. In regard to another early action item, the Habitat/Watershed Protection and Enhancement Element, appraisals for some of the potential properties included in the watershed land acquisition targets are also being conducted.

Framework for Implementation Report Update *by Andrew Graham, HDR*
Andrew discussed with the Workgroup a handout on the Framework for Implementation report. The handout includes information on cost/risk analysis, cost allocation, economics, and the report outline.

The handout is intended to provide information to support a request to Congress for project authorizations.

Costs for the Integrated Plan have been updated to 2012, reflecting inflation in construction costs since 2010. Thorp Pump Station has been removed, saving approximately $250 million; however, estimated costs for Bumping Dam have increased from $430 million to approximately $570 million. The Integrated Plan total cost is still approximately $4 billion.

A preliminary cost allocation is underway, and will identify how costs would be allocated to ecological restoration, irrigated agriculture, and municipal/domestic water supply. A financial feasibility analysis will also be conducted. Work is beginning on the "four accounts analysis" per the Federal Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies (Principles and Guidelines). Sid Morrison noted that the Federal Principles and Guidelines are being updated. Andrew and others pointed out that the Integrated Plan analysis is relying upon the existing (1983) Principles and Guidelines, as the newer guidelines are still being developed. A question was raised about whether the Federal guidelines are different or the same for Federal agencies, e.g., US Army Corps of Engineers? Wendy Christensen and Jerry Kelso said they are Federal guidelines that apply to both Reclamation and the Corps.

The Framework for Implementation report will be completed by September 1, 2012. No review period will be provided, as this is more of an internal Reclamation technical report. However, Workgroup members may provide comments to Reclamation on the report content and those comments will be considered as implementation continues.

In response to Sid Morrison's question on where economic analysis results will be in the report, Andrew noted that Section 3 will contain this information, including national and regional economic effects, environmental quality and social effects. Wendy pointed out that regional economic development analysis will include the four-county area covered by the Yakima basin. All economic information in the report will be in 2012 dollars, so it will be higher than the 2010 dollars reported in the Integrated Plan and related documents.

Okanogan-Wenatchee National Forest Travel Management Plan and Forest Plan Revision Process/Schedule *by Stuart Woolley and Scott Lynn, US Forest Service*

Stuart identified four areas of the watershed lands protection actions in the Integrated Plan that directly involve the USFS--National Recreation Areas (NRA), Wilderness Area designations, Wild & Scenic River designations, and land acquisitions. Stuart then shared that the USFS joint planning for the Colville and Okanogan-Wenatchee Forest Plan Revisions, motorized travel management planning, and land acquisition processes, which may address some elements of the Integrated Plan. He provided an overview of the forest planning and travel management planning, and Scott Lynn provided an overview

of land acquisitions. Handouts were provided in the Workgroup meeting packet addressing each of these topics.

USFS planning efforts over the next few years could potentially address refinements to the watershed land protection actions in the Integrated Plan. Reclamation and Ecology have coordinated with the USFS and this coordination will continue and be enhanced by their participation on both the Workgroup and the Workgroup's Watershed Land Conservation subcommittee.

Colville and Okanogan-Wenatchee National Forest Plan Revisions

This joint forest planning effort began in June 2011, with a proposed action and several public scoping meetings. Nearly 30,000 public comments were made, and the USFS summarized these into 170 Public Concern Statements. Issues raised included riparian areas, wildlife/habitat connectivity, grazing, wilderness designations, road access/density, motorized recreation and trails, and old forest/Northwest (NW) forest plan reserves. The public provided a full spectrum of comments on these topics. A draft Environmental Impact Statement (EIS) will be released in spring 2013, with a final EIS to be released in spring 2014, and record of decision (ROD) released by the end of 2014. In the forest plan revisions, USFS will make recommendations to Congress on proposed Wilderness and Wild & Scenic designations. Only Congress can establish Wilderness areas and Wild & Scenic Rivers.

National Recreation Areas

The proposed NRAs in the Integrated Plan have stimulated serious discussions as it relates to motorized vehicles. The USFS has been evaluating unmanaged recreation, including off-highway vehicle use since 2005. Input has been received through public meetings, a comment period and stakeholder meetings. A draft EIS is being prepared by USFS with analysis on environmental effects for various alternatives. The draft EIS will be released for public comment in fall 2012, with a final EIS and ROD in winter/spring 2013. In the summer/fall of 2013, a motor vehicle use map (MVUM) will be established identifying where motor vehicle access is allowed. This MVUM will be updated annually thereafter. This USFS process of establishing the MVUM is where a determination will be made of off-road vehicle use areas in the Okanogan-Wenatchee National Forest. Only Congress has the authority to establish a National Recreation Area.

Forest Service Land Acquisitions

Scott Lynn shared information on the Federal Land and Water Conservation Fund (LWCF). Appropriated funding is competed on nationally, based upon ranking criteria. Current Yakima basin land acquisitions being sought in Federal fiscal year 2014 through LWCF funding are depicted on a map distributed at today's meeting. Future requests will be coordinated with the Workgroup for acquisition lands identified in the Integrated Plan.

Regarding acquisitions, Jeff Tayer noted that regional interests are starting to work together more closely to leverage collective goals and opportunities and strengthen the competitiveness of acquisition

proposals. Acquisition efforts for the Integrated Plan can be coordinated with others working through existing Federal and state programs. Jeff also acknowledged the efforts of the TAPASH Collaborative are consistent with the actions in the Integrated Plan. Phil Rigdon concurred, noting that the efforts of the TAPASH collaborative is to balance economic, cultural, social and ecological values (*Note: The TAPASH collaborative is a group comprised of Federal and State agencies and nongovernmental groups working to enhance the resiliency, diversity and productivity of native forest ecosystems in eastern Central Washington*). Forest health and local economic needs, including Yakama Nation timber economy needs, are intertwined.

Michael Garrity emphasized the need to be able to seize on acquisition opportunities when they arise.

Paul Jewell wants to see more discussion occur regarding NRAs, and noted his surprise with USFS comments on the Integrated Plan PEIS regarding NRAs. Wendy Christensen noted the USFS does not receive additional funding for managing new NRAs. Continued dialogue with USFS and engagement in their planning processes is needed as land use is addressed in the forest plan updates, along with coordination efforts through the Workgroup's Watershed Lands Protection subcommittee. Stuart Woolley also noted that the USFS is not required to make recommendations to Congress on new NRAs, but they will be identifying land uses through their forest plan and through the MVUM where motorized off-road vehicle (ORV) usage will be allowed.

Sid Morrison asked what is the national importance of the lands identified in the Integrated Plan? Stuart noted they are of national importance and the USFS Chief (Tom Tidwell) supports protecting the lands identified for the eastern Cascades, and is tracking this effort. The Workgroup's support of protecting these lands improves the likelihood of receiving Federal funding for acquisition.

Implementation Subcommittee Update *by Derek Sandison, Ecology, Implementation Subcommittee members/alternates (Urban Eberhart, Phil Rigdon, Mike Leita and Michael Garrity), and Mike Schwisow, communications consultant*

In April, members of the subcommittee along with Ruth Jim from the Yakama Nation and legislative advisors for the respective organizations, visited congressional delegates and officials in Reclamation, US Department of Interior (Interior), USFS,US Department of Agriculture, National Oceanic and Atmospheric Administration (NOAA), the Office of Management and Budget, and congressional committee staffs in Washington, DC. Implementation Subcommittee members made the following observations:

- The Workgroup representatives were well received and many of those individuals they met with knew they were coming, were aware of the Integrated Plan, and provided feedback that the united front was impressive.
- Budget realities in Congress exist.
- It is important to get information out about the plan.

- Important to solidify the Federal part of the implementation partnership.
- Implementation will be funded with discretionary funding for the next few years; having the strong and diverse support coalition working together will improve the Yakima basin as a national priority to hopefully receive more of the limited discretionary funding.
- Support for land acquisition will be helped by the meetings held with USFS, National Oceanic and Atmospheric Administration, and Interior.
- In seeking to set up a Federal task force to help with coordination Integrated Plan implementation, the Workgroup was cautioned to not "federalize" the process. Keep it a Yakima basin, grass-roots led process coordinated with the Federal agencies.
- Work with the congressional delegation and committee staffs on how best to seek authorization and appropriations for implementing the Integrated Plan.

Meetings were recently held with Senator Cantwell's staff in Yakima, along with Democrat and Republican gubernatorial candidates Jay Inslee and Rob McKenna. Senator Cantwell and Congressman Hastings staff members are leading efforts to advance the plan and are coordinating their efforts. The gubernatorial candidates were both well-informed on the plan and supportive. Jay Inslee has a good handle on the plan elements from the work he did in the early 1990s to sponsor the YRBWEP Phase 2 legislation.

Other presentations have been made to the Deschutes Water Alliance, Oregon, and the Idaho Water Board.

Derek noted that several communities and public interest groups have provided letters of support for the Integrated Plan (Cities of Ellensburg and Cle Elum, and Kittitas Chamber of Commerce). Cynthia Wilkerson from the Wilderness Society has been making contact with a number of groups.

<u>Education and outreach</u>
Derek Sandison introduced Mike Schwisow as the public outreach consultant to assist with education and broadening support for the plan. Mike and Vicky Scharlau will be helping with requests for information responses, consistent messaging, and coordinating communications with civic organizations and other groups. For example, Mike is working with the Yakima League of Women Voters to schedule a meeting on the Integrated Plan this fall. Ben Floyd will circulate Mike's contact information to the Workgroup interested parties distribution list so that others can contact Mike if they would like information or are seeking an Integrated Plan presentation for a particular group.

<u>2012 American Water Resources Association Integrated Water Resources Management Award</u>
Derek announced that the YRBWEP Workgroup is receiving the inaugural American Water Resources Association (AWRA) Integrated Water Resources Management award in 2012 for the Integrated Plan. Andrew Graham with HDR was acknowledged for his efforts in working with Ecology to develop the award application. Per the AWRA notification letter, the Workgroup "exemplifies the coordinated

development and management of water, land and related resources in order to maximize economic and social welfare without compromising the sustainability of ecosystems and the environment." The award will be presented later this year.

Watershed Lands Protection – Proposed Approach for Additional Refinements *by Andrew Graham, HDR*

Andrew reviewed the history on how the watershed lands protection actions were developed, starting with a proposal from a group of environmental organizations including Michael Garrity and Steve Malloch, and refinements made through the Watershed Lands Conservation subcommittee. Several comments were received on NRAs through the Integrated Plan PEIS, relating how it will affect lands and access. Michael and Steve have suggested the environmental organizations re-convene to discuss these comments. Bill Ross, facilitator, will assist in facilitating this discussion. Results from these facilitated discussions will then be discussed by the subcommittee. Any resulting revisions proposed for the watershed lands protection element will be brought to the Workgroup for consideration. An update on this effort will be provided at the September 26, 2012, Workgroup meeting.

Michael Garrity noted those not directly participating in the facilitated environmental groups discussion can provide their input to the process through him. Recreation interests will also be involved, including mountain bikers and ORV users. Refinements will also be made to more clearly identify environmental restoration benefits.

Jeff Tayer indicated broad support for the watershed lands protection proposal will be needed to have Congress take action.

Yakima Integrated Plan – Programmatic EIS Update *by Wendy Christensen, Reclamation*

Wendy provided the latest information on the PEIS. Reclamation has continued discussions with the USFS on related Integrated Plan elements. Reclamation received several comments on the final PEIS that will be considered when the Record of Decision (ROD) is issued later this fall. The ROD will be issued after the Framework for Implementation report is completed.

Sid Morrison asked a general question about how the Integrated Plan affects surface water quality, which will likely become worse under climate change. Derek Sandison responded that water quality is addressed in many ways through the Integrated Plan, and specific projects such as Wymer and others will undergo water quality reviews as part of project permitting. Tom Tebb added that mitigation will be determined on a project-by-project basis in working toward project implementation. Other Workgroup members noted that water quality would be improved through watershed protections, mainstem floodplain restoration, groundwater infiltration and other measures in the plan. Derek also pointed out that a lower Yakima Groundwater Management Area (GWMA) is also being formed, and includes a broad-based advisory committee. Mike Leita noted parallel efforts are ongoing concurrent

with the Integrated Plan, and that the Workgroup should keep focused on the actions in the plan. Sid wants to make sure the Integrated Plan process generates new water supply.

Public Comment:

- Chris Maykut provided Friends of Bumping Lake comments opposing the proposed Bumping Lake expansion (see attached comments to these notes).
- Elaine Packard requested a response from Reclamation and Ecology on a March 30, 2012, letter with comments on the Integrated Plan Final PEIS, signed by several organizations (see attached letter to these notes).
- Chuck Klarich suggested the Workgroup review the four accounts analysis completed for the Yakima River Basin Water Storage Feasibility Study for comparison with the four accounts analysis being conducted for the water storage and other elements of the Integrated Plan.
- David Ortman requested the winter and spring 2012 issues of The Wild Cascades publication be included in the public record.

Workgroup Members in Attendance

Alex Conley, Yakima Basin Fish & Wildlife Recovery Board
Kirk Cook, Washington State Department of Agriculture
Rick Dieker, Yakima-Tieton Irrigation District
Urban Eberhart, Kittitas Reclamation District
Michael Garrity, American Rivers
Paul Jewell, Kittitas County
Mike Leita, Yakima County
Sid Morrison, Yakima Basin Storage Alliance
Phil Rigdon, Yakama Nation
Derek Sandison, Washington State Department of Ecology
Jeff Thomas, US Fish and Wildlife Service
Jim Trull, Sunnyside Valley Irrigation District
Ron VanGundy, Roza Irrigation District
Dawn Wiedmeier, Bureau of Reclamation
Stuart Woolley, U.S. Forest Service

Other Attendees

Mary Baechler
Dave Brown, City of Yakima
David Child, Yakima Basin Join Board
Wendy Christensen, Bureau of Reclamation
Dan Church, Bureau of Reclamation
Marie Cobb, Intern

Stuart Crane, Yakama Nation
Charity Davidson, Washington State Department of Fish and Wildlife
Charlie de la Chapelle, Yakima Basin Storage Alliance
Beneitta Eaton, Rancher
Jack Eaton, Rancher
Bill Ferry, Bureau of Reclamation
Ben Floyd, Anchor QEA
Joel Freudenthal, Yakima County
Adam Fyall, Benton County
Chuck Garner, Bureau of Reclamation
Don Gatchalian, Yakima County
Andrew Graham, HDR Engineering, Inc.
Sean Gross, National Marine Fisheries Service
Judy Hallisey, U.S. Forest Service
Justin Harter, Naches Selah Irrigation District
Carron Helberg, Bureau of Reclamation
Lynn Holt, Bureau of Reclamation
Joel Hubble, Bureau of Reclamation
Eleanor Hungate
Jerry Kelso, Bureau of Reclamation
Chuck Klarich, Yakima Basin Storage Alliance
Paul La Riviere, Washington State Department of Fish and Wildlife
Walt Larrick, Bureau of Reclamation
David Lester, Yakima Herald
Barb Lisk, Office of Representative Doc Hastings
Steve Malloch, National Wildlife Federation
Larry Martin, Velikanje Halvorson
Chris Maykut, Friends of Bumping Lake
Samantha Maykut, Friends of Bumping Lake
Tim McCoy, Bureau of Reclamation
Keith McGowan, Bureau of Reclamation
Jim Milton, Yakima-Tieton Irrigation District
Tom Monroe, Roza Irrigation District
Bryan Myre, Yakama Reservation Irrigation District
David Ortman, Sierra Club
Elaine Packard, Sierra Club
Kelly Reed, Anderson Perry
Tom Ring, Yakama Nation
Mike Schwisow, Schwisow & Associates
Lynn Scott, US Forest Service

Elaine Smith, League of Women Voters
Rob Swedo, Bonneville Power Administration
David Taylor
Tom Tebb, Washington State Department of Ecology
Cynthia Wilkerson, The Wilderness Society

Next Workgroup Meeting

The next meeting will be held September 12, 2012, at 9:30 AM at the Yakima Arboretum. A meeting notice and agenda will be distributed in advance of the meeting.

Where to Find Workgroup Information

Meeting materials, notes, and presentations from the Workgroup meetings will be posted on the project website (http://www.usbr.gov/pn/programs/yrbwep/index.html). A bibliography of information sources, many of which are available online, is also posted on the website. If anyone needs help finding an information source, contact those listed at the top of page 1 or Ben Floyd at Anchor QEA, Richland office, (509) 392-4548, or bfloyd@anchorqea.com.

Yakima River Basin Integrated Water Resource Management Plan

Early Action Items
Status / Update
June 20, 2012

DEPARTMENT OF ECOLOGY State of Washington

U.S. DEPARTMENT OF THE INTERIOR BUREAU OF RECLAMATION

Early Action Items

Prepared for Discussion at the March 14, 2012, Workgroup Meeting

Yakima River Basin Integrated Water Resource Management Plan Early Action Items Funding Status			
Integrated Plan Actions/Projects	**Total Estimated Cost (million $)**	**Early Action Items (1-2 years) ($)**	**Early Action Funding Status ($)**
Tributary Habitat Enhancement Program	$180.0	$2,600,000	$225,000[1]
Fish Passage at Clear Lake Dam	$3.0	$400,000	
Subordinate Power Diversions, Roza & Chandler	TBD	$500,000	$225,000[2]
Fish Passage at Cle Elum Lake Dam	$87.6	$2,600,000	$700,000[3]
Cle Elum Dam Pool Raise	$16.8	$2,000,000	
Watershed Land Conservation - Land Acquisition	TBD	$2,000,000	$500,000[1]
Wymer Dam & Reservoir	$1,077	$3,000,000	
Bumping Lake Enlargement	$402.5	$1,200,000	$1,250,000[1]
Pipeline from Lake Keechelus to Lake Kachess	$190.7	$3,500,000	$2,500,000[1]
Lake Kachess Inactive Storage	$253.8	$1,500,000	$450,000[2]
Groundwater Infiltration (Pilot project)	$4.7	$1,600,000	$200,000[1]
TOTAL		$20,900,000	$6,050,000[4]

[1] Washington State-funded
[2] Funded by Tribe, Reclamation, USGS, and irrigation districts
[3] Reclamation-funded
[4] This total does not include the additional State contribution to the Integrated Plan Programmatic EIS and Framework for Implementation document of $1.88 million.

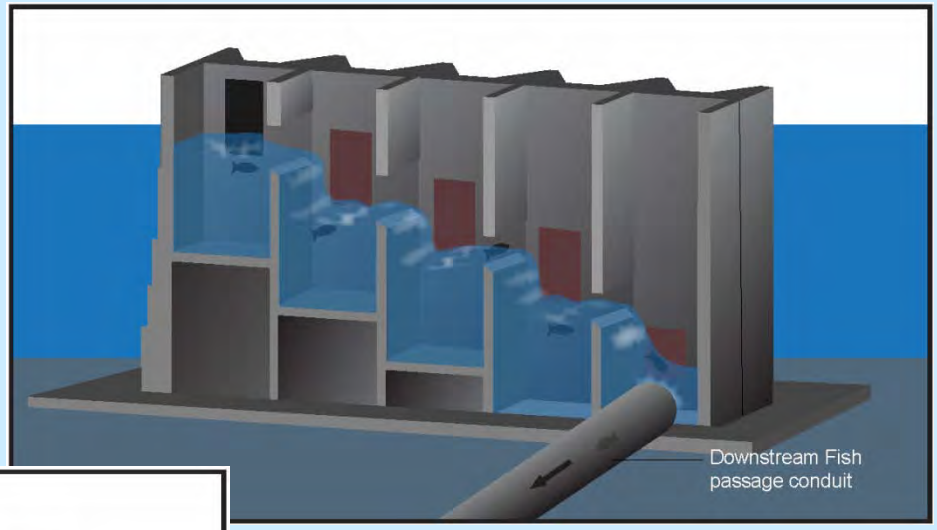
March 14, 2012

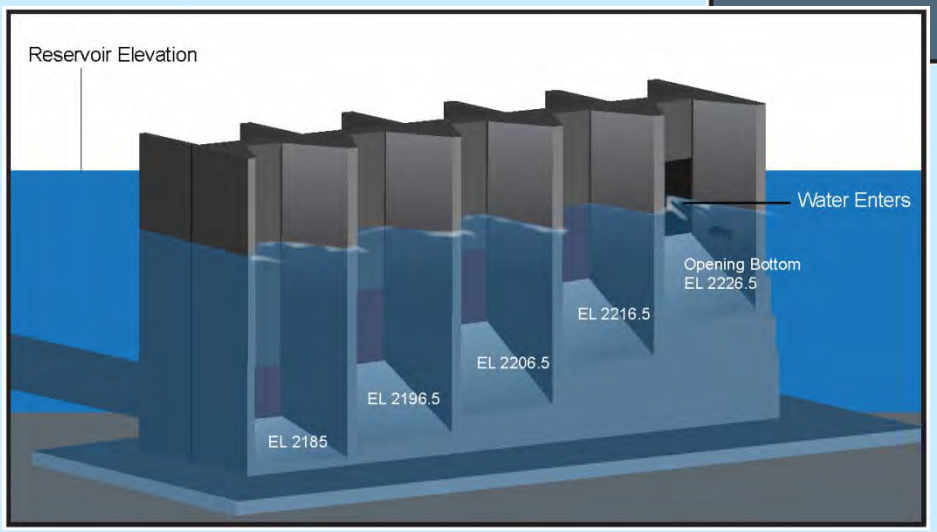
Status

- Reclamation Funding – Approx. $2M
  - Cle Elum Fish Passage - $700K, Physical Model / Cultural
  - Lake Kachess Water Supply Study - $450K
- Washington State Department of Ecology Funding – Approx. $4M
- Summary of Authorities
- Federal Workgroup – Washington D.C. Offices
  - Reclamation, USFWS, NOAA, BLM, BIA, USGS, USFS, Others?

Cle Elum Fish Passage Facility
Multilevel Intake Structure

Interior View





Front Elevation

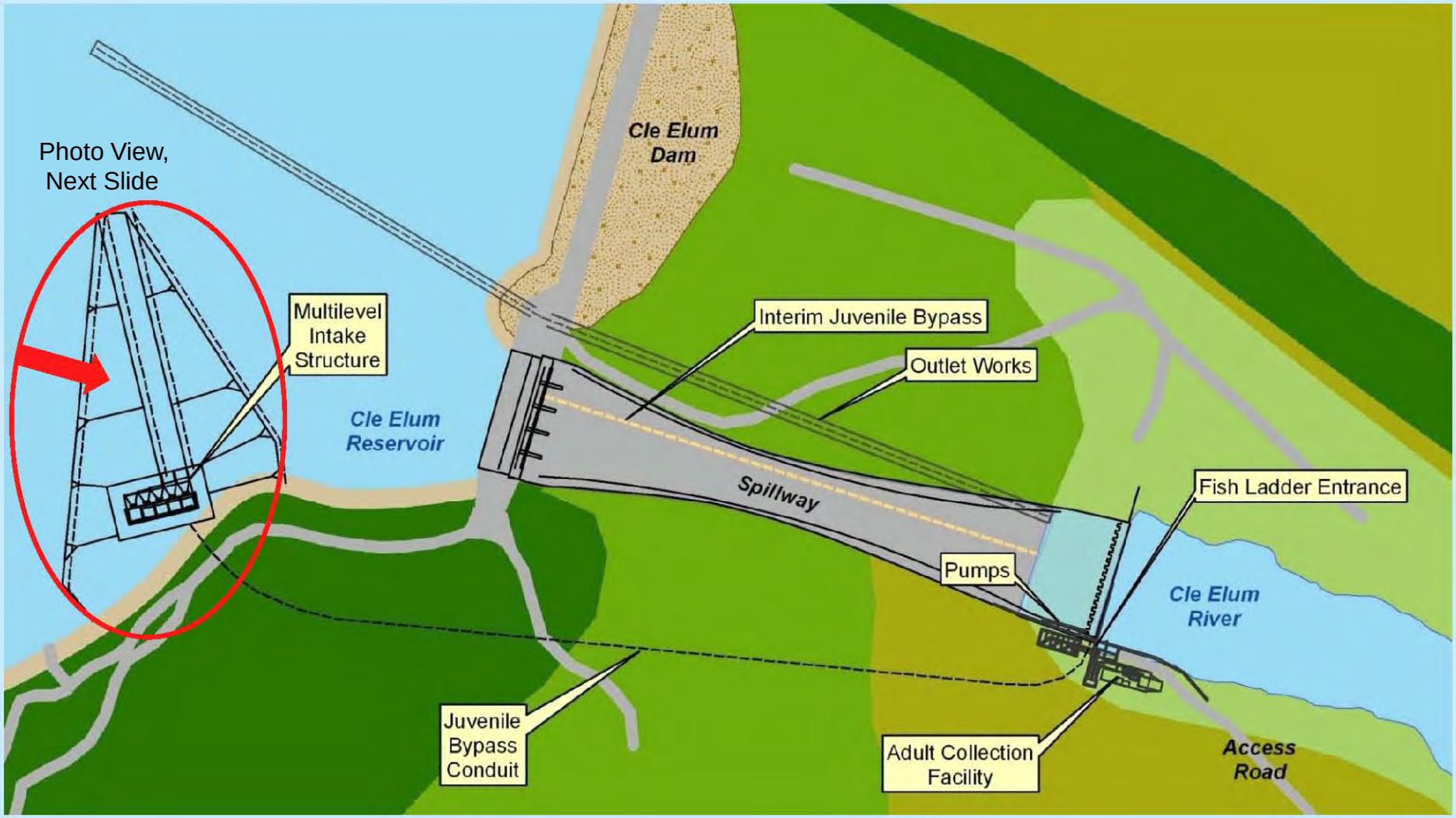
Cle Elum Fish Passage Facility
Multilevel Intake Structure

Physical Hydraulic Model at Denver TSC, June 15, 2012

Cle Elum Fish Passage Facility
Multilevel Intake Structure

Physical Hydraulic Model at Denver TSC, June 18, 2012

Cle Elum Fish Passage Facility
Preferred Alternative



Cle Elum Fish Passage Facility
Downstream Topography Installation

Physical Hydraulic Model at Denver TSC, June 15, 2012

Cle Elum Fish Passage Facility
Multilevel Intake Structure

Physical Hydraulic Model at Denver TSC, June 18, 2012

Update on Framework for Implementation Report
Yakima River Basin Integrated Water Resource Management Plan

June 20, 2012

Overall Purpose

Provide information needed by Reclamation, Ecology and the federal Office of Management and Budget in order to request authorizations and appropriations needed to implement the Integrated Plan.

New Analyses

Cost Risk Analysis (HDR Methodology)

Purpose: Improve information on costs, to support funding requests to Congress and State Legislature

- Six projects reviewed: Wymer Reservoir, Bumping Reservoir, Kachess Inactive Storage, K-to-K Pipeline, Cle Elum Fish Passage, Wymer Downstream Conveyance
- Detailed review of construction costs and adjust for inflation
- Replaced standardized contingency costs with specific risk elements affecting each project.
- Monte Carlo simulation of risk and uncertainty yields new, statistical cost ranges
- Draft Results:
    - Biggest decrease is elimination of Thorp Pump Station and Conveyance
    - Biggest increase is in cost of Bumping Reservoir
    - Total cost of Integrated Plan overall similar to 2011 results (<3% change, including inflation)
- Draft results under review at TSC (Reclamation Technical Service Center)
- Cost risk analysis should be updated periodically as additional investigations, design and risk-mitigation provide new information.

Preliminary Cost Allocation (federal methodology for water and power projects)

Purpose: Preliminary review of how costs should be allocated to different purposes, to support eventual determination of reimbursable/non-reimbursable costs, and repayment formulas for the reimbursable costs.

- Preliminary Cost Allocation Analysis (in progress)
  - Three purposes of Integrated Plan:
    - Ecological Restoration
    - Agricultural Irrigation
    - Municipal and Domestic Water Supply
  - Allocation of specific costs to these three purposes
  - Equitable distribution of remaining joint costs among the three purposes

- Financial Feasibility Analysis (pending)
  - Analysis of payment capacity using farm-level data on costs and revenues.
  - Analysis of ability-to-pay aggregated to irrigation-district level.

Four Accounts Analysis (federal Principles & Guidelines)

- National Economic Development (analysis in progress)
  - Updates economic analysis performed in 2010.
  - Looks at costs and benefits from a national perspective.
  - Results from Cost Risk Analysis used to update costs.
  - Benefits assessed in three categories:
    - Predicted increase in fish populations
    - Predicted increase in farm revenues from improved reliability
    - Additional supply for municipal and domestic uses

- Regional Economic Development (analysis pending)
  - Regional income
  - Regional employment

- Environmental Quality (analysis pending)
  - Ecological, aesthetic and cultural resources.
  - Effects of proposed alternative on significant resources

- Other Social Effects (analysis pending)
  - Effects not included in the other three accounts. E.g. energy needs; community effects, health and safety effects

Outline of Framework for Implementation Report (Draft)

1.0 Introduction and Purpose

1.1 The Yakima River Basin Integrated Water Resource Management Plan
1.2 Previous Activities and Studies
1.3 Programmatic Environmental Impact Statement
1.4 Purpose and Content of Framework for Implementation

2.0 Construction Cost Estimates

2.1 Summary of Construction Cost Estimates
2.2 Development of Construction Cost Estimates

3.0 Four Account Analysis

3.1 Purpose and Background
3.2 National Economic Development (NED) Account
3.3 Regional Economic Development (RED) Account
3.4 Environmental Quality (EQ) Account
3.5 Other Social Effects (OSE) Account

4.0 Preliminary Cost Allocation

4.1 Purpose
4.2 Identification of Benefits (Project Purposes) for Cost Allocation
4.3 Summarize Results and Cite Technical Memorandum
4.4 Methodology

5.0 Financial Feasibility Analysis

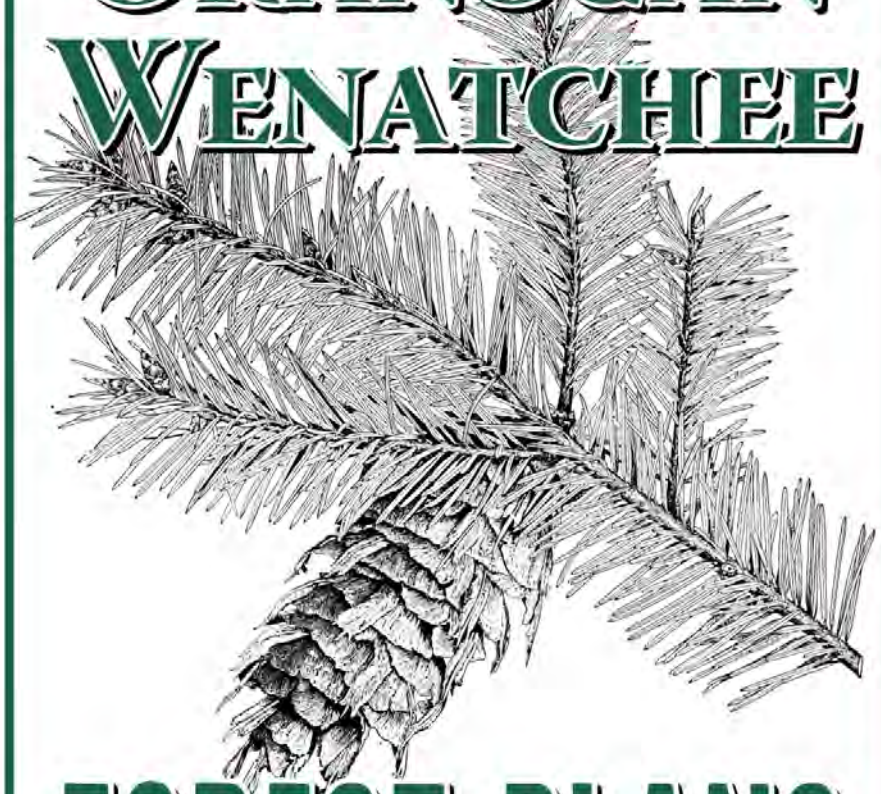
5.1 Purpose
5.2 Summarize Results and Cite Technical Memorandum
5.3 Methodology

6.0 References

7.0 List of Preparers

Appendices

COLVILLE
OKANOGAN
WENATCHEE



FOREST PLANS

Proposed Action Scoping

July-Sept./2011

Public Outreach

- Nine public meetings and two webinars
- Colville, Republic, Okanogan, Wenatchee, Newport, Spokane, Yakima, Cle Elum, and Seattle

The **main objective of scoping** is to ultimately identify the ***Issues*** that will be used to modify the Proposed Action (PA), develop alternatives and/or refine the analysis.

The ID Team is currently working on this step.

To Date there are about 7 larger issues –

People were really concerned about…

✓ *Riparian Areas;*
✓ *Wildlife Habitat Connectivity;*
✓ *Livestock Grazing – Domestic Sheep*
✓ *Wilderness;*
✓ *Road Access/Density;*
✓ *Motorized Recreation – Trails;*
✓ *Old Forest – NWFP Reserves*

Forest Plan Revision

NEXT STEPS-
DEIS -Spring 2013
FEIS - Spring 2014
ROD - December 2014

Motorized Travel Management

The Chief of the Forest Service identified…

…unmanaged recreation, including unmanaged off-highway vehicle use, as one of four threats to the nation's forests and grasslands and published the National Travel Management Rule in 2005

Travel Management

- The rule requires the designation of a system of roads, trails, and areas open to motorized vehicle travel on the national forest and display of the system on a motor vehicle use map (MVUM) ;
- Once this system is designated, motorized travel off the system is prohibited

Travel Management

The decision will include:

- Fundamental management change from a system which is open unless posted closed to a system that is closed unless posted open, legitimizing motorized use by delineating where it is appropriate
- This will tweak the existing system to improve the recreational experience for both motorized and non-motorized users

Travel Management

Specific actions include:

- Eliminate cross country travel;
- Prohibit motorized use on most maintenance level 1 (ML1) roads (managed as closed, but no legal prohibition);
- Authorize some ML1 roads as trails, designate unauthorized motorized trails pending resource surveys, authorize additional non-highway legal vehicle use of open roads pending risk mitigation;

Travel Management

Specific actions include (cont.):

- Convert some existing trails between motorized use and non-motorized use and vice versa and remove some motorized trails from the system;
- Designate a small amount of small-sized motorized areas;
- Provide motorized access to dispersed recreation and dispersed camping.

Travel Management

- **Completed steps are:**
- 2006-2008 – two rounds of public meetings;
- Spring 2009 – Public release of Proposed Action with public meetings and comment period
- Summer 2009 to Spring 2011 – Developed alternative actions in response to public feedback
- Summer 2011 to present –Analyzed environmental consequences of alternative actions
- Fall 2011 – Met with group of stakeholders to display early effects and tweak proposals as needed

Travel Management

- **The next steps are:**
- Regional review of the DEIS – Summer 2012;
- Public comment on the DEIS – Fall 2012;
- Analysis of comments, Final EIS, ROD – Winter/ Spring 2013;
- Creation and roll out of the MVUM to implement decision – Summer/ Fall 2013;
- Annual updates to the MVUM based on subsequent decisions.

Land Acquisitions – Scott Lynn

- FS Funding for Land Acquisitions =
  Land and Water Conservation Fund
- LWCF is funded by Outer Continental Shelf Oil drilling royalties at $900million/year, subject to annual appropriations.

Annual Appropriations in Millions of Dollars

	FY 2010	FY 2011	FY 2012	FY 2013 (President's Request)
LWCF Total:	$453	$301	$323	$450
LWCF Fed. Purchase	$278	$177	$199	$269

Land Acquisitions

Okanogan-Wenatchee NF will be responding to Region 6 LWCF nomination process in July/Aug. for FY 2014

The Okanogan-Wenatchee NF will be nominating a portion of the lands identified in the Yakima Integrated Plan for FY 2014 LWCF funding.

National Ranking Criteria are:

- National Importance
- Landscape Level Impact
- Public and Partner Support
- Urgency to Forest and Community
- Annual O&M improvements, savings or cost

FS LWCF 2014 Planning Map 06/20/2012

Legend

- USDA Forest Service
- Proposed LWCF Parcels
- FS Acquired Lands
- Pending FS Purchase
- Misc. Colors = Public or Conservation Own.

The USDA Forest Service makes no warranty, expressed or implied regarding the data displayed on this map, and reserves the right to correct, update, modify, or replace this information without notification.

T.22N., R.10E., 33
T.22N., R.11E., 33
T.22N., R.12E., 33
T.22N., R.13E., 33
T.22N., R.14E., 33
T.22N., R.15E., 33
T.22N., R.16E., 33
T.22N., R.17E., 33
T.21N., R.10E., 33
T.21N., R.11E., 33
T.21N., R.12E., 33
T.21N., R.13E., 33
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T.18N., R.14E., 33
T.18N., R.15E., 33

Attention: Derek Sandison
Director, Office of Columbia River
Department of Ecology
15 W. Yakima Ave, Suite 200
Yakima, WA 98902-345
dsan461@ecy.wa.gov

Attention: Candace McKinley
Bureau of Reclamation, Columbia-Cascades Area Office
Environmental Program Manager
1917 Marsh Road
Yakima, WA 98901
yrbwep@usbr.gov

CC: David Lester, Yakima Herald
Joanna Markell, Ellensburg Daily Record
Courtney Flatt, NWPR

COMMENTS SUBMITTED TO YAKIMA WORKGROUP - June 20, 2012

RE: Proposed New Bumping Lake Dam

The owners of the Bumping Lake Cabin Community and members of the Friends of Bumping Lake would like to request that this document be accepted into the official record expressing our concern and opposition to the proceedings of the YRBWEP Workgroup regarding the Workgroup's decision to dam and destroy our community. For more than two years the Workgroup has conducted its sessions without transparency and with the meetings of the Implementation Subcommittee closed to the public. The failure of open process has resulted in a plan that would permanently and adversely affect thousands of stakeholders who care about Bumping Lake. Not once have the either the U.S. Bureau of Reclamation or Washington Department of Ecology attempted to contact residents at Bumping Lake or communities in the upper Naches River area to collaborate, discuss, or even inform us on these proceedings.

These decisions have been made public to us by way of other groups that were not allowed to participate as Workgroup members, but have been carefully monitoring the proposals that have been finalized in recent months. Even as the Workgroup is actively pushing its plan in Congress and Olympia, lobbying for early action taxpayer funding, and moving forward with this idea of building a new Bumping Dam, nobody from the Workgroup has reached out to our community in any way.

It is clear to us the outcome of this project: everything that we love in this area will be permanently destroyed. The high water line of a new Bumping Dam is above our cabins, above the marina, above the campground, and includes 2,000 acres of ancient forest as well as endangered species habitat for Northern spotted owls and bull trout. The burning question in our minds is this: how can Yakima irrigators decide the fate of a place that is so special to so many people without having the decency to contact those of us who would be permanently impacted?

*www.usbr.gov/pn/programs/yrbwep/reports/FPEIS/fpeis.pdf

Much of the Bumping Lake Community was built by our great-great grandparents in the 1930's and 40's. Six generations of families have experienced this beautiful place and call it home. Far from an electrical outlet and out of cell phone range, it is a rare and pristine wilderness that contains some of Central Washington's last ancient forests. It is irreplaceable, cannot be offset by for-flung preservation deals, and should be preserved for all to enjoy for many generations to come.

The Department of Ecology admits "by itself, the Market Reallocation Element has the potential to offset much, but not all, of the irrigation-related economic losses from a future severe drought."* The Federal Register notice regarding water management and conservation plans for the Central Valley Project - according to Section 3405(e)(1) - states these criteria must be developed: "with the purpose of promoting the highest level of water use efficiency reasonably achievable by project contractors using best available cost-effective technology and best management practices."

While we do not oppose the goals of the YRBWEP Workgroup, Friends of Bumping Lake oppose the new Bumping Dam as it has been proposed. **The Workgroup's final plan does not mandate water marketing or conservation**. In an era of celebrating dam removal and returning to natural ecosystems, thoughtful, **regulated water management is the best choice for all**.

We are dedicated to the permanent preservation of the recreational, ecological and familial heritage of Bumping Lake, and will do everything in our power to meet these goals. We ask that the Workgroup acknowledge these errors and take remedial action to include Friends of Bumping Lake in all communication relating to the Workgroup, take into account the thousands of stakeholders who will be adversely affected by your plans, and remove the proposal to build the Bumping Lake Dam from the Yakima Plan.

Chris Maykut, President
Friends of Bumping Lake
4000 Aurora Avenue North
Suite 224
Seattle, WA 98103

*www.usbr.gov/pn/programs/yrbwep/reports/FPEIS/fpeis.pdf

Alpine Lakes Protection Society - El Sendero - Endangered Species Coalition
Friends of Bumping Lake - Issaquah Alps Trails Club - Kittitas Audubon Society
The Mazamas - Middle Fork Outdoor Recreation Coalition
North Cascades Conservation Council - Olympic Forest Coalition - Sierra Club
Washington Native Plant Society - Wenatchee Mountains Coalition
Western Lands Project - Western Watersheds Project

March 30, 2012

Attention: Derek Sandison
Director, Office of Columbia River
Department of Ecology
15 W. Yakima Ave, Suite 200
Yakima, WA 98902-345
dsan461@ecy.wa.gov

Attention: Candace McKinley
Bureau of Reclamation, Columbia-Cascades Area Office
Environmental Program Manager
1917 Marsh Road
Yakima, WA 98901
yrbwep@usbr.gov

RE: Comments on the Yakima "Integrated Plan" FPEIS

We have reviewed a copy of the Final Programmatic Environmental Impact Statement for the "Integrated Water Resource Management Plan, Yakima River Basin Water Enhancement Project, Benton, Kittitas, Klickitat, and Yakima Counties, Washington" (FPEIS).

Overall, we find that the FPEIS does not comply with the requirements of the National Environmental Policy Act (NEPA) or State Environmental Policy Act (SEPA). We request that the Bureau of Reclamation and the Department of Ecology withdraw the FPEIS and provide written responses to the following concerns:

* **NRAs and ORV use added to FPEIS.** The FPEIS, Sec. 2.4.7.1 includes as part of the "Integrated Plan" a Targeted Watershed Protections and Enhancements element that has little to no connection to the Purpose and Need for the Action, FPEIS, Section 1.3. This element is not related to fish passage, streamflow alterations and water demands by the irrigators, demand for municipal and domestic water supplies or climate change. Parts of the Targeted Watershed Protections and Enhancements element are important in and of themselves. However, the Draft PEIS contains no mention of two new proposed National Recreation Areas (NRAs), an Upper Yakima NRA and

Manastash-Taneum NRA within the Okanogan-Wenatchee National Forest, added to the FPEIS. This proposal was released by the Yakima Workgroup Watershed Lands Conservation Subcommittee on January 4, 2012, the day after comments closed on the Draft PEIS,[1] and includes over 41,000 acres for "backcountry motorized recreational use," i.e., use by off-road vehicles (ORVs) such as motorcycles, ATVs, 4x4s and snowmobiles. A proposal for NRAs and ORV use appears only in the Final PEIS and did not appear in the Draft PEIS.

Designation of new NRAs for ORV use is a significant change to the proposed alternative as presented in the Draft PEIS. Furthermore, additional ORV use would have a probable significant adverse impact on the Okanogan-Wenatchee National Forest environment. On March 6, 2012, the Okanogan-Wenatchee National Forest issued a fact sheet stating, "The NRA designations have potential to increase recreation impacts to ecosystems and affect wildlife corridors that pass through these areas because the designation would likely attract more of the recreating public."

Because the proposal for NRAs was NOT included in the Draft PEIS, the public and our organizations were not given the opportunity to provide comments on the NRA proposal. Will the Bureau of Reclamation and Department of Ecology withdraw the FPEIS or issue a supplement to allow public comment on this new proposal?

* **Early Action prior to issuance of Draft PEIS.** The Federal Register Notice (77 FR 12076; February 28, 2012) announcing the availability of the FPEIS stated that the Bureau of Reclamation will not make a decision on the proposed action until at least 30 days after filing the Final PEIS with the Environmental Protection Agency. WAC 197-11-460(5) prohibits agencies from acting on a proposal for which a SEPA EIS has been required prior to seven days after issuance of the Final EIS. "NEPA procedures must insure that environmental information is available to public officials and citizens before decisions are made and before actions are taken" (emphasis added). *40 CFR Sec. 1500.1(b).*

Before the Draft PEIS was even released for public comment, on September 18, 2011, at a briefing for Yakama Tribal Chairman Smiskin, Secretary Salazar, Governor Gregoire, Congressman Hastings, Senator Cantwell, and Commissioner Connor on the Yakima River Basin Integrated Water Resource Management Plan, Secretary Salazar requested that a list of early action items be submitted to him by November 1, 2011.[2] On October 2011, the Workgroup Implementation Subcommittee presented an Early Implementation Request for over $20 million to the Workgroup,[3] prior to the issuance of

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[1] The Endangered Species Coalition, Federation of Western Outdoor Clubs, Kittitas Audubon Society, Lower Columbia Basin Audubon Society, The Mazamas, The Mountaineers, Seattle Audubon Society, Sierra Club Washington State Chapter, Western Lands Project, Western Watersheds Project, Wild Fish Conservancy sent a letter dated November 23, 2011, requesting an extension of the comment period on the DPEIS. The Bureau of Reclamation and Department of Ecology denied this request.

[2] http://www.usbr.gov/pn/programs/yrbwep/2011integratedplan/meetings/2011-12-14/3yakactnsum.pdf

[3] http://www.usbr.gov/pn/programs/yrbwep/2011integratedplan/meetings/2011-10-12/4earlyimpre-rev.pdf

the Draft PEIS dated November 16, 2011. At the March 14, 2012, Yakima Workgroup meeting, the Bureau of Reclamation and Ecology distributed a document entitled, "Yakima River Basin Integrated Water Resource Management Plan Early Action Items Funding Status," which identifies several "Integrated Plan" actions/projects receiving funding from the Bureau of Reclamation and Washington State.[4] The Bureau of Reclamation also distributed a FY 2012 spending plan, which includes funding elements of the proposed "Integrated Plan."[5] Will the Bureau of Reclamation and Ecology identify all early action implementation steps they have taken to date, prior to the decision deadline mentioned in the Federal Register and the SEPA Regulations?

* **Lack of Alternatives.** The FPEIS fails to include any alternatives other than the proposed alternative ("Integrated Plan," which now includes the proposed NRAs) and the required "no-action alternative." Because the FPEIS does not provide a range of alternatives, decisionmakers and the public are not presented with a clear basis for choice among options as required by NEPA. An "Integrated Plan" element also includes construction of two new large dams (Bumping Lake and Wymer) that would destroy endangered species habitat. The FPEIS states that "Old-growth forest that is lost to reservoir expansion or facility construction cannot be replaced. Mitigation efforts for shrub-steppe communities have had mixed results, and successful outcomes are not certain." *Sec. 5.84, FPEIS.* We remain opposed to these projects. Will the Bureau of Reclamation and Ecology withdraw the FPEIS or issue a supplement to present additional alternatives that would avoid these impacts?

In summary, the Bureau of Reclamation and Department of Ecology have issued a FPEIS that does not comply with either NEPA or SEPA and has incorporated the January 4, 2012, National Recreation Areas proposal with ORV use into the "Integrated Plan" without allowing public comment at either the Workgroup or Draft PEIS stage. Please consider this letter as comments on the Final DEIS and provide responses to the above concerns.

Signed:

Alpine Lakes Protection Society
Rick McGuire, President
P.O. Box 27646
Seattle WA 98165

El Sendero
Gus Bekker
Backcountry Ski and Snowshoe Club
PO Box 5622
Wenatchee, WA 98807

[4] http://www.usbr.gov/pn/programs/yrbwep/2011integratedplan/meetings/2012-03-14/4funding.pdf
[5] http://www.usbr.gov/pn/programs/yrbwep/2011integratedplan/meetings/2012-03-14/3spending.pdf

Endangered Species Coalition
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Kittitas Audubon Society
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Ellensburg, WA 98926

The Mazamas
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Middle Fork Outdoor Recreation Coalition
Mark Boyar, President
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Seattle, WA 98118

North Cascades Conservation Council
Marc Bardsley, President
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Seattle, WA 98145-2980

Olympic Forest Coalition
John Woolley, President
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Quilcene, WA 98376

Sierra Club Washington State Chapter
Mark Lawler, Chair, National Forests Committee
Elaine Packard, Chair, Water and Salmon Committee
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Seattle, WA 98109

Washington Native Plant Society
Dean Longrie, President
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Alpine Lakes Protection Society - El Sendero - Endangered Species Coalition
Friends of Bumping Lake – Friends of the Earth - Issaquah Alps Trails Club
Kittitas Audubon Society - The Mazamas - Middle Fork Outdoor Recreation Coalition
North Cascades Conservation Council - Olympic Forest Coalition - Sierra Club
Washington Native Plant Society - Wenatchee Mountains Coalition
Western Lands Project - Western Watersheds Project

March 30, 2012

Attention: Derek Sandison
Director, Office of Columbia River
Department of Ecology
15 W. Yakima Ave, Suite 200
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dsan461@ecy.wa.gov

Attention: Candace McKinley
Bureau of Reclamation, Columbia-Cascades Area Office
Environmental Program Manager
1917 Marsh Road
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RE: Comments on the Yakima "Integrated Plan" FPEIS

We have reviewed a copy of the Final Programmatic Environmental Impact Statement for the "Integrated Water Resource Management Plan, Yakima River Basin Water Enhancement Project, Benton, Kittitas, Klickitat, and Yakima Counties, Washington" (FPEIS).

Overall, we find that the FPEIS does not comply with the requirements of the National Environmental Policy Act (NEPA) or State Environmental Policy Act (SEPA). We request that the Bureau of Reclamation and the Department of Ecology withdraw the FPEIS and provide written responses to the following concerns:

* **NRAs and ORV use added to FPEIS.** The FPEIS, Sec. 2.4.7.1 includes as part of the "Integrated Plan" a Targeted Watershed Protections and Enhancements element that has little to no connection to the Purpose and Need for the Action, FPEIS, Section 1.3. This element is not related to fish passage, streamflow alterations and water demands by the irrigators, demand for municipal and domestic water supplies or climate change. Parts of the Targeted Watershed Protections and Enhancements element are important in and of themselves. However, the Draft PEIS contains no mention of two new proposed National Recreation Areas (NRAs), an Upper Yakima NRA and

Manastash-Taneum NRA within the Okanogan-Wenatchee National Forest, added to the FPEIS. This proposal was released by the Yakima Workgroup Watershed Lands Conservation Subcommittee on January 4, 2012, the day after comments closed on the Draft PEIS,[1] and includes over 41,000 acres for "backcountry motorized recreational use," i.e., use by off-road vehicles (ORVs) such as motorcycles, ATVs, 4x4s and snowmobiles. A proposal for NRAs and ORV use appears only in the Final PEIS and did not appear in the Draft PEIS.

Designation of new NRAs for ORV use is a significant change to the proposed alternative as presented in the Draft PEIS. Furthermore, additional ORV use would have a probable significant adverse impact on the Okanogan-Wenatchee National Forest environment. On March 6, 2012, the Okanogan-Wenatchee National Forest issued a fact sheet stating, "The NRA designations have potential to increase recreation impacts to ecosystems and affect wildlife corridors that pass through these areas because the designation would likely attract more of the recreating public."

Because the proposal for NRAs was NOT included in the Draft PEIS, the public and our organizations were not given the opportunity to provide comments on the NRA proposal. Will the Bureau of Reclamation and Department of Ecology withdraw the FPEIS or issue a supplement to allow public comment on this new proposal?

* **Early Action prior to issuance of Draft PEIS.** The Federal Register Notice (77 FR 12076; February 28, 2012) announcing the availability of the FPEIS stated that the Bureau of Reclamation will not make a decision on the proposed action until at least 30 days after filing the Final PEIS with the Environmental Protection Agency. WAC 197-11-460(5) prohibits agencies from acting on a proposal for which a SEPA EIS has been required prior to seven days after issuance of the Final EIS. "NEPA procedures must insure that environmental information is available to public officials and citizens before decisions are made and before actions are taken" (emphasis added). *40 CFR Sec. 1500.1(b).*

Before the Draft PEIS was even released for public comment, on September 18, 2011, at a briefing for Yakama Tribal Chairman Smiskin, Secretary Salazar, Governor Gregoire, Congressman Hastings, Senator Cantwell, and Commissioner Connor on the Yakima River Basin Integrated Water Resource Management Plan, Secretary Salazar requested that a list of early action items be submitted to him by November 1, 2011.[2] On October 2011, the Workgroup Implementation Subcommittee presented an Early Implementation Request for over $20 million to the Workgroup,[3] prior to the issuance of the Draft PEIS dated November 16, 2011. At the March 14, 2012, Yakima Workgroup

[1] The Endangered Species Coalition, Federation of Western Outdoor Clubs, Kittitas Audubon Society, Lower Columbia Basin Audubon Society, The Mazamas, The Mountaineers, Seattle Audubon Society, Sierra Club Washington State Chapter, Western Lands Project, Western Watersheds Project, Wild Fish Conservancy sent a letter dated November 23, 2011, requesting an extension of the comment period on the DPEIS. The Bureau of Reclamation and Department of Ecology denied this request.

[2] http://www.usbr.gov/pn/programs/yrbwep/2011integratedplan/meetings/2011-12-14/3yakactnsum.pdf

[3] http://www.usbr.gov/pn/programs/yrbwep/2011integratedplan/meetings/2011-10-12/4earlyimpre-rev.pdf

meeting, the Bureau of Reclamation and Ecology distributed a document entitled, "Yakima River Basin Integrated Water Resource Management Plan Early Action Items Funding Status," which identifies several "Integrated Plan" actions/projects receiving funding from the Bureau of Reclamation and Washington State.[4] The Bureau of Reclamation also distributed a FY 2012 spending plan, which includes funding elements of the proposed "Integrated Plan."[5] Will the Bureau of Reclamation and Ecology identify all early action implementation steps they have taken to date, prior to the decision deadline mentioned in the Federal Register and the SEPA Regulations?

* **Lack of Alternatives.** The FPEIS fails to include any alternatives other than the proposed alternative ("Integrated Plan," which now includes the proposed NRAs) and the required "no-action alternative." Because the FPEIS does not provide a range of alternatives, decisionmakers and the public are not presented with a clear basis for choice among options as required by NEPA. An "Integrated Plan" element also includes construction of two new large dams (Bumping Lake and Wymer) that would destroy endangered species habitat. The FPEIS states that "Old-growth forest that is lost to reservoir expansion or facility construction cannot be replaced. Mitigation efforts for shrub-steppe communities have had mixed results, and successful outcomes are not certain." *Sec. 5.84, FPEIS.* We remain opposed to these projects. Will the Bureau of Reclamation and Ecology withdraw the FPEIS or issue a supplement to present additional alternatives that would avoid these impacts?

In summary, the Bureau of Reclamation and Department of Ecology have issued a FPEIS that does not comply with either NEPA or SEPA and has incorporated the January 4, 2012, National Recreation Areas proposal with ORV use into the "Integrated Plan" without allowing public comment at either the Workgroup or Draft PEIS stage. Please consider this letter as comments on the Final DEIS and provide responses to the above concerns.

Signed:

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El Sendero
Gus Bekker
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[4] http://www.usbr.gov/pn/programs/yrbwep/2011integratedplan/meetings/2012-03-14/4funding.pdf
[5] http://www.usbr.gov/pn/programs/yrbwep/2011integratedplan/meetings/2012-03-14/3spending.pdf

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RECLAMATION
Managing Water in the West

WASHINGTON STATE DEPARTMENT OF ECOLOGY

Contact: Wendy Christensen, 509-575-5848, ext. 203 **Derek Sandison, 509-457-7120**

Agenda

Yakima River Basin Water Enhancement Project Workgroup

September 26, 2012, 9:30 to 12:00 PM at Yakima Arboretum, 1401 Arboretum Dr., Yakima WA

Time

9:30 – 9:35 Welcome/Introductions and Agenda Overview
Ben Floyd, Anchor QEA

9:35 – 9:45 Early Action Items –Status
Wendy Christensen, Reclamation and Derek Sandison, Ecology

9:45 – 9:55 Governor Gregoire Briefing - August 2, 2012
Derek Sandison, Ecology and Wendy Christensen, Reclamation

9:55 – 10:45 Framework for Implementation Report Update
- Preliminary Cost Allocation Analysis, *Wendy Christensen, Reclamation*
- Principles and Guidelines - Four Account Display, *Ernie Niemi, ECONorthwest and Ann Root, ESA*

10:45 – 11:00 BREAK

11:00 –11:10 Targeted Watershed Protections and Enhancements – Update
Michael Garrity, American Rivers

11:10 – 11:50 Implementation Subcommittee Update
Derek Sandison, Ecology and Dan Silver, Consultant

- Recent Washington DC Visit,
  Implementation Subcommittee panel

- Education and Outreach Status
  Mike Schwisow, Consultant

11:50 – Noon Public Comment

Next meeting – December 12, 9:30 AM at Yakima Arboretum

Adjourn

*Work Group facilitation by Ben Floyd, Anchor QEA as a subconsultant to HDR, under contract to US Bureau of Reclamation

RECLAMATION
Managing Water in the West

Contact: Wendy Christensen, Columbia-Cascades Area Office, (509) 575-5848, ext. 203
Derek Sandison, Washington State Department of Ecology, (509) 457-7120

Final Meeting Notes
September 26, 2012
Yakima Arboretum, Yakima WA

Yakima River Basin Water Enhancement Project (YRBWEP) Workgroup

Welcome/Introductions and Agenda Overview *by Ben Floyd, Anchor QEA*
Ben Floyd, meeting facilitator, welcomed the Workgroup members and public, led introductions, and provided an overview of the agenda. Ben congratulated Jeff Tayer on his recent retirement from Washington Department of Fish and Wildlife (WDFW) and introduced John Easterbrooks as the new YRBWEP Workgroup WDFW representative and Perry Harvester as the new WDFW alternate.

Early Action Items Status *by Wendy Christensen, Reclamation, and Derek Sandison, Ecology*
Wendy Christensen, U.S. Department of the Interior, Bureau of Reclamation (Reclamation), reviewed the Yakima River Basin Integrated Water Resources Management Plan Early Action Items Funding Status Table. The table is largely the same as the version presented at the March 14, 2012, YRBWEP meeting; however, it has been updated to include results from the cost-risk analysis and revised funds for the Watershed Land Conservation – Land Acquisition item. (*For Workgroup meeting notes and information on topics discussed at the September meeting please see* http://www.usbr.gov/pn/programs/yrbwep/2011integratedplan/2012meetings/index.html).

Wendy said that Walt Larrick of Reclamation, Washington State Department of Ecology (Ecology), Kittitas Conservation District, and Kittitas Reclamation District (KRD) have been coordinating on a proposed conservation project that will enhance flows in Manastash Creek. Reclamation is preparing a draft report on Manastash Creek to detail Tributary Habitat Enhancements. Urban Eberhart said the project will beprecedent-setting for Manastash Creek. He added that the proposed project will make significant progress toward providing fish access to approximately 30 miles of Manastash Creek habitat through lateral piping projects and improve water supply for landowners located along the lateral.

The passive integrated transponder (PIT)-tag study for the Yakima River reach just below Roza dam is now complete. The draft report will be available later this fall. Cle Elum fish passage modeling is in progress. Discussions are ongoing with WDFW to identify additional potential land acquisition areas. A site visit looking a geological borings has been completed at the proposed Wymer and Bumping damsites and the Keechelus-to-Kachess conveyance route. HDR Engineering, Inc. (HDR) is now under contract to also look at a Keechelus-to-Kachess conveyance route that uses a tunnel to help avoid

surface impacts to wetlands downstream of Keechelus Dam and other forest habitat. HDR, with assistance from a subconsultant (Golder Associates), is also conducting a reconnaissance study on groundwater infiltration in Kittitas County.

Wendy shared photos of the physically scaled models of the Cle Elum fish passage multilevel intake structure and juvenile bypass conduit being constructed at the Reclamation Technical Service Center in Denver, Colorado, as well as the upstream passage model. As currently constructed, flow through the multilevel structure is too turbulent for juvenile passage, as demonstrated in a video shared at the meeting. The video showed a test performed on the multilevel structure (test performed at 200 cubic feet per second [cfs]). The Yakima Storage Dam Technical Workgroup (comprised of WDFW, National Oceanic and Atmospheric Administration [NOAA], U.S. Fish and Wildlife Service [USFWS], and Yakima Joint Board fisheries staff), will review the model and revise the design as needed for fish passage efficiency.

Workgroup Comment

- Bob Hall – What will the $700,000 budgeted for the Fish Passage at Cle Elum Lake Dam project be used for? *Upstream and downstream modeling as well as design data collection and final design.*

Governor Gregoire Briefing - August 2, 2012 *by Wendy Christensen, Reclamation, and Derek Sandison, Ecology*

Derek Sandison said that on August 2, 2012, Governor Gregoire met with members of the YRBWEP Workgroup at the Yakima Arboretum to discuss progress of the Integrated Plan. Governor Gregoire was extremely positive and shared words of encouragement. Ecology has been working with the Governor's staff on budget and policy legislation that will solidify the Integrated Plan with respect to projects and funding needs.

A video of the August 2, 2012 meeting was shared with the Workgroup. Governor Gregoire identified the following activities the State is pursuing: 1) and outline of legislation that will be introduced in January 2013 to establish the Integrated Plan as an ongoing state priority; and 2) seek a monetary commitment by including the Integrated Plan in the capital budget. Doing these things will send a solid message to Congress that the YRBWEP Workgroup and Washington State are united behind the Integrated Plan; that the Integrated Plan is a good investment. Governor Gregoire noted that, to date, the State has made a $480-million commitment to the Columbia River, and the Governor promised to fulfill that commitment. Governor Gregoire thanked the Workgroup members for their efforts.

Framework for Implementation Report Update

Principles and Guidelines – Four- Account Display *by Ernie Niemi, Natural Resource Economics, and Ann Root, ESA*

Ernie Niemi and Ann Root provided a presentation on the Four-Accounts Analysis of the Integrated Plan. The analysis is per the 1983 *Federal Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies* (Principles and Guidelines). The presentation included information on costs and benefits (National Economic Development [NED]); impacts of expenditures (Regional Economic Development [RED]); Environmental Quality (EQ); and Other Social Effects (OSE).

In the Four-Accounts Analysis, NED benefits are quantified under three categories: 1) fish-related benefits; 2) agriculture-related benefits; and 3) municipal/domestic benefits. Ernie explained how these benefits are quantified, and also discussed what NED benefits are not quantified. Several graphs were reviewed depicting NED benefits and costs under a 30-percent supply for proratable irrigation districts during drought conditions. The range of Integrated Plan costs were compared to a range of calculated benefits. Benefits included increases in salmon and steelhead populations, improved agricultural output during severe droughts, new water to support anticipated growth, and increased security for current municipal/domestic groundwater users above Parker Gage. The resulting programmatic-level benefit-cost ratios ranged from 1.4 to 3.2.

RED impacts were also reviewed, which are based on activity, not values. RED impacts include output, personal income, and jobs; resulting from construction expenditures, operation and maintenance (O&M) expenditures, and increased agricultural production during severe drought years. Implementation of the Integrated Plan would create benefits in RED impacts for each type of expenditure; both in the four-county study area (Yakima, Kittitas, Benton, and Franklin[1] counties), and statewide. The Integrated Plan would generate $20 to 690 million, and up to $790 million, between construction, O&M, and agricultural outputs, for the four-county study area, and Washington State, respectively. This includes creating approximately 10,100 jobs for agricultural production in the four-county study area. Ernie noted that RED impacts by type of expenditure are not readily comparable; and he added that in terms of agricultural production, the models assumed the existing crop pattern would not change. A discount rate of 4 percent was applied to RED impacts in accordance with U.S. Office of Management and Budget (OMB) Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs.

Ann presented the EQ and OSE analyses, and noted that the analysis is part of the Four-Account analysis and separate from the National Environmental Policy Act (NEPA) analysis. Methods for evaluation were reviewed, which were the same for both EQ and OSE. The EQ and OSE category rankings and weightings, and a comparative display of EQ and OSE with the Integrated Plan and with

[1] Franklin County, although it is located outside of the basin, was included in RED impacts because the county is economically integrated with Benton County.

the No Action Alternative were also discussed. The EQ and OSE categories were weighted on a scale ranging from +3 to -3, with 0 equaling no change from existing conditions. The analyses indicate the overall trend with the Integrated Plan is positive, while the overall trend with No Action is negative. Integrated Plan key benefits for EQ include +3 ratings for prorationing and municipal water resources, fish numbers and passage, and riparian vegetation. Other high ratings include instream flows, steelhead recovery, and water-based and land-based recreation. The key benefits for OSE include cultural subsistence resources, protection and enhancement of ecosystems and biodiversity, and improved water supply reliability (sustainability benefits).

Workgroup Comments (Primarily on EQ/OSE)

- Dave Fast – In the comparative displays, why are negative values indicated for "No Action"? Should those values be "0"? *The No Action Alternative is not simply "no action." The alternative includes a number of actions that could benefit water resources and fish. The negative values reflect analysis results that conditions in some categories would get worse over time*.
- Alex Conley – In fisheries analyses, bull trout was most difficult to analyze. How did you balance your bull trout analyses? *There were no additional analyses performed; instead, existing data were applied*.
- Michael Garrity – In the comparative display of EQ, how do you have a negative significance value for private property acquisition with the Integrated Plan? Why was there no change for designations? *The negative value associated with private property acquisition represents all the property that would be acquired under the Integrated Plan, including land for reservoirs, riparian enhancement, and for other projects such as the K-to-K pipeline, not just the properties acquired for watershed enhancement*.
- Bob Hall – This information is critical to the process, and two elements are missing: 1) bankers need to understand the cost-benefit analysis; and 2) it does not appear that the active environmental community performed a review or provided input on the EQ and OSE elements. Before we get to the policy level, we need to have this understanding. *For consistency, the EQ/OSE analyses included participation were by the same Reclamation staff that participated in the similar analyses for the Storage Study*.

Public Comment

- Chris Maykut – How can the score for old growth be '0' when 2,000 acres of old growth at Bumping Lake are being inundated? *Analyses considered the overall impacts of the Plan on old growth. Other property acquisitions would help offset impacts to Bumping. However, there appears to be an error in the table and it will be revisited. Also only 900+ acres would be inundated at Bumping Lake under the Integrated Plan, not 2,000*.
- Joel Freudenthal – How broad are the OSE benefits? The categories seem to be double counting agricultural elements. *We tried to avoid double counting. For example, instead of addressing*

irrigation only, the overall system functionality was addressed. However, minimal double counting may have occurred. What about impacts to social load; was this considered? *That was not analyzed*.

Steve Malloch – We tried to be really clear that the Teanaway acquisition was not mitigation for impacts at Bumping Lake. To say that Teanaway offsets Bumping leads into negative responses, and we will need an opportunity to contribute to this. There will be problems if this is final. *The statement about "offset" was incorrect. Additional mitigation will be required for specific project impacts as described in the EIS; and the EQ values are based on the overall balance of the plan.*Preliminary Cost Allocation Analysis *by Wendy Christensen, Reclamation*

- Wendy presented summary information on the preliminary programmatic-level cost allocation. The term, "cCost allocation," what constitutes "preliminary," and other key terms were defined. Key inputs were described, including primary purposes, value of benefits, and financial costs; many of which have ecological components. The step-by-step procedure on cost allocation includes: 1) establishing "justifiable expenditure," by purpose; 2) defining "specific costs," by purpose; 3) defining "joint costs;"; 4) allocating the joint costs by purpose; and 5) for each purpose, adding the allocated joint costs to the specific costs for each purpose. Preliminary costs allocated for each purpose of the Integrated Plan include $2,440 million for ecological restoration (69.3 percent), $729 million for agricultural irrigation (20.7 percent), and $351 million for municipal and domestic supply (10 percent).

Workgroup Comment

- Bob Hall – What does $3.5 billion represent? *That is the current value of the Integrated Plan. Currently, construction costs equal $3.2 to 5.4 billion*. How do these numbers compare to Black Rock? *They are not really comparable. Black Rock benefits did not have a positive benefit-cost ratio.. In order to do a cost allocation the benefits must equal or exceed the costs. Since the benefit-cost ratio of Black Rock was 0.17:1 there is no way to allocate costs. Therefore a cost allocation cannot be performed on Black Rock.* Bob suggested this will need to be explained in more detail.
- Alex Conley – Are joint costs allocated by essentially subsidizing other costs? *No. Joint costs are based on reduced costs (i.e., taking the lesser value).*

Public Comment

- Chuck Klarich – Were all of these impact studies performed with the assumption that 100 percent of all projects and benefits will be achieved? *The evaluation was conducted on the entire Integrated Plan*. Chuck's opinion was that those assumptions are incorrect.

Targeted Watershed Protections and Enhancements – Update *by Michael Garrity, American Rivers*
Michael Garrity said in January 2012, a report outlining designations was distributed that contained ambiguity on how the wilderness, wild and scenic, and national recreation designations would meet

concerns. Bill Ross is now facilitating discussions to develop recommendations on how to revise this part of the Integrated Plan to be more specific and address both the economic and environmental concerns that have been raised. Meetings are ongoing to develop recommendations to the Workgroup's Watershed Lands Subcommittee. The goal is to refine the plan as best as possible based on input received. A recommendation to the Watershed Lands Subcommittee will be ready by the end of the year.

Workgroup Comment

- Stuart Woolley – Has there been discussion on travel planning and motorized use? *Several people are engaged in those discussions. There may not be an explicit link between those processes; however, people will have an ability to inform the Watershed Lands Subcommittee*.

Implementation Subcommittee Update *by Derek Sandison, Ecology and Dan Silver, Consultant*
Dan Silver introduced the Implementation Subcommittee. This year, the subcommittee has convened at least once a month, working to shift energy from development of the Integrated Plan to implementation of the plan. The subcommittee is working simultaneously with state and federal funds to develop different scenarios for 5-year budgets. A constraining factor will be Olympia's ability to match funds requested from Congress. The goal is to have Integrated Plan funds set by fiscal (FY) 2015.

Recent Washington DC Visit *by Implementation Subcommittee members/alternates (Derek Sandison, Urban Eberhart, Phil Rigdon, Mike Leita, and Michael Garrity)*
The Implementation Subcommittee members characterized the mid-September Washington DC visit as productive and encouraging. There was a broad sense of support and awareness of the Integrated Plan and Workgroup efforts; and discussions were held with several agency and congressional staff. The subcommittee met with several federal entities, including staff at NOAA, U.S. Department of Commerce, Office of Representative Doc Hastings, U.S. House Committee on Natural Resources (Resources; both majority and minority staff), Office of Senator Patty Murray, OMB, U.S. Department of Agriculture Natural Resources and Conservation Service (USDA NRCS), U.S. Forest Service (USFS), Bureau of Indian Affairs (BIA), Reclamation, USFWS, Office of Representative Dave Reichert, and Senator Maria Cantwell's office. Key discussion points included the following:

- Based on discussions with NOAA, the U.S. Department of Commerce seemed interested in assisting with Integrated Plan implementation.
- Congressman Hastings' staff and Resources' staff offered advice on requesting funding from Congress. They also expressed interest in details for long-term implementation; Congressman Hastings staff wanted to better understand how storage in the Integrated Plan will be advanced along with other actions, and emphasized the importance of continuing to move storage forward along with other actions.

- Resources' staff expressed appreciation of the resolve that has come from the YRBWEP Workgroup, and said this encouraged them to engage in this plan.
- OMB staff was interested in further details on budget requests.
- USDA NRCS has programs that could fit into the Integrated Plan, and they suggested contacting the USDA NRCS State Conservationist to discuss ways to further cooperate. USDA NRCS expressed interest in supporting the Integrated Plan, and should be considered for a supplemental funding source.
- Water supply and values in the upper watersheds have not yet been quantified in the plan, and this should be addressed.
- Outreach to federal agencies at the regional levels needs to be a focus.
- Reclamation, BIA, and USFWS staff applauded the Integrated Plan for becoming a model for entities across the nation; they are working to establish a federal "interagency group" that can assist in coordinating implementation of the Integrated Plan.
- Senator Patty Murray's staff is interested in better understanding near-term actions and what funds will be requested.

Mike Leita expressed confidence that conservation projects will likely be funded; however, he noted that the largest component of the Integrated Plan is storage, and how that will move forward is still being worked out. Urban Eberhart added that a handout outlining proposed projects and goals for Manastash Creek was distributed at each meeting as an example of a good candidate for early implementation. Derek Sandison also added that regarding upcoming federal budgets, funds were not necessarily requested; rather, estimated costs were presented. Regarding regional outreach, Wendy said that Derek, Jerry Kelso, and she had briefed the Bureau of Land Management (BLM) on the Integrated Plan, and they also plan to have discussions with the NRCS regional office (State Conservationist).

Dan recognized the hours and effort the Implementation Subcommittee has devoted to this endeavor. He noted that an immediate challenge will be working with a new governor; and that there will more work at the State level to keep the momentum.

Education and Outreach Status *by Mike Schwisow, communications consultant*

Mike Schwisow introduced the website, www.yakimabasinplan.org, and reviewed available features and information that can be found at the site. A goal of the website is to target folks outside of the basin, and also targets three groups: 1) agriculture; 2) municipal; and 3) civic. The focus of targeting the agricultural groups is to access their policy process; as the Integrated Plan has progressed to the point of legislation and appropriations requests. The site is also aimed to target folks who have a presence in Olympia. A site user can request a presentation (by an Implementation Subcommittee member, or Mike); presentation formats are different depending on the audience. Mike asked Workgroup members to review the site and provide recommendations on site improvements.

Workgroup Comment

- Bob Hall – Is there a presentation schedule posted to the website? *A schedule will be posted on the website, including an indication if the meeting is open to the public, or closed.*
- Rick Dieker – Will there be a misconception of the plan when certain aspects of the plan change after it is already presented? *The plan is not static, and presentation of the plan will also evolve. Also, guidance from the Workgroup will be sought to field questions.*

Public Comment:

- Chris Maykut – Chris shared his experiences at Bumping Lake and provided Friends of Bumping Lake comments opposing the proposed Bumping Lake expansion (see handout attached to meeting notes).

Workgroup Members in Attendance

Dale Bambrick, National Marine Fisheries Service
Dave Brown, City of Yakima
Alex Conley, Yakima Basin Fish & Wildlife Recovery Board
Rick Dieker, Yakima-Tieton Irrigation District
John Easterbrooks, Washington Department of Fish and Wildlife
Urban Eberhart, Kittitas Reclamation District
David Fast, Yakama Nation
Michael Garrity, American Rivers
Bob Hall, Yakima Basin Storage Alliance
Paul Jewell, Kittitas County
Mike Leita, Yakima County
Scott Revell, Kennewick Irrigation District
Phil Rigdon, Yakama Nation
Derek Sandison, Washington State Department of Ecology
Jim Trull, Sunnyside Valley Irrigation District
Ron VanGundy, Roza Irrigation District
Dawn Wiedmeier, Bureau of Reclamation
Stuart Woolley, U.S. Forest Service

Other Attendees

David Bowen, American Forest Land Co.
David Child, Yakima Basin Joint Board
Wendy Christensen, Bureau of Reclamation
Stuart Crane, Yakama Nation
James Davenport, JH Davenport, LLC
Warren Dickman, Yakima Basin Storage Alliance

Bill Ferry, Bureau of Reclamation
Ben Floyd, Anchor QEA
Joel Freudenthal, Yakima County
Don Gatchalian, Yakima County
Kristi Geris, Anchor QEA
Perry Harvester, Washington Department of Fish and Wildlife
Lynn Holt, Bureau of Reclamation
Joel Hubble, Bureau of Reclamation
Eleanor Hungate
Jerry Kelso, Bureau of Reclamation
Chuck Klarich, Yakima Basin Storage Alliance
Paul La Riviere, Washington State Department of Fish and Wildlife
Walt Larrick, Bureau of Reclamation
Barb Lisk, Office of Representative Doc Hastings
Chris Lynch, Bureau of Reclamation
Steve Malloch, National Wildlife Federation
Chris Maykut, Friends of Bumping Lake
Keith McGowan, Bureau of Reclamation
Jim Milton, Yakima-Tieton Irrigation District
Bob Montgomery, Anchor QEA
Bryan Myre, Yakama Reservation Irrigation District
Tom Myrum, Washington State Water Resources Association
Ernie Niemi, Natural Resource Economics
David Ortman, Sierra Club
Elaine Packard, Sierra Club
Kelly Reed, Anderson Perry
Davis Reeploeg, Office of Senator Maria Cantwell
Tom Ring, Yakama Nation
Ann Root, ESA
Mike Schwisow, Schwisow & Associates
Teresa Scott, Washington State Department of Fish and Wildlife
Dan Silver, Independent Consultant
Elaine Smith, League of Women Voters
Rob Swedo, Bonneville Power Administration
Jeff Tayer, Consultant
Tom Tebb, Washington State Department of Ecology
Rebecca Thornton, Office of Senator Patty Murray
Bob Tuck, Yakima Basin Storage Alliance
Darrell Wallace, Back Country Horseman of Washington

Next Workgroup Meeting

The next meeting will be held December 12, 2012, at 9:30 AM at the Yakima Arboretum. A meeting notice and agenda will be distributed in advance of the meeting.

Where to Find Workgroup Information

Meeting materials, notes, and presentations from the Workgroup meetings will be posted on the project website (http://www.usbr.gov/pn/programs/yrbwep/index.html). A bibliography of information sources, many of which are available online, is also posted on the website. If anyone needs help finding an information source, see contact information listed at the top of page 1 or contact Ben Floyd at Anchor QEA, Richland office, (509) 392-4548 x102, or bfloyd@anchorqea.com.

Yakima River Basin Integrated Water Resource Management Plan

Status / Update
September 26, 2012

Early Action Items

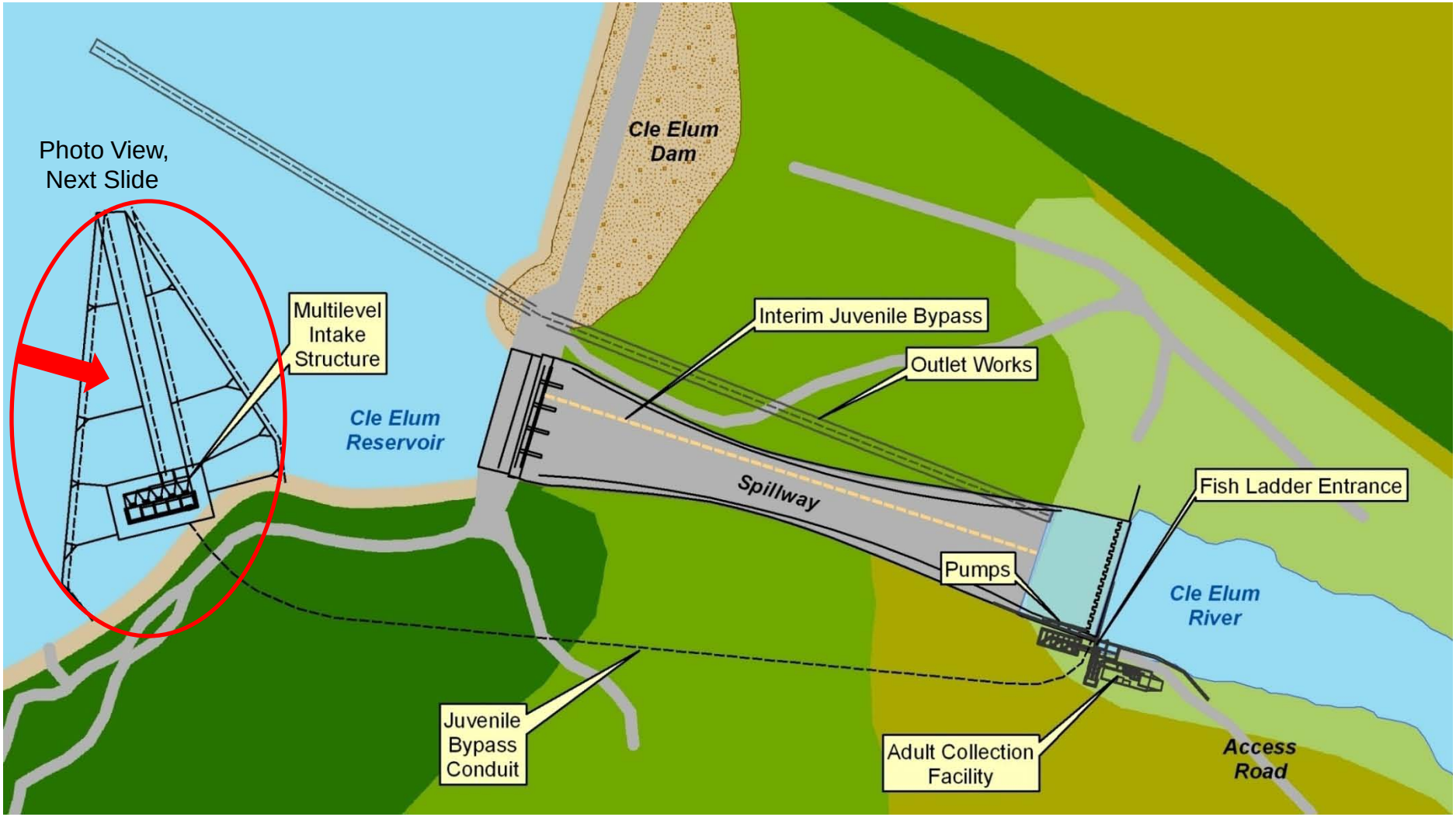
Prepared for Discussion at the September 26, 2012, Workgroup Meeting

Yakima River Basin Integrated Water Resource Management Plan Early Action Items Funding Status			
Integrated Plan Actions/Projects	**Total Estimated Cost (million $)***	**Early Action Items (1-2 years) ($)**	**Early Action Funding Status ($)**
Tributary Habitat Enhancement Program	$192.2	$2,600,000	$225,000[1]
Fish Passage at Clear Lake Dam	$3.2	$400,000	
Subordinate Power Diversions, Roza & Chandler	TBD	$500,000	$225,000[2]
Fish Passage at Cle Elum Lake Dam	$87.0	$2,600,000	$700,000[3]
Cle Elum Dam Pool Raise	$18.1	$2,000,000	
Watershed Land Conservation - Land Acquisition	100.0	$2,000,000	$700,000[1]
Wymer Dam & Reservoir	$1,138.0	$3,000,000	
Bumping Lake Enlargement	$571.0	$1,200,000	$1,250,000[1]
Pipeline from Lake Keechelus to Lake Kachess	$197.0	$3,500,000	$2,500,000
Lake Kachess Inactive Storage	$279.0	$1,500,000	$450,000[3]
Groundwater Infiltration (Pilot project)	$4.7	$1,600,000	$200,000[1]
TOTAL		$20,900,000	$6,050,000[4]

*Price level – March 2012. Updated from March 14, 2012, handout

[1] Washington State-funded
[2] Funded by Tribe, Reclamation, USGS, and irrigation districts
[3] Reclamation-funded
[4] This total does not include the additional State contribution to the Integrated Plan Programmatic EIS and Framework for Implementation document of $1.88 million.

Cle Elum Fish Passage Facility
Preferred Alternative

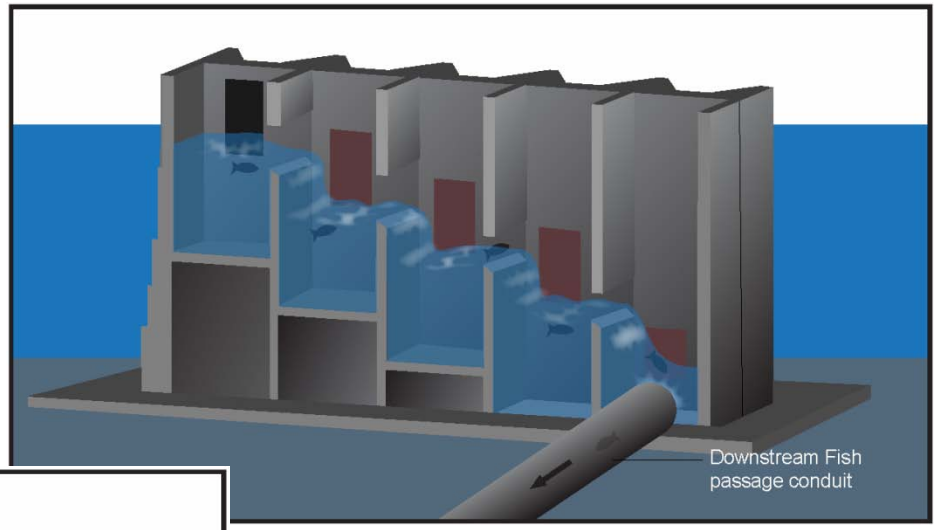


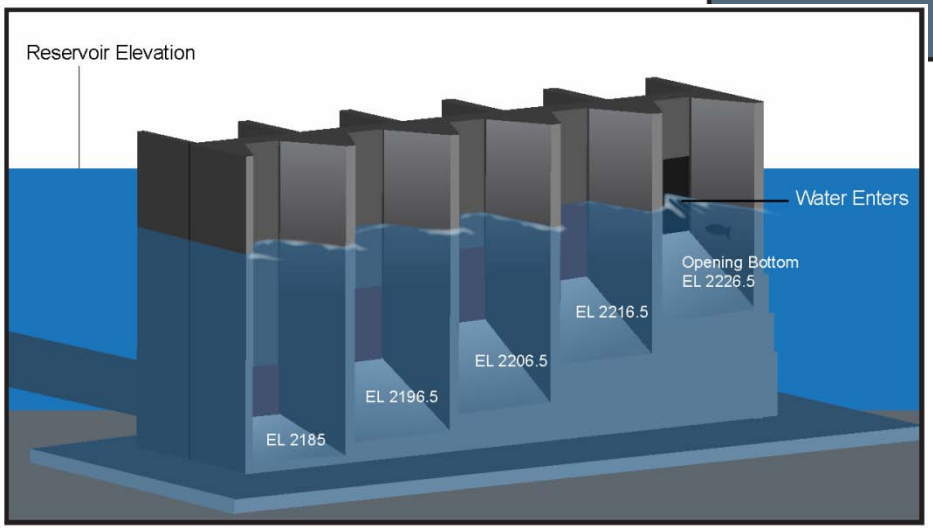
Cle Elum Fish Passage Facility
Upstream Passage Model

Physical Hydraulic Model at Denver TSC, August 28, 2012

Cle Elum Fish Passage Facility
Multilevel Intake Structure

Interior View





Front Elevation

Cle Elum Fish Passage Facility
Multilevel Intake Structure

Physical Hydraulic Model at Denver TSC, June 18, 2012

Four Accounts Analysis of the Integrated Plan

YRBWEP Work Group Meeting

September 26, 2012

Four-Account Analysis

- 1983 *Principles and Guidelines* establish standards and procedures for use by federal agencies in evaluating alternative plans for water and related land resources

- Created Four-Account Analysis to evaluate projects with goal that projects contribute to national economic development consistent with protecting the environment

Four-Account Analysis

- **National Economic Development (NED)**

  Costs and benefits (value of national goods and services)

- **Regional Economic Development (RED)**

  Impacts of expenditures (jobs, incomes, output)

- **Environmental Quality (EQ)**

  Mechanism for displaying information relative to effects of proposed alternatives on resources significant to decision-making

- **Other Social Effects (OSE)**

  Repository for alternative effects not reflected in the other three accounts

1. National Economic Development (NED)

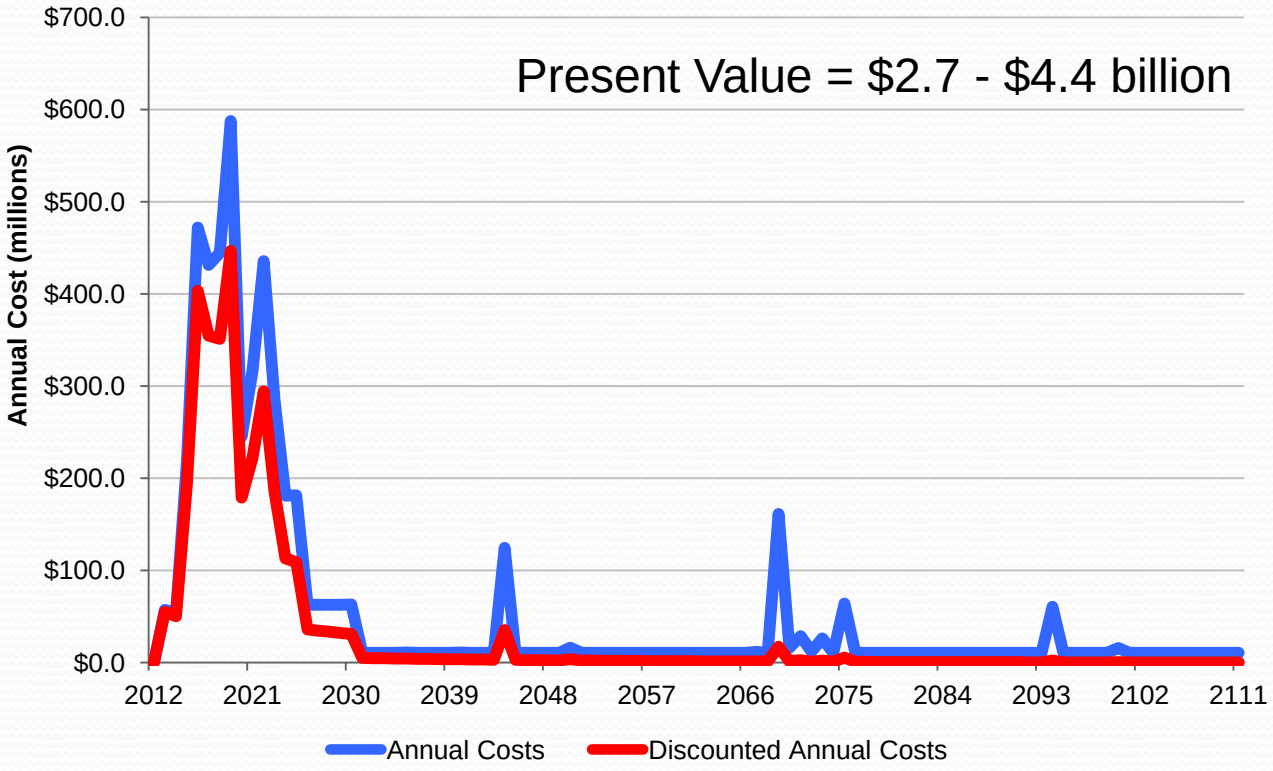
NED Benefits Quantified

- **Fish-Related Benefits**
  - Increases in salmon and steelhead populations
- **Agriculture-Related Benefits**
  - Improved agricultural output during severe droughts
- **Municipal/Domestic Benefits**
  - New water to support anticipated growth
  - Increased security for current municipal/domestic groundwater users above Parker Gage

NED Benefits Not Quantified

- **Cultural/spiritual values**
- **Species other than salmon/steelhead**
- **Agricultural output during less severe droughts**
- **Net increase in recreational opportunities**
- **Improved resiliency and adaptability of the water system**
- **Impacts on water supply and quality with anticipated increases in drought frequency or severity resulting from climate change**

NED Costs

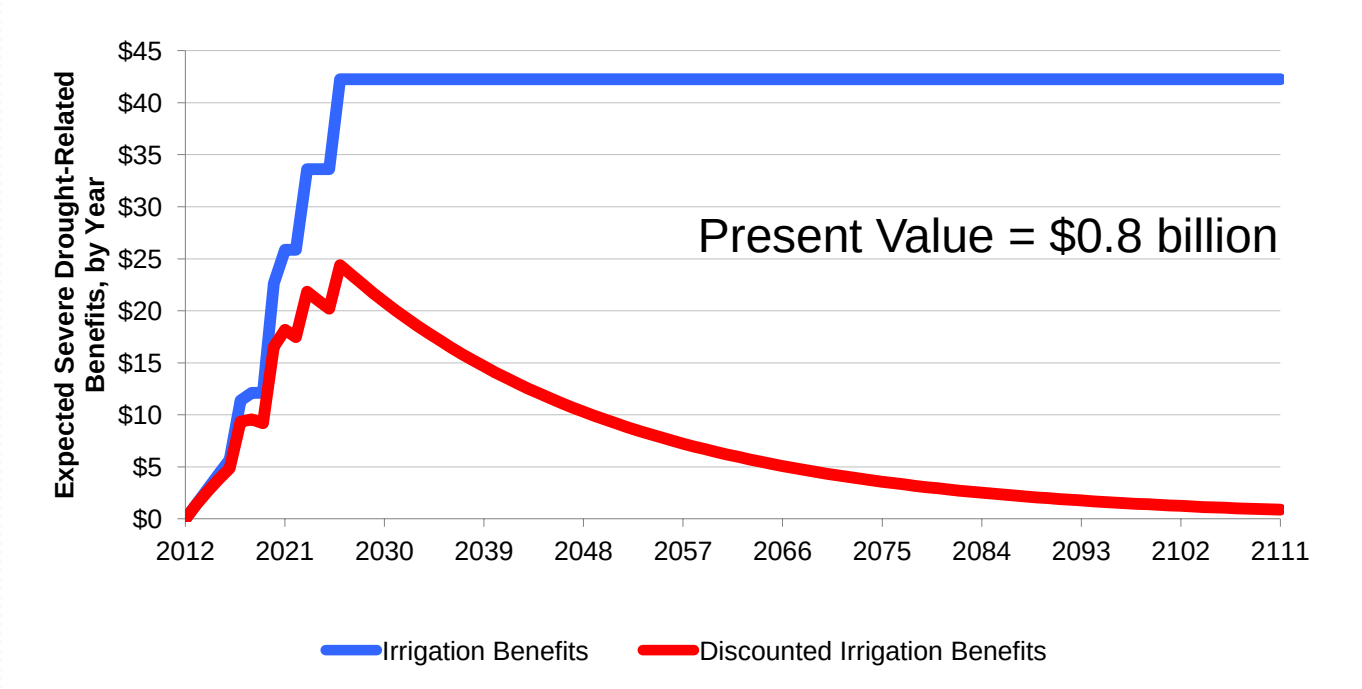

Present Value = $2.7 - $4.4 billion
Annual Cost (millions)
$700.0
$600.0
$500.0
$400.0
$300.0
$200.0
$100.0
$0.0
2012
2021
2030
2039
2048
2057
2066
2075
2084
2093
2102
2111
Annual Costs
Discounted Annual Costs

NED Fish-Related Benefits

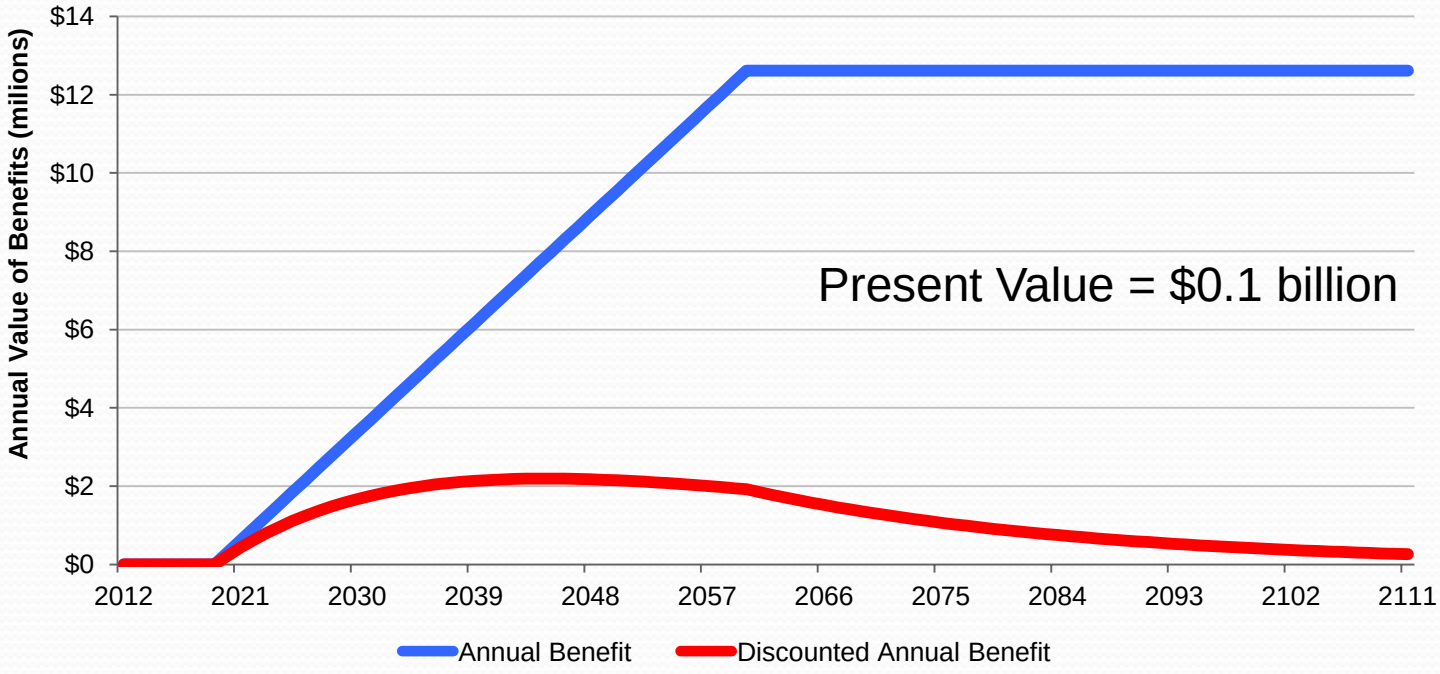
Region	Households (millions)	Total Present Value (billions)
WA only	2.66 - 3.23	$3.1 - $4.6
WA and OR	4.21 - 5.20	$5.0 - $7.4

(Quantifiable use-value = $0.1 - $0.3 billion of the total present value)

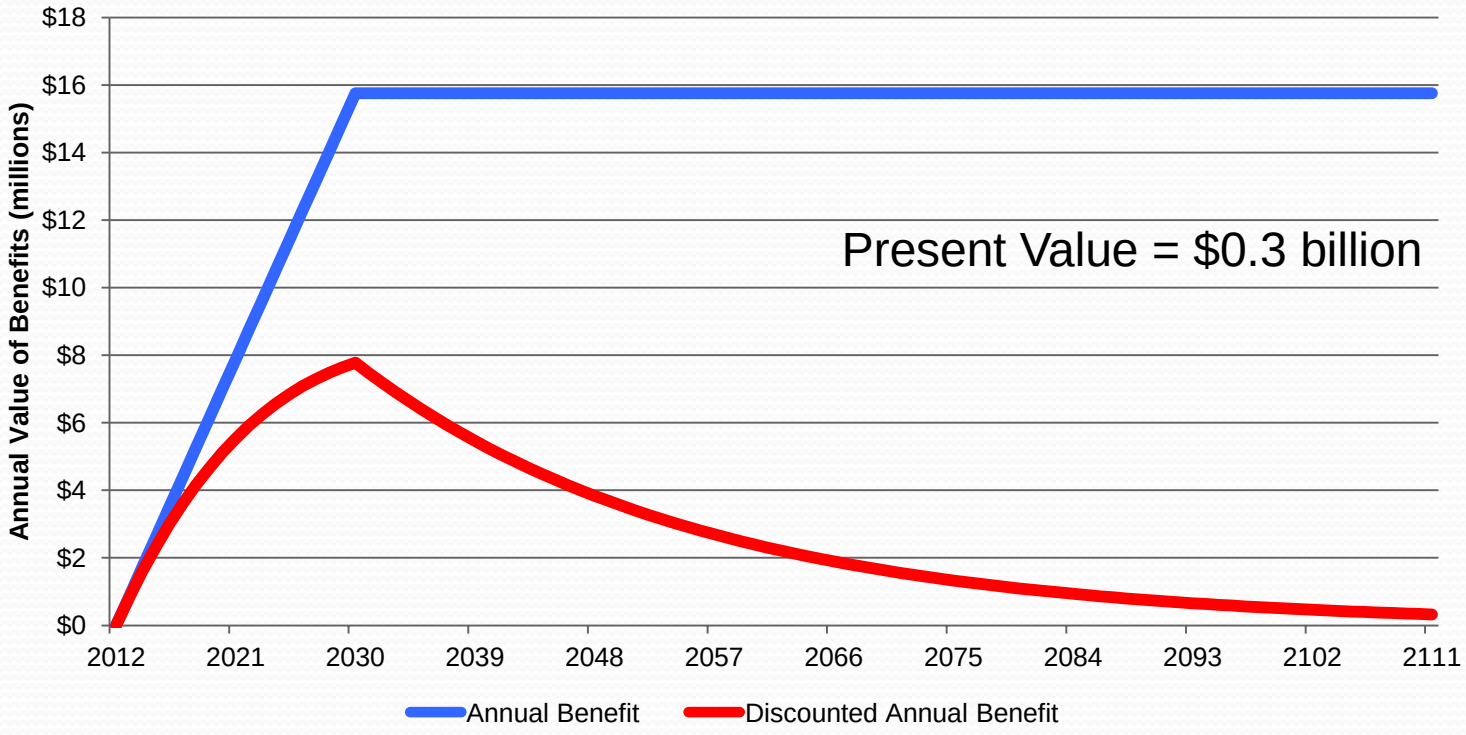
NED Irrigation-Related Benefits



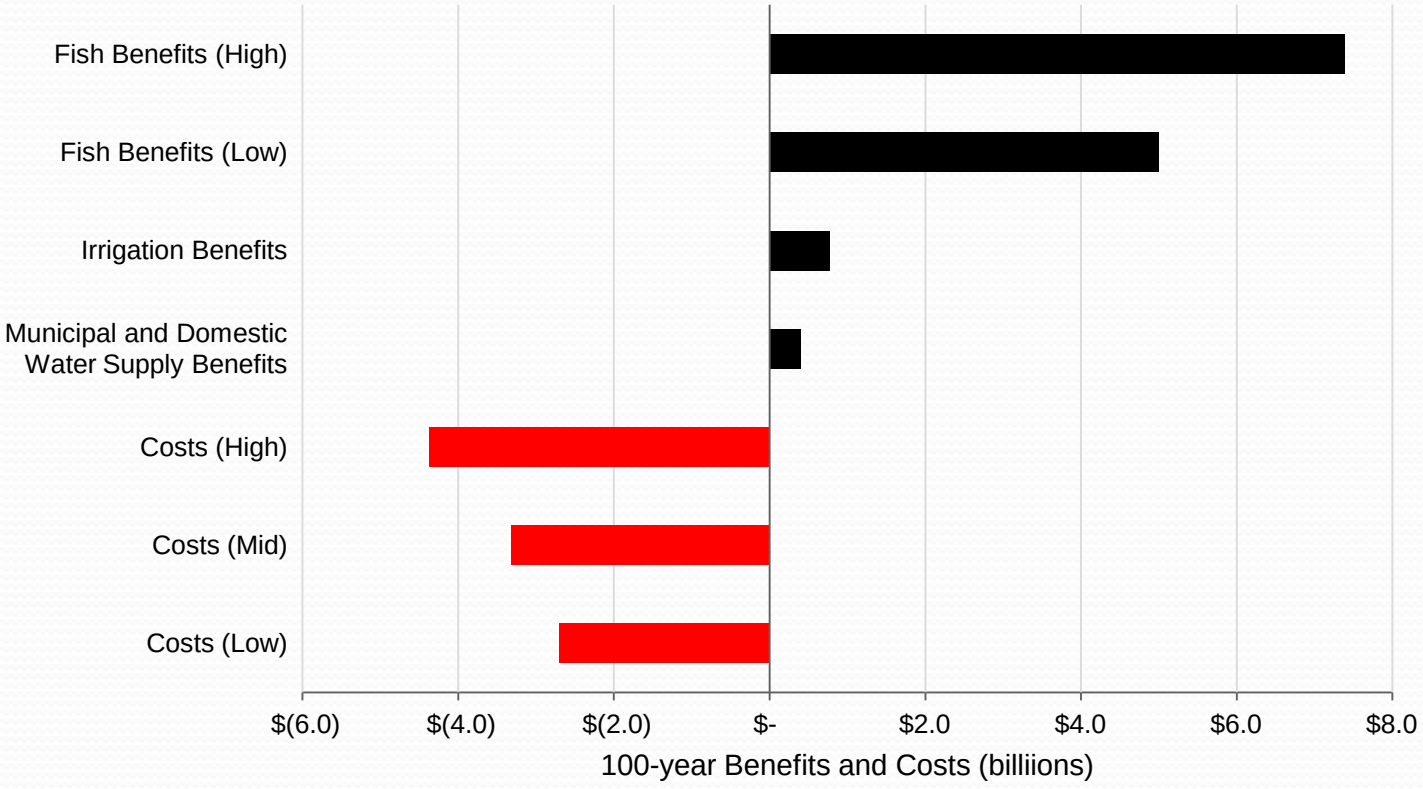
NED Municipal/Domestic Supply Benefits



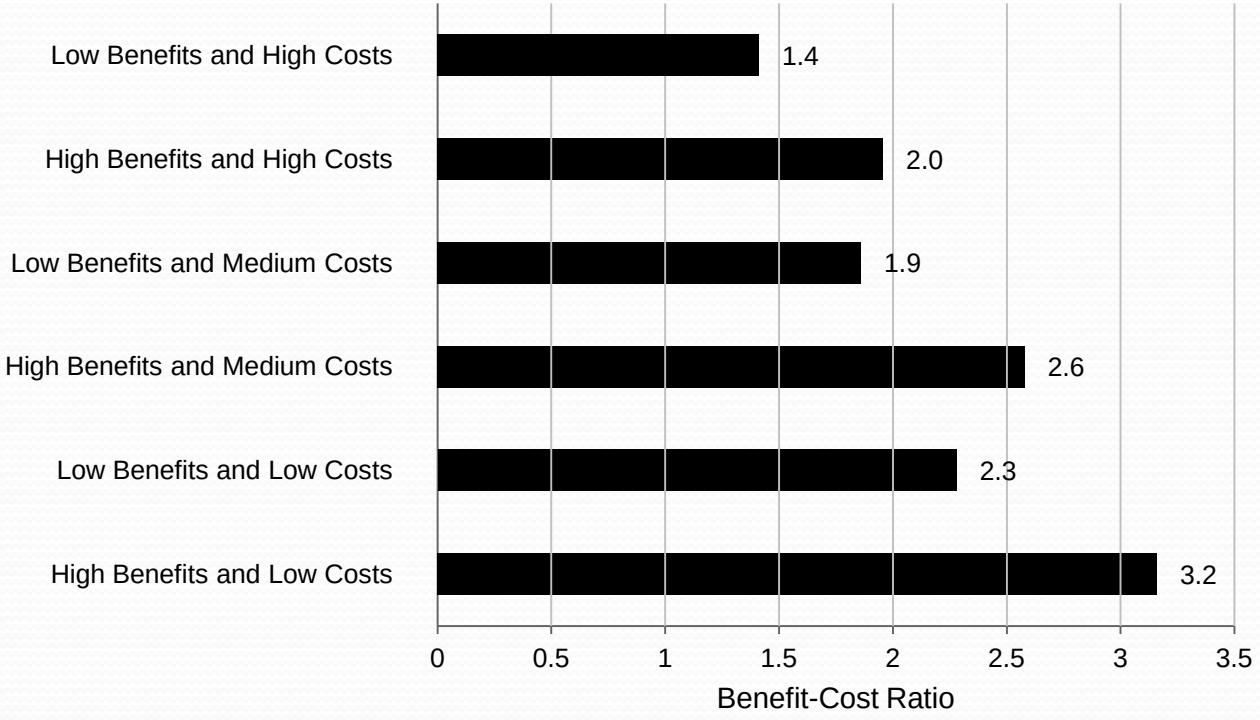
NED Municipal-Domestic Security Benefits



NED Benefits and Costs



NED Benefit-Cost Ratios



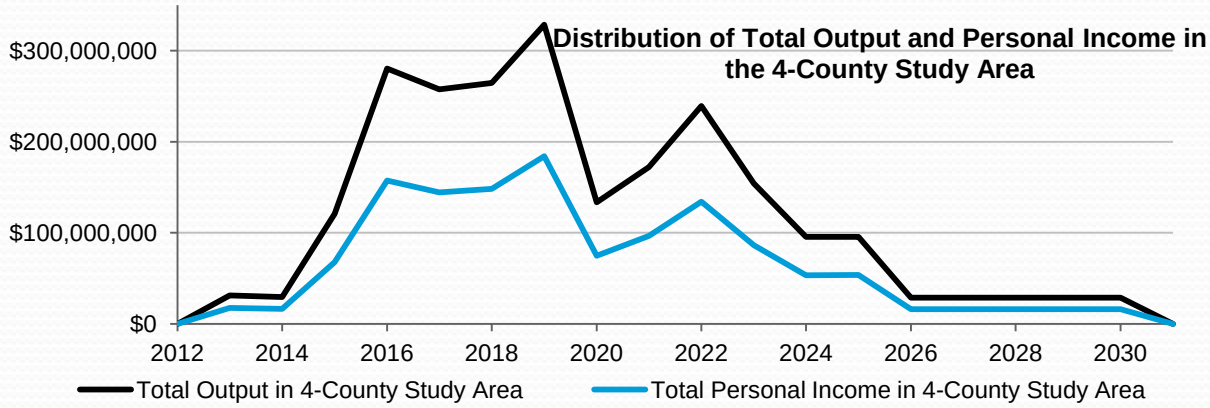
2. Regional Economic Development (RED)

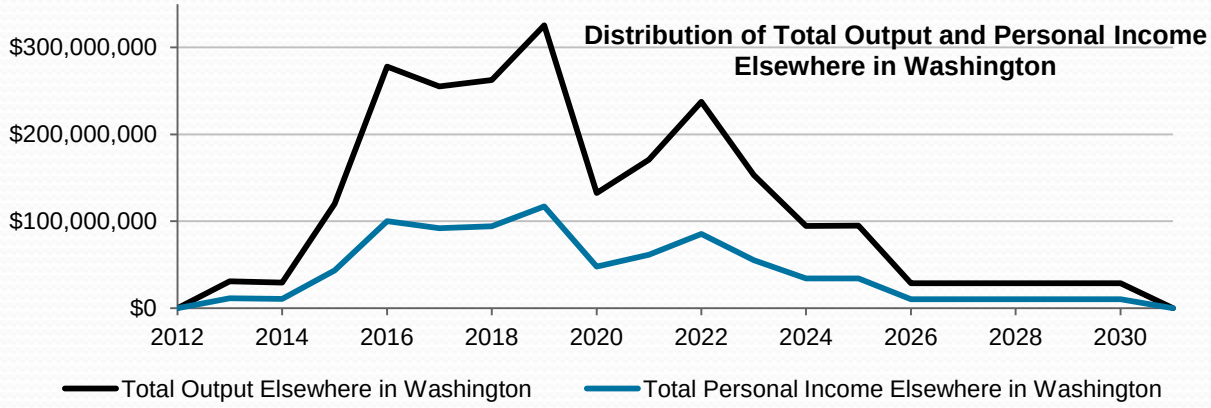
RED Impacts

- **Types of Impacts:**
  - Output (2012 dollars)
  - Personal income (2012 dollars)
  - Jobs (job-years)

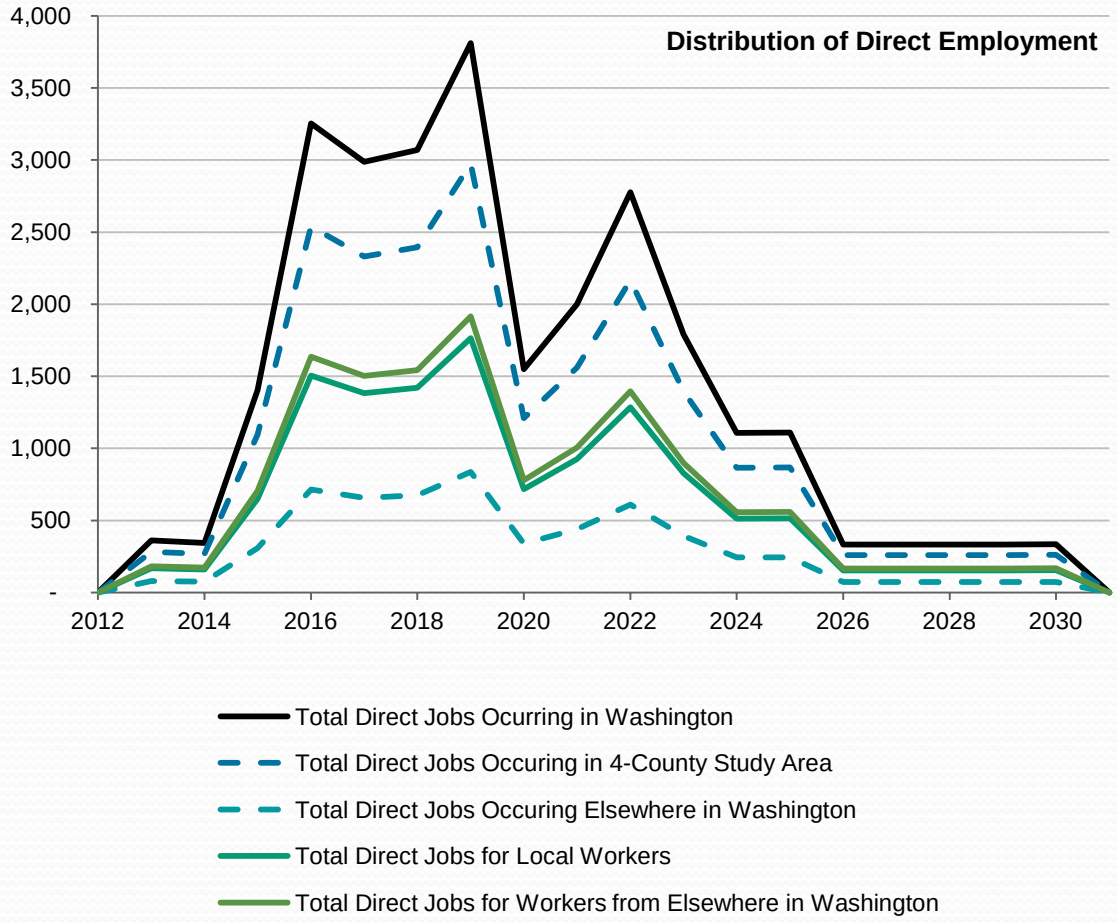
- **Resulting from:**
  - Construction expenditures
  - O&M expenditures
  - Increased agricultural production during severe drought years

Construction-Related Output and Personal Income





Construction-Related Jobs



RED Impacts

	4-County Study Area		Washington	
Type of Expenditure	**Total Impacts**	**Total Impacts as a Percentage of Overall Economy**	**Total Impacts**	**Total Impacts as a Percentage of Overall Economy**
Construction (2013-2030 average)				
Output	$130,000,000	0.4%	$260,000,000	< 0.1%
Personal Income	$73,000,000	0.7%	$120,000,000	< 0.1%
Jobs	1,500	0.6%	2,300	< 0.1%
O&M (maximum annual)				
Output	$20,000,000	< 0.1%	$20,900,000	< 0.1%
Personal Income	$7,000,000	< 0.1%	$7,200,000	< 0.1%
Jobs	110	< 0.1%	120	< 0.1%
Agricultural Production (severe drought year only)				
Output	$690,000,000	2.1%	$790,000,000	0.1%
Personal Income	$185,000,000	1.7%	$208,000,000	0.1%
Jobs	10,100	3.9%	10,800	0.3%

Questions/Discussion on NED and RED

3. Environmental Quality (EQ)
4. Other Social Effects (OSE)

Environmental Quality and Other Social Effects

- Separate from NEPA analysis
  - Part of the Four-Account Analysis
- Environmental Quality (EQ)—Mechanism for displaying information relative to the effects of proposed alternatives on "significant" resources
  - Resources likely to have bearing on decision-making
- Other Social Effects (OSE)—Repository for alternative effects that are not reflected in the other three accounts

Methods for Evaluations

- Workshop to evaluate EQ and OSE
  - Reclamation, Ecology and senior consultants
  - Expertise in environmental analysis, engineering, Yakima Project operations
  - Group consensus decisions
  - Same process used for Storage Study
- Process:
  - Identified resource categories
    - How did they meet Purpose and Need
    - What would be most affected
  - Prioritized and weighted

EQ Categories and Rankings

- Categories:
  - Highest priority:
    - Most affect Purpose and Need
      - Water resources, fish, and threatened and endangered species
  - Secondary priority:
    - Most likely to be affected by Integrated Plan
      - Vegetation and wildlife, hydropower, land use, recreation
- Subcategories and weighting

EQ Categories and Weighting

Category	Weight	Sub-categories	Weight	Final Weight
Water Resources	0.2	Prorationing	0.7	0.14
		Municipal	0.3	0.06
Fish	0.2	Fish Numbers	0.25	0.05
		Flows	0.5	0.1
		Fish Passage	0.25	0.05
Threatened and Endangered Species	0.2	Spotted Owl	0.3	0.06
		Steelhead	0.3	0.06
		Bull Trout	0.3	0.06
		Greater Sage-Grouse	0.1	0.02
Vegetation and Wildlife Habitat	0.1	Shrub Steppe	0.333	0.033
		Old Growth Forest	0.333	0.033
		Riparian	0.333	0.033
Hydropower	0.1	Overall Impacts	1	0.1
Land Use	0.1	Designations	0.5	0.05
		Private Property Acquisition	0.5	0.05
Recreation	0.1	Water-Based	0.2	0.02
		Land-Based	0.5	0.05
		Public Accees	0.3	0.03
TOTALS	1			1

OSE Categories and Rating

- Categories
  - Cultural resources—broader than just physical environment
  - Environmental stewardship benefits
  - Sustainability benefits
  - Equal priority
- Subcategories and weighting

OSE Categories and Rankings

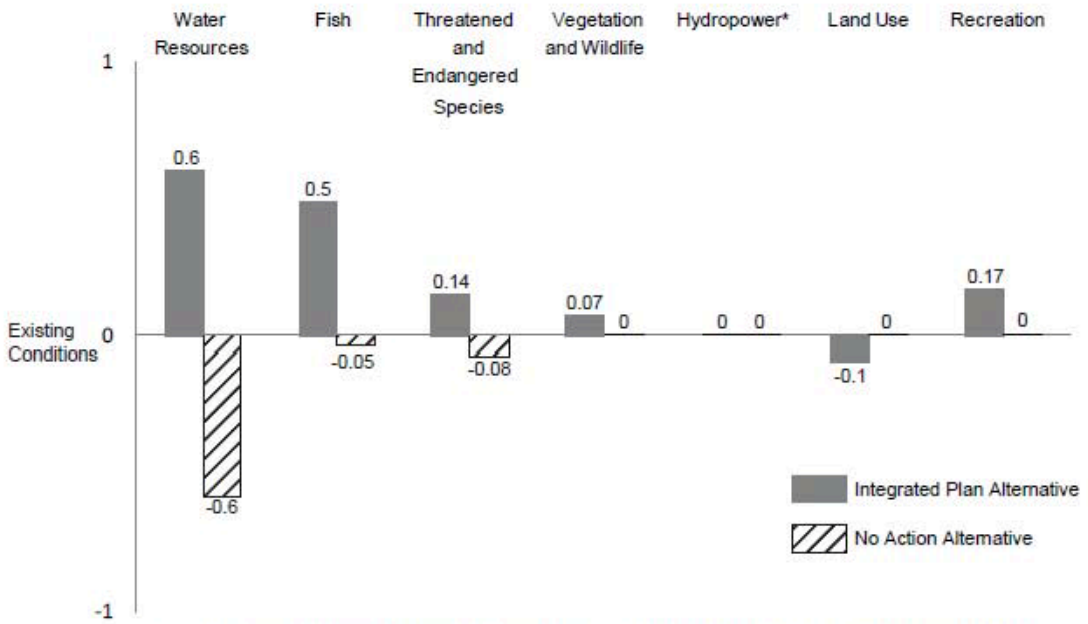
Category	Weight	Sub-categories	Weight	Final Weight
Cultural	0.33	Historic Properties	0.33	0.11
		Cultural and Archaeological Resources	0.33	0.11
		Subsistence Resources	0.33	0.11
				0
Environmental Stewardship Benefits	0.33	Protection and Enhancement of Ecosystems and Biodiversity	1	0.33
Sustainability Benefits	0.33	Improve Water Supply Reliability	0.5	0.17
		Overall System Resilience to Climate Change	0.5	0.17
				0
TOTALS	1			1

EQ and OSE Display

- Rated impacts
- Comparison between Integrated Plan and No Action Alternative
  - Remember No Action includes ongoing projects
- Scale ranging from +3 to -3, 0=no impact

Comparative Display of EQ

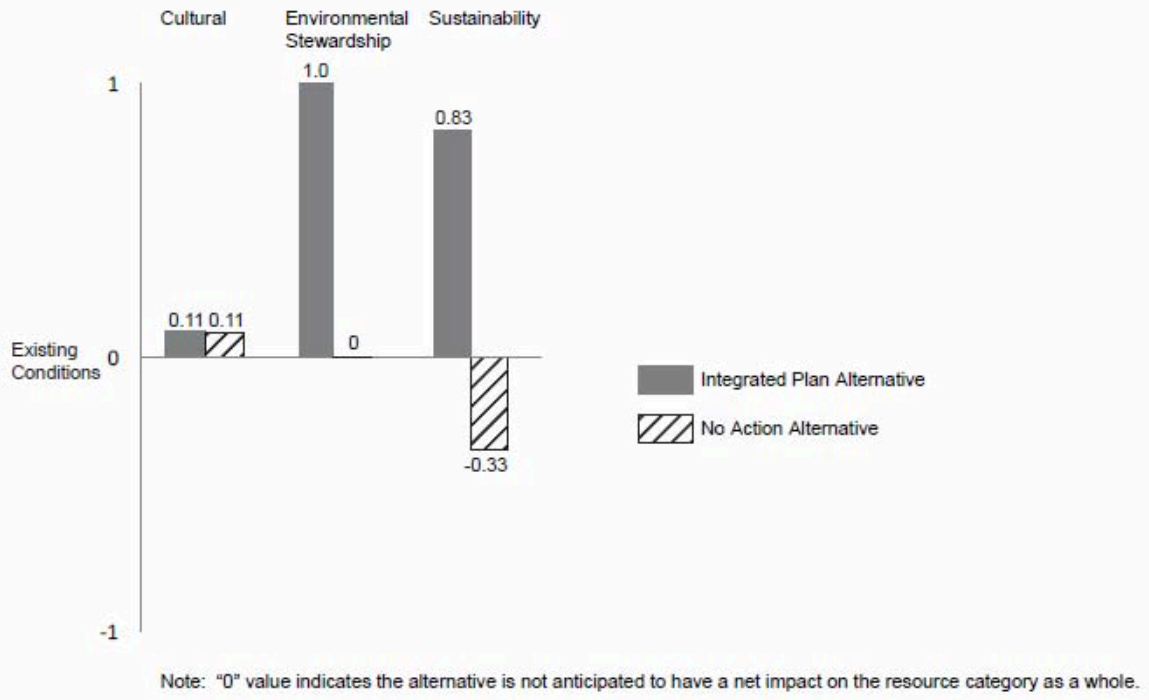
COMPARATIVE DISPLAY OF ALTERNATIVES						
EQ RESOURCE CATEGORY			**No Action Alternative**		**Integrated Plan**	
		Weight	**Significance**	**Score**	**Significance**	**Score**
Water Resources	Prorationing	0.14	-3	-0.42	3	0.42
	Municipal	0.06	-3	-0.18	3	0.18
	Subtotal			**-0.6**		**0.6**
Fish	Fish Numbers	0.05	1	0.05	3	0.15
	Instream Flows	0.1	-1	-0.1	2	0.2
	Fish Passage	0.05	0	0	3	0.15
	Subtotal			**-0.05**		**0.5**
Threatened and Endangered Species	Spotted Owl	0.06	-1	-0.06	-1	-0.06
	Steelhead	0.06	0	0	2	0.12
	Bull Trout	0.06	0	0	1	0.06
	Greater Sage-Grouse	0.02	-1	-0.02	1	0.02
	Subtotal			**-0.08**		**0.14**
Vegetation and Wildlife Habitat	Shrub Steppe	0.033	-1	-0.03	1	0.03
	Old Growth Forest	0.033	0	0.00	-2	0
	Riparian	0.033	1	0.03	3	0.10
	Subtotal			**0.00**		**0.07**
Hydropower	Overall Impacts	0.1	0	0	0	0
Land Use	Designations of wilderness, wild and scenic rivers, or national recreation areas	0.05	0	0	0	0
	Private Property Acquisition	0.05	0	0	-2	-0.1
	Subtotal			**0**		**-0.1**
Recreation	Water-Based	0.02	0	0	2	0.04
	Land-Based	0.05	0	0	2	0.1
	Public Access	0.03	0	0	1	0.03
	Subtotal			**0**		**0.17**
Total		1		**-0.73**		**1.38**



*No changes are anticipated because subordination would not take place until alternative power sources are found to mitigate subordination.

Note: "0" value indicates the alternative is not anticipated to have a net impact on the resource category as a whole.

OSE RESOURCE CATEGORY		Weight	No Action Alternative		Integrated Plan	
			Significance	Score	Significance	Score
Cultural	Historic Properties	0.11	0	0.00	-1	-0.11
	Cultural and Archaeological Resources	0.11	0	0.00	-1	-0.11
	Subsistence Resources	0.11	1	0.11	3	0.33
	Subtotal			**0.11**		**0.11**
Environmental Stewardship Benefits	Protection and Enhancement of Ecosystems and Biodiversity	0.33	0	0	3	1
				0		**1**
Sustainability Benefits	Improve Water Supply Reliability	0.17	-2	-0.333	3	0.50
	Overall System Resilience to Climate Change	0.17	0	0.00	2	0.33
	Subtotal			**-0.33**		**0.83**
Total		1		**-0.22**		**1.94**



Note: "0" value indicates the alternative is not anticipated to have a net impact on the resource category as a whole.

Questions/Discussion on EQ and OSE

Integrated Water Resource Management Plan

Preliminary Cost Allocation

YRBWEP Work Group Meeting

September 26, 2012

What is Cost Allocation?

- Multi-purpose projects achieve cost savings compared with single-purpose projects
- Cost savings can be shared across the various purposes
- Cost allocation determines how costs (and savings) can be shared equitably

Why is it “Preliminary”?

- Integrated Plan will be considered for funding by State and federal governments
- Projects, designs and sequencing may change as funds are appropriated and projects are implemented
- Cost allocation to be updated as changes occur
- Final repayment obligations will be established based on final projects as constructed, cost-share arrangements and Reclamation law

Key Inputs

- **Primary Purposes**
  - Ecological Restoration
  - Agricultural Irrigation
  - Municipal and Domestic Water Supply
- **Value of Benefits** (from NED Account, Present Value)
  - Ecological Restoration: $6.2 billion (midpoint of range)
  - Agricultural Restoration: $0.8 billion
  - Municipal and Domestic: $0.4 billion
- **Financial Costs**
  - Construction, OM&R, Interest During Construction

Step-by-Step Procedure

1. Establish "Justifiable Expenditure," by Purpose
2. Define "Specific Costs," by Purpose
3. Define "Joint Costs"
4. Allocate the Joint Costs by Purpose
5. For each Purpose, Add the Allocated Joint Costs to the Specific Costs

The result is an allocation to each purpose. The allocations sum to the total project cost.

Establish "Justifiable Expenditure" by Purpose

- Define a Single-Purpose Alternative (SPA)* for Each Purpose
- Estimate Cost of Each SPA
- Take the lesser of:
  - Benefit for a given Purpose
  - Cost of SPA for the same Purpose
- This is the "Justifiable Expenditure" for Each Purpose

*SPA's are not proposed for construction: they are defined solely to support the cost allocation procedure.

Define "Specific Costs"

- Costs of Projects or Features needed for only one purpose, not two or more purposes
- These are allocated directly, by assigning them solely to the appropriate purpose

Fish Passage Costs	
Kachess Inactive Storage Costs	Assign to Irrigated Agriculture
Municipal Conservation Costs	Assign to Municipal/Domestic Supply

Define “Joint Costs”

Total Project Cost (all purposes combined) - Specific Costs (from all 3 Purposes) = Remaining Joint Costs (all purposes combined)

Remaining Joint Costs need to be allocated by Purpose.

The percentages from the next slide are used to allocate them

Allocate the Joint Costs

Joint costs are allocated based on a percentage, calculated as:

(RJE by purpose) / (total RJE)

Add Specific Costs and Joint Costs, by Purpose

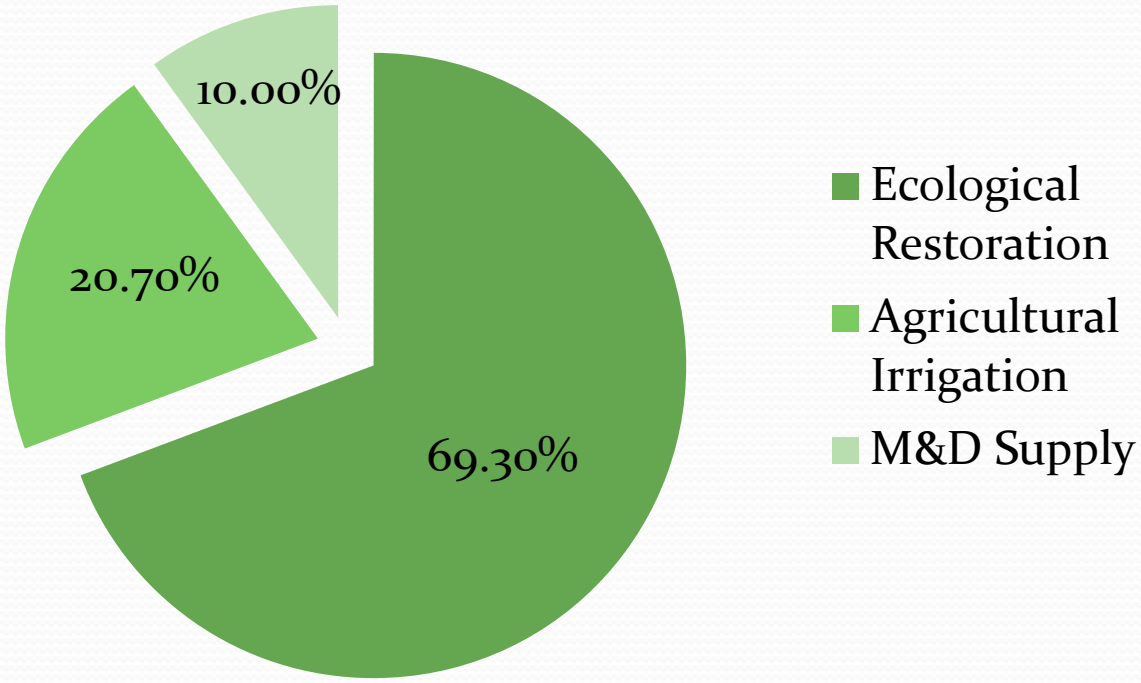
Ecological Restoration	Agricultural Irrigation	Municipal & Domestic Supply
Specific Costs Assigned	Specific Costs Assigned	Specific Costs Assigned
+ Joint Costs Allocated	+ Joint Costs Allocated	+ Joint Costs Allocated
= Cost Allocated to this Purpose	**= Cost Allocated to this Purpose**	**= Cost Allocated to this Purpose**

Preliminary Cost Allocation for the Integrated Plan

	Ecological Restoration	Agricultural Irrigation	Municipal & Domestic Supply
Specific Costs:	$ 920 M	$ 197 M	16 M
+ Joint Cost:	+ 1,520 M	+ 532 M	335 M
= Cost Allocated to Each Purpose	**= 2,440 M**	**= 729 M**	**= 351 M**

- Total cost is $3,520 M ($3.5 billion)
- This includes construction, IDC and OM&R.
- Results expressed as present value (discounted), in 2012 dollars.

Preliminary Cost Allocation in Percentages



Questions/Discussion

For Complete Analysis, see:

Technical Memorandum: *Preliminary Cost Allocation for the Proposed Integrated Water Resource Management Plan* (August 2012)

Attention: Derek Sandison
Director, Office of Columbia River
Department of Ecology
15 W. Yakima Ave, Suite 200
Yakima, WA 98902-345
dsan461@ecy.wa.gov

Attention: Candace McKinley
Bureau of Reclamation, Columbia-Cascades Area Office
Environmental Program Manager
1917 Marsh Road
Yakima, WA 98901
yrbwep@usbr.gov

CC: David Lester, Yakima Herald
Joanna Markell, Ellensburg Daily Record
Courtney Flatt, NWPR

COMMENTS SUBMITTED TO YAKIMA WORKGROUP – September 26th, 2012

RE: Proposed New Bumping Lake Dam

It was a wonderful summer at Bumping Lake! I personally spent over 25 wonderful nights in the cabin built by my grandfather and great-grandfather. My children – Gus,3 and Raina, 6 – really blossomed into nature lovers this year, not asking once to go home or return to some place with television. Here are some highlights from the summer at Bumping:

- My mother, Naydene, spent her 75th summer there and spent even more time then myself at the lake. Nearly every morning after breakfast would find her donning her Friends of Bumping Lake shirt, loading flyers into a waterproof bag, and paddling across the lake to the campgrounds. She typically spent 2 hours going from site to site, handing out fliers and talking to people about the plans YBIWMP has for the lake they were recreating on. Their reactions ranged from shock to anger to, in the case of one small boy, tears. 90% people she spoke with had heard nothing of this plan. Nearly every last person expressed gratitude for our time in this, pledged to do whatever they could do to help, and signed up as members of FOBL.
- My daughter turned 6 while we were at the cabin this summer. With the help of a friend who came to the lake with us, she overcame her fears and learned to swim in Bumping Lake. Now she's intent on breaking her father's record of being the youngest family member to swim across the lake with no life jacket.
- Just 2 weeks ago, FOBL hosted 25 members of the Sierra Club and heads of other environmental organizations at the cabin for an astonishingly warm weekend of fun and recreation. One highlight included separate trips to two groves of massive ancient trees that will be flooded and destroyed with the installation of a high Bumping Dam. But the unequivocal highlight was the big group dinner that went late into the night. Surrounded by great food and lovely Yakima Valley wines, it was an amazing experience to be surrounded by people dedicated to the preservation of a pristine wilderness that is adored by tens of thousands of people.

- One last highlight: on our way home from the annual Sierra Club outing, we were flagged down near the spillway at twilight by Susie and Tom Cyr, the owners of Cabin 17 that originally housed the dam tenders that preceded the cabins. They had been watching enormous Chinook salmon spawning at the base of the dam, some of which looked to be over 3 feet long. That was a beautiful moment. Once the Bumping Dam is taken out of consideration and Bumping has achieved permanent preservation, it is FOBL's third operational goal to work to bridge the gap between those salmon and the lake without resorting to widespread flooding and destruction.

I realize that it's not in any of your best interest to do this, but if you really want to know how people feel about this, I would advise that you go to the campground any day next summer and talk to people about it. People who care about this place are not a small handful of cabin owners, they are tens of thousands of people from Yakima to Spokane to Ellensburg to Seattle – over **20,000 people every summer** alone. From them you will hear the full story of Bumping.

One person here who knows the full story of Bumping is Mr. Jeff Tayer, who has been going to the lake far longer than I have. Jeff, you were recently quoted in the Ellensburg Daily Record as saying "My heart tells me no, don't flood this beautiful place ... But my head tells me that the amount of conservation in this plan so far exceeds the amount of impact." To that, I would counter with this quote from writer Karen Marie Moning:

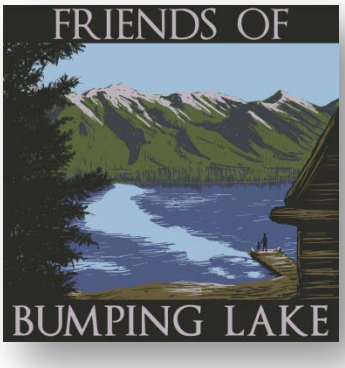
"The most confused we ever get is when we're trying to convince our heads

of something our heart knows is a lie."

My request to the workgroup, as it shall be until it is done, is please remove the Bumping Lake Dam from this plan and utilize mandated conservation and water marketing to get the water you desire instead.

Thank you,

Chris Maykut, President
Friends of Bumping Lake
4000 Aurora Avenue North
Suite 224
Seattle, WA 98103



RECLAMATION
Managing Water in the West

WASHINGTON STATE DEPARTMENT OF ECOLOGY

Contact: Wendy Christensen, 509-575-5848, ext. 203 **Derek Sandison, 509-457-7120**

Agenda

Yakima River Basin Water Enhancement Project Workgroup

December 12, 2012, 9:30 to 12:00 PM at Yakima Arboretum, 1401 Arboretum Dr., Yakima WA

Time

9:30 – 9:35	Welcome/Introductions and Agenda Overview *Ben Floyd, Anchor QEA*
9:35 – 9:50	Framework for Implementation Report Update - Revisions, NEPA ROD schedule *Wendy Christensen, Reclamation*
9:50 – 10:05	Implementation Subcommittee Update *Implementation Subcommittee and Dan Silver, Consultant*
	Education and Outreach Update *Mike Schwisow, Outreach Consultant*
10:05 –10:15	Targeted Watershed Protections and Enhancements – Update *Michael Garrity, American Rivers*
10:15 – 10:30	Kittitas County - Economic Impacts from Watershed Protections *Paul Jewell, Kittitas County*
10:30 – 10:45	Break
10:45 – 11:05	Early Actions/Technical Work Update *Wendy Christensen, Reclamation; Derek Sandison, Ecology; and Andrew Graham, HDR*
11:05 – 11:15	Operational Guidelines for Additional Storage–Status *Bob Montgomery and Ben Floyd, Anchor QEA*
11:15 – 11:50	Workgroup – Roundtable Discussion *Ben Floyd, Anchor QEA*
11:50 – 12:00	Public Comment

Adjourn

Next meeting – March 13, 9:30 AM at Yakima Arboretum

(Other 2013 meeting dates will be held in June, Sep and Dec but still working on specific dates)

For additional information, see the reports and documents available at this link:
http://www.usbr.gov/pn/programs/yrbwep/2011integratedplan/index.html

*Work Group facilitation by Ben Floyd, Anchor QEA as a subconsultant to HDR, under contract to US Bureau of Reclamation

RECLAMATION
Managing Water in the West

***Contact: Wendy Christensen, Columbia-Cascades Area Office, (509) 575-5848, ext. 203**
Derek Sandison, Washington State Department of Ecology, (509) 457-7120

Draft Meeting Notes
December 12, 2012
Yakima Arboretum, Yakima WA

Yakima River Basin Water Enhancement Project (YRBWEP) Workgroup

Welcome/Introductions and Agenda Overview *by Ben Floyd, Anchor QEA*
Ben Floyd, meeting facilitator, welcomed the Yakima River Basin Water Enhancement Project (YRBWEP) Workgroup members and public, led introductions, and provided an overview of the agenda. Wendy Christensen, Bureau of Reclamation (Reclamation), introduced Clint Kyhl, U.S. Forest Service (USFS) representative on the Workgroup, to his first Workgroup meeting (Stuart Woolley has been attending as his alternate). Bob Hall, Yakima Basin Storage Alliance, attended in place of Sid Morrison. In addition, Ben announced that members of the Implementation Subcommittee would be presenting the Education and Outreach portion of the agenda on Mike Schwisow's behalf.

Ben noted that he would be leading a round table discussion at the end of the meeting, giving Workgroup members the opportunity to provide feedback on the Integrated Plan implementation activities and supplemental planning efforts, meetings and ongoing communications. The Workgroup was encouraged to provide feedback on the quality and timing of information exchanges, frequency of meetings, on the general progress of implementation, and other topics.

Framework for Implementation Report Update - Revisions *by Wendy Christensen, Reclamation*
Wendy provided an update on the Framework for Implementation Report. At the September 26, 2012, Workgroup meeting, Ernie Niemi and Ann Root presented an overview of the analysis conducted in the report. The report was updated based on the feedback received at the September meeting (available on the project website, posted with materials from the December meeting at http://www.usbr.gov/pn/programs/yrbwep/2011integratedplan/2012meetings/index.html). The report includes a summary of the "Four Accounts" analyses.

The updated analyses did not result in any changes to the overall outcomes of the report. Improved conditions are still anticipated under the "implementation" alternative in relation to the "no action" alternative. Wendy noted that modifications to the Environmental Quality (EQ) and Other Social Effects (OSE) accounts analyses were reflected in the final report. The EQ and OSE analyses were updated to reflect comments from National Oceanic and Atmospheric Administration (NOAA), U.S. Fish and Wildlife Service (USFWS), and the Washington Department of Fish and Wildlife (WDFW).

The updates were made by the same group of resource experts that had performed the original analyses, with consideration of the comments/discussion provided by resource agencies and others.

Applying these analyses framework to programmatic-level feasibility studies can be challenging. Feedback from the Workgroup has been helpful in completing these analyses.

Workgroup Comments

- John Easterbrooks – How is "sustainability" defined in the Framework for Implementation Report? *Sustainability benefits are intended to capture overall benefits of the integrated plan to water resource reliability and ecosystem resilience to climate change. The category is divided into two subcategories – improved water resource reliability and increased resistance of the ecosystem to climate change.*

NEPA ROD schedule *by Wendy Christensen, Reclamation*
Wendy provided an update on the schedule for the Record of Decision (ROD) for the Programmatic Environmental Impact Statement (PEIS), which is anticipated in January 2013.

Implementation Subcommittee Update *by Implementation Subcommittee and Dan Silver, Consultant*
Dan Silver and the Implementation Subcommittee members/alternates (Mike Leita, Ron VanGundy, Derek Sandison, Michael Garrity, and Tom Ring) provided updates on the implementation process. The Subcommittee has been hard at work attending many meetings and briefings and providing presentations in efforts to build financial and political support to move implementation forward. A number of entities, including the Port of Grandview and the City of Sunnyside, plan to adopt resolutions supporting the Integrated Plan as a result of these efforts. It is important to maintain momentum.

In 2013, the Subcommittee will continue efforts to secure additional funding and support. The Subcommittee is mindful of the implementation schedule and the challenge of maintaining balance in funding among the seven plan elements, and regularly discusses how best to address these challenges as funding materializes from different sources.

A proposed State bill is currently being reviewed by the Washington State Office of Financial Management (OFM). The draft bill includes policy findings that the Integrated Plan objectives are in the public interest, and also includes measure to create a financial system for setting up funds, including taxable bonds (for use by private or federal entities) and non-taxable bonds (for grants) to help fund implementation. The bill does not specify funding for individual projects, but provides the funding to help enable the process to move forward.

The Subcommittee acknowledged Emily Washines' (Yakama Nation) work in helping to publish the Opinion Editorial on the Integrated Plan in the Seattle Times (Celebrating and supporting the return of

the Cle Elum sockeye by Virgil Lewis, Yakama Nation Tribal Councilman), and also acknowledged the efforts of Cynthia Wilkerson with The Wilderness Society.

Ron VanGundy also noted a question he received from the public, along with the response he provided:

- How many new acre-feet of water that will be created under the Integrated Plan. *While this number varies from year to year; multiple studies indicate that pro-ratable supplies of water will be 70 percent under the Integrated Plan.*

Education and Outreach Update

Derek Sandison announced that the American Water Resources Association (AWRA) recognized the YRBWEP Workgroup with its Integrated Water Resources Management Award for 2012. At the AWRA's national meeting last month in Jacksonville, Florida, William Battaglin, AWRA president, presented the award to Derek Sandison, Robert Quint, Reclamation, and Andrew Graham, on behalf of the Workgroup. Workgroup members were presented with their personal copy of the plaque presented at the award ceremony. Congratulations to the Workgroup!

Targeted Watershed Protections and Enhancements – Update *by Michael Garrity, American Rivers*

Michael stated that the Workgroup's Watershed Lands Conservation Subcommittee will be reconvening soon to develop updated recommendations to the Workgroup on recreation goals. The Subcommittee will consider findings from a group of environmental and conservation organizations that have been meeting this fall and winter to further refine recreation goals. A final meeting of these organizations will be on January 14, 2013. A summary of recommendations for recreation goals will follow in a report to the Subcommittee and Workgroup. The Workgroup will likely reconvene the Watershed Lands Conservation Subcommittee in January to consider the findings from the environmental and conservation organizations, and provide the Workgroup with updated recommendations by early spring.

Kittitas County - Economic Impacts from Watershed Protections *by Paul Jewell, Kittitas County*

Paul provided a presentation on the Kittitas County analysis of land use and economic impacts resulting from the Targeted Watershed Protections and Enhancements element of the Integrated Plan. Kittitas County had some concerns with acquisition of private lands in Kittitas County for public use and the potential for disparity of project impacts within Kittitas County. Specifically, the County was concerned about how this might cause a shift in tax burdens, affect future land use and land management/ownership, and cause other long-term, potentially negative impacts to the County. Kittitas County convened a citizen advisory group (CAG) of 15 members to represent a broad cross section of Kittitas County and County staff. The impact analysis looked at two main components: land use and economic impacts.

The land use and economic analyses considered impacts on a per-action basis and were based on existing land use designation, zoning, and ownership.

For the economic analysis, impacts were organized for consideration by major category (i.e. forestry, agriculture, recreation, land development, county revenues and expenditures, etc.) and the results were presented under two scenarios: with public investment and without public investment. The economic analysis also considered development potential under a realistic likelihood outside of the zoning context.

The analysis predicts new service-related costs that would be unique to Kittitas County. The analysis also predicts that benefits to the urban areas would far outweigh the benefits to rural areas. The County identified some recommendations for mitigating revenue impact on the County, which included:

- Federal Payments in Lieu of Taxes (PILT) – increase of $17,666.80 per year.
- State PILT – increase of $36,296.00 per year.
- Maintenance Endowment Fund – $15 million one-time payment recommendation (earning would be utilized as a revenue source for ongoing expenditures).
- Community Forest Operations and Forest Health Practices Fund.
- Investment Fund – $5 million initial investment.

Paul stated that he would make a digital copy of the Kittitas County Impact Analysis available to the Workgroup.

Workgroup Comments

- John Easterbrooks – What types of projects/facilities would public investment funds be used to maintain? *Public investment funds would be used to develop/maintain recreational facilities like public trails (but not public roads).*
- John Easterbrooks – Would the maintenance endowment fund be used for additional law enforcement needs due to increase in recreational users? *These impacts were not considered in the analysis.*
- Scott Revell – The purpose of the Integrated Plan is to improve long-term water supply which should have a net economic benefit to Kittitas County; was this considered in the County's economic analysis? *The scope of the economic analysis looked exclusively at the Targeted Watershed Enhancement component of the implementation action because 99% of the components are within Kittitas County. Other components in the Integrated Plan are distributed more evenly among the counties.*
- Scott Revell – Could we combine the Kittitas County Economic Analysis results with economic analysis results (benefits of the Integrated Plan) in the Framework for Implementation Report. It would be helpful in understanding the total economic effects of the plan to show the combined results of these two studies at an upcoming Workgroup meeting.

Early Actions/Technical Work Update *by Wendy Christensen, Reclamation; Derek Sandison, Ecology; and Andrew Graham, HDR*

Andrew Graham, HDR, presented updates on several early action projects, with assistance from Reclamation and others.

The Keechelusto-Kachess (K-to-K) Conveyance Project

The K-to-K Conveyance project would convey water from the Keechelus Reservoir to the Kachess Reservoir. A pipeline was proposed under the original proposal, but further investigation indicated that a proposed pipeline could potentially result in substantial natural resource impacts. Rerouting the pipeline to avoid the natural resources would be expensive and would pose some hydraulic challenges. Hence, a tunnel alternative is now under consideration. Field exploration is required to investigate rock quality along the tunnel alignment. State funding is available for field exploration, and Reclamation's Denver office has been working with the local office and consulting team to develop a field exploration plan. Boring locations are identified and special use permits obtained from the USFS; contracting for drilling has also been completed. One or two borings may be completed this winter, depending on snow conditions. Further borings are planned for spring 2013.

Kachess Inactive Storage Project

The Kachess Inactive Storage project would enable drawdown of the reservoir by an additional 80 feet to access additional water during drought conditions. Prior presentations to the Workgroup included a gravity-flow tunnel option and a pump station option. Although the tunnel and pump station alternatives are roughly comparable in capital costs, gravity-flow systems are generally preferred due to higher operation and maintenance costs associated with running the pump systems.

Further consideration of the alternatives recently identified a problem with the tunnel option. The outlet of the tunnel would be several miles downstream of Lake Easton, where Kittitas Reclamation District (KRD) has its canal headworks. Therefore, water released from the tunnel cannot be delivered into the KRD system. This is fine during most of the year because KRD can be supplied using releases from Keechelus Reservoir. However during the September "flip-flop" operation used by the Yakima Project to protect salmon spawning areas, the flow from Keechelus Reservoir is greatly reduced and would not be adequate to supply KRD. This issue is leading the project team to reevaluate whether the tunnel option is feasible. Because the system would be used only during dry years, this option may still be viable if adjustments to flip-flop operations during drought years could be made to enable the tunnel option to be viable. The conveyance system would likely be used approximately once every 5 years (not including climate change impacts).

For the pump station option, the pump station locations would depend on rock quality. Field exploration in the form of borings is anticipated in spring 2013 and would likely be conducted from a barge. Reclamation's Denver office has been working with the local office and consulting team to develop a field exploration plan.

Workgroup Comments

- Dale Bambrick – Would operation of the K-to-K conveyance allow transfer of enough water to Kachess Reservoir so the frequency of operating the tunnel could be reduced? This may help solve the flip-flop problem. *This can be investigated.*

Groundwater Infiltration

Potential groundwater infiltration pilot testing locations have been considered in the Wapato Irrigation Project, Moxee Valley, and Kittitas Reclamation District (KRD) areas. The project team is currently focusing on potential sites in the Kittitas Valley. Staff from Golder Associates has been performing reconnaissance in that area, together with Tom Ring (Yakama Nation) and Dave Nazy (Ecology) and Urban Eberhart (KRD). One potential pilot area has been identified near the KRD North Branch Main Canal. A temporary diversion from Naneum Creek is planned for this winter or spring to evaluate infiltration capacity in this area. The team has also been contacting well owners to discuss possible monitoring of ground water levels.

Workgroup Comments

- Tom Ring – Resource agencies would need to know when the water diversion would be proposed for infiltration pilot studies, and how much water is proposed for diversion.
- Tom Ring – For the groundwater infiltration project, the KRD North Branch Canal is not viable as a long-term option without a pump station. We should not commit to a pump system until we know what kind of infiltration capacity we are anticipating. *Funding is available to investigate whether the KRD delivery system would be a feasible means for infiltration. The KRD canal has limitations for conveying water, which vary at different times throughout the year. Pump sizes currently under consideration are within the 100 to 300 cubic feet per second (cfs) capacity. The appropriate sizing will depend on the capacity of the canal and potential benefit from infiltration.*

Cle Elum Fish Passage Project

Wendy Christensen and Joel Hubble, Reclamation, provided an update on the Cle Elum Fish Passage project. The concept shared with the Workgroup earlier in the year, a multilevel intake structure and juvenile conduit, has been abandoned after physical modeling results. Three additional conceptual designs are now under consideration: the ramp-along-bank concept, helix-and-inlet concept, and trough-ramp concept. These concepts were developed during a brainstorm session with resource agencies (Cle Elum Fish Passage Technical Workgroup) and Reclamation staff in November. The next steps are to look at costs, operation and management requirements, and then move on to selecting a concept and refining the design. This project is unique in that we are designing a system to move fish out of a fluctuating reservoir system.

Roza Reach Smolt Survival Study

The purpose of the Roza Reach Smolt Survival Study is to identify which factors influence smolt survival: flow, temperature, and/or migratory disposition. Under the Study, three smolt releases were conducted in 2012 as a part of the 3-year study (2012 – 2014). One release was made early in the season, during low-flow (<600 cfs) conditions, and two releases were made during late season, high-flow conditions (>3,000 cfs). Early, low-flow survival rates were at 61 percent and late, high-flow survival rates were at 96 percent and 98 percent.

The study direction for the next 2 years will focus on test releases in the 1,000 to 2,500-cfs range between mid-March and mid-April, in order to collect data that minimizes the effects of confounding explanatory variables, so that flow effects on migration survival can be quantified independent of these other influential factors. The smolt study will include avian predation monitoring and dam passage survival evaluations.

Workgroup Comments

- Dale Bambrick – Appreciates the study being done, but he's concerned that the necessary agreements with Bonneville Power Administration (BPA) related to power subordination are not being addressed.

Manastash Creek Project

Walt Larrick, Reclamation, provided an update on the Manastash Creek project. Manastash Creek irrigation diversions have blocked fish passage for the past 100 years. The proposed project will enclose one of KRD's laterals with a piped and pressurized system, and provide for increased flow in Manastash Creek. The project is queued and construction is scheduled to start in early 2013.

Workgroup Comments

- John Easterbrooks – How soon can the project be operational? *Construction is anticipated to begin in 2013; however, Manastash Creek is not expected to have additional water until the next (2014) irrigation season.*

Other Early Action Activities

Andrew provided updates on the status of the other early action activities.

- Wymer Reservoir is slated for geotechnical exploration, and value engineering and temperature modeling, and members of the consultant team are working with Reclamation's geologists and geotechnical experts in Denver to scope the field investigation. Additionally, an alternate pump station site on the Yakima River is being considered, in order to address concerns by the Eaton family regarding use of their land.

- Bumping Reservoir is also slated for geotechnical exploration, and members of the consultant team are working with Reclamation's geologists and geotechnical experts in Denver to scope the field investigation.
- The K-to-K Conveyance project is slated for additional alternatives evaluation and environmental screening analysis.
- Teanaway Property and Eaton Ranch, potential land acquisitions, are going through the land appraisal process.

Workgroup Comments

- Jim Trull – What is the estimated volume of water that would be transferred via the K-to-K Conveyance? *Data was extracted from the RiverWare model runs that were performed previously. The runs look at hydrologic conditions over the years 1981-2005, with the Integrated Plan project features in place. The table below (prepared by HDR and emailed out after the December 2012 Workgroup meeting), shows the modeled transfers of water through the K-to-K Conveyance, in acre-feet.*

Transfers through K-to-K, as modeled for Integrated Plan analysis

Water Year (Nov-Oct)	***Volume (AF)***
1981	75,480
1982	117,146
1983	115,190
1984	123,173
1985	96,575
1986	106,204
1987	59,318
1988	51,322
1989	79,818
1990	124,115
1991	100,727
1992	95,644
1993	47,381
1994	12,276
1995	73,308
1996	127,965
1997	134,992
1998	122,259
1999	132,278
2000	126,641
2001	43,565
2002	116,308
2003	88,302

Water Year (Nov-Oct)	*Volume (AF)*
2004	78,762
2005	55,806
Median	**96,575**
Max	**134,992**
Min	**12,276**

Workgroup Comments

- John Easterbook – Why does K-to-K tunnel require a vertical "portal," as discussed in the presentation? *The portal is a vertical shaft that is needed in order to ensure the end of the tunnel is constructed in a high-quality rock formation, without excessive jointing or weathering.*
- Scott Revell – What is the length of the K-to-K tunnel? *Approximately 5 miles.*
- Bob Hall – The K-to-K Conveyance project is estimated to cost $200 million for a system only meant to be used in water short years. *K-to-K could provide benefits in other years besides drought years; Kachess inactive storage would be used as supply only in drought years.*
- Dave Brown – The City of Yakima has an aquifer storage and recovery (ASR) system ready to go. Is there room to consider some of the city's pilot ASR sites? *ASR for municipal water systems was also included in the Integrated Plan and should be considered. The presentation earlier today was focused only on the infiltration approach using the irrigation supply systems.*

Operational Guidelines for Additional Storage–Status *by Ben Floyd, Anchor QEA*

Ben discussed the operation guidelines for additional storage (filling in for Bob Montgomery, Anchor QEA, who was unable to attend). Ben stated that an Operational Guidelines Subcommittee was convened to assist in developing these guidelines. The Subcommittee (which includes most of the same members that were on the Workgroup's Instream Flow Subcommittee) is developing draft guidelines for how to operate and manage the additional storage facilities that would be constructed per the Integrated Plan. Operational guidelines include considerations for additional flow for fish, and irrigation and municipal water supply.

In the last two Subcommittee meetings, the following potential early flow enhancement opportunities were discussed:

- Keechelus Reservoir – 120 cfs (over 12 months)
- Cle Elum Reservoir – 300 cfs (October to March)
- Tieton Reservoir – 125 cfs (November to March)

In future meetings, the Subcommittee will follow-up with modeling scenarios in order to evaluate the potential for meeting the flow enhancement goals and continue to develop and fine tune operation guidelines. The Subcommittee's recommendations will also be evaluated to identify legal issues and constraints needing resolution.

Workgroup – Roundtable Discussion *by Ben Floyd, Anchor QEA*
Ben opened the floor up to the Workgroup for a roundtable discussion.

- Dave Brown – The Implementation Subcommittee has been doing a great job in building momentum in implementing the Integrated Plan, and it is greatly appreciated.
- Clint Kyhl – It would be interesting to learn more about the environmental and conservation groups' recent meetings/work on the Targeted Watershed Lands Protection and Enhancement actions, once the Workgroup has reconvened the Watershed Lands Subcommittee.
- John Easterbrooks – I haven't been aware of the Operational Guidelines Subcommittee. I look forward to participating and becoming more involved in this Subcommittee.
- Kirk Cook – I'm happy with degree of information and frequency of exchange. I am pleased to see progress on early implementation projects. Development updates from the work of the Watershed Lands Conservation Subcommittee is a continued areas of interest. Additionally, the Workgroup members should continue efforts to correct misinformation being shared at times among stakeholders, and to help advance the plan.
- Alex Conley – I am glad to see that the Operational Guidelines Subcommittee is making progress. It will also be interesting to see how programmatic habitat restoration also fits into the larger program element (Targeted Watershed Lands Protection and Enhancement actions).
- Michael Garrity – I would like to see additional information on how the programmatic habitat restoration will work, and how funding can be leveraged on habitat floodplain restoration and management.
- Ron VanGundy – In relation to the Operational Guidelines Subcommittee, legal questions are currently under consideration in parallel with initial development of the operational guidelines. It will take a fair amount of time to develop legal solutions. I would suggest involving the legal group early.
- Urban Eberhart – It is exciting to be a part of the only basinwide implementation plan in the country. Once we finalize the ROD, it will be exciting to see the Implementation Plan projects start to quickly progress.
- Paul Jewell – The Watershed Land Conservation Subcommittee will probably make a lot of progress over the next year and it will be helpful to stay apprised on their progress. Additionally, it would be very helpful to have presentations on early action projects occurring in the County, e.g., projects that will soon be conducting field explorations or moving into construction. The Kittitas County Board of Commissioners needs to be apprised of what is happening on the ground as projects move forward. I would like more direct lines of communication regarding projects that will be active in the field and details on the nature and status of work in order to keep the Board of Commissioners informed.
- Mike Leita – We may wish to adjust our public outreach plan to specialize an outreach component to parties affected by early implementation project activities.

- Jeff Thomas – The information provided during the Workgroup meetings has been good but timing of information feels somewhat sporadic. A monthly update outlining planned projects and the status of those projects would be helpful to keep members up-to-date. On another note, the Implementation Subcommittee has been doing a great job.
- Dale Bambrick – I would like to thank to Urban for his work with the KRD. I am not convinced that Reclamation is making progress on the Roza Dam Subordination project identified in the plan. If action doesn't happen through implementation of the Integrated Plan, then NMFS could seek a potential remedy through an Endangered Species Act (ESA) consultation, which would likely result in a jeopardy effect determination in a biological assessment (BA).
- David Fast – Progress is moving faster than anticipated; therefore, it would be helpful to see more frequent updates, possibly in the form of a monthly newsletter. Also, I would like to see the details on the scope of the habitat projects identified in the early actions funding request table ($5 million budgeted).
- Bob Hall – I would like to see reporting of fatal flaws.

Ben thanked the Workgroup for the feedback. Based on the roundtable discussion, it appears that Workgroup is interested in more frequent communications on the status and progress of various projects, and there is high interest in the upcoming work of the Watershed Lands Subcommittee. Andrew stated that details on these upcoming subcommittee meetings will be shared soon. The first meeting of the group will likely occur early in 2013, and take two to three meetings to process the updated recommendations. Those recommendations would then be presented to the Workgroup for discussion.

Public Comment

- Chris Maykut asked that Friends of Bumping Lake's comments be considered in any changes made to the final Implementation Plan. He respects the overall objectives the Workgroup is trying to accomplish. Chris also shared an article titled *"A sense of betrayal" in the Yakima Plan,* by Karl Forsgaard (posted on the Reclamation website). Chris noted that the article states that there isn't necessarily 100-percent consensus in support of the Implementation Plan. He also noted that if cost becomes an issue for the Integrated Plan, elimination of the Bumping Reservoir enlargement would save $500 million.
- Rick McGuire provided a copy of the Green Scissors 2012 report, co-produced by Friends of the Earth. A copy of the report is posted on the project website. Rick also requested that a response to the Friends of the Earth March 21, 2012, comment letter on the PEIS scoping process be provided.
- Chuck Klarich asked if the environmental process for each project would also include a benefit-cost analysis for Federal funding. *Once viable project configurations are identified, we will conduct environmental review, which will occur concurrently with feasibility studies. During the environmental review process, cost and engineering review will progress, which will allow us to proceed with an economic analysis of project costs.*

- Paul La Riviere, WDFW, expressed personal appreciation for the outreach process and thanked Mike Schwisow for preparing the list of briefings, which helped illustrate efforts made to move the Implementation Plan forward.

Workgroup Members in Attendance

Dale Bambrick, National Marine Fisheries Service
Alex Conley, Yakima Basin Fish & Wildlife Recovery Board
Kirk Cook, Washington State Department of Agriculture
Rick Dieker, Yakima-Tieton Irrigation District
John Easterbrooks, Washington Department of Fish and Wildlife
Urban Eberhart, Kittitas Reclamation District
David Fast, Yakama Nation
Michael Garrity, American Rivers
Bob Hall, Yakima Basin Storage Alliance
Paul Jewell, Kittitas County
Clint Kyhl, U.S. Forest Service
Mike Leita, Yakima County
Scott Revell, Kennewick Irrigation District
Derek Sandison, Washington State Department of Ecology
Jeff Thomas, U.S. Fish and Wildlife Service
Jim Trull, Sunnyside Valley Irrigation District
Ron VanGundy, Roza Irrigation District
Dawn Wiedmeier, Bureau of Reclamation

Other Attendees

David Bowen, American Forest Land Co.
Dave Brown, City of Yakima
David Child, Yakima Basin Joint Board
Wendy Christensen, Bureau of Reclamation
Stuart Crane, Yakama Nation
Warren Dickman, Yakima Basin Storage Alliance
Beneitta Eaton, Rancher
Jack Eaton, Rancher
Ben Floyd, Anchor QEA
Joel Freudenthal, Yakima County
Don Gatchalian, Yakima County
Andrew Graham, HDR Engineering, Inc.
Ken Hasbrouck, Kittitas Reclamation District
Lynn Holt, Bureau of Reclamation
Joel Hubble, Bureau of Reclamation

Eleanor Hungate
Chuck Klarich, Yakima Basin Storage Alliance
Paul La Riviere, Washington State Department of Fish and Wildlife
Walt Larrick, Bureau of Reclamation
David Lester, Yakima Herald
Barb Lisk, Office of Representative Doc Hastings
Mike Livingston, Washington State Department of Fish and Wildlife
Chris Lynch, Bureau of Reclamation
Chris Maykut, Friends of Bumping Lake
Samantha Maykut, Friends of Bumping Lake
Tim McCoy, Bureau of Reclamation
Patrick McGuire, Kennewick Irrigation District
Rick McGuire, North Cascade Conservation Council
Jim Milton, Yakima-Tieton Irrigation District
Tom Monroe, Roza Irrigation District
Bryan Myre, Yakama Reservation Irrigation District
Scott Nicolai, Yakima-Klickitat Fisheries Project
David Ortman, Sierra Club
David Reeploeg, Office of Senator Maria Cantwell
Tom Ring, Yakama Nation
Mary Ellen Robinson, League of Women Voters
Teresa Scott, Washington State Department of Fish and Wildlife
Vivian Shin Erickson, Anchor QEA
Dan Silver, Facilitator
Tom Tebb, Washington State Department of Ecology
Cynthia Wilkerson, The Wilderness Society

Next Workgroup Meeting

The next meeting will be held March 13, 2013, at 9:30 a.m. at the Yakima Arboretum. A meeting notice and agenda will be distributed in advance of the meeting.

Where to Find Workgroup Information

Meeting materials, notes, presentations, and materials submitted during public comment for the Workgroup meetings will be posted on the project website (http://www.usbr.gov/pn/programs/yrbwep/index.html). A bibliography of information sources, many of which are available online, is also posted on the website. If anyone needs help finding an information source, contact those listed at the top of page 1 or Ben Floyd at Anchor QEA, Richland office, (509) 392-4548, or bfloyd@anchorqea.com.

Yakima River Basin Integrated Water Resource Management Plan

Framework for Implementation Report

U.S. Bureau of Reclamation
Contract No. 08CA10677A ID/IQ

Prepared by

HDR Engineering
Anchor QEA
ECONorthwest
Natural Resource Economics
ESA

U.S. Department of the Interior
Bureau of Reclamation
Pacific Northwest Region
Columbia-Cascades Area Office

State of Washington
Department of Ecology
Office of Columbia River

October 2012

MISSION STATEMENTS

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Yakima River Basin Integrated Water Resource Management Plan

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State of Washington
Department of Ecology
Office of Columbia River

October 2012

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Yakima River Basin Integrated Water Resource Management Plan

Structural & Operational Changes

1. Raise the Cle Elum Pool by three feet to add 14,600 ac-ft in storage capacity.
2. Modify Kittitas Reclamation District canals to provide efficiency savings.
3. Construct a pipeline from Lake Keechelus to Lake Kachess to reduce flows and improve habitat conditions during high flow releases below Keechelus and to provide more water storage in Lake Kachess for downstream needs.
4. Decrease power generation at Roza Dam and Chandler power plant to support outmigration of juvenile fish.
5. Make efficiency improvements to the Wapatox Canal.

Enhanced Water Conservation

1. Implement an agricultural water conservation program designed to conserve up to 170,000 acre-feet of water in good water years.
2. Create a fund to promote water use efficiency basin-wide using voluntary, incentive-based programs. Focus on outdoor uses as top priority.

Habitat/Watershed Protection & Enhancement

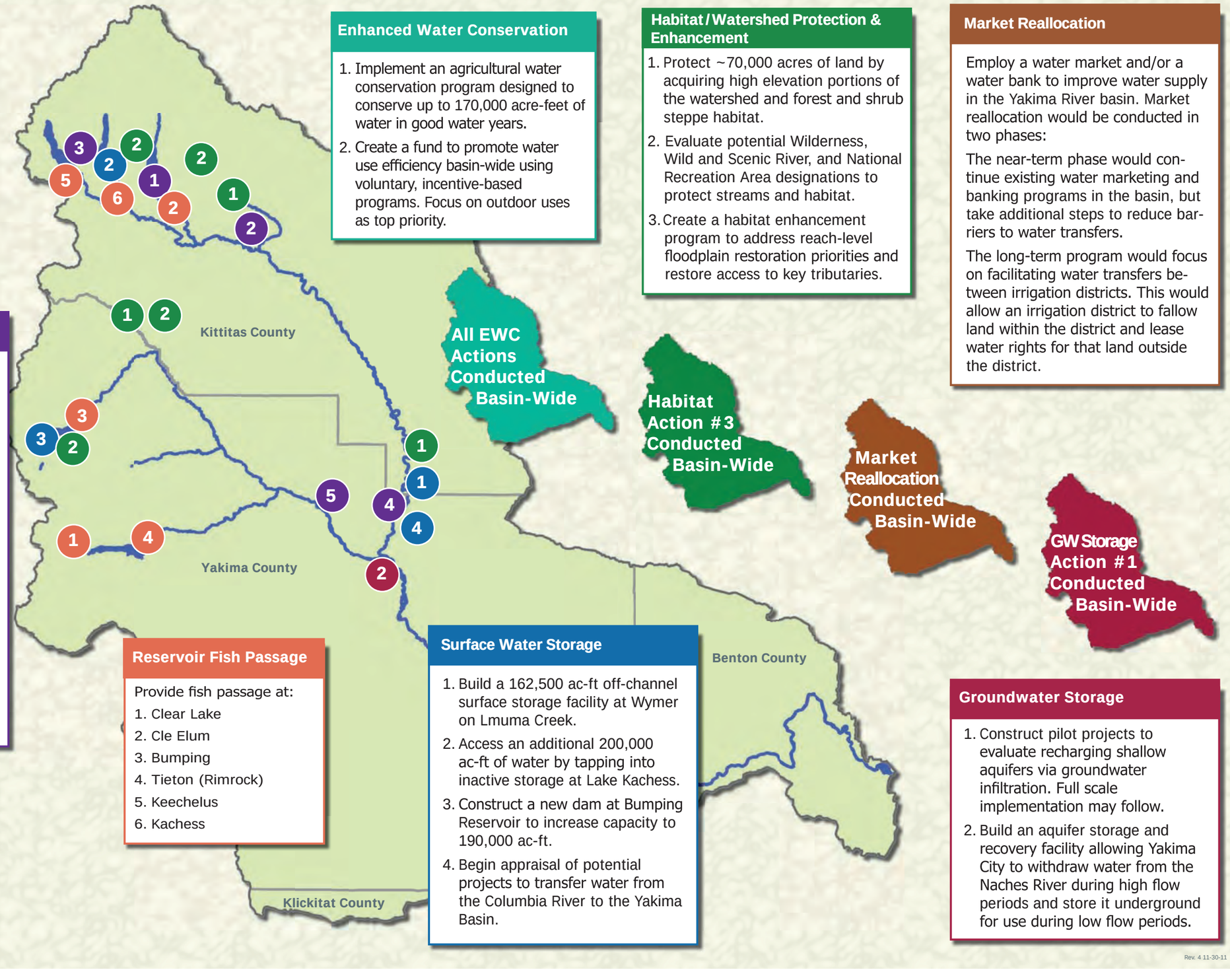
1. Protect ~70,000 acres of land by acquiring high elevation portions of the watershed and forest and shrub steppe habitat.
2. Evaluate potential Wilderness, Wild and Scenic River, and National Recreation Area designations to protect streams and habitat.
3. Create a habitat enhancement program to address reach-level floodplain restoration priorities and restore access to key tributaries.

Market Reallocation

Employ a water market and/or a water bank to improve water supply in the Yakima River basin. Market reallocation would be conducted in two phases:

The near-term phase would continue existing water marketing and banking programs in the basin, but take additional steps to reduce barriers to water transfers.

The long-term program would focus on facilitating water transfers between irrigation districts. This would allow an irrigation district to fallow land within the district and lease water rights for that land outside the district.



Reservoir Fish Passage

Provide fish passage at:

1. Clear Lake
2. Cle Elum
3. Bumping
4. Tieton (Rimrock)
5. Keechelus
6. Kachess

Surface Water Storage

1. Build a 162,500 ac-ft off-channel surface storage facility at Wymer on Lmuma Creek.
2. Access an additional 200,000 ac-ft of water by tapping into inactive storage at Lake Kachess.
3. Construct a new dam at Bumping Reservoir to increase capacity to 190,000 ac-ft.
4. Begin appraisal of potential projects to transfer water from the Columbia River to the Yakima Basin.

Groundwater Storage

1. Construct pilot projects to evaluate recharging shallow aquifers via groundwater infiltration. Full scale implementation may follow.
2. Build an aquifer storage and recovery facility allowing Yakima City to withdraw water from the Naches River during high flow periods and store it underground for use during low flow periods.

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Acronyms and Abbreviations
(A full glossary with terms and definitions is located at the back of this document.)

AHA	All H (habitat, hatchery, harvest and hydropower) Analyzer model
ASR	Aquifer storage and recovery
BPA	Bonneville Power Administration
CFS	Cubic feet per second
Ecology	Washington State Department of Ecology
EDT	Ecosystem Diagnosis and Treatment model
EIS	Environmental impact statement
EQ	Environmental Quality
FEIS	Final environmental impact statement
FY	Fiscal Year
Integrated Plan	Proposed Integrated Water Resource Management Plan for the Yakima Basin
IDC	Interest during construction
KAF	Thousand Acre-feet
K to K	Lake Keechelus to Lake Kachess (conveyance)
KRD	Kittitas Reclamation District
NED	National Economic Development
NEPA	National Environmental Policy Act
O&M	Operation and maintenance
OM&R	Operations, maintenance and construction
OPCC	Opinion of probable construction cost
OSE	Other Social Effects
PR/EIS	Planning report/environmental impact statement
Reclamation	United States Department of the Interior, Bureau of Reclamation
RED	Regional Economic Development
SEPA	State Environmental Policy Act
SPA	Single Purpose Alternative
TWSA	Total water supply available
USGS	United States Geological Survey
Workgroup	Yakima River Basin Water Enhancement Project Workgroup
YRBWEP	Yakima River Basin Water Enhancement Project

Executive Summary

The Yakima River Basin Integrated Water Resource Management Plan (Integrated Plan) offers an approach to improving water management in the Yakima River basin of central Washington State. It was developed by Reclamation and the Washington State Department of Ecology in conjunction with the Yakama Nation and Yakima River basin stakeholders. The goals of the Integrated Plan are to protect, mitigate, and enhance fish and wildlife habitat; provide increased operational flexibility to manage instream flows to meet ecological objectives, and improve the reliability of the water supply for irrigation, municipal supply and domestic uses. A Final Programmatic Environmental Impact Statement (PEIS) analyzing broad effects of the Integrated Plan on environmental resources was issued in 2012 (Reclamation and Ecology 2012d).

This Framework for Implementation Report includes information such as refined cost estimates and a preliminary schedule for implementing the Integrated Plan. The report summarizes the "Four-Accounts" analyses required under the Federal *Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies* (U.S. Water Resources Council. 1983) (Principles and Guidelines). The Four Accounts are: National Economic Development (NED), Regional Economic Development (RED), Environmental Quality (EQ) and Other Social Effects (OSE). It also addresses financial feasibility, including a preliminary allocation of costs to the various purposes served by the Integrated Plan.

Funding for the projects that make up the Integrated Plan are expected to be cost shared among a wide range of partners. Even though this Study utilizes traditional economic tools and analyses (Principles and Guidelines), the Integrated Plan is not intended to be funded as a typical Reclamation project. It is anticipated that the State of Washington would continue to be a cost-share partner in funding implementation of many of the elements of the Integrated Plan, as well as local governments and other parties. At this time, however, specific cost-sharing provisions between local, State, Federal governments, as well as other partners, have not been determined.

The Integrated Plan

The Integrated Plan includes seven elements: 1) reservoir fish passage; 2) structural and operational changes to existing facilities; 3) surface water storage; 4) groundwater storage; 5) habitat/watershed protection and enhancement; 6) enhanced water conservation; and 7) market reallocation. It addresses current water resource and habitat problems, while providing an adaptive management framework to address potential future changes in water needs or hydrology, including potential climate change effects.

Outcomes of the Integrated Plan can be summarized as follows.

- Improved streamflow conditions in many key reaches of the Yakima River, Naches River, and tributaries with storage facilities. This includes improved ability to meet flow objectives in 13 of 15 reaches of the mainstem Yakima River, as well as increased "carryover" water that provides flexibility for meeting other streamflow objectives.
- Substantial increases in fish populations, including spring/summer Chinook, fall Chinook, coho, steelhead and sockeye.
- Improved water supply reliability for three irrigation divisions that rely heavily on "proratable" water rights, primarily for agricultural irrigation. These are the Kittitas

Reclamation District, Roza Irrigation District and Wapato Irrigation Project. Drought conditions have reduced supplies in some years to as low as 37 percent of entitlements. The plan is expected to increase available supplies to at least 70 percent of water entitlements to these users during dry years.

- Improved water supply for municipal and domestic water users, including improved security for existing users whose water rights are junior to the proratable water users, and new supply of 50,000 acre feet per year to support growth and economic development in the Yakima River basin.
- Improved resilience to potential effects of climate change on the basin's streamflows and water supplies.

Implementation Costs

Capital costs of the Integrated Plan are estimated to be between $3.2 and $5.4 billion, with a most probable cost estimate of approximately $4.2 billion, expressed in 2012 dollars. These costs include permitting, design, environmental analyses, construction of infrastructure projects, implementation of programmatic activities, and environmental mitigation. The range was developed using cost-risk assessment to consider uncertainty and risk factors for each of the six largest projects to generate probabilistic estimates of construction costs. Additional costs of approximately $140 million are identified for interest during construction. Annual Operations and Maintenance (O&M) costs are expected to be approximately $12 million in 2012 dollars once all projects and programs from the Integrated Plan are fully operational.[1]

National Economic Development

The National Economic Development (NED) account measures benefits and costs of the Integrated Plan to the Nation as a whole. The analysis performed on the Integrated Plan addresses three categories of economic benefits: increases in fish populations, increases in the reliability of irrigation water during severe drought years; and improvements in municipal and domestic water supply. Estimated value of these benefits is displayed in Table ES-1. Values shown are discounted to present value in 2012 and expressed in 2012 dollars for the 100-year life of the project. Additional benefits are also identified, but are not readily quantified in monetary terms.

Table ES - 1. Benefit Estimates

CATEGORY	ESTIMATED VALUE (PRESENT VALUE, 2012 DOLLARS)
Fish Benefits	$5.0 billion to 7.4 billion
Agricultural Irrigation Benefits	$0.8 billion
Municipal and Domestic Water Supply Benefits	$0.4 billion
Total Benefits	$6.2 to 8.6 billion

Benefits are described more fully in Section 3.1, and the full benefits analysis is presented in Reclamation and Ecology 2012b.

[1] Costs listed in this paragraph are not discounted. Costs and benefits listed later in this Executive Summary include some values that are discounted, and these are noted. Discounting is a process used in economic analysis to account for the time value of money. When discounting is applied, money spent in the future has less value than money spent in the present.

A range of benefit/cost ratios was estimated, using low, medium and high values for both costs and benefits, with discounting. The benefit/cost ratios range from 1.4 to 3.2, depending on the combination of benefits and costs used.

Regional Economic Development

The Regional Economic Development (RED) account shows regional effects on personal income, jobs, and economic output stemming from changes in construction expenditures, operation and maintenance (O&M) expenditures, and gross farm earnings that would occur with implementation of the Integrated Plan. The RED analysis uses IMPLAN (IMpact Analysis for PLANning) modeling software to examine economic impacts within the four county area[2] comprising the Yakima River basin and Tri-Cities area; as well as effects within the State of Washington as a whole. Results are summarized in Tables ES-2 and ES-3.

The values describing construction-related impacts represent the Integrated Plan's average annual effects during the implementation period described in the plan. These economic impacts would fluctuate from year to year as the overall construction effort varies. The values describing O&M-related impacts represent the plan's effects beginning in the year in which all projects have been constructed and all programs have been activated. The values describing agriculture-related impacts represent the plan's effects during a severe drought year. During nondrought years, agricultural production would be similar to production without the Integrated Plan.

Table ES - 2. Summary of Economic Impacts in the Four-County Area, by Type of Expenditure

TYPE OF EXPENDITURE	DIRECT	INDIRECT	INDUCED	TOTAL
Construction (annual average during implementation period)				
Output	$97,000,000	$11,000,000	$22,000,000	$130,000,000
Personal Income	$63,000,000	$4,000,000	$7,000,000	$73,000,000
Jobs[a]	1,200	100	200	1,500
O&M (annual following implementation)				
Output	$11,000,000	$5,000,000	$4,000,000	$20,000,000
Personal Income	$5,000,000	$1,000,000	$1,000,000	$7,000,000
Jobs[a]	60	20	30	110
Agricultural Production (severe drought year only)				
Output	$400,000,000	$137,000,000	$153,000,000	$690,000,000
Personal Income	$87,000,000	$52,000,000	$46,000,000	$185,000,000
Jobs[a]	7,200	1,500	1,400	10,100

[a] Jobs represent a combination of full-time and part-time jobs.

[2] Benton, Franklin, Kittitas, and Yakima Counties.

Table ES - 3. Summary of Economic Impacts in Washington State, by Type of Expenditure[a]

TYPE OF EXPENDITURE	DIRECT	INDIRECT	INDUCED	TOTAL
Construction (annual average during implementation period)				
Output	$147,000,000	$33,000,000	$79,000,000	$260,000,000
Personal Income	$88,000,000	$9,000,000	$23,000,000	$120,000,000
Jobs[b]	1,500	200	600	2,300
O&M (annual following implementation)				
Output	$11,000,000	$5,300,000	$4,600,000	$20,900,000
Personal Income	$5,000,000	$1,100,000	$1,100,000	$7,200,000
Jobs[b]	60	25	35	120
Agricultural Production (severe drought year only)				
Output	$400,000,000	$201,000,000	$189,000,000	$790,000,000
Personal Income	$87,000,000	$66,000,000	$55,000,000	$208,000,000
Jobs[b]	7,200	2,000	1,600	10,800

[a] Statewide impacts include the four-county results from Table ES-2. For more information see Section 3.2 and Reclamation and Ecology 2012b.

[b] Jobs represent a combination of full-time and part-time jobs.

Environmental Quality

The Environmental Quality (EQ) evaluation was conducted by a team of staff from Reclamation and Ecology along with senior environmental consultants to the agencies. Members of the team have all worked on the PEIS for the Integrated Plan and have expertise in environmental analysis, engineering, and Yakima Project operations. The evaluation was conducted in a workshop setting with decisions made by group consensus. Two alternatives were compared: the Integrated Plan Alternative (Preferred Alternative from the Final PEIS) and a No Action Alternative.

The team identified key resource categories for the EQ analysis by selecting resources based on how they helped meet the purpose and need of the Integrated Plan and how they were affected by the Integrated Plan. Figure ES-1 shows normalized scores from the EQ evaluation, indicating that the Integrated Plan would provide substantial benefits in comparison with the No Action Alternative.

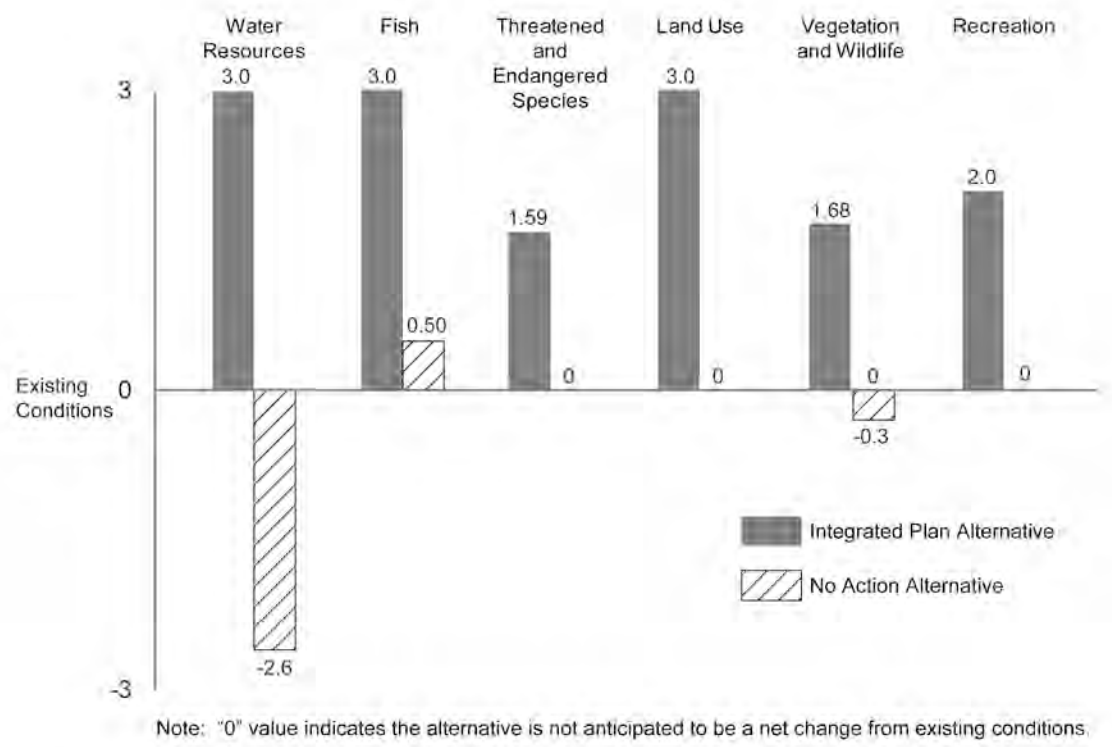

Figure ES - 1. Environmental Quality Scores for the Integrated Plan and No Action Alternatives

Other Social Effects

Other Social Effects (OSE) were analyzed by the same team using the same methods as the EQ evaluation. The OSE account is intended to include perspectives that are not included in the NED, RED, or EQ accounts. The team identified two resource categories to include in the OSE account: cultural resources and sustainability benefits. Normalized OSE scores are displayed in Figure ES-2 and indicate that the Integrated Plan would provide substantial overall benefits to sustainability, compared with the No Action Alternative. There is little difference between the two alternatives in regard to the extent of cultural resource impacts.

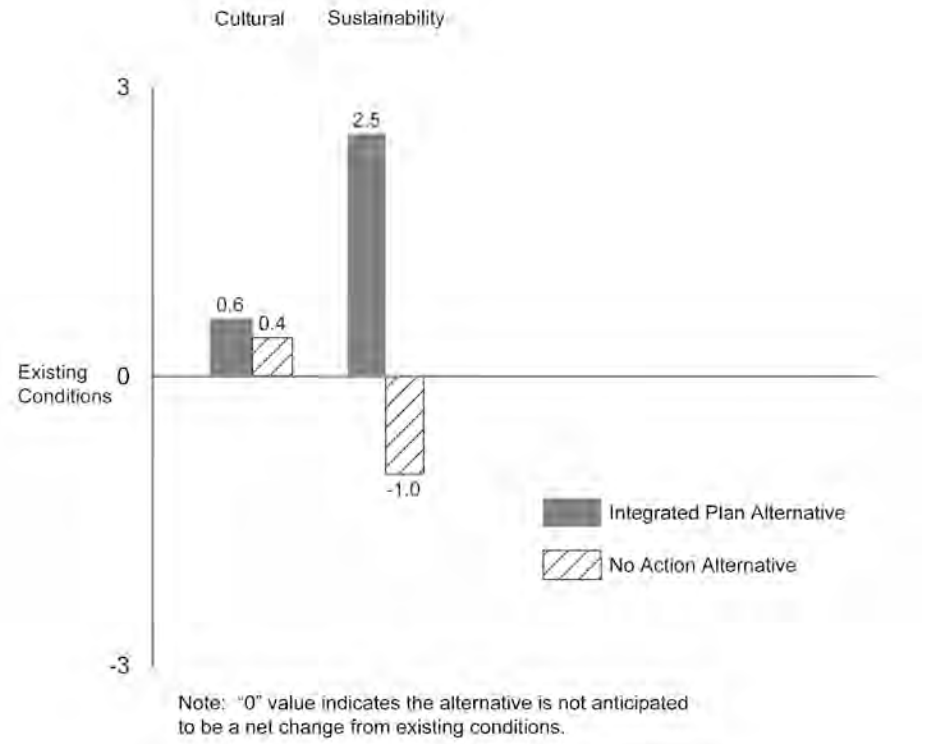

Figure ES - 2. Other Social Effects Scores for the Integrated Plan and No Action Alternatives

Financial Feasibility

The financial feasibility analysis performed for the Integrated Plan includes a preliminary cost allocation by purpose and consideration of cost repayment.

The Alternative Joint Expenditures (AJE) method was used in the preliminary cost allocation of the Integrated Plan. In brief, the AJE method separates out the specific costs that should be associated with a single purpose. It then follows a step-by-step procedure to allocate the joint costs that remain. Allocated joint costs are added to specific costs for each purpose, to determine that purpose's share of total project costs.

The preliminary cost allocation indicates the following breakdown among the three project purposes considered in the analysis (values discounted to present value and expressed in 2012 dollars):

Table ES - 4. Results of Preliminary Cost Allocation

PURPOSE	ALLOCATION ($) (PRESENT VALUE)	ALLOCATION (%)
Ecological Restoration	$2.4 billion	69%
Agricultural Irrigation	$0.7 billion	21%
Municipal and Domestic Water Supply	$0.4 billion	10%
Total Cost	$3.5 billion	100%

For more information see Section 4 and Reclamation and Ecology 2012c.

Reimbursable project functions included in the Integrated Plan are agricultural irrigation and municipal and domestic water supply. Construction costs allocated to agricultural irrigation are generally reimbursable without interest, while those allocated to municipal and domestic supply are reimbursable with interest. For the Integrated Plan, cost-share partners such as the State of Washington, local governments or other parties, may participate in reimbursement.

Ecological restoration is generally a non-reimbursable function that is typically expected to be borne by the U.S. Treasury in combination with the state and other cost-share partners.

It is anticipated that the State of Washington would be a partner in funding many of the elements of the Integrated Plan. At this time specific cost-sharing provisions between the State and Federal government have not been determined.

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1.0 Introduction and Purpose

The Yakima River Basin Integrated Water Resource Management Plan (Integrated Plan) offers an approach to improving water management in the Yakima River basin of central Washington State. It was developed by Reclamation and the Washington State Department of Ecology in conjunction with the Yakama Nation and Yakima River basin stakeholders. The goals of the Integrated Plan are to protect, mitigate, and enhance fish and wildlife habitat; provide increased operational flexibility to manage instream flows to meet ecological objectives, and improve the reliability of the water supply for irrigation, municipal supply and domestic uses. The Integrated Plan was issued in 2011 (Reclamation and Ecology 2011d). A Final Programmatic Environmental Impact Statement (PEIS) analyzing broad effects of the Integrated Plan on environmental resources was issued in 2012 (Reclamation and Ecology 2012d).

This Framework for Implementation Report includes information such as refined cost estimates and a preliminary schedule for implementing the Integrated Plan. The report summarizes the "Four-Accounts" analyses required under the Federal *Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies* (U.S. Water Resources Council. 1983) (Principles and Guidelines). The Four Accounts are: National Economic Development (NED), Regional Economic Development (RED), Environmental Quality (EQ) and Other Social Effects (OSE). It also addresses financial feasibility, including a preliminary allocation of costs to the various purposes served by the Integrated Plan.

Funding for the projects that make up the Integrated Plan are expected to be cost shared among a wide range of partners. Even though this Study utilizes traditional economic tools and analyses (Principles and Guidelines), the Integrated Plan is not intended to be funded as a typical Reclamation project. It is anticipated that the State of Washington would continue to be a cost-share partner in funding implementation of many of the elements of the Integrated Plan, as well as local governments and other parties. At this time, however, specific cost-sharing provisions between local, State, Federal governments, as well as other partners, have not been determined

To provide context for this information, this report also summarizes background information from the Integrated Plan and PEIS.

The Integrated Plan was developed from studies initiated as early as 1979 under the Yakima River Basin Water Enhancement Project (YRBWEP), together with updated information developed under the 2011 Yakima River Basin Study, which was conducted through a planning partnership of Reclamation and Washington State Department of Ecology (Ecology).

Building on previous planning efforts, the Integrated Plan is the most comprehensive effort to date in proposing water resource and habitat protection and restoration solutions in the Yakima basin.

The Yakima River basin encompasses about 6,100 square miles. It is located in south central Washington State on the east side of the Cascade Range and includes Kittitas County and portions of Yakima, Benton, and Klickitat Counties. Figure 1 shows the location of the basin within Washington State and displays Reclamation's Yakima Project facilities, the irrigation divisions served by Federal water facilities, and the counties, cities and towns within the basin.

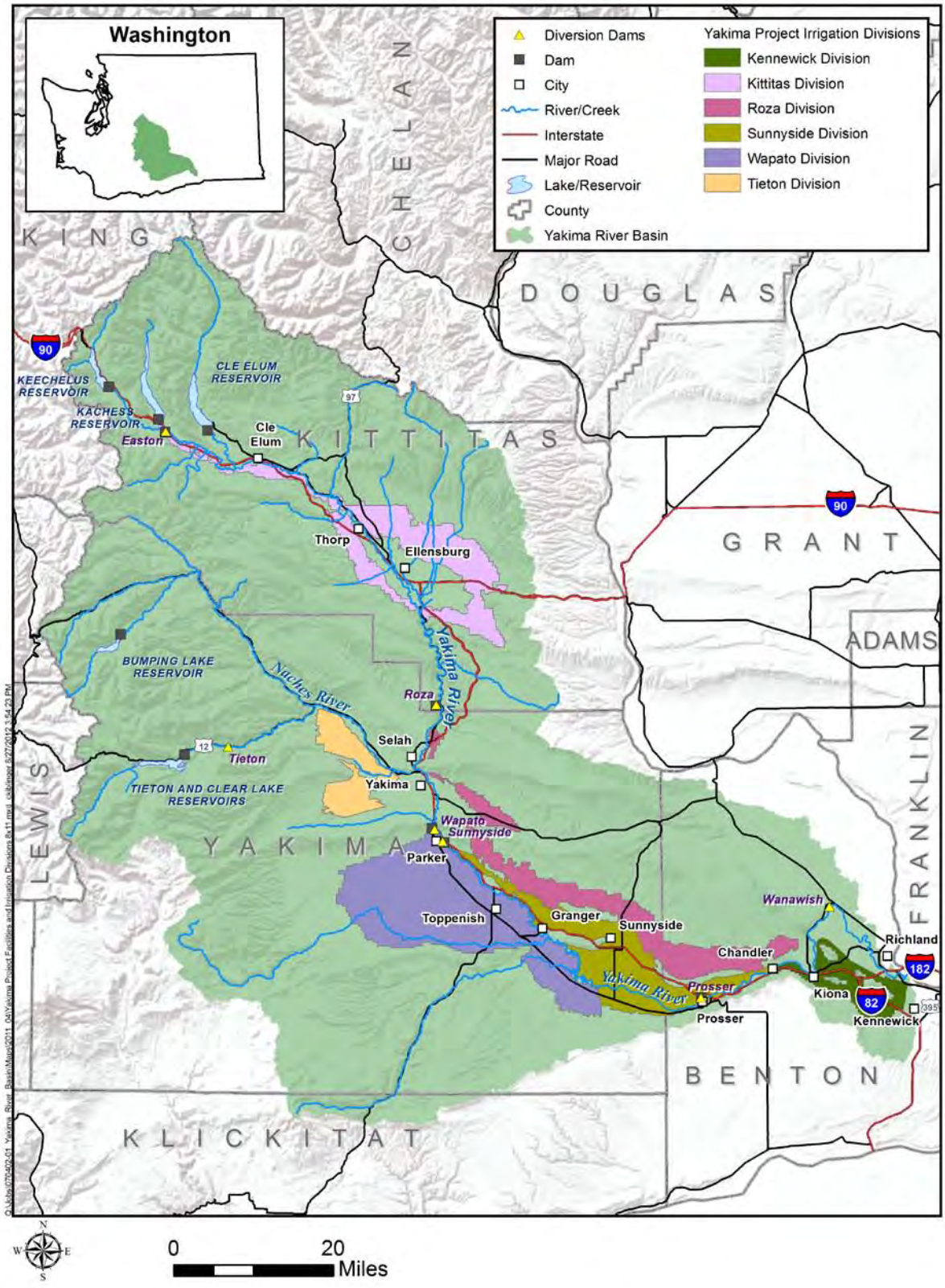


Figure 1. Yakima Project Facilities and Irrigation Divisions

1.1 Previous Activities, Recent Studies and Accomplishments

1.1.1 Yakima River Basin Water Enhancement Project

The Yakima River Basin Water Enhancement Project (YRBWEP) was initiated by Congress in 1979 in recognition of the extreme water shortage problems of the basin. YRBWEP has the following objectives: develop a plan that would provide 1) supplemental water for presently irrigated lands; 2) water for new lands within the Yakama Indian Reservation; 3) water for increased instream flows for aquatic life; and 4) a comprehensive plan for efficient management of basin water supplies. Since 1979, state and Federal YRBWEP feasibility study activities have been ongoing with the objectives to develop and implement a comprehensive solution for efficient management of Yakima basin water supplies (see Figure 2).

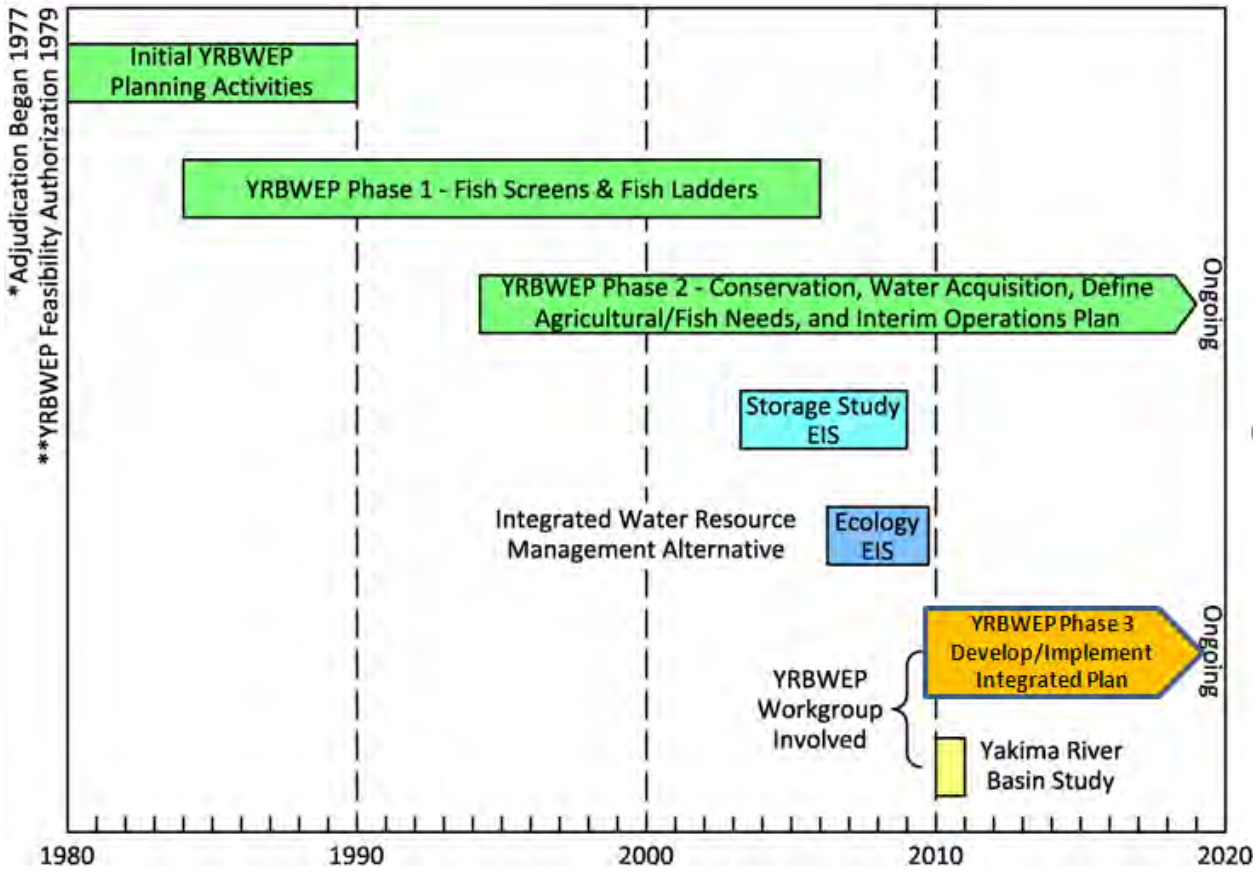


Figure 2. Yakima River Basin Water Enhancement Project Timeline

Early in the YRBWEP study process, fish passage problems were identified as needing immediate attention. Congressional legislation in 1984 (Public Law 98-381) authorized Reclamation to design, construct, and operate fish passage facilities within the Yakima River basin in accordance with the Northwest Power and Conservation Council's (NPCC) Columbia River Fish and Wildlife Program (YRBWEP Phase 1). A companion law was enacted August 22, 1984, to provide, among other things, for operations and maintenance costs related to fish facilities (Public Law 98-396, 98 Stat. 1379). The YRBWEP efforts proceeded through the 1980s, but were not fully completed, primarily due to issues and uncertainties associated with basin surface water rights adjudication. In 1994, Congress passed legislation for YRBWEP

Phase 2 (Public Law 103-434), which provided for significant water conservation and acquisition activities; studies to define the long-term water needs of fish and irrigators; improvements to the Wapato Irrigation Project; and development of an interim operations plan for management of basin water supplies.

In compliance with the 1994 YRBWEP Act (Phase 2 Legislation – Public Law 103-434), Reclamation and Ecology are cost-sharing partners in the Basin Conservation Program, with Reclamation funding 65 percent of the cost and Ecology and participating irrigation districts each funding 17.5 percent. Under this program, two-thirds of the water savings remains in the river, and the irrigation district retains one-third.

As of August 2012, Reclamation, Ecology, and irrigation entities have cost-shared to develop eight Comprehensive Conservation Plans and four conservation Feasibility Investigation Reports for Yakima basin irrigation systems. A number of projects have been implemented to generate water savings and improve streamflows. For more information, see the Reclamation's Web site at: http://www.usbr.gov/pn/programs/yrbwep/phase2/basinconservation.html.

1.1.2 Yakima River Basin Water Storage Feasibility Study and Development of the Integrated Plan Alternative

In 2003, Congress directed Reclamation to conduct a feasibility study of options for additional water storage in the Yakima River basin. The authorization for the study is contained in Section 214 of the Act of February 20, 2003 (Public Law 108-7). The authorization states that the study will place "… emphasis on the feasibility of storage of Columbia River water in the potential Black Rock Reservoir and the benefit of additional storage to endangered and threatened fish, irrigated agriculture, and municipal water supply."

Reclamation began the Storage Study in May 2003. The State of Washington joined Reclamation in that effort after funding was provided in the State's 2003-2005 capital budget.

In 2007, Reclamation and Ecology initiated environmental review for the Storage Study. The Draft Planning Report/Environmental Impact Statement (PR/EIS) was prepared as a combined National Environmental Policy Act (NEPA) and State Environmental Policy Act (SEPA) document, entitled the Yakima River Basin Water Storage Feasibility Study Draft Planning Report/Environmental Impact Statement (Reclamation and Ecology, 2008).

Reclamation understood that Federal funds provided under Section 14 of the Act of February 20, 2003, could only be used to study Black Rock Reservoir and other potential storage facilities in the Yakima River basin. The alternatives considered by Reclamation were:

- No Action Alternative;
- Black Rock Reservoir Alternative;
- Wymer Dam and Reservoir Alternative; and
- Wymer Dam Plus Yakima River Pump Exchange Alternative.

These storage facilities were referred to as the "Joint Alternatives" in the January 2008 Draft PR/EIS because they were advanced jointly by Reclamation and Ecology. Under its SEPA authority, Ecology determined that both storage and nonstorage means of achieving the objectives needed to be evaluated. Thus, the January 2008 Draft PR/EIS considered three "State Alternatives" in addition to the Joint Alternatives:

- Enhanced Water Conservation Alternative;
- Market-Based Reallocation of Water Resources Alternative; and
- Groundwater Storage Alternative.

Reclamation and Ecology held a public comment period on the January 2008 Draft PR/EIS from January 29 to March 31, 2008. A number of the comments received asserted that Reclamation and Ecology had failed to evaluate an adequate range of reasonable alternatives. Ecology consulted with Reclamation concerning whether additional alternatives should be evaluated, and Ecology concluded that the scope of the EIS should be expanded; however, Reclamation determined that its congressional authorization precluded it from expanding its analysis under NEPA to include nonstorage alternatives. Therefore, Ecology decided to separate from the joint NEPA/SEPA process for the study and to pursue completion of a stand-alone SEPA Supplemental EIS. Ecology continued to act as a cooperating agency for Reclamation's NEPA process while Reclamation acted in a similar capacity for the SEPA process. Reclamation pursued completion of the Final PR/EIS for the Storage Study, while Ecology prepared a SEPA Supplemental Draft EIS and a Final EIS.

Reclamation released its Final PR/EIS on December 29, 2008. The Final PR/EIS included only the storage facilities in the Joint Alternatives and responses to comments on the Joint Alternatives. The Final PR/EIS concluded that none of the storage features by themselves met Federal criteria for an economically and environmentally sound water project and recommended the No Action Alternative as the Preferred Alternative. On April 3, 2009, Reclamation, in a concluding letter, announced that it had concluded the Yakima River Basin Water Storage Feasibility Study.

1.1.3 Ecology's Yakima River Basin Water Storage Feasibility Study Supplemental SEPA Analysis

Ecology's Supplemental DEIS was released December 10, 2008, and evaluated an integrated approach to water management in the Yakima River basin. Ecology's Integrated Water Resource Management Alternative proposed seven elements for improving water supplies for agricultural and municipal needs and to improve habitat for anadromous and resident fish. The seven elements were fish passage, modifying existing structures and operations improvements, new surface storage, groundwater storage, fish habitat enhancement, enhanced water conservation, and market-based reallocation of water resources. Ecology prepared its EIS at a programmatic level. The FEIS was issued in June 2009. It presents an integrated package of opportunities to address water resource problems in the Yakima River basin.

1.2 YRBWEP Workgroup

In 2009, Reclamation and Ecology convened the YRBWEP Workgroup to review studies produced since the 1979 YRBWEP feasibility study authorization, including Ecology's FEIS, in order to formulate a comprehensive and integrated solution for the basin's water resource problems and ecosystem restoration needs. The Workgroup is composed of representatives of the Yakama Nation, Federal agencies, Washington State and local governments, an environmental organization, and irrigation districts (see Reclamation and Ecology 2011d for list of YRBWEP Workgroup members). Staff representing the state's congressional delegation also

attended regularly to observe Workgroup discussions. Meetings have been open to the public with opportunities for public input; public attendance regularly numbered 20 to 30 individuals.

The Workgroup has met regularly since June 2009. Activities have included development of an initial Integrated Plan proposal, performance of multiple analyses to examine a range of technical, engineering, and economic topics, and preparation of the Integrated Plan.

Members of the Workgroup include the following organizations:

State and Federal Agencies
Bureau of Reclamation
National Marine Fisheries Service
U.S. Fish and Wildlife Service
U.S. Forest Service
Washington State Department of Agriculture
Washington State Department of Ecology
Washington State Dept. of Fish & Wildlife

Yakama Nation
Yakama Nation Natural Resources
Yakima/Klickitat Fisheries Project

Local Governments
Benton County
Kittitas County
Yakima County
City of Yakima

Irrigated Agriculture
Kennewick Irrigation District
Kittitas Reclamation District
Roza Irrigation District
Sunnyside Valley Irrigation District
Yakima-Tieton Irrigation District

Other Stakeholders
American Rivers
National Wildlife Federation[3]
Yakima Basin Fish & Wildlife Recovery Board
Yakima Basin Storage Alliance

1.3 Yakima River Basin Study

In early 2010, further evaluation and analysis of the Integrated Plan was undertaken under funding from the Department of Interior's WaterSMART Basin Study Program. The Yakima River Basin Study was jointly conducted in 2010 by Reclamation and Ecology.

Through the Basin Study and associated interaction with the Workgroup and its subcommittees, basin needs were specified in greater detail. Reclamation and Ecology further defined, evaluated, and updated actions in the Integrated Plan. Expected hydrologic, fish habitat, fisheries, and economic effects for the Integrated Plan and the future without the Integrated Plan were also further characterized. Potential impacts of future climate change were evaluated and factored into the instream and out-of-stream projections for future water availability and demands. Storage and flow projections were modeled for plan elements based on accepted climate change projections.

The Basin Study including modeling and analysis results, along with cost estimates, assessments of barriers and risks, and potential economic effects were completed in 2011. The Integrated Plan and supporting technical documents are located on Reclamation's website at: http://www.usbr.gov/pn/programs/yrbwep/2011integratedplan/index.html

[3] Alternate for American Rivers

1.4 Authority

Federal authority is through various legislation. State authority is through the Columbia River Water Supply legislation and State Capital Budget as discussed below.

1.4.1 Federal Authority

Congress authorized Reclamation to conduct a feasibility study to address the water resource needs of the Yakima River basin in the Act of December 28, 1979 (93 Stat. 1241, Public Law 96-162, Feasibility Study - Yakima River Basin Water Enhancement Project).

Other authorities relevant to the YRBWEP are:

- Hoover Power Plant Act of 1984, which authorizes Reclamation to install fish passage facilities on Reclamation dams; and
- Yakima River Basin Water Enhancement Project Act of 1994.

1.4.2 Washington State Authority

Authority for the State of Washington is provided by Chapter 90.90 RCW, the Columbia River Basin Water Supply legislation approved by the Washington State Legislature in 2006, which states:

> *(1) The legislature finds that a key priority of water resource management in the Columbia river basin is the development of new water supplies that includes storage and conservation in order to meet the economic and community development needs of people and the instream flow needs of fish.*
>
> *(2) The legislature therefore declares that a Columbia river basin water supply development program is needed, and directs the department of ecology to aggressively pursue the development of water supplies to benefit both instream and out-of-stream uses.*

In 90.90.010 RCW, the legislature created the Columbia River Basin water supply development account in the state treasury. The account may be used to:

> *Assess, plan and develop new storage, improve or alter operations of existing storage facilities, implement conservation projects, or any other actions designed to provide access to new water supplies within the Columbia river basin for instream and out-of-stream uses.*

Additional authority for the State of Washington is contained in the 2011 to 2013 Capital Budget, Yakima Basin Integrated Water Management Plan Implementation (30000278) C 49, L 11, E1, Sec 3033. Under this provision, funding is provided to implement the Integrated Water Resource Management Plan identified as a result of the Yakima River Basin Study. Projects proposed for inclusion with this first phase address storage, including the Wymer Reservoir and Bumping Lake expansion projects, and fish passage at Cle Elum Dam.

1.5 Elements Included in the Integrated Plan

The Integrated Plan includes seven elements: 1) fish passage; 2) structural and operational changes; 3) surface water storage; 4) groundwater storage; 5) habitat protection and

enhancement; 6) enhanced water conservation; and 7) market-based reallocation. It addresses water resource and habitat problems that exist today that can be resolved through regional solutions, while providing an adaptive management framework to address potential future changes in water needs or hydrology, including potential climate change effects.

Table 1 displays the proposed actions included in the Integrated Plan. The total cost of all actions in the plan is estimated to be approximately $4.2 billion in 2012 dollars. Proposed actions are listed in Table 1 and would be carried out over a period of 18 years. Figure 3 shows locations of projects that are identified for particular sites in the basin (programmatic actions that are more dispersed geographically are not shown).

Table 1. Elements and Associated Actions Included in Integrated Plan

ACTION	DESCRIPTION
Fish Passage	
Clear Creek Dam	Improve upstream and downstream fish passage at Clear Lake
Cle Elum Dam	Add upstream and downstream fish passage facilities at other dam sites
Bumping Lake Reservoir Dam	
Tieton Dam	
Keechelus Dam	
Kachess Dam	
Structural and Operational Changes	
Raise Pool at Cle Elum Dam	3-foot increase in storage pool elevation
KRD Canal Changes	Reduce seepage and enhance tributary flows
Keechelus-to-Kachess Conveyance	Optimize storage between two reservoirs
Subordinate Power at Roza Dam and Chandler Power Plants	Reduce water diversions to support fish migration
Wapatox Canal Improvements	Improve efficiency and consolidate diversions
Surface Water Storage	
Wymer Dam	New off-channel reservoir (162,500 acre-feet). Also investigate removal of Roza Dam
Lake Kachess Inactive Storage	Tap inactive storage volume (up to 200,000 acre-feet)
Enlarged Bumping Lake Reservoir	Enlarge reservoir to 190,000 acre-feet
Columbia River Pump Exchange with Yakima Basin Storage	Conduct feasibility study; and periodically evaluate need for additional supplies
Groundwater Storage	
Shallow Aquifer Recharge	Late winter/early spring infiltration prior to storage control
Aquifer Storage and Recovery	Off-season recharge of municipal supplies
Habitat Protection and Enhancement	
Mainstem Floodplain Restoration	Program to fund a range of fish habitat projects
Tributaries Habitat Enhancement	Program to fund a range of fish habitat projects
Targeted Watershed Protection and Enhancements	Program to acquire and protect sensitive lands, including aquatic and terrestrial habitats
Enhanced Water Conservation	
Agricultural Water Conservation	Program to fund a range of projects
Municipal Water Conservation	Program to fund a range of projects and encourage conservation by residents
Market Reallocation	
Near-term Effort	Reduce barriers to trading
Long-term Effort	Additional steps to reduce barriers

KRD = Kittitas Reclamation District

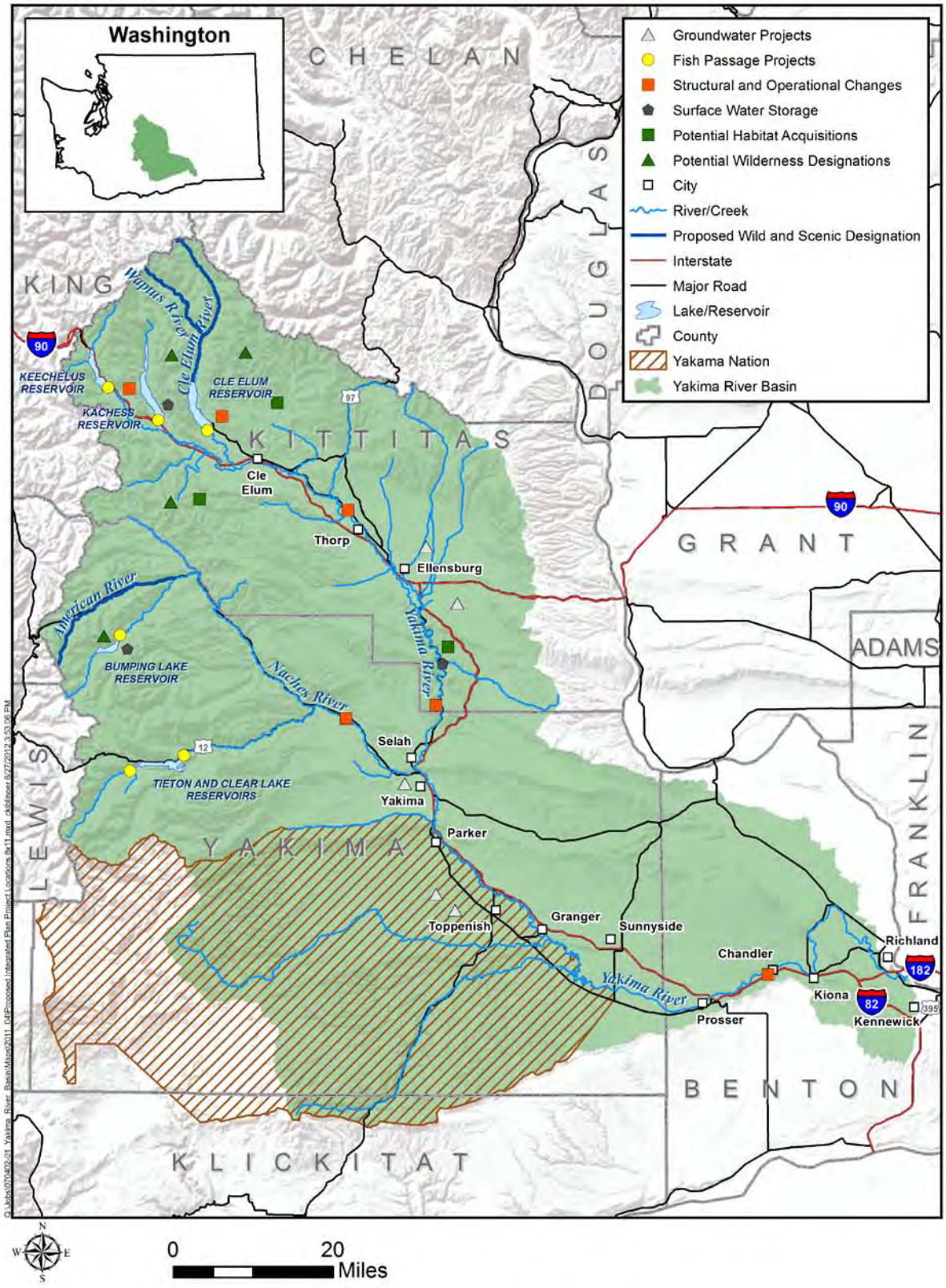


Figure 3. Integrated Plan Project Locations

1.6 Outcomes of the Integrated Plan

The Integrated Plan includes evaluations of water supply and streamflow outcomes from a detailed hydrologic model of the Yakima basin. The model, which operates in a RiverWare software platform and was originally developed by Reclamation to support Yakima Project operations, was adapted to support the Yakima River Basin Study (Reclamation and Ecology 2011c).

Fish production was modeled using the Ecosystem Diagnosis and Treatment (EDT) model, the All H[4] Analyzer (AHA) model, and the Euphotic Zone Depth (EZD) model. The EDT model characterized habitat condition improvements that could result from implementing the habitat program and how the improvements would increase fish production for spring, summer, and fall Chinook, steelhead, and coho. The EZD model was used to estimate sockeye population abundance in the five reservoirs. A qualitative effects analysis was conducted to characterize both positive and negative effects on bull trout populations. Modeling of fish production was discussed with fisheries experts at the Yakama Nation, Reclamation, and the Yakima Fish and Wildlife Recovery Board.

The targeted watershed protection and enhancements were proposed initially by a group of private, nonprofit conservation groups and was subsequently refined by a subcommittee of the workgroup that included representatives from Kittitas County, the Yakama Nation, the environmental community, Washington State Department of Fish and Wildlife, Washington State Department of Natural Resources, and the U.S. Forest Service (USFS). The Watershed Lands Subcommittee proposal was then prepared based on discussion among this subcommittee of expected land-use practices in the future both with and without the proposal and are documented in the Watershed Lands Subcommittee Final Report.

Further assessment of outcomes was conducted during preparation of the Draft and Final PEIS. Outcomes can be summarized as follows.

- Improved streamflow regime in many key reaches of the Yakima River, Naches River, and tributaries with storage facilities. This includes improved ability to meet flow objectives in 13 of 15 reaches of the mainstem Yakima River, as well as improved "carryover" water in storage at the end of most irrigation seasons. Carryover water provides improved system flexibility for meeting streamflow objectives in the following water year.
- Substantial increases in fish populations, including spring/summer Chinook, fall Chinook, coho, steelhead and sockeye.
- Improved water supply reliability for three irrigation divisions that rely heavily on "proratable" water rights, primarily for agricultural irrigation.[5] These are the Kittitas Reclamation District, Roza Irrigation District, and Wapato Irrigation Project. Drought conditions have occurred an average of once every 4 years in the last 20 years, reducing

[4] Habitat, hatchery, harvest, and hydropower

[5] Water entitlements served by the Yakima Project are divided into two classes: proratable and nonproratable. Under drought conditions, proratable entitlements receive reduced (prorated) supplies. Over half of the surface-water entitlements in the basin are proratable under a 1945 Consent Decree. Water users with nonproratable entitlements are served first and are not reduced until all the proratable entitlements are regulated to zero.

supplies to as low as 37 percent of entitlements. The plan is expected to increase available supplies to at least 70 percent of water entitlements to these users during dry years.

- Improved water supply for municipal and domestic water users, including improved security for existing users whose water rights are junior to the proratable water users, and new supply of 50,000 acre feet per year to support continued growth and economic development in the Yakima River basin.
- Improved resilience to potential effects of climate change on the basin's streamflows and water supplies.

The new storage space, operational improvements, and other water management actions provided by the Integrated Plan would be used to meet the plan's multiple goals. New reservoir storage provided with the Integrated Plan would be managed in conjunction with existing storage to provide flexibility in operations for all reservoirs. New reservoir storage beyond that reserved for drought-year water supplies would be available for other uses such as releases for fisheries benefits as identified by fisheries managers and for municipal and domestic water supply needs, to the extent identified in the Plan. The operational regime is meant to be flexible and adaptive; flows may increase or decrease depending on storage available, water supply forecasts and needs, and instream flow needs in the basin. Adaptive management would also address potential future changes in water needs or hydrology, including potential climate change effects.

1.7 Programmatic Environmental Impact Statement

Reclamation and Ecology issued a Draft PEIS on the Integrated Plan in November 2011 (Reclamation and Ecology 2011f). Comments on the Draft PEIS were received and these were addressed in a Final PEIS issued in March 2012 (Reclamation and Ecology 2012d). The USFS and Bonneville Power Administration (BPA) were cooperating agencies for the PEIS. The Final PEIS meets the requirements of both NEPA and SEPA at a programmatic level.

The Final PEIS identifies the purposes of the Integrated Plan as to:

- Implement a comprehensive program of water resource and habitat improvements in response to existing and forecast needs of the Yakima River basin; and
- Develop an adaptive approach for implementing these initiatives and for long-term management of basin water supplies that contributes to the vitality of the regional economy and sustains the health of the riverine environment.

The PEIS examined and compared effects of the Integrated Plan Alternative, the only action alternative, with effects of the No Action Alternative. The Integrated Plan was identified as the Preferred Alternative (Reclamation and Ecology, 2012d).

The proposed action is a plan that contains a large number of interrelated projects and actions intended to operate jointly with each other. A programmatic EIS and planning-level analysis are appropriate at this stage in the decisionmaking process because they enable evaluation of the effects of a broad proposal or planning-level decision that includes any or all of the following:

- A wide range of individual projects;
- Implementation over a long timeframe; and/or
- Implementation across a large geographic area.

1.8 Preliminary Schedule for Implementation

Figure 4 on the following page shows the preliminary implementation schedule for the actions in the Integrated Plan. Colors are used in the figure to show four stages of activity: 1) authorization; 2) studies; 3) project-level environmental review, permitting, and design; and 4) project construction or program activation. This schedule is subject to revision as project-specific actions are further defined.

The schedule shown here has been used for analyses of economic and financial considerations described in this Framework for Implementation Report. This is relevant, for example, in calculating present values of the stream of costs and benefits and for calculating interest during construction in the cost-allocation procedure. Revisions to the project schedule, if they occur, are not expected to significantly alter the reported outcomes of the economic analyses.

1.9 Periodic Reviews and Adjustments

Progress on the Integrated Plan would be reviewed and summarized annually through year 5, and at least every 5 years thereafter, until the plan is deemed fully implemented. Also, an adaptive management plan should be developed in the future to further refine metrics or plan performance measures, triggers, and adaptive management measures for potential plan adjustments through time. The Integrated Plan review should include the following:

- Status of securing funding for implementation.
- Progress in setting up programmatic elements (e.g., market reallocation, water conservation, habitat improvements, and floodplain restoration).
- Progress in constructing identified infrastructure improvements.
- Assessment of outcomes for water supply and fish production, compared with the goals and applicable metrics.
- Effectiveness of revised Yakima Project operating guidelines[6] based on identified goals for meeting instream and out-of-stream needs.
- Significant changes, if any, in the underlying drivers for the Integrated Plan such as listing status of aquatic species; major shifts in cropping patterns or irrigation practices; and changes in the basin's population and economy, climate, snowpack, hydrology, and water needs.
- If plan adjustments are necessary, a clear explanation of the basis and rationale for the recommended adjustments.

[6] Yakima Project operating guidelines should be revised as projects are implemented to meet instream and out-of-stream needs identified in the Integrated Plan.

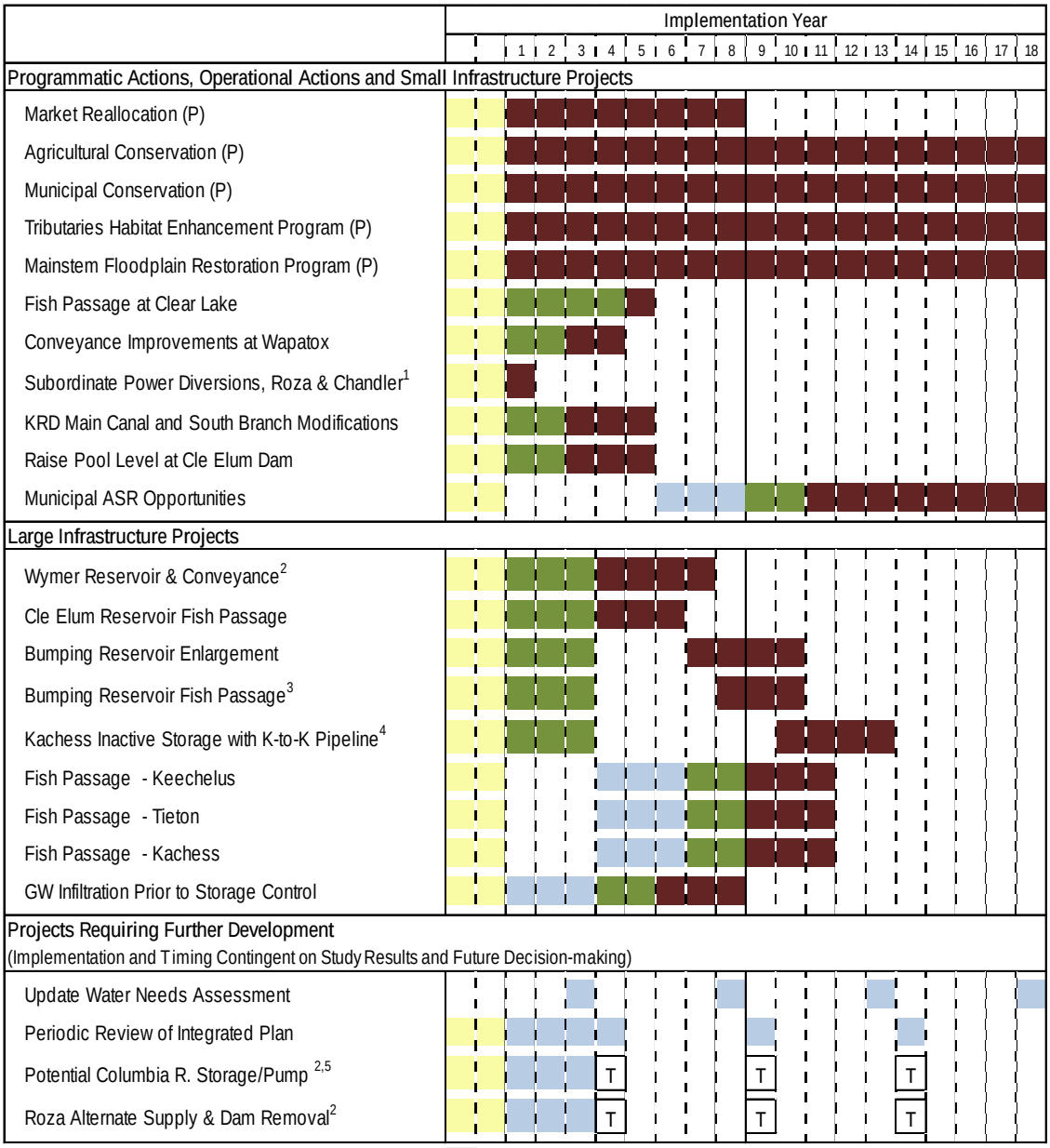


Figure 4. Preliminary Implementation Schedule for the Integrated Plan

The following principles should be applied if the review described above indicates a need for significant changes to the Integrated Plan:

- Every effort should be made to advance both water supply improvements and fisheries enhancements, consistent with the balanced approach of the Integrated Plan.
- If particular actions encounter insurmountable obstacles to implementation or are found unable to deliver the expected benefits, substitutes for those actions should be developed to achieve comparable outcomes.
- The agencies and organizations represented on the Workgroup would continue to work in good faith throughout the implementation period to secure resources as soon as possible to implement all of the Integrated Plan actions or to identify reasonable substitutes if one or more of the recommended actions cannot be implemented. This collaborative effort would continue until the entire plan has been implemented or further implementation is deemed infeasible based on the review process described above.

2.0 Costs of the Integrated Plan

Capital costs of the Integrated Plan are estimated to be between $3.2 and $5.4 billion, with a most probable estimate of approximately $4.2 billion in 2012 dollars. These costs include permitting, design, environmental analyses, construction of infrastructure projects, implementation of programmatic activities, and environmental mitigation. Additional costs of approximately $140 million are identified for interest during construction (see Section 4).

Cost estimates were developed in three stages. First, as part of the Yakima Basin Study during development of the Integrated Plan in 2011, the consulting team led by HDR Engineering prepared opinions of probable construction costs (OPCCs), together with estimates of programmatic costs and operations and maintenance costs. Costs from this analysis were documented in Reclamation and Ecology 2011b.

Second, in 2012, staff from Reclamation's Technical Services Center (TSC) performed a peer review of the design assumptions and cost estimating procedure for six of the infrastructure projects from the Integrated Plan (these included all of the construction projects with costs of $100 million or more. Results from the peer review, plus additional input from Reclamation and consulting team staff were used to perform a cost-risk assessment. The cost-risk assessment analyzed uncertainty and risk factors for each of these six projects and produced updated, probabilistic estimates of their costs. The methods and results are documented in Reclamation and Ecology 2012a.

Finally, a preliminary cost allocation was prepared in 2012. The preliminary cost allocation is documented in Reclamation and Ecology 2012c, and results are also summarized in Section 4 of this Framework for Implementation Report. The Cost Allocation relied on results from the studies listed above, with all costs indexed to first quarter 2012. The Cost Allocation included estimation of replacement costs and interest during construction, which had not been included in the prior analyses.

Revisions to the original 2011 list of projects from the Integrated Plan have been made in the course of refining the costs. First, the Thorp Conveyance System identified as an option to fill Wymer Reservoir was removed from the list of projects, because its cost was deemed too high for the benefits it offered. Second, the cost of land acquisition was not identified in the Integrated Plan, because it is highly uncertain and can be determined only through negotiations with landowners. While this remains true, a preliminary value was needed in order to carry out the cost-allocation procedure, and this preliminary value is now included. Third, estimated costs of environmental mitigation have been developed. Additional adjustments to costs of the Integrated Plan may be identified in the future.

Capital costs of the Integrated Plan are summarized in Table 2. Operations and Maintenance (O&M) costs were estimated in 2011 concurrent with development of OPCCs (Reclamation and Ecology 2011b). These include routine operations, maintenance and minor repairs, and energy costs for pumping. Table 3 shows O&M costs in 2012 dollars. Annual O&M costs are expected to be approximately $11.6 million in 2012 dollars when all the projects are fully operational,

For purposes of the economic analyses and preliminary cost allocation described in Sections 3 and 4, a 100-year breakdown of capital, O&M, and replacement costs was developed. Costs from Tables 2 and 3 (above) were broken out by year, according to the implementation schedule

in Figure 4 (above). For purposes of cost allocation (see Section 4), replacement costs for major components of individual projects that are expected to wear out during the life of the project (100 years) were also estimated. In the cost allocation section, replacement costs are grouped with O&M costs in a category called OM&R.

Table 2. Summary of Capital Costs (2012 dollars)

Project	Undiscounted Capital Cost ($M)	Present Value ($M)
Fish Passage at Lake Cle Elum Dam	87.0	71.5
Fish Passage at Bumping Lake Dam	28.4	20.0
Fish Passage at Clear Creek Dam	3.2	2.6
Fish Passage at Tieton Dam	105.2	71.1
Fish Passage at Kachess Dam	105.2	71.1
Fish Passage at Keechelus Dam	105.2	71.1
Wymer Reservoir and Adjacent Intake	1,138.0	918.1
Wymer Downstream Conveyance	289.0	233.1
Conveyance from Lake Keechelus to Lake Kachess	197.0	125.6
Lake Kachess Inactive Storage Alternative 1 - Tunnel	279.0	177.9
Fish Passage at Box Canyon Creek	1.3	0.8
Bumping Lake Reservoir Enlargement	571.0	409.5
Pool Level Increase at Cle Elum Dam	18.1	15.5
KRD Main Canal and South Branch Modifications	38.3	32.8
Wapatox Canal Conveyance - Alternative 2	87.7	76.4
Mainstem Floodplain Restoration Program	288.3	202.7
Tributaries Habitat Enhancement Program	192.2	135.2
Enhanced Agricultural Conservation	427.1	300.3
Municipal Conservation	0.0	0.0
Market Reallocation	2.1	1.9
Groundwater Infiltration (Pilot Plus Full Scale)	111.5	84.0
Municipal ASR Opportunities	5.3	3.0
Columbia River Pumping & Storage Feasibility Study	4.3	4.0
Land Acquisition Program	100.0	88.9
Update Water Needs Assessment	0.3	1.1
Periodic Review of Integrated Plan	0.2	0.5
Roza Alternate Supply & Dam Removal Feasibility Study	1.1	1.0
Other Mitigation (not broken out by individual project)[1]	2.5	1.9
Total Construction Cost	4,188.2	3,121.7

[1] Mitigation costs are included in the six projects analyzed using cost risk assessment in 2012. This row represents additional mitigation not included in the individual projects.

Table 3. Summary of O&M Costs (2012 dollars)

Project	Annual O&M Cost ($)	Present Value Over 100 Years ($M)
Fish Passage at Lake Cle Elum Dam	320,000	6.2
Fish Passage at Bumping Lake Dam	320,000	5.3
Fish Passage at Clear Creek Dam	75,000	1.5
Fish Passage at Tieton Dam	320,000	5.0
Fish Passage at Kachess Dam	320,000	5.0
Fish Passage at Keechelus Dam	320,000	5.0
Wymer Reservoir and Adjacent Intake	3,900,000	72.9
Wymer Downstream Conveyance	133,000	2.5
Conveyance from Lake Keechelus to Lake Kachess	94,000	1.4
Lake Kachess Inactive Storage Alternative 1 - Tunnel	299,000	4.3
Fish Passage at Box Canyon Creek	32,000	0.5
Bumping Lake Reservoir Enlargement	226,000	3.7
Pool Level Increase at Cle Elum Dam	0	0
KRD Main Canal and South Branch Modifications	160,000	3.2
Wapatox Canal Conveyance - Alternative 2	224,000	4.7
Mainstem Floodplain Restoration Program	534,000	9.7
Tributaries Habitat Enhancement Program[a]	0	0
Enhanced Agricultural Conservation[b]	0	0
Municipal Conservation	1,061,000	15.9
Market Reallocation[c]	212,000	0.5
Groundwater Infiltration (Pilot Plus Full Scale)	2,295,000	42.5
Municipal ASR Opportunities	267,000	3.6
Columbia River Pumping & Storage Feasibility Study	0	0
Land Acquisition Program	500,000	9.0
Update Water Needs Assessment	0	0
Periodic Review of Integrated Plan	0	0
Roza Alternate Supply & Dam Removal Feasibility Study	0	0
Other Mitigation (not broken out by individual project)[a]	0	0
Total Annual O&M Cost	11,612,000	187

[a] O&M costs would depend on specific projects funded. Not broken out separately from capital costs shown in Table 2.
[b] Assumed to fall within existing O&M costs of Irrigation Districts. No new Federal/State outlays.
[c] O&M represents costs as this program is being established. Does not include costs paid by water users purchasing or leasing water.

The projects included in the Integrated Plan are also subject to cost refinement as site exploration, environmental analysis and more advanced designs are developed. The cost-risk assessment provides a range of possible costs for each of the six projects analyzed and identifies key risks and opportunities affecting their costs. Table 4 displays the range of costs for the six projects analyzed using cost-risk assessment and for all of the remaining projects and programs

contained in the Integrated Plan (Reclamation and Ecology 2012a and 2011b). The outcomes are present in terms of probabilities. At the 50th percentile, there is a 50-percent probability that costs would be lower, and 50-percent probability that costs would be higher. At the 90th percentile, there is a 90-percent probability that costs would be lower, and 10-percent probability that costs would be higher. At the 10th percentile, there is a 10-percent probability that costs would be lower, and 90-percent probability that costs would be higher.

Table 4. Range of Integrated Plan Costs with Cost Risk Results

	Costs ($M)[1]		
	10th Percentile	50th Percentile	90th Percentile
Projects from Cost Risk Analysis			
Cle Elum Fish Passage	69	87	110
Bumping Lake Enlargement	467	571	696
K-to-K Conveyance	153	197	250
Kachess Inactive Storage, Alternative 1 (Tunnel)	215	279	351
Wymer Dam	870	1,138	1,443
Wymer Downstream Conveyance	208	289	391
Subtotal	1,982	2,561	3,241
Other Projects and Programs from Integrated Plan[2]	1,185	1,514	2,147
Total with All Projects	3,167	4,075	5,388

[1] All values expressed in first quarter, 2012 dollars.
[2] Other projects and programs from Integrated Plan use low, medium and high values, escalated to 2012 dollars, as rough equivalents to the 10th, 50th and 90th percentiles.

3.0 Four-Accounts Analysis

This section presents results of the analysis of four "accounts" as required under the *Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies* (U.S. Water Resources Council. 1983) (*Principles and Guidelines*). The four accounts are described as follows:

- **The National Economic Development (NED) account** displays changes in the economic value of the national output of goods and services. The Federal objective is to contribute to national economic development consistent with protecting the Nation's environment. The NED account measures the beneficial and adverse monetary effects of each alternative in terms of changes in the value of the national output of goods and services.
- **The Regional Economic Development (RED) account** registers changes in the distribution of regional economic activity that result from each alternative plan. Evaluations of regional effects are to be carried out using nationally consistent projections of income, employment, output, and population. This account evaluates the beneficial and adverse impacts of each alternative on the economy of the affected region, with particular emphasis on income and employment measures. The affected region reflects the geographic area where significant impacts are expected to occur. Impacts can be measured in both monetary and nonmonetary terms.
- **The Environmental Quality (EQ) account** displays nonmonetary effects on significant natural and cultural resources. This account displays the effects on ecological, cultural, and aesthetic attributes of significant natural and cultural resources which cannot be adequately measured in monetary terms within the NED and RED accounts.
- **The Other Social Effects (OSE) account** registers plan effects from perspectives that are relevant to the planning process, but are not reflected in the other three accounts.

The subsections below present results for each of the four accounts. More detailed documentation is available in Reclamation and Ecology 2012b.

3.1 National Economic Development

This section focuses on the NED account, which measures the benefits and costs to the Nation. NED benefits are increases in the total value of the national output of goods and services that can be expressed in monetary units. They include increases in the net value of those goods and services that are marketed, and also of those that may not be marketed. NED costs are the opportunity costs of resources used in implementing the Integrated Plan. In addition to financial costs, opportunity costs can include any decreases in output, or employment losses, if they result from a project.

Before comparisons can be made between costs and benefits, they must be converted to the same dollar year and point in time. Since all the costs and benefits are measured in current dollars, no dollar year adjustment was necessary. However, the costs and benefits would occur at different times. Costs would occur over a period of years as the various projects and programs within the Integrated Plan are implemented. Benefits associated with each project or program would begin

at the time each project or program becomes operational. Therefore all the costs and benefits are expressed as present value in year 2012. Future costs and benefits incurred are discounted (reduced) back to 2012 using the Federal 2011-2012 water project planning discount rate of 4.0 percent.

The NED analysis reported here for the Integrated Plan describes three categories of economic benefits: increases in fish populations; improvements in municipal and domestic water supply; and increases in the reliability of irrigation water during severe drought years. The computation of the different categories of benefits involves analytical methods recommended by the *Principles & Guidelines*.

Fish-Related Benefits: The computation of the value of the fish-related benefits applies the *Principles & Guidelines*' preferred indicator for measuring the value of economic benefits: society's willingness to pay (WTP) for the benefits. The computation employs an analytical approach called benefit transfer. It involves computing the value of the fish-related benefits that would be produced by the Integrated Plan using values determined in a separate study that addressed similar issues in a broader region (the Columbia River Basin) that includes the Yakima River basin.

The study used (Layton, Brown, and Plummer 1999) (*LBP Study*) estimated households' average willingness to pay for actions similar to those included in the Integrated Plan to bring about similar increases in salmon populations in the Columbia River Basin (which includes the Yakima River basin). For the NED analysis of the Integrated Plan, the study team transferred the *LBP Study* results to estimate households' average willingness to pay for the future increases in salmon/steelhead populations expected to result from the Integrated Plan. Household willingness to pay was then multiplied by the number of households to estimate the total value of the expected increases. The analysis uses two groups of households for the computation: one includes only households in Washington, the other uses households in Washington and Oregon.

Irrigation-Related Benefits: The computation of irrigation-related benefits focuses on the increase in farmers' net income expected to result from the Integrated Plan. The analysis first determines the expected increase in crop yield for those farmers who would receive additional water supplies during severe drought years in the Yakima River basin. It then multiplies the increase times an estimate of the net farm income per unit of each crop. This calculation provides the net benefits to farmers receiving the additional water. The analysis then considers potential impacts on farmers elsewhere, recognizing that the increase in crop yield by the farmers receiving additional water may decrease the price farmers elsewhere receive for their crop. The final result represents the overall net change in crop value, from a national perspective.

Municipal and Domestic Benefits: The computation of the Integrated Plan's benefits associated with water for municipal and domestic uses has two components. The first component estimates the market price of the additional water the plan would make available to support anticipated population and economic growth in the basin. It determines the amount of additional water that would be available in future years for municipal and domestic use, if the Integrated Plan were implemented. It then multiplies this amount times an estimate of the wholesale price of water for municipal and domestic use.

The second component estimates the willingness of current municipal and domestic groundwater users above Parker Gage[7] to pay for increased security in their water supplies. It first measures the amount of senior water rights these users would have to acquire to prevent legal action that would disrupt their consumptive use of groundwater during drought years. It then estimates the groundwater users' willingness to pay for the senior water rights and subtracts the value of the agricultural production that would be lost when senior rights are transferred from irrigation to municipal and domestic uses. It then multiplies the difference between these two values, which represents the net economic benefit of the transfer of water rights, multiplied by the amount of senior water rights the municipal and domestic users would have to acquire to prevent legal action that would disrupt their consumptive use of groundwater during drought years.

The sum of the values for the two components of the computation provides the total economic benefit of the increased supply of water for municipal and domestic uses.

Unquantified Benefits: The Integrated Plan likely would produce other types of benefits important to national economic well-being. This report does not include them in the NED account, however, because insufficient information currently exists to describe them in the monetary terms required by the *Principles & Guidelines*. These additional expected benefits include, but are not limited to:

- Unquantified salmon/steelhead benefits.
- Unquantified benefits from increases in the populations of other valuable species.
- Unquantified irrigation-related benefits.
- Unquantified benefits from increases in the net value of recreational opportunities.
- Unquantified benefits from improved resiliency and adaptability of the water system.
- Unquantified climate-change benefits.

3.1.1 Fish Benefits

The Integrated Plan would generate economic benefits by increasing future populations of young salmon/steelhead (fish) produced in the Yakima River basin as well as the numbers of adult fish returning to the basin. Increases in fish populations can yield economic benefits in several ways. Economists often distinguish among the categories of value shown in Figure 5. One general category, called "use value," concerns activities such as commercial and recreational fishing, during which individuals directly interact with and can extract fish from the environment. It also includes values generated indirectly by salmon/steelhead, as when the carcasses of salmon that have spawned and died provide nourishment for other fish and wildlife important to humans.

[7] The Parker Gage is located on the Yakima River at Parker (see Figure 1). It is a key control point for flows and water supply.

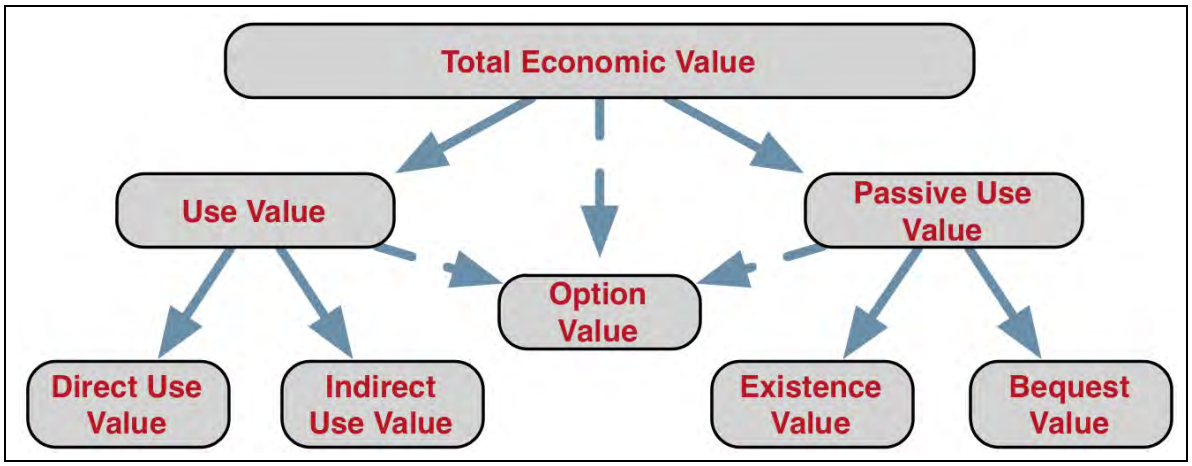


Figure 5. Components of Total Economic Value

The other general category, called "passive-use value," (or sometimes, "nonuse value") does not require this direct interaction and use. It occurs when people place importance on the continued existence of fish and on ensuring that fish would be available for the enjoyment of others, such as future generations. People can assign a use value or a passive-use value, or both, to a resource to represent their current relationship with the resource. People can also assign a value to maintaining the option of establishing the relationship in the future and this is known as "option value." When combined, use values and passive-use values (together with their option values) add up to total economic value (Tietenberg 2000).

This section describes the potential fish-related economic benefits of the Integrated Plan.[8] It first describes the Integrated Plan's potential impact on future fish populations, and then estimates the total economic value of the potential increase in fish populations. The basis for the calculation of total economic value is a valuation model derived from survey-based research, which estimates households' WTP for future increases in fish populations in the Columbia River Basin. The section concludes with an exercise that estimates the size of the use-value portion of the total economic value, applying a methodology used by Reclamation in a prior analysis of water storage projects in the Yakima River basin (Reclamation, 2008).

For more information on the methodology used in calculating benefits, see Reclamation & Ecology 2012b.

The Integrated Plan's Potential Impact on Future Fish Populations

The Integrated Plan would increase future salmon/steelhead populations in the Yakima River basin through the combined effects of diverse actions addressing multiple factors that negatively affect these populations. Improvements in streamflows and habitat would be accomplished through:

- Investments to provide fish passage around all five of the major dams in the Yakima River basin to reduce the impacts of dams on salmon/steelhead.

[8] All values in this section are in 2012 dollars. Values from previous years are brought to 2012 dollars using the U.S. Bureau of Labor Statistics' Consumer Price Index.

- Structural and operational changes at existing facilities that would improve streamflow conditions.
- Development of new surface water storage to increase water supplies and improve streamflow.
- Development of groundwater storage that would improve streamflow conditions.
- Targeted watershed protections and enhancements that would improve habitat in forested watersheds.
- Mainstem floodplain and tributary habitat enhancements.
- Promotion of municipal and domestic water conservation and direct investment in agricultural conservation that would improve streamflows.

Current production of salmon and steelhead in the Columbia River Basin is on the order of 2 million fish per year, on average (Fish Passage Center 2011; Oregon Department of Fish and Wildlife 2012). Biological modeling indicates that, when fully implemented, the Integrated Plan would increase the number of adult salmon and steelhead in the Columbia River Basin by about 180,000 to 470,000 fish a year (see Table 5).

This analysis assumes fish populations would increase linearly over a 30-year period and remain stable after that. The actual growth in fish populations may occur faster or slower depending on a number of factors. As explained below, however, the rate of growth does not affect the computation of households' willingness to pay for the growth, because the method used for the computation depends on the total growth rather than on the annual rate of growth.

It is assumed that each year commercial and recreational fisheries would harvest about 21 percent of the additional adult fish resulting from the Integrated Plan. This harvest rate reflects current compliance with fishery management compacts and regulations established under the Federal Endangered Species Act. After 30 years, the change in fish harvest associated with the Integrated Plan would stabilize at about 38,000–103,000 fish a year (see Table 5). The increase in fish populations would affect several species: spring, summer, and fall Chinook salmon, coho salmon, steelhead, and sockeye salmon. Sockeye salmon represent about 80–94 percent of the overall expected increase in adult fish population, and 77–92 percent of the increase in fish harvest (see Table 5).

Table 5. Expected Increases in Salmon and Steelhead Populations Resulting from the Integrated Plan at Full Implementation

	RECRUITMENT	HARVEST
Spring/Summer Chinook	6,000–46,700	1,497–12,524
Fall Chinook	1,600–16,150	664–6,342
Coho	1,650–10,700	420–2,786
Steelhead	2,400–18,900	316–2,451
Sockeye	170,000–380,000	35,100–78,500
Total	181,650–472,450	37,997–102,603
Source: Adapted from Hubble, 2012.		

Total Economic Value of the Integrated Plan's Potential Impact on Future Fish Populations

In 1999, the Washington Department of Ecology commissioned the development and application of a model (*LBP Study)* for estimating the total economic value of benefits derived from potential future programs to increase fish populations in waterways across the state (Layton, Brown and Plummer 1999). Results from the *LBP Study* were used to estimate the economic benefits associated with increases in fish populations resulting from the Integrated Plan.

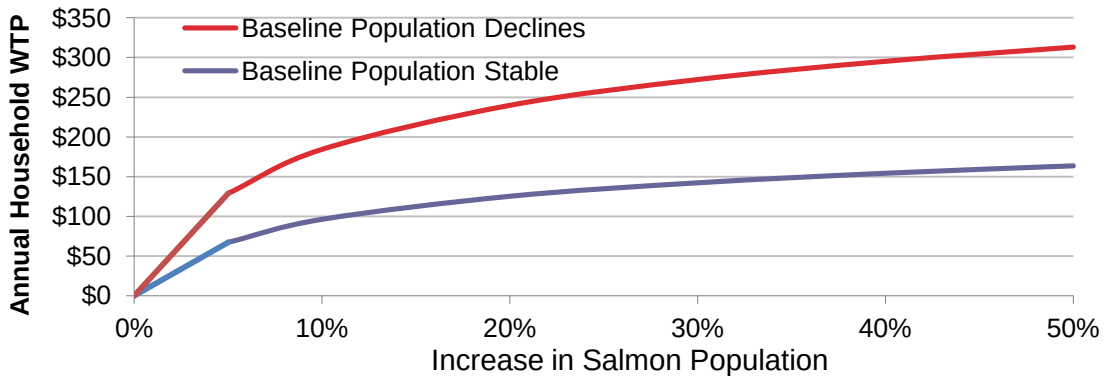
The LBP Study

The *LBP Study* surveyed Washington residents and used the results to develop a model for estimating the total economic value associated with potential future increases in five different fish populations in Washington. This analysis employs the findings for what the *LBP Study* calls Eastern Washington and Columbia River migratory fish (i.e., salmon and steelhead originating from Eastern Washington and the Columbia River Basin). More information about the survey methodology is presented in Reclamation and Ecology 2012b.

The survey was designed to obtain information from respondents on their WTP for improvements in fish populations, separate from their beliefs about specific factors that have depressed these populations, their preferences for specific beneficial actions relative to others, or for who should pay for different types of actions.

The researchers used survey responses to develop a model of households' WTP for increases in fish populations. Figure 6 describes the model for salmon/steelhead populations in the Columbia River and Eastern Washington (in 2012 dollars). The model has two components, corresponding to the different baseline scenarios, and each component has two functions. Figure 6 shows the functions and a graph with their corresponding curves. The first row shows the functions for the blue curve, which describes households' average annual WTP for increases in salmon populations when the baseline fish population remains stable over the next 20 years. The second row shows the functions for the red curve, which describes households' average annual WTP for increases in salmon populations when the baseline fish population declines over that period.

BASELINE FUTURE FISH POPULATION	WILLINGNESS TO PAY FUNCTION
Stable over time at 2 million	f(X)=12*1.06X*1.377, 0% ≤ X < 5% f(X)=12*-(0.0673/-0.0266)*LN(X*100)*1.377, 5% ≤ X
Declining over 20 years from 2 million to 0.5 million	f(X)=12*2.04X*1.377, 0% ≤ X < 5% f(X)=12*-(0.1003/-0.0207)*LN(X*100)*1.377, 5% ≤ X
Where: f(X)= Annual household WTP in 2012 dollars X=Percent increase in Eastern Washington, Columbia River migratory fish	



Source: Adapted from Layton, Brown and Plummer 1999

Figure 6. Annual Household Willingness to Pay for an Increase in the Columbia River and Eastern Washington Salmon/Steelhead Population

As the curves show, households are willing to pay more to improve fish populations when baseline fish populations decline than when they remain stable. Furthermore, moving from left to right (from smaller to larger increases in future fish populations), the curves show that households' average annual WTP increases, but at a decreasing rate. This trend suggests that respondents were willing to pay more, per fish, for small increases in future fish populations than for large increases. This is consistent with expectations from economic theory.

Applying the LBP Study's Results to the Integrated Plan

The process used to apply the *LBP Study* to the Integrated Plan is known as benefit transfer. Reclamation and Ecology 2012b reviews the applicability of using this process to determine the value of the Integrated Plan's fish-related benefits. It also examines potential differences between the focus of the *LBP Study* and the Integrated Plan's impacts that may affect the applicability of the *LBP Study's* results to the total economic value of the Integrated Plan's impact on fish populations. It concludes that the differences are small and unbiased relative to the overlap between the *LBP Study* and the Integrated Plan.

The *LBP Study* is particularly suitable for benefit transfer in this setting. Its applicability stems from the high technical quality of its research design and the close similarity between its scope and focus and the scope and focus of the Integrated Plan. The *LBP Study* satisfies these criteria, expressed by the Federal Office of Management and Budget (2003), for assessing the applicability of a study used in a benefit-transfer process:

- The selected studies should be based on adequate data, sound and defensible empirical methods and techniques.
- The selected studies should document parameter estimates of the valuation function.
- The study context and policy context should have similar populations (e.g., demographic characteristics). The market size (e.g., target population) between the study site and the policy site should be similar.
- The good, and the magnitude of change in that good, should be similar in the study and policy contexts.
- The relevant characteristics of the study and the policy contexts should be similar.
- The distribution of property rights should be similar so that the analysis uses the same welfare measure.
- The availability of substitutes across study and policy contexts should be similar.

More information on the applicability of these criteria is presented in Reclamation and Ecology 2012b.

Timing of Increases in Fish Populations

In the *LBP Study's* survey, respondents were asked how much money they would be willing to pay each month, for the next 20 years, for a program with components similar to those of the Integrated Plan that, after 20 years, would result in the specified increases in fish populations. The survey did not describe the rate at which fish populations would increase. In stating their WTP, respondents defined acceptable levels for 20 years of monthly payments associated with the specified increase in fish population after 20 years, regardless of how quickly or slowly populations would increase.

The biological modeling underlying the Integrated Plan indicates that salmon/steelhead populations would increase linearly over a 30-year period beginning in the year when the first habitat improvements are completed. After 30 years, populations are expected to stabilize (Hubble 2012). Year-to-year growth could vary from the linear path, but the modeling anticipates the long-term variation over 20 to 40 years would be small. To apply the model developed in the *LBP Study,* this analysis divides the Integrated Plan's impact on fish populations into two groups: one describing the increase in fish populations that occurs over the first 20 years, the other describing the increase in fish populations that occurs in the following 20 years. These assumptions ensure the analysis closely follows the assumptions and structure of the *LBP Study's* model.

Baseline Fish Populations, without the Integrated Plan

As previously described, the *LBP Study* estimated households' WTP for increases in salmon/steelhead populations within the context of three fish population estimates shown to survey respondents. These estimates included a historical population of 8 million; a current population of 2 million; and two different "baseline" scenarios without a program to increase the population. In one baseline scenario, the population would remain stable; in the other baseline scenario, the population would decline to 0.5 million. This analysis incorporates the assumptions underlying the stable-population baseline.

Historical fish populations correspond to those represented in the *LBP Study*: the Columbia River Basin and Eastern Washington produced about 8 million adult salmon/steelhead per year (National Marine Fisheries Service 2011; Northwest Power and Conservation Council, 2000). The current salmon/steelhead population in this region is about 2 million: fish counts at Bonneville Dam and on the Willamette River have fluctuated between 1.0 and 2.0 million since 2000, and these counts do not incorporate fish that return to the Lower Columbia River after maturing in the ocean, but do not pass the counting stations (Fish Passage Center 2011; Oregon Department of Fish and Wildlife 2012).

Households and their Preferences

To estimate the total economic value of increases in fish populations, the *LBP Study* modeled the average WTP per household in Washington, and then multiplied this average by 2 million, the estimated number of households in Washington in 1999. Applying the results to determine the fish-related NED benefits of the Integrated Plan requires accounting for any identifiable change in households' preferences and WTP for future increases in fish populations and for changes in the number of households since 1999.

Households' average willingness to pay may fluctuate, from year to year, representing changes in economic conditions (Montgomery and Helvoigt 2006) and other factors. Over the 40-year period of analysis, however, households' WTP for increases in salmon/steelhead populations in Eastern Washington and the Columbia River Basin likely would increase—barring unexpected events, such as a major restructuring of the region's economy—in response to potential increases in average household incomes (Horowitz and McConnell, 2000), increased WTP for fish-related recreation (Rosenberger and Loomis, 2001), or other factors.

The U.S. Census shows that the number of households in Washington increased from the 2 million used in the *LBP Study* to 2,620,076 in 2010 (U.S. Census Bureau, 2010). Projections of the state's population indicate the number of households would continue to increase. Projections show a 1.4 percent increase in Washington's population from 2010 to 2012 (the beginning of the first 20-year period) and a 23.3 percent increase from 2010 to 2032 (the beginning of the second 20-year period) (Office of Financial Management, 2011).

The NED value of the expected increases in salmon/steelhead populations resulting from the Integrated Plan depends on the importance that all U.S. households place on conserving this resource. Applying the results from the *LBP Study* to just Washington households likely underestimates the actual value, from a national perspective, since this overlooks the value to households in other states.

Households in Oregon likely have a WTP similar to that of Washington households, given that the two states share the Columbia River Basin, and also share similarities in the importance of salmon and steelhead to their respective cultures and economies[9] (The discussion, below, of factors that may affect the accuracy of the estimates considers the possibility that Oregon households are less willing than Washington households to pay for increases in fish populations.) Adding Oregon households to the analysis increases the total number of 2012 households by about 60 percent. If Washingtonians and Oregonians share the same WTP for increased fish populations in the Columbia River Basin and Eastern Washington, incorporating Oregon

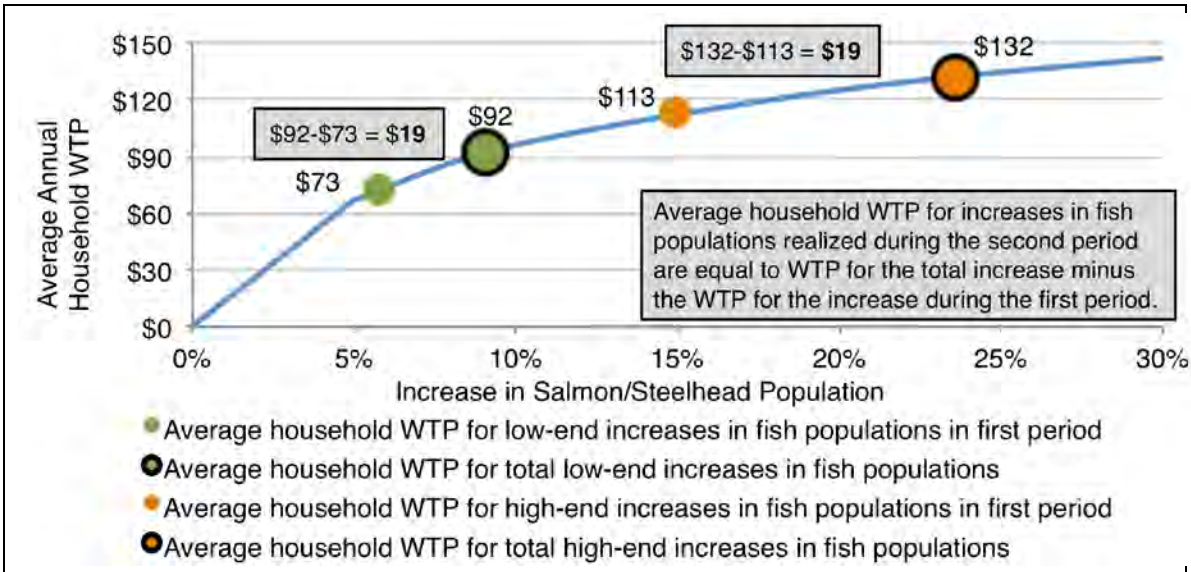
[9] See, for example, Bell et al., 2003; DHM Research and Earthfix, 2011

households into the computation would increase the total economic value of the Integrated Plan's impact on fish populations by the same percentage, all else equal. Accounting for the value households in Washington and Oregon would realize from the increases in fish populations expected from the Integrated Plan does not account for the value households in other states would realize, however, and, hence, it still underestimates the total value from a national perspective.

The Total Economic Value of Increases in Fish Populations Resulting from the Integrated Plan

The Integrated Plan would increase the number of adult salmon and steelhead produced by the Columbia River Basin and Eastern Washington over time, with the maximum increase of about 182,000 to 472,000 fish per year achieved at year 30 and continuing for the remainder of the 100-year period of analysis. This range in the number of fish yields two estimates of the Integrated Plan's fish-related benefits: the bottom of the range yields the "low-end" estimate, and the top yields the "high-end" estimate.

Figure 7 shows the average annual willingness to pay, per household, associated with the low-end and high-end percentage increases in fish populations, relative to the stable-population baseline (2 million fish), that households in Year 1 and Year 20 would expect from the Integrated Plan. The line in the figure is the same as the blue line in Figure 6, representing the *LBP Study's* estimate of the households' average annual WTP for increases in fish populations if the baseline (no action) scenario predicts stable fish populations into the future. The green dots represent households' average annual willingness to pay for the low-end estimate of increases in fish population that would result from the Integrated Plan. The orange dots represent the WTP for the high-end potential increases. The small dots represent the benefits that would materialize initially, and reflect the willingness of current households to pay for the expected increase in salmon/steelhead populations expected 20 years later. The large dots represent the Integrated Plan's total fish-related benefits, and reflect the amounts represented by the small dots plus the willingness of Year 21 households to pay for the increase expected in the 2nd 20-year period. The text boxes in the figure show the calculation of households' average annual WTP for the additional increase in fish populations expected in the second period.



Source: Adapted from Layton et al., 1999; Hubble, 2012

Figure 7. Average Annual Household WTP for the Integrated Plan's Potential Impact on Fish Populations

Table 6 summarizes the results shown in Figure 7. For each period, it shows households' average annual WTP, throughout the period, for the fish-population increase expected at the end of the period. All monetary amounts are given in 2012 dollars.

Table 6 also shows the present value, equivalent to the 20-year stream of payments for each period, using a discount rate of 4.0 percent per year, the rate applicable to NED calculations in 2012.[10] Thus, the present value of households' average willingness initially to pay $73 per year for 20 years for a program that would yield the low-end increase in fish populations at year 20 is $1,030. The present value of households' average willingness at year 21 to pay $19 per year for 20 years for an additional program that would build on the success of the first program and yield the low-end increase in fish populations expected at year 40 is $120. The corresponding numbers for the high-end increase are $1,600 for the first period, and $120 for the second period.

Table 6. Average WTP per Household for Low- and High-End Expected Increases in Fish Population Resulting from the Integrated Plan: Annual and Present Value

[10] This is the discount rate applicable to NED analysis of water-resource projects in 2012 retrieved from: 76 Federal Register 73674 (November 29, 2011).

20-YEAR ANALYSIS PERIOD	YEAR BENEFITS ARE REALIZED	AVERAGE HOUSEHOLD WTP FOR LOW- AND HIGH-END INCREASES IN FISH POPULATIONS			
		ANNUAL		PRESENT VALUE	
		Low-end Increase	High-end Increase	Low-end Increase	High-end Increase
First 20-Year Period	Initial Year	$73	$113	$1,030	$1,600
Second 20-Year Period	Year 21	$19	$19	$120	$120

The total present value of the increase in fish populations expected from the Integrated Plan equals the average present value per household for each period, times the number of households at the beginning of the period. Table 7 shows the computations for two alternatives. One alternative considers the value of the expected increases in fish populations to households in Washington State only. The other alternative considers the value of the expected increases in fish populations to households in both Washington and Oregon, and assumes that both exhibit the same average WTP for increases in fish populations derived from the *LBP Study*.

Table 7. Present Value of the Integrated Plan's Fish-Related Benefits

REGION	YEAR BENEFITS ARE REALIZED	PRESENT VALUE PER HOUSEHOLD		NUMBER OF HOUSEHOLDS (MILLIONS)	TOTAL PRESENT VALUE (BILLIONS)	
		Low-end Increase	High-end Increase		Low-end Increase	High-end Increase
Washington Only	Initial Year	$1,030	$1,600	2.66	$2.8	$4.3
	Year 21	$120	$120	3.23	$0.4	$0.4
	Total	- -	- -	N/A	$3.1	$4.6
Washington and Oregon	Initial Year	$1,030	$1,600	4.21	$4.4	$6.7
	Year 21	$120	$120	5.20	$0.6	$0.6
	Total	- -	- -	N/A	$5.0	$7.4
Rounding may cause a total to differ from the sum of its elements.						

For Washington households only, the overall present value of the increases in fish populations expected from the Integrated Plan is $3.1 billion for the low-end of the expected increase and $4.6 billion for the high-end. Considering the combined households of Washington and Oregon, the total economic value of the fish-related benefits of the Integrated Plan is $5.0 billion for the low-end increase and $7.4 billion for the high-end.

Factors Affecting the Accuracy of the Estimated Fish-Related Benefits

The values reported in Table 7 likely underestimate the total fish-related NED benefits of the Integrated Plan for three reasons:

- The values in Table 6 and Table 7 show the value households in Washington and Oregon would realize from the expected increases in fish populations. They do not, however, include the value that households in the rest of the Nation would realize.
- The values in Table 6 and Table 7 reflect an assumption that salmon/steelhead populations in the Columbia River Basin would remain stable into the future without the Integrated Plan. However research suggests that these fish populations likely would

decline in the future due to several factors, such as climate change and increases in human populations. All else equal, the potential for future declines in the baseline fish populations would tend to raise NED benefits to levels higher than shown in Table 7.

- The values in Table 6 and Table 7 assume benefits are realized only at the beginning of each 20-year period, to reflect households' expectation of increases in fish populations at the end of each period. In reality, however, some households likely would derive additional benefits throughout each of the two 20-year analysis periods. Moreover households likely would continue deriving benefits after 40 years, although the discounting process would reduce its present value considerably.

Other factors, though, create uncertainty about the accuracy of the estimated value of the Integrated Plan's fish-related benefits, and some could cause overestimation of the total fish-related NED benefits of the Integrated Plan. These include factors arising from the design of the *LBP Study* itself; uncertainties associated with benefit-transfer approaches to economic analysis, and declines in median household income, in constant dollars, since the *LBP Study* was performed. For further discussion of these uncertainties, see Reclamation and Ecology 2012b. While these factors must be considered in evaluating applicability of the *LBP Study* to estimating NED for the Integrated Plan, the overall conclusion is that the study yields robust results for this purpose.

Comparison with Results from Other Studies

The results shown in Table 7 are consistent with the findings of related research on the value of potential increases in salmon/steelhead populations in the Pacific Northwest. Table 8 summarizes the results from three studies of the economic value associated with increases in salmon populations in this region.

Table 8. Comparative Findings on Household Willingness to Pay for Increased Salmon Populations

SOURCE	OLSEN ET AL. 1991	LOOMIS 1996	BELL ET AL. 2003	NED ANALYSIS OF INTEGRATED PLAN
Geography	Columbia River	Elwha River	Coastal OR and WA	Columbia River
Change in Fish Population	2,500,000	300,000	165,000	115,045–299,218* 66,605–173,232**
Average Annual Household WTP (2012 dollars)	$100	$100	$120	$73–$113* $19**

Source: Olsen et al., 1991; Loomis, 1996; Bell et al., 2003

* Increase in fish population from 2012-2031 and average annual WTP in 2012 for that increase.

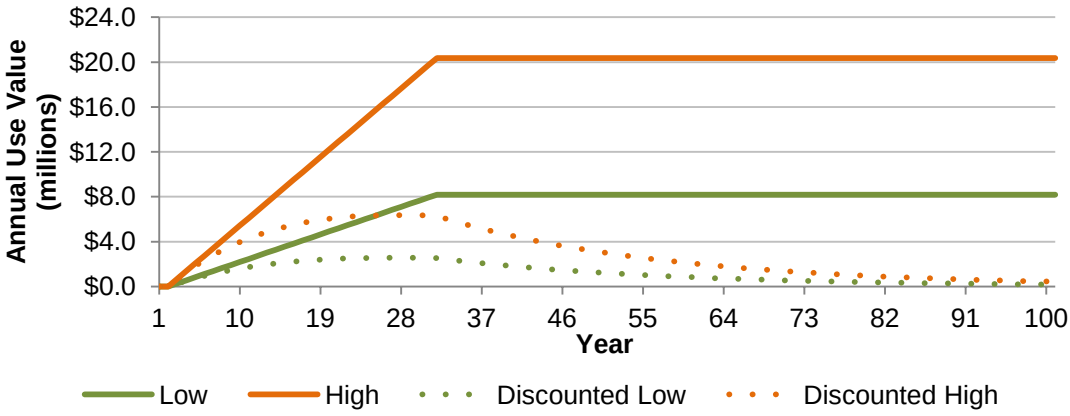
** Increase in fish population from 2032-2051 above the increase in the prior 20 years, and average annual WTP in 2032 for that additional increase.

The Use-Value Component of the Integrated Plan's Fish-Related Benefits

Reclamation and Ecology 2012b also employs a separate analytical method to estimate the use-value component of the Integrated Plan's fish-related benefits that were computed in the previous section. The intent is not to estimate additional fish-related values. Instead, this effort

aims to isolate the portion of the total value, estimated above, that would be captured by activities that entail direct use of the potential increase in fish populations resulting from the Integrated Plan. Specifically in this analysis, use value is the value associated with harvesting adult fish produced as a result of the Integrated Plan. The harvesting might occur in several ways: commercial, sport, subsistence, and Tribal ceremonial.

To estimate the total use value associated with the Integrated Plan's impact on fish populations, annual species- and fishery-specific harvests are multiplied by the relevant use values. These annual use values accumulate over time. The present value of the future stream of values reflects a discount rate of 4.0 percent per year.[11] Figure 8 shows the annual use values of the Integrated Plan's fish-related benefits over a 100-year period. The solid lines represent undiscounted annual values in 2012 dollars. The dashed lines represent discounted annual values. Orange lines represent high-end potential increases in fish populations and green lines represent low-end potential increases in fish populations. As shown at the bottom of Figure 8, the present value of use values attributable to the Integrated Plan's impact on fish populations for the 100-year period is about $0.1–$0.3 billion. As noted previously, this is a component of the total fish-related benefits, rather than an additional benefit.



Overall Present Value (discounted)	$0.1–$0.3 billion

Figure 8. Annual Use Values Derived from the Implemented Plan's Potential Impact on Fish Populations

For further information on the data and analysis used to estimate use value, see Reclamation and Ecology 2012b.

3.1.2 Irrigation Benefits

If implemented, the Integrated Plan would generate two types of irrigation-related benefits that are considered in this analysis: (1) it would stimulate market-based reallocation of water between irrigators, resulting in more transfers than otherwise would occur, and moving water from production of lower-valued crops to higher-valued crops; and (2) it would increase the supply of water available to irrigators during a severe drought. This section first describes the setting and

[11] This is the discount rate applicable to NED analysis of water-resource projects in 2012 retrieved from: 76 Federal Register 73674 (November 29, 2011).

outlines the analytical approach, assumptions, and scenarios applied in the analysis. Then it describes the anticipated annual net farm earnings under two scenarios, with and without the Integrated Plan, and projects those benefits over the next 100 years. The section concludes with a discussion of the Integrated Plan's potential effects on the broader market for agricultural products during severe droughts.

The results of this analysis show that, once fully implemented, the Integrated Plan could increase annual net farm earnings during a severe drought year to very near the values expected during an average nondrought year without the Integrated Plan. Over the next 100 years, the overall present value of the Integrated Plan's irrigation-related benefits, discounted at 4.0 percent (the Federal 2011-2012 water project planning rate), is about $0.8 billion (in 2012 dollars).

Setting

Irrigated agriculture is the largest user of water in the Yakima River basin. Most of the water used for irrigation is provided by the Yakima Irrigation Project (Yakima Project), which is operated by Reclamation. The Yakima Project provides water to six irrigation districts or divisions: Kittitas, Roza, Tieton, Wapato, Sunnyside, and Kennewick. The first five in this list would be most directly affected by the Integrated Plan. They have 81 percent (1,938,300 acre-feet) of the total entitlements (2,406,917 acre-feet) to water in the Yakima, Tieton and Naches Rivers above the Parker Gage on the Yakima River (Reclamation and Ecology, 2011a).

The amount of land that can be irrigated in the Yakima River basin is limited. Federal law constrains the amount of land served by the Yakima Project, and the available water supply limits the amount of land that can be irrigated outside the Yakima Project. The Yakima Project currently supports irrigation for 464,000 acres (Reclamation and Ecology, 2011d). Because of the constraints on irrigated acreage, the Integrated Plan assumes acreage available for irrigated agriculture in the basin will not expand in the future, and it aims to improve reliability of irrigation supplies, but not to bring about expansion of irrigated acreage.

The reliability of water supplies for irrigators served by the Yakima Project differs considerably for two groups of irrigators. Water rights associated with the Yakima Project fall into two classes: nonproratable and proratable. Nonproratable water rights are more senior and have priority dates prior to May 10, 1905. These rights are served first from the Total Water Supply Available (TWSA), which Reclamation defines each year based on reservoir storage, runoff forecast, and return flow estimates. Proratable water rights, however, have a priority date of May 10, 1905. When the TWSA cannot fully serve both groups, it goes first to satisfy the nonproratable water rights insofar as possible, with any remainder shared by the proratable water rights. In each of the droughts occurring in recent decades, Reclamation has been able to fully supply nonproratable water rights, but proratable water rights have received reduced (prorated) supplies, as low as 37 percent of normal supply. The Integrated Plan aims to improve the reliability of supplies for irrigation users with proratable water rights.

As noted above, the primary concern about water-supply reliability involves the five irrigation districts above the Parker gage.[12] To facilitate the presentation, the following discussion refers to each of these entities as a district. The concern narrows further, to Roza, Kittitas, and Wapato districts, insofar as Sunnyside and Tieton have stated they do not need additional water during

[12] The analysis does not include Kennewick Irrigation District because it typically does not experience reduced water availability during a severe drought that affects other districts.

drought periods even though they have proratable entitlements (Reclamation and Ecology, 2011e). Table 9 compares the proratable water rights for the three districts with the rest of the Yakima Project entitlements above the Parker gage. Kittitas, Roza, and Wapato districts (divisions) hold 82 percent of the total proratable water rights above the Parker gage. They hold 96 percent of the proratable water rights above the Parker gage, exclusive of Sunnyside and Tieton districts.

Table 9. Proratable Water Rights above Parker Gage

IRRIGATION DISTRICTS	PRORATABLE ENTITLEMENTS (ACRE-FEET)	% OF TOTAL PRORATABLE ENTITLEMENTS	
		Total	Not Including Sunnyside and Tieton
Roza	393,000	30%	35%
Wapato	350,000	27%	31%
Kittitas	336,000	26%	30%
Subtotal	*1,079,000*	*82%*	*96%*
Sunnyside	157,776	12%	0
Tieton	30,425	2%	0
Subtotal	*1,267,201*	*97%*	*96%*
Non-Division Entitlements	42,874	3%	*4%*
Total	1,310,075	100%	100%

Source: Adapted from Reclamation and Ecology, 2011e.

Analytical Approach

To estimate the irrigation-related economic benefits of the Integrated Plan, this analysis describes its potential impacts on net farm earnings, consistent with the *Principles & Guidelines*. As described in the *Principles & Guidelines*, the Integrated Plan's potential impacts on net farm earnings represents damage reduction benefits in the form of increased agricultural production due to a more reliable water supply. The analysis first computes the direct increase in net farm earnings for irrigators in the Yakima Project who would enjoy greater reliability of water supplies because of the Integrated Plan. It then considers the potential for indirect impacts on the net farm earnings of other crop producers who might see lower prices for their crops because of the higher production of the direct beneficiaries.

The analysis has these four components (additional details are available in Reclamation and Ecology 2012b):

1. Scenarios that support comparison of net farm earnings with vs. without the Integrated Plan.
2. A spreadsheet model that estimates each district's net farm earnings by simulating irrigated acreage and net farm earnings, by crop, by district, for a specified level of water availability and a given extent of market reallocation of water from lower- to higher-value crops.
3. Current data on crops, crop-irrigation requirements, crop prices, and variable crop-production costs.
4. Estimates of the elasticity of price with respect to level of production, by crop.

The following discussion presents information on the scenarios and spreadsheet model.

Scenarios

The analysis incorporates the two scenarios summarized in Table 10. The top section shows the Baseline Scenario, without the Integrated Plan. In a non-drought year all irrigators in the five districts would have enough water to satisfy their irrigation requirements. During a severe drought year, water supplies would satisfy the entitlements of non-proratable irrigators, but proratable irrigators would receive less than their full entitlement. Recent severe droughts have seen proratable irrigators receive as little as 37 percent of their full entitlement. With expectations that future droughts may be exacerbated by changes in climate, this analysis assumes future severe droughts would see proratable irrigators receiving only 30 percent of their full entitlements. To lessen the impacts of the severe drought, the Baseline Scenario assumes that irrigators would lease 30,000 acre-feet of water to other irrigators, with the water shifting from lower-value to higher-value crops.

Table 10. Scenarios Used in the Analysis of Irrigation-Related Benefits

BASELINE SCENARIO (WITHOUT THE INTEGRATED PLAN)
• During non-drought years, TWSA is sufficient to satisfy the full entitlement for all non-proratable and proratable irrigators in the Yakima Project. • Consistent with historical experience, severe, 1-year drought occurs every 5 years. A severe, 3-year drought occurs every 20 years. • During a severe drought year: o TWSA is sufficient to satisfy all non-proratable irrigators in the Yakima Project, but proratable irrigators receive only 30 percent of their full entitlement. o Inter-district leasing of water would reallocate about 30,000 acre-feet of water among Kittitas, Roza, and Sunnyside Districts. Additionally, intra-district trading would occur in all five districts.
INTEGRATED PLAN SCENARIO
• During non-drought years, TWSA is sufficient to satisfy the full entitlement for all non-proratable and proratable irrigators in the Yakima Project. • Frequency and duration of severe droughts are the same as in the Baseline Scenario. • During a severe drought year: o All irrigators in the five districts would be willing to sell or buy water for short-term lease when the water supply available to them falls below crop-irrigation requirements of the crops they are producing. o Irrigators experiencing reduced supplies would use water to satisfy crop-irrigation requirements of their higher-valued crops as much as possible, leaving other acreage fallow, and would receive no net farm earnings from fallowed land. o Because of their topographical and infrastructure characteristics, Tieton and Wapato Districts would conduct only intra-district trading within each district; Kittitas, Roza, and Sunnyside Districts would conduct both intra- and inter-district trading. Buyers would lease water only for crops with annual net farm earnings of at least $150 per acre-foot. Irrigators in Roza, Kittitas, and Sunnyside Districts would lease no more than 10 percent of each district's water supply to irrigators in another district. o The Integrated Plan increases the supply of water beginning in 2018, with the amount ramping-up, as the various storage projects come on line under the schedule in the proposed Integrated Plan until 2026, when the Yakima Project delivers 70 percent of proratable entitlements during a severe drought year. o The Integrated Plan would yield no irrigation-related benefits until 2013. Potential benefits from market-based reallocation of water would ramp up, beginning in 2013, rising to one-half of the full potential in 2017 and remain constant thereafter. This represents an assumption that it will take approximately 5 years to bring market reallocation practices to full implementation, and that achievement of the market reallocation potential as modeled may not be fully achievable.

The bottom section of Table 10 describes conditions with implementation of the Integrated Plan. This scenario entails staged implementation of different components of the Integrated Plan,

involving increased market-based reallocation of water from lower- to higher-value crops during severe drought years, as well as increased water supplies, so the amount of water available to proratable irrigators during severe drought years rises from 30 percent to 70 percent of their full entitlements.

Spreadsheet Model of Direct Irrigation Benefits

A spreadsheet model was developed to estimate each district's net farm earnings, with and without the Integrated Plan, under non-drought and severe drought conditions. The model identifies the allocation of available water across crops and districts that, given identified constraints, would maximize annual net farm earnings under optimal market conditions. The model structure is adapted from a model developed by researchers at the Pacific Northwest National Laboratory, who used it to describe opportunities for market-based transfers to mitigate the impacts of drought on agricultural production in the Yakima River basin and to increase the overall value of agricultural earnings derived from the basin's water resources (Scott et al., 2004; Vano et al., 2009).

Crops. The model assumes irrigators in the five districts grow these 17 different crops (in some cases, types of crops) and that irrigators do not change what crops they grow over time.

- Other vegetables
- Other grain
- Concord grapes
- Sweet corn
- Other hay
- Alfalfa hay
- Wine grapes
- Hops
- Miscellaneous
- Asparagus
- Timothy hay
- Pasture
- Apples
- Potatoes
- Other tree crops
- Mint
- Wheat

The model assumes crops have different water needs, depending on the district in which they're grown and reflecting past water demand and irrigation technology. During an average, non-drought year, the model assumes all irrigators have sufficient water to satisfy their irrigation requirements. During drought years, when water supplies are restricted, the model assumes water is traded from crops with low annual net farm earnings to crops with high annual net farm earnings (within the constraints of the given scenario).

Fixed Variables. The model relies primarily on annual net farm earnings (in terms of dollars per acre-foot) to distribute water from low-value crops to high-value crops. The model also directly or indirectly uses several other fixed variables, by crop, including:

- Total irrigable acres
- Average yield (output units/acre)
- Annual variable cost (dollars/acre)
- Average price (dollars/output unit)
- Water diversion demand (acre-feet/acre)

Consistent with the *Principles & Guidelines,* whenever possible this analysis uses normalized crop prices issued by the U.S. Department of Agriculture for all relevant crops (U.S. Department of Agriculture, National Agricultural Statistics Service, 2011a). For some crops, however, the U.S. Department of Agriculture does not provide normalized crop prices. In those instances, this analysis uses statewide average prices over the previous 3 years (U.S. Department of

Agriculture, National Agricultural Statistics Service. 2011b). Annual variable costs were compiled from crop-specific enterprise budgets (Washington State University Extension, Various Years) and from Reclamation (2008). In all cases, crop prices and variable costs were adjusted to 2012 dollars using the commodity-specific producer price index from the U.S. Bureau of Labor Statistics (U.S. Bureau of Labor Statistics, 2012).

Direct Irrigation-Related Benefits

This section describes the effects of the Integrated Plan on the net farm earnings of irrigators in the five districts. It first describes what the effects would be during a severe drought year if the Integrated Plan were fully implemented. It then describes the expected effects over the next 100 years, as different elements of the Integrated Plan become operational and severe drought years occur at a rate similar to recent experience. It concludes with a sensitivity analysis describing the irrigation-related benefits, over the next 100 years, assuming higher and lower restrictions during severe droughts, accounting for the potential impact of climate change.

Benefits of the Integrated Plan During a Severe Drought Year

The first two rows in Table 11 summarize net farm earnings in the five districts under the Baseline Scenario during drought and non-drought years. During an average non-drought year, all irrigators would receive water equal to their full entitlement and net farm earnings would total $480 million. During a severe drought year, non-proratable irrigators would receive water equal to their full entitlement, but proratable irrigators would receive water equal to 30 percent of their entitlement, market-based reallocation of water would result in inter-district trading of 30,000 acre feet, and net farm earnings would fall $160 million, to $320 million. With full implementation, the Integrated Plan would generate direct economic benefits by eliminating these losses. Under the Integrated Plan, non-proratable irrigators would receive water equal to their full entitlement during a severe drought year; proratable irrigators would receive water equal to 70 percent of their entitlement, which would be sufficient for them to sustain output; market-based reallocation of water (beyond what would occur in the Baseline Scenario) would involve inter-district trades of 30,000 acre-feet and intra-district trades of about 110,000 acre-feet; and annual net farm earnings would fall $10 million, to $470 million (see the third row in Table 11). The increase, relative to the Baseline Scenario, of $150 million in net farm earnings during a severe drought year, from $320 million to $470 million, represents the direct-irrigation benefit of the Integrated Plan.

The Integrated Plan Scenario manages to achieve net earnings under drought conditions that are nearly equivalent to non-drought conditions under the Baseline Scenario by providing additional water supply, concentrating production under scarce conditions in the most profitable crops, and temporarily eliminating production of lower value crops. In particular, it results in reducing the application of water to irrigate crops that would generate limited farm income and using the water, instead, to irrigate crops that can generate substantial net farm income.

Table 11. Annual Net Farm Earnings during a Severe Drought Year for Baseline and Integrated Plan Scenarios

SCENARIO	PERCENT OF PRORATABLE ENTITLEMENTS RECEIVED	WATER TRADED (ACRE-FEET)		TOTAL ANNUAL NET FARM EARNINGS (MILLIONS)	
		Intra-District	Inter-District	Total	Loss from Drought
Baseline Scenario (Average Non-Drought Year)	100%	-	-	$480	Zero
Baseline Scenario (Severe Drought Year)	30%	-	30,000	$320	-$160
Integrated Plan Scenario (Severe Drought Year)	70%	110,000	30,000	$470	-$10

These results are sensitive to the absolute and relative net earnings per acre of each crop and district combination. For further discussion, see Reclamation and Ecology 2012b.

Benefits of the Integrated Plan over the Next 100 Years

Once it is fully implemented, the Integrated Plan would increase annual net farm earnings for the beneficiary irrigators by $150 million during a severe drought year. Based on conditions in the Yakima Project since the 1970s, the model assumes drought years would occur, on average, every 5 years, with a 3-year severe drought occurring every 20 years. The full benefits of the Integrated Plan would not materialize immediately, but would ramp up until 2026 based on the implementation schedule. Figure 9 accounts for these factors and shows the anticipated pattern of the Integrated Plan's irrigation-related benefits over the next 100 years. The blue line shows those values in undiscounted 2012 dollars. The red line shows the present values, discounted at 4.0 percent per year to 2012. The overall, present value of the potential, irrigation-related benefits over the 100-year period is about $0.8 billion (in 2012 dollars).

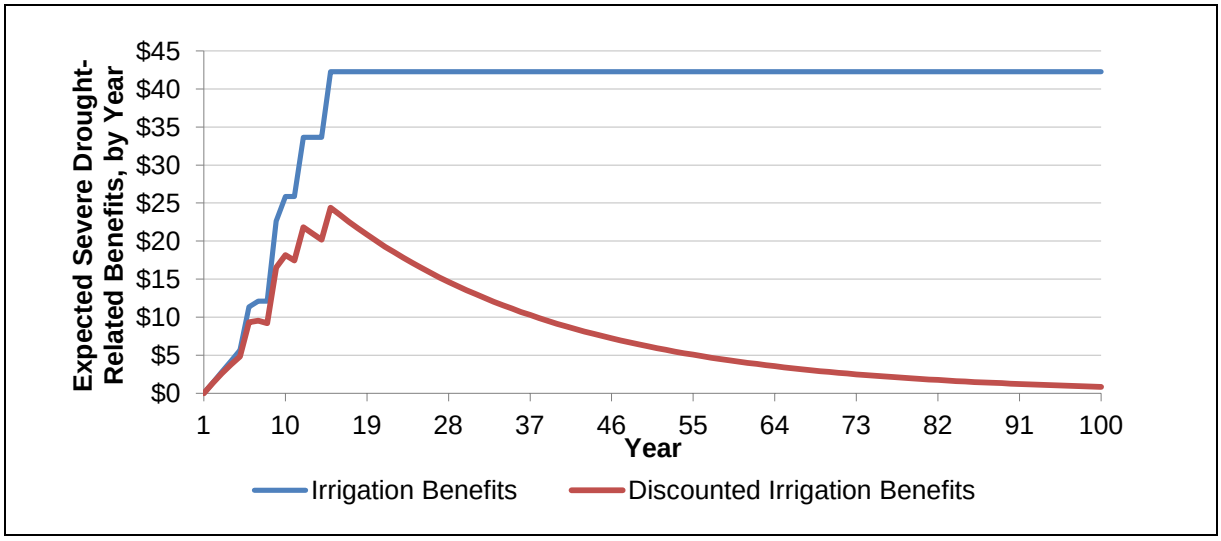


Figure 9. Potential Irrigation-Related Benefits of the Integrated Plan (millions)

Sensitivity Analysis – Climate Change

Without the Integrated Plan, the Baseline Scenario assumes that, during severe drought years, water supplies are sufficient to satisfy all non-proratable irrigators in the Yakima Project and 30 percent of all proratable entitlements. Severe droughts could, however, result in more or less intense restrictions on proratable irrigators. Models estimating the potential impacts of climate change on water supply availability in the Yakima Project suggest that proratable irrigators could receive only 9 percent of their entitlements during severe droughts by the 2040's (under a moderately adverse climate change scenario) or no water at all (under a more extreme climate change scenario) (Reclamation and Ecology, 2011c).

In this section, the amount of water available to proratable irrigators during severe drought years is adjusted to account for the potential impacts of climate change (see Table 12). As previously described, assuming that proratable irrigators receive 30 percent of their entitlements during severe drought years without the Integrated Plan, the 100-year net present value (NPV) of irrigation-related benefits derived from Integrated Plan (which would provide proratable irrigators with 70 percent of their entitlements) is about $0.8 million. If, however, proratable irrigators were to receive only 20 percent of their entitlements during severe drought years without the Integrated Plan, the 100-year NPV of irrigation-related benefits rises to $0.9 billion. If proratable irrigators were to receive 40 percent of their entitlements during severe drought years without the Integrated Plan, the 100-year NPV of irrigation-related benefits falls to $0.6 billion.

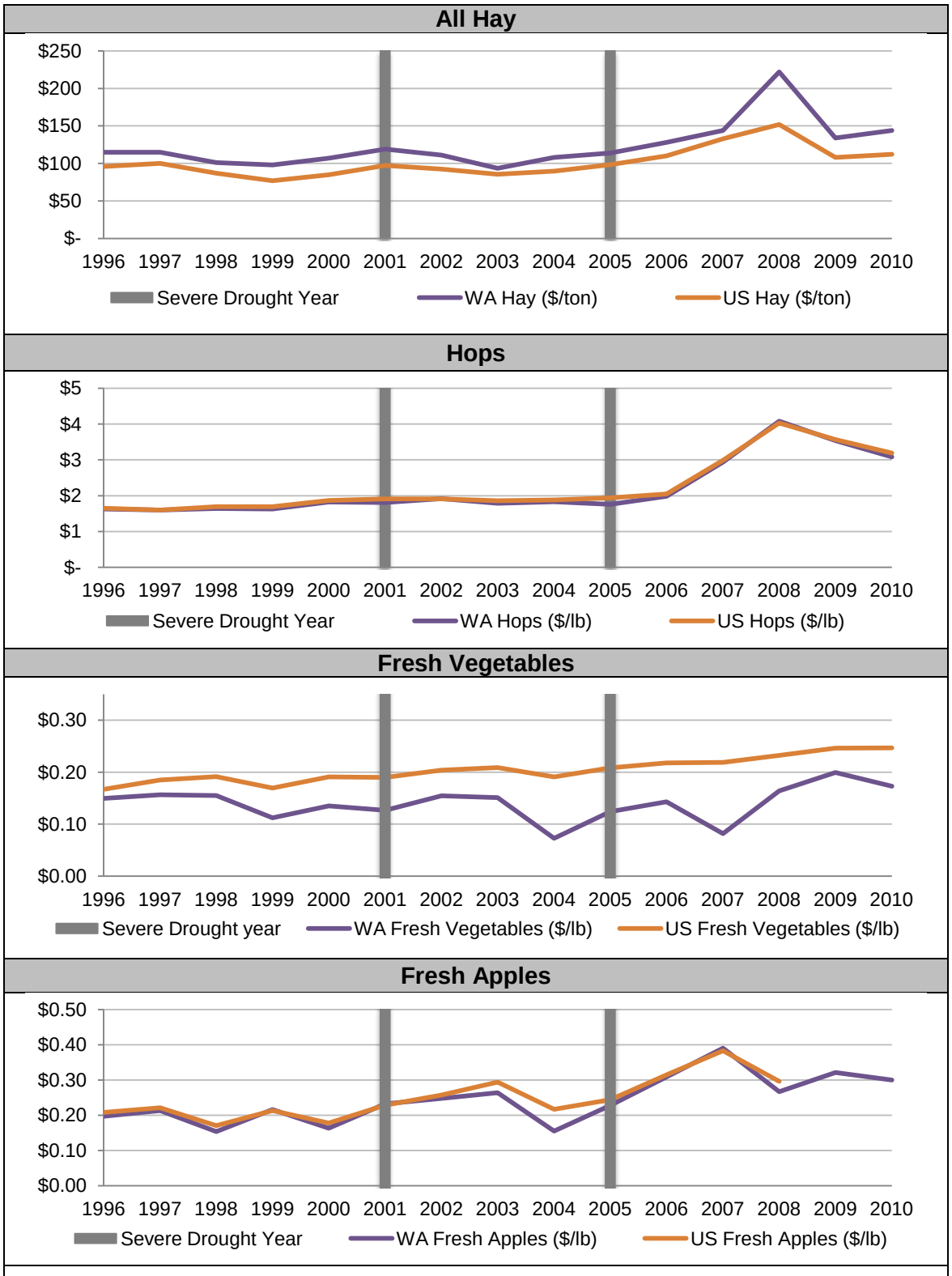
Table 12. Irrigation-Related Benefits Assuming a Range of Severe Drought Conditions

PERCENT OF ENTITLEMENTS PRORATABLE IRRIGATORS RECEIVE DURING SEVERE DROUGHT YEARS		100-YEAR NPV OF IRRIGATION RELATED BENEFITS
Without the Integrated Plan	With the Integrated Plan	
30%	70%	$0.8 billion
20%	70%	$0.9 billion
40%	70%	$0.6 billion

Benefits from the National Perspective

If the increased value of crop production realized by beneficiary irrigators in the five districts has no effect on the value of crop production elsewhere, then the direct benefits described in the preceding section equal the irrigation-related benefits from the national perspective prescribed for the NED account by the *Principles & Guidelines*. If the Integrated Plan affects not just the value of crop production in the Yakima Project but also the value outside it, then the NED benefits would differ from the direct benefits. An effect outside the Yakima Project could occur through the so-called price effect, with an increase in the supply of a given crop resulting from the Integrated Plan lowering the market price for the crop in a larger market and, hence, lowering the value of the crop produced elsewhere.

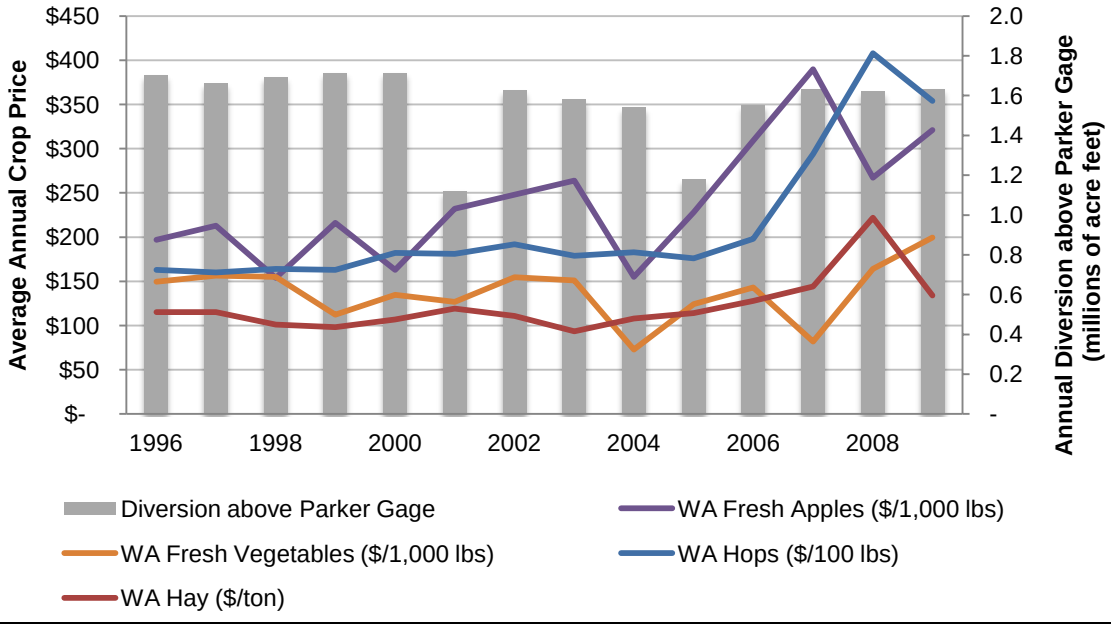
The Integrated Plan likely would not have national price effects, however, if local crop prices are not sensitive to changes in water scarcity typically experienced during severe droughts. Severe droughts occurred in the Yakima River basin in both 2001 and 2005. Crop prices locally, and nationally, however, did not demonstrably increase during those years relative to existing trends, as Figure 10 shows.



Source: Adapted from Hop Growers of America, 2005; U.S. Department of Agriculture, National Agricultural Statistics Service, 1999-2011a; U.S. Department of Agriculture, National Agricultural Statistics Service, 1999–2011b; U.S. Department of Agriculture, National Agricultural Statistics Service, 1999-2011c; U.S. Department of Agriculture, National Agricultural Statistics Service, Washington Field Office, *No Date*.

Figure 10. Average Annual U.S. and Washington Marketing Year Crop Prices

To the contrary, Figure 11 suggests that, for the State of Washington as a whole, drought years did not result in price peaks and generally fell below the average for the period of 1996-2010. The data in these figures do not demonstrate that, but for the droughts, prices would not have been even lower during those years, but they do not suggest as much. The data do show that local and national prices have tended to be closely correlated for the crops, hops and apples, where the state's production represents a large share of national production. But non-drought factors seem likely to be the primary drivers for the pattern of fluctuation in prices for these crops. Overall, these data suggest that drought conditions in the Yakima River basin do not tend to drive up crop prices in the 3-county area; the State of Washington; the 3-state region of Washington, Oregon and Idaho; or the Nation as a whole. Overall, these data suggest that the Integrated Plan, by increasing the supply of water available to proratable irrigators in the three districts, relative to recent historical market and drought conditions, would not substantially reduce crop prices, relative to the Baseline Scenario, at the national, regional, or local scale. For further discussion, see Reclamation and Ecology 2012b.



Source: Adapted from Reclamation, 2010; Reclamation and Ecology, 2011a; and data from previous figures.

Figure 11. Water Availability and Washington Crop Prices

In sum, the available evidence supports the conclusion that the irrigation benefits of the Integrated Plan, viewed from the national perspective of the NED account are the same as, or close to, the direct benefits realized by the beneficiary irrigators in the three irrigation districts. The overall, present value of the potential, irrigation-related benefits over the 100-year period is about $0.8 billion.

As in any economic analysis, several factors create uncertainty regarding the accuracy of this estimate. They include the possibility that future years would see irrigators planting a different mix of crops, sell their crops for different prices, and incur different variable production costs than those incorporated into the analysis. Insufficient data currently exist to quantify these factors. They are unlikely, in the aggregate, to yield a lower value for the irrigation-related

benefits of the Integrated Plan, however. The U.S. Department of Agriculture projects that "following near-term reductions from record levels reached in 2011, the values of U.S. agricultural exports and net farm income each rise over the rest of the decade," and there are no apparent reasons to expect this trend would reverse itself in subsequent years (U.S. Department of Agriculture, Economic Research Service, 2012).

3.1.3 Municipal and Domestic Water Supply Benefits

This section describes the NED benefits associated with municipal and domestic uses expected to result from implementation of the Integrated Plan. In this study municipal uses refer to all residential, commercial, industrial, and government uses of the community water systems in the Yakima River basin that supply drinking water to consumers. Domestic uses refer to the household consumption of water supplies by the owners of domestic wells in the basin.

Future Without the Integrated Plan

In 2010, municipal and domestic users in the Yakima River basin used approximately 91,000 acre-feet of water. Of this amount, 46 percent (42,000 acre-feet) represents municipal demand of the six main cities in the basin, 17 percent (15,000 acre-feet) is demand of small public water systems, and 37 percent (34,000 acre-feet) represents the use of domestic-well owners. The municipal users obtain water from surface and groundwater, while domestic wells rely exclusively on groundwater. Sixty percent of the supplies that go to municipal and domestic uses are non-consumptive and either return to stream channels in the Yakima River basin as return flow or recharge the underlying aquifer (Reclamation and Ecology, 2011e).

Future changes in municipal and domestic uses are highly dependent on population growth, land use types, and type of infrastructure used to convey water from the source to the points of demand. The current population served by municipal public water systems and domestic wells in the basin was estimated at 326,000 in the year 2010 and includes the populations of Benton, Kittitas, and Yakima counties. This estimate excludes the populations of Kennewick, Richland, and West Richland (all located in Benton County), as their potable water comes from the Columbia River and groundwater outside the Yakima River basin. By 2060, the population is projected to increase to 590,000 if no constraints on growth from water supplies occur (Reclamation and Ecology, 2011e). While the latest recession may have decreased the population growth below the moderate rate of one percent per year assumed in this estimate, future rates of household formation may accelerate and make up for the decrease.

Over the next 50 years, if municipal and domestic uses increase at the same rate as the assumed population growth, the water use rate would increase to approximately 163,000 acre-feet annually. The impact on the basin's overall water supplies likely would not reach this level, because of the effects of anticipated municipal water conservation programs. In addition, some municipal/domestic growth likely would involve urban development on agricultural lands, with some of the water that otherwise would be used for irrigation instead being used for municipal/domestic purposes and the remainder being available for other purposes. Current assumptions about expected population, economic activity, and conservation in the basin suggest that actual municipal/domestic use will rise 48,900 acre-feet above the 2010 level, to 140,000 acre-feet per year, by 2060. Conservation trends independent of the Integrated Plan that improve the technology related to the delivery of municipal water supplies and that include a shift from

open canals to piped systems are expected to reduce the daily water use from the current 250 gallons to 234 gallons per-capita by 2060 (Reclamation and Ecology, 2011e).

Water supplies become restricted during dry years when low flows cannot meet all demands. Municipal and domestic groundwater uses in the basin are typically junior to irrigation water rights, so their supplies can be reduced when drought occurs[13] (Reclamation, 2008). These circumstances have the potential to cause major disruption of service during severe drought years (Reclamation and Ecology, 2011e). Water shortages for municipal and domestic users occur especially during the irrigation season, when non-proratable water rights tied to agricultural irrigation in the basin have first call on available supplies.

Without the Integrated Plan, municipal and domestic water users who use groundwater above Parker Gage would be particularly vulnerable to disruptions, with major disruptions during severe drought years. In 2010, three municipal systems above Parker Gage—City of Ellensburg, Nob Hill Water Association, and Yakima County Public Works' Terrace Heights system—served about 48,000 people, providing them with about 10,000 acre-feet of water per year. Of these, about 4,000 acre-feet were used consumptively. Domestic wells and small systems using groundwater above Parker supplied about 58,000 people with about 16,000 acre-feet of water per year, of which about 6,500 acre-feet were used consumptively (Graham 2012). The sum of the municipal and domestic consumptive use is about 10,500 acre-feet per year.

Ongoing investigations demonstrate that the groundwater supplies are connected to the basin's surface waters (Vacarro 2011). Under the laws and regulations that allocate the basin's surface water, the municipal and domestic users of groundwater generally have water rights junior to those of proratable irrigators. Therefore, proratable irrigators have the ability to demand that consumptive use of groundwater cease when surface water supplies are insufficient to satisfy their entitlements. Hence, continuation of current groundwater use, whether for municipal, domestic, agricultural or other purposes, would require mitigation of its impacts on surface-water users with more senior water rights. Emerging concerns about conflict between groundwater users and irrigators with more senior water rights induced Ecology to adopt a permanent rule in December 2010 that allows new groundwater withdrawals in Upper Kittitas County only if they are mitigated and backed by senior water rights (Ecology, 2010).

Ecology also has taken steps to facilitate groundwater users' acquisition of senior water rights through voluntary, market-based transactions, but progress has been slow. However such transactions likely would remain severely limited without implementation of the Integrated Plan, because of structural impediments. These impediments arise from the absence of smoothly operating, permanent institutions, including an information clearinghouse and brokerage, experts providing technical support to buyers and sellers, and an authority to verify the conveyance of transferred water (Ecology, 2007). The Integrated Plan includes actions to encourage increased market transactions involving water supplies between willing sellers and willing buyers.

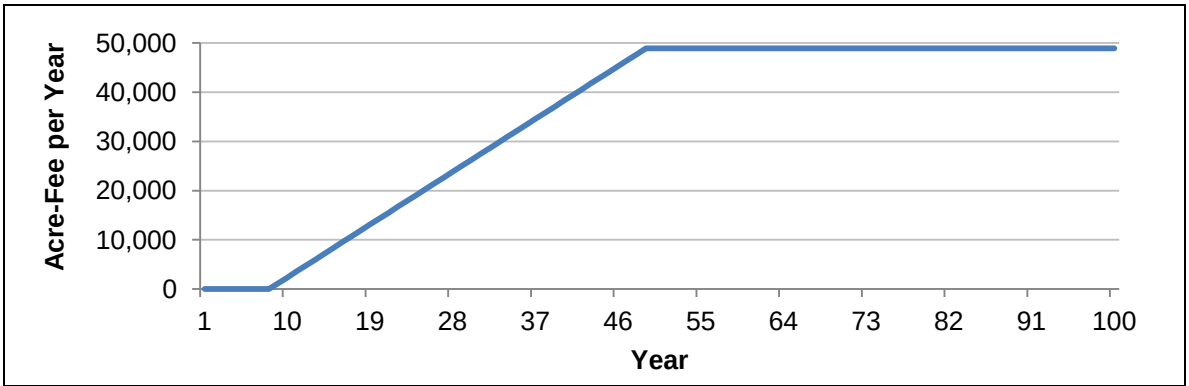
Uncertainties about the future reliability of water supplies during drought and non-drought years become more important when accounting for shifts in the variability of precipitation and plant water demand due to climate change. By 2040, climate change is expected to increase the water demand for landscaping and other municipal and domestic outdoor uses by five percent. This rise

[13] There are also many agricultural irrigators using groundwater, and their ground water rights also tend to be junior to the basin's surface water rights.

would reduce return flows and increase the consumptive uses portion of the municipal and domestic water supplies (Reclamation and Ecology, 2011e).

Expected Municipal and Domestic Benefits of the Integrated Plan

The Integrated Plan would yield municipal and domestic economic benefits in two ways. One would materialize as the area's population and economy grow and the Integrated Plan provides water to satisfy demands that otherwise would remain unmet and by increasing the reliability of future water supplies. Increases in supply for municipal and domestic uses are expected to start materializing in 2020 and continue increasing with population growth through 2060, reaching 48,900 acre-feet annually. This study assumes municipal and domestic benefits of the Integrated Plan would continue at the same rate from 2060 through the end of the analysis period in 2111. Figure 12 shows the distribution of municipal and domestic benefits over the 100 years included in this analysis.



Source: Adapted from Reclamation and Ecology, 2011e

Figure 12. Annual Distribution of the Integrated Plan's Municipal and Domestic Water Benefits Associated with New Water Supplies for Future Growth

The Integrated Plan would increase water availability to satisfy future growth in demand for municipal water systems across all three counties in the basin. Half of the new water allocated for municipal needs would be distributed to users across the three counties based on projected growth, while the other half would be made available on a first-come, first-served basis regardless of county (Reclamation and Ecology, 2011d).

The other way in which the Integrated Plan would provide municipal and domestic benefits is by increasing the security of water supplies for the current population and economy. This is especially the case for current municipal and domestic water users above Parker Gage, whose supplies may be affected in light of research findings confirming their water supplies are connected the basin's surface water (Vacarro 2011). Their water rights are generally junior to those of proratable irrigators and most other water users and continued groundwater use may require mitigation of its impacts during future droughts on surface-water users with more senior water rights. Mitigation typically entails acquiring a senior water right for the consumptive use of groundwater. If current municipal/domestic users of groundwater above Parker Gage do not acquire sufficiently senior water rights, they would be vulnerable during future droughts to demands that they reduce water use that impairs the access of proratable irrigators to their full

entitlements. Implementation of the Integrated Plan would facilitate the voluntary transfer of senior water rights to cover existing municipal and domestic systems (including small systems) that currently provide groundwater to about 106,000 individuals above Parker Gage who use about 26,000 acre-feet and consume about 10,500 acre-feet per year. By improving the supply of water to proratable irrigators during drought years, the Integrated Plan would lower the risk of litigation against junior groundwater users.

The benefits from increased security for existing municipal and domestic users of groundwater above Parker Gage would materialize as implementation of the Integrated Plan lowers three types of barriers to voluntary market-based transactions through which these users would acquire water rights with sufficient seniority to eliminate, or at least greatly reduce, the risk that their use of water would be curtailed during future droughts. The first of these barriers is structural: the absence of a water information clearinghouse and brokerage; legal, hydrological, and other technical expertise; and mechanisms for conveying and verifying the outcomes of water-right transfers. The second is economic: the absence of sufficient water during severe drought years for there to be a large enough pool of irrigators willing to sell water rights with sufficient seniority to provide secure water supplies to municipal and domestic groundwater users above Parker Gage. The third is legal: by increasing the supply of water available to proratable irrigators during drought years, the Integrated Plan reduces the likelihood that the irrigators would take legal action to force groundwater users to reduce or suspend pumping. Reducing or eliminating the uncertainty and risk associated with legal action would enable municipal and domestic groundwater users to avoid legal expenses and other risk-avoidance costs.

These water-security benefits would materialize as implementation of the Integrated Plan strengthens the basin's water-market institutions and provides additional water supplies. This analysis assumes they would begin in 2013, with the initial implementation of the plan's market-reallocation elements, and grow linearly until they reach the maximum, 10,500 acre-feet in 2030, when additional water supplies from dam construction would become available.

NED Value of Municipal and Domestic Water Benefits Associated with New Water Supplies for Future Growth

The calculation of municipal and domestic water benefits associated with future growth in the Yakima River basin entails three steps: (1) estimating the level of benefits and the timeline for the benefit stream; (2) calculating the value of benefits each year they materialize; and, (3) calculating the present, discounted value of the benefits.

Municipal and Domestic Water Benefits Associated with New Water Supplies for Future Growth

These municipal and domestic benefits would start to accrue in 2020 and reach a maximum value of 48,900 acre-feet per year in 2060. This maximum value is maintained through 2111.

Annual Value of Municipal and Domestic Water Benefits Associated with Future Growth

For the purposes of this analysis, it is assumed that, absent the Integrated Plan, the water to meet new municipal and domestic demand would come from another source. The most likely alternative is purchasing or leasing water rights from other users in the Yakima River basin or in other parts of the Columbia River Basin. The value of the municipal/domestic benefits of the Integrated Plan reflects the avoidance of costs to purchase or lease water. This analysis assumes

that, absent the Integrated Plan, municipal/domestic users would obtain water from alternative sources at the average wholesale price of municipal water as reflected in transactions in the Pacific Northwest (U.S. Water Resources Council, 1983). This approach is modeled after Reclamation (2008), which estimated the wholesale price of municipal to be $235.66 per acre-foot (in April 2007 dollars). Adjusting for inflation to reflect prices in March 2012 converts this price to about $258 per acre-foot. This is the value employed in the calculations of the value of the Integrated Plan's municipal/domestic benefits associated with future growth.[14] The blue line in Figure 13 represents the value of these benefits, expressed in 2012 prices, as they accrue each year of the analysis period.

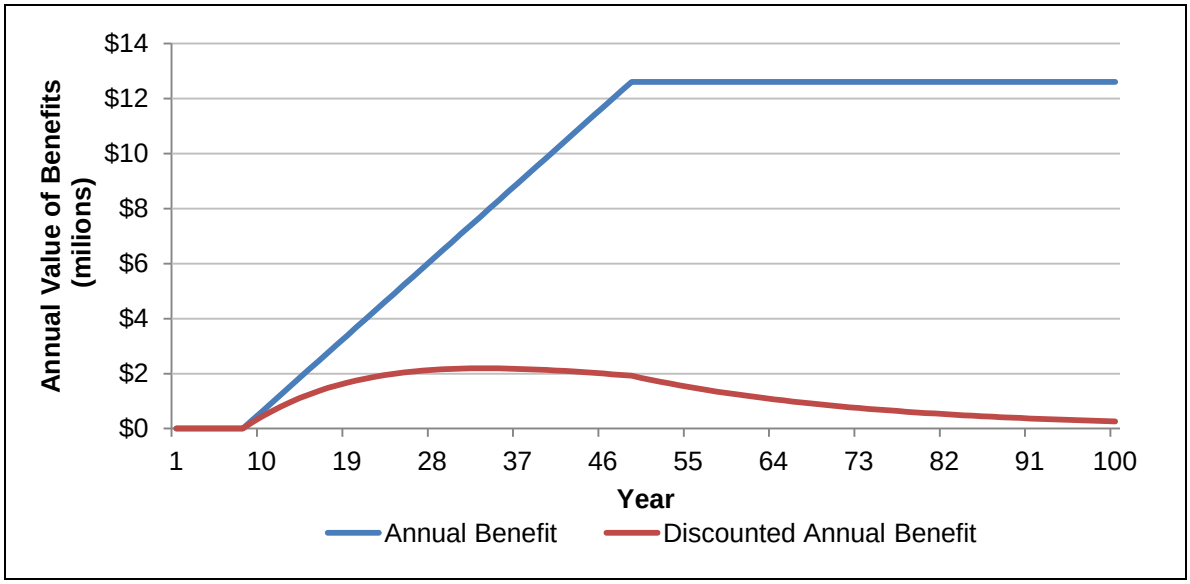


Figure 13. Annual and Discounted Value of Expected Municipal and Domestic Benefits Associated with New Water Supplies for Future Growth

Present Value of Municipal and Domestic Benefits Associated with New Water Supplies for Future Growth

Assuming a linear increase of water use after this category of municipal and domestic benefits start accruing and when they peak at 48,900 acre-feet per year, the municipal/domestic uses would grow 1,193 acre-feet per year during this period. Multiplying this rate by the March 2012 water price of $258 per acre-foot means that the value of the benefits increases by about $308,000 annually. The maximum annual value is about $12.6 million, and continues at the same value until the end of the 100-year period of analysis. As Figure 13 shows, discounting these benefits to 2012 dollars reduces their value.

To estimate the present value of this stream of annual municipal and domestic benefits, this analysis applies a discount rate of 4 percent per year, equal to the discount rate for Federal water resources planning for FY 2012 (Federal Register, 2011). The red line in Figure 13 shows the

[14] This price represents the value of each acre-foot of water that would be made available for future growth in municipal and domestic use. It is distinct from the $2,500 per acre-foot price for a water right that would give current municipal and domestic water users of groundwater the right (subject to water-allocation rules) to use that amount of water per year, into the future.

discounted value of the expected benefits for each year. The overall present value of the municipal-supply benefits is about $115 million in 2012 dollars. Figure 14 presents the accumulation of benefits through 100 years.

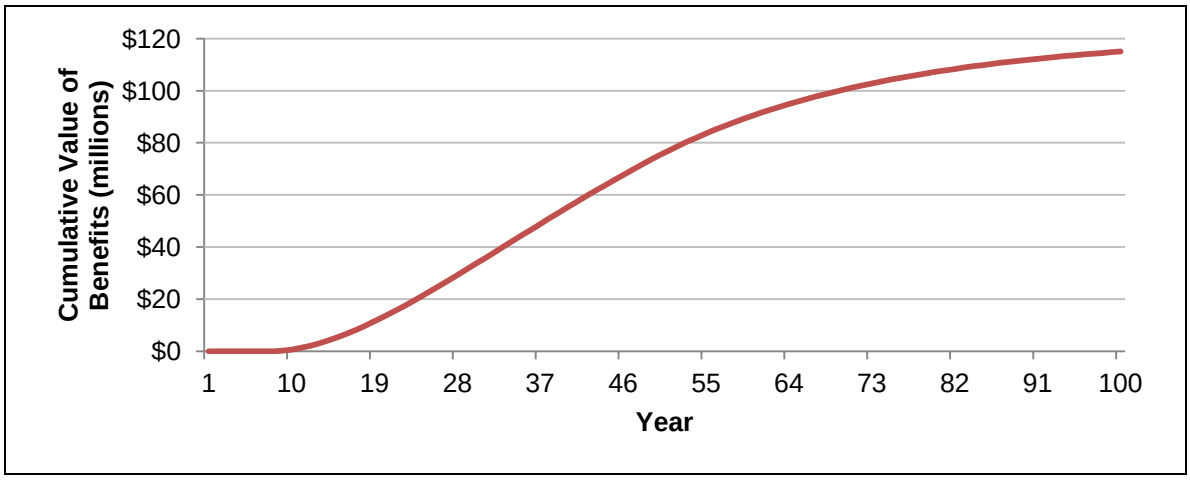


Figure 14. Cumulative Discounted Benefits of the Integrated Plan Associated with Future Growth in Municipal and Domestic Water Users

Sensitivity Analysis of the Economic Values of Municipal and Domestic Benefits Associated with New Water Supplies for Future Growth

The actual value of these benefits could be higher or lower than the estimated value. The estimated value reflects the avoided costs of acquiring water from another source, absent the Integrated Plan. In general, using the avoided costs to estimate the value of these benefits underestimates the true value, all else equal, to the extent that consumers' willingness to pay for new water supplies to satisfy the demands associated with future growth exceeds these costs. The validity of this conclusion is clouded, however, because the data underlying the estimate of avoided costs generally represent administrative prices set by water utilities based on cost of service, rather than market prices, determined under competitive conditions, that indicate consumers' true willingness to pay for the water.

The slowing of population growth associated with the current weakness in the national economy may lead to overestimation of the benefits resulting from new water supplies the Integrated Plan would make available for future population and economic growth. The long-run perspective on growth represented in the analysis assumes that future acceleration in growth would offset, and may exceed, the current, temporary slowing of growth, so that the overall outcome reflects the long-run trend. The timing of the swings in short-run growth rates could cause the present value of these benefits to be higher or lower than the estimated value. If future accelerations in growth occur soon and are large, their positive impact on the present value may more than offset the decrease resulting from the current slower-than-trend growth. The further in the future the occurrence of the accelerations, the more the discounting process would diminish their ability to offset the current decrease.

To capture some of the possible increases in the benefits of new water supplies for future growth in municipal and domestic uses in the future, this analysis estimates the economic value of the benefits by assuming an increase in the real rate of municipal benefits of 1 percent and 2 percent,

respectively (Reclamation, Mid-Pacific Region, 2011). Such increases in the price of water for municipalities represent moderate estimates for a period of 100 years but have little impact on the overall present, discounted value. The resulting range in overall discounted benefits is $116-$117 million.

NED Value of Municipal and Domestic Water Benefits Associated with Increased Security for Current Municipal and Domestic Groundwater Users

The calculation of this category of municipal and domestic water benefits associated with current municipal/domestic groundwater users in the Yakima River basin entails three steps: (1) estimating the level of benefits and the timeline for the benefit stream; (2) calculating the value of benefits each year they materialize; and, (3) calculating the present, discounted value of the benefits.

Municipal and Domestic Water Benefits Associated with Increased Security for Current Municipal and Domestic Groundwater Users

These municipal and domestic benefits would start to accrue in Year 1 and reach a maximum value of 10,500 acre-feet once all Integrated Plan projects and programs have been implemented. This maximum value is maintained through Year 100.

Annual Value of Municipal and Domestic Water Benefits Associated Increased Security

For the purposes of this analysis, it is assumed that, absent the Integrated Plan, current municipal and domestic users of groundwater would not be able to secure senior water rights for 10,500 acre-feet of consumptive use per year. They therefore would face the risk of curtailment of this water use during future drought years. Implementation of the Integrated Plan would reduce or eliminate this risk by improving the institutional infrastructure for the basin's water market. This would facilitate the acquisition of senior water rights, increasing the supply of water available to proratable irrigators, thus reducing the likelihood that they would take legal action to curtail more junior municipal/domestic consumptive groundwater use during drought years. To calculate the value of the increased security of water supplies for current municipal/domestic groundwater users above Parker Gage, this analysis estimates these users' willingness to pay for senior water rights. From this amount, the analysis subtracts the value of the crop production that would be lost when an irrigator sells a ware right to the groundwater users. The difference equals the value of the NED benefits associated with current municipal/domestic groundwater users.[15]

Recent small transactions to mitigate the impacts of residential development have occurred with prices equivalent to about $30,000 per acre-foot, but information obtained during efforts by Ecology and others to expand the amount of market activity suggests the price would fall to about $2,500 per acre-foot (Barwin, 2012). This value, which represents the buyers' willingness to pay for senior water rights, would be offset by the value of the forgone irrigation-related benefits that would be lost when the seller, typically an irrigator, no longer has the water available to produce irrigated crops. The value of the forgone benefits is indicated by the price of irrigator-to-irrigator transactions. The information obtained during efforts by Ecology and others to expand the amount of market activity suggests the price of these transactions would average about $1,000 per acre-foot (Barwin, 2012). Accounting for this offset indicates the net economic

[15] This analysis focuses on municipal and domestic groundwater use. A similar analysis could be done for agricultural groundwater use, but has not been done under the current analysis.

benefit of voluntary transactions, resulting from the Integrated Plan, to increase the security of water supplies for municipal and domestic groundwater users is about $1,500 per acre-foot. The blue line in Figure 15 represents the value of these benefits, expressed in 2012 prices, as they accrue each year of the analysis period.

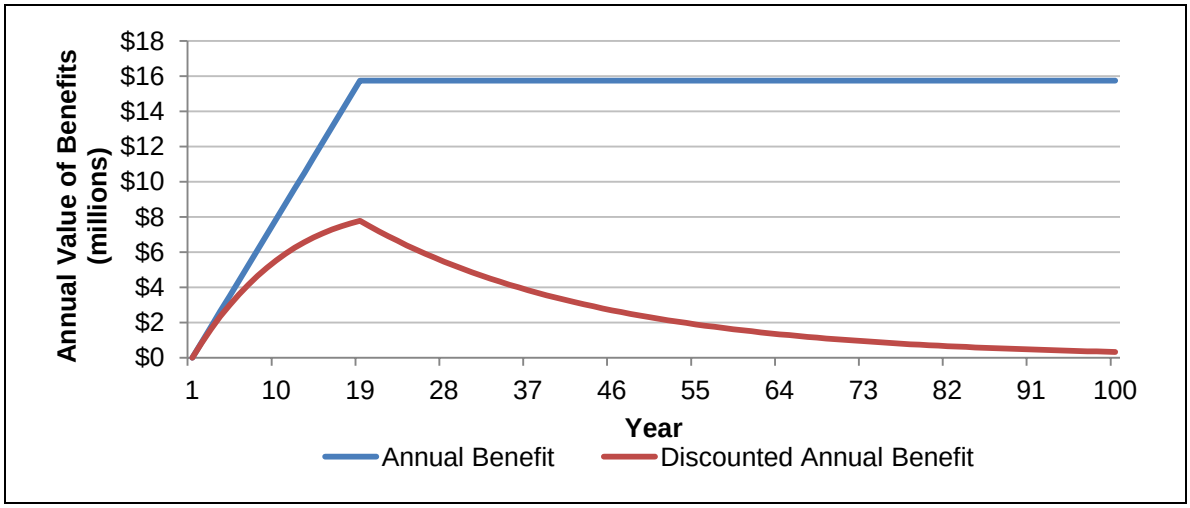


Figure 15. Annual and Discounted Value of Expected Municipal and Domestic Benefits Associated with Increased Security for Current Municipal and Domestic Groundwater Users

Present Value of Municipal and Domestic Benefits Associated with Increased Security for Current Municipal and Domestic Groundwater Users

Assuming a linear increase of water use between Year 1, when the municipal and domestic benefits start accruing, and Year 18, when they peak at 10,500 acre-feet per year, the municipal/domestic uses would grow about 583 acre-feet per year. Multiplying this rate by the estimated value of $1,500 per acre-foot means that the value of the benefits would increase by about $875,000 annually. The maximum annual value would be about $16 million, and continue at the same value until the end of the 100-year period analyzed.

The red line in Figure 15 shows the discounted value of the expected benefits for each year, as determined using a discount rate of 4 percent per year, equal to the discount rate for Federal water resources planning for FY 2012 (Federal Register, 2011). The overall present value of these municipal-supply benefits is about $280 million in 2012 dollars. Figure 16 presents the accumulation of discounted benefits through Year 100.

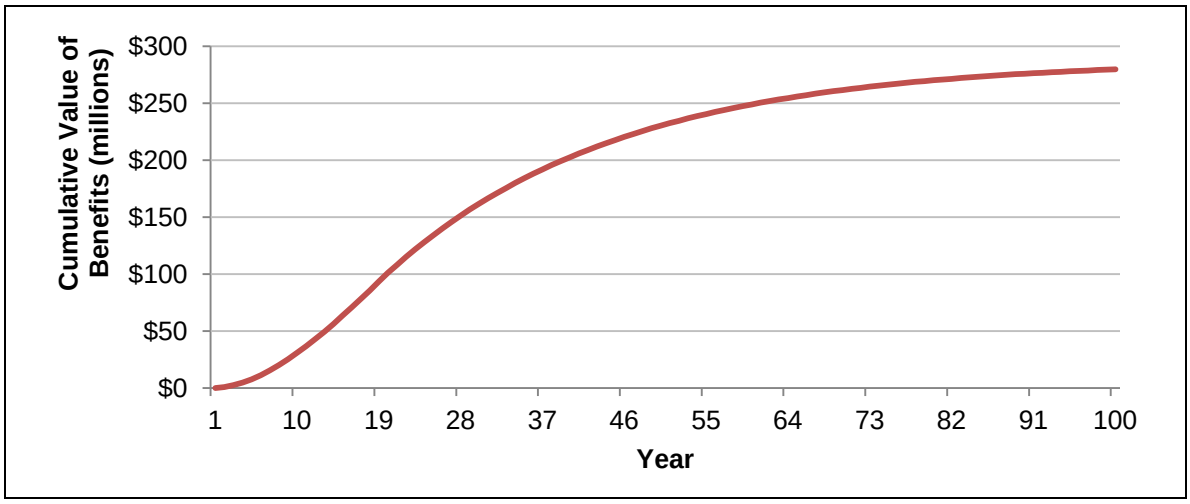


Figure 16. Cumulative Discounted Benefits of the Integrated Plan Associated with Increased Security for Current Municipal and Domestic Groundwater Users

Sensitivity Analysis of the Economic Values of Benefits Associated with Increased Security for Current Municipal and Domestic Groundwater Users

The actual benefits associated with current municipal and domestic use of groundwater may be lower or higher than indicated. A recent compilation of data on water-market activity in western states found that the mean price for a one-acre-foot per year water right was about $4,400 for an agriculture-to-urban transaction and about $1,700 for an agriculture-to-agriculture transaction, with the difference between the two about $2,700 (Brewer et al. 2007). Using this value in the calculation increases the present value of the increased security for current municipal/domestic groundwater users to about $500 million. Brewer et al. (2007) also found that the median price for a one-acre-foot per year water right was about $2,600 for an agriculture-to-urban transaction and about $1,200 for an agriculture-to-agriculture transaction, with the difference between the two about $1,400 (Brewer et al. 2007). Using this value in the calculation decreases the present value of the increased security for current municipal/domestic groundwater users to about $260 million.

Total Municipal and Domestic Water Supply Benefits.

Implementation of the Integrated Plan would yield two types of NED benefits associated with municipal and domestic water supplies. One, an increase the supply of water to support anticipated population and economic growth, has a present value of about $115 million. The other, an increase in the security of water supplies for current municipal and domestic groundwater users, has a present value of about $280 million. The sum of these two amounts, $395 million, is the total value of the Integrated Plan's NED benefits associated with municipal and domestic water supplies.

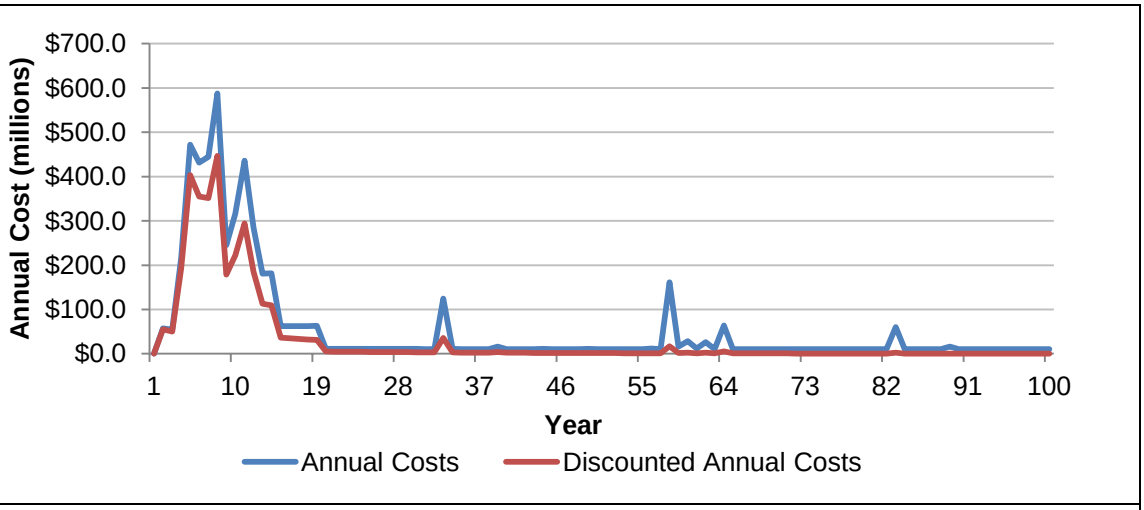
3.1.4 Costs of the Integrated Plan Applied to NED

The Integrated Plan's economic costs fall into these categories:

- Financial expenditures to implement programs and construct, operate, and maintain structures.

- Effects from inundation of land at two reservoir sites that would reduce the value of certain environmental resources or other goods and services currently available from those sites.

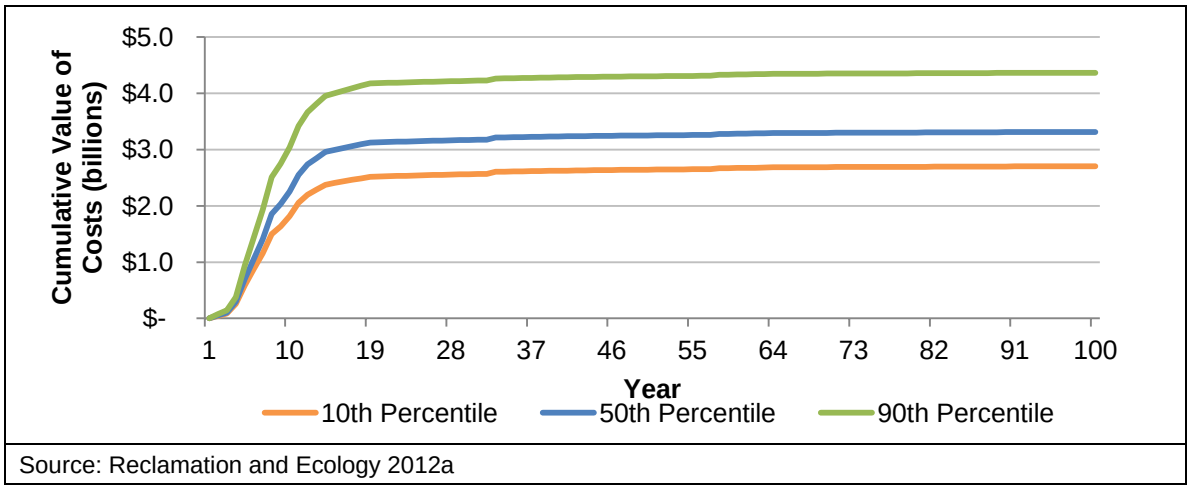
Available information supports monetary quantification for only the financial expenditures. Figure 17 shows the financial costs to implement the Integrated Plan, by year, for the next 100 years (see Reclamation and Ecology 2012b for more details). These costs include capital costs, operations and maintenance costs, and costs associated with periodic replacement of major components. Nearly all the costs would occur during the first 20 years. Figure 17 also shows the present value of the annual financial costs (the blue line), using a discount rate of 4.0 percent per year, equal to the discount rate for Federal water resources planning for FY 2012 (Federal Register, 2011). The overall present value of the 100-year stream of expected costs is about $3.3 billion.



Source: Reclamation and Ecology 2012a

Figure 17. Potential Financial Costs to Implement the Integrated Plan

The costs summarized in Figure 17 represent the 50th percentile of costs as estimated using the Cost Risk Assessment methodology on the Integrated Plan's various components. The Cost Risk Assessment results also generated annual costs at the 10th percentile and 90th percentile levels. These additional reference points provide a range within which the costs associated with the Integrated Plan likely would fall. Figure 18 shows the accumulation of annual costs, discounted at a rate of 4.0 percent per year, based on 10th percentile, 50th percentile, and 90th percentile cost estimates. The overall present value of the 100-year stream of expected costs ranges from about $2.7 billion to $4.4 billion.



Source: Reclamation and Ecology 2012a

Figure 18. Cumulative Discounted Financial Costs of Implementing the Integrated Plan

3.1.5 Comparison of NED Benefits and Costs

This report describes the economic value, over the next 100 years, of three potential benefits associated with the Integrated Plan: (1) fish benefits, (2) irrigation benefits, and (3) municipal and domestic water supply benefits. The report also describes the economic value, over the next 100 years, of the anticipated costs of implementing the Integrated Plan in terms of capital costs, operation and maintenance costs, and the costs associated with periodic replacement of major components. Figure 19 summarizes the overall present value of the stream of benefits and costs, over the next 100 years.

The range of relationships shown in Figure 19 reflects all the benefits and costs for which sufficient information exists to estimate their economic importance in monetary terms. As noted above, the Integrated Plan would have additional benefits and costs, but these have not been monetized. Some of the omitted benefits likely have substantial economic value. They include the unquantifiable cultural and spiritual values that members of the Yakama Nation and others associate with increases in salmon/steelhead populations; benefits of the Integrated Plan for other species, including bull trout, which has been listed as threatened under the Endangered Species Act; benefits to irrigators who would have a more reliable water supply in years with dry conditions that are less severe than those used in the analysis; increases in the net value of recreational opportunities; improved resiliency and adaptability of the water system; and potential benefits that would emerge as changes in climate affect both the supply of and demand for water in the basin. The omitted costs likely would be small in relation to those that have been monetized and small in relation to the omitted benefits. These include the loss of ecosystem services that would result from construction activities and the inundation of lands and habitat by Bumping Lake Reservoir Enlargement and Wymer Reservoir. These lands have resources with high scarcity value, including some habitat for threatened or endangered species. However, the affected lands are of limited extent and other aspects of the Integrated Plan would improve protections of similar land and habitat resources. Moreover, environmental mitigation costs have been included in the monetized costs discussed in this analysis.

BENEFIT/COST CATEGORY	OVERALL PRESENT VALUE OVER 100 YEARS
Benefits:	
Fish Benefits	$5.0 billion to $7.4 billion
Irrigation Benefits	$0.8 billion
Municipal and Domestic Water Supply Benefits	$0.4 billion
Total Benefits:	$6.2 to 8.6 billion
Costs	$2.7 billion to $4.4 billion

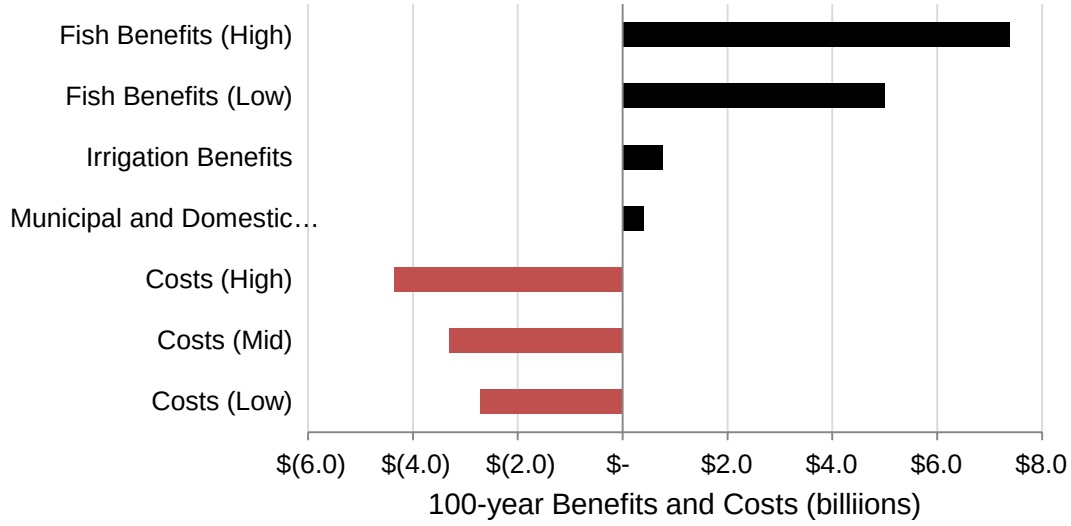


Figure 19. Summary of Benefits and Costs

When comparing the benefits and costs of a project, a benefit-cost ratio can be used to determine the extent to which the value of the benefits outweighs the value of the costs, or vice-versa. If the benefit-cost ratio is greater than one, the value of the benefits outweighs the value of the costs; if it is less than one, then the value of the costs outweighs the value of the benefits. In this instance, where there are several ranges of potential benefits and potential costs, several benefit-cost ratios must be calculated. Figure 20 summarizes the benefit-cost ratios associated with the full range of benefits and costs. Using the high-end value of benefits and the low-end value of costs generates the largest benefit-cost ratio, 3.2. Using the low-end value of benefits and the high-end value of costs generates the smallest benefit-cost ratio, 1.4. In all cases, however, the benefit-cost ratio is greater than one, which means that the value of the benefits associated with the Integrated Plan outweighs the value of its costs.

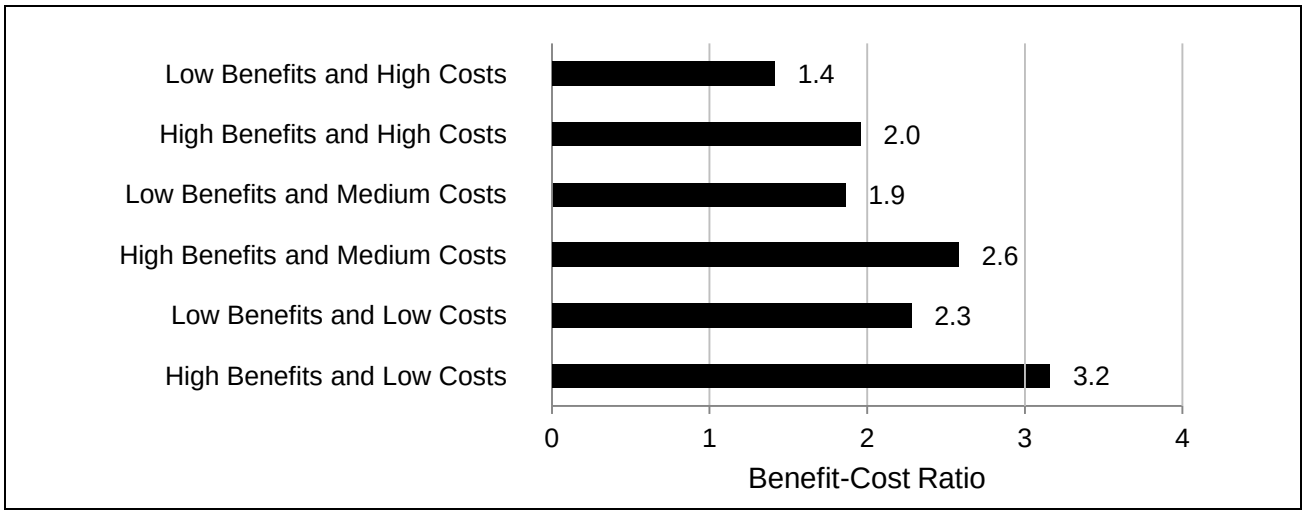


Figure 20. Summary of Benefit-Cost Ratios

3.2 Regional Economic Development

This section presents the Regional Economic Development (RED) account, which shows regional incidence of the Integrated Plan's effects on national economic development, income transfers, and employment. It describes the effects on personal income, jobs, and economic output stemming from changes in construction expenditures, O&M expenditures, and gross farm earnings that would occur with implementation of the Integrated Plan, relative to what would materialize without it. More specifically, the *Principles & Guidelines* describes the RED account as follows:

> The RED account registers changes in the distribution of regional economic activity that result from each alternative plan. Two measures of the effects of the plan on regional economies are used in the account: regional income and regional employment. The regions used for RED analysis are those regions within which the plan would have particularly significant income and employment effects. Effects of a plan not occurring in the significantly affected regions are to be placed in a "rest of nation" category. Effects that cannot be satisfactorily quantified or described with available methods, data and information or that would not have a material bearing on the decisionmaking process may be excluded from the RED account.

This section summarizes results of the RED analysis. More detailed documentation is available in Reclamation and Ecology 2012b.

3.2.1 Analytical Approach

The RED analysis examines three elements of the Integrated Plan that likely would generate economic impacts in the region and across the state: (1) spending associated with construction and program implementation (although only a portion of these expenditures would be spent on construction activities, per se, we refer to them all as "construction expenditures"), (2) spending associated with operations and maintenance (O&M), and (3) changes in agricultural production during severe drought years. Changes in spending and agricultural production are measured in 2012 dollars.

This analysis uses IMPLAN modeling software to examine the economic impacts of the Integrated Plan across the region. IMPLAN is an input-output model that works by tracing how spending associated with a specific project circulates through the defined impact area. For this impact analysis, the study area is defined as the Yakima River basin and Tri-Cities[16] area, encompassing Benton, Kittitas, Yakima, and Franklin Counties in the State of Washington (hereafter referred to as the four-county study area[17]). The analysis also describes economic impacts across the rest of the State of Washington. Input-output models were built for both study areas using 2009 IMPLAN data.

Because of limitations in the available, relevant data, the RED analysis does not quantify the economic impacts of other changes in spending or production that would result from the Integrated Plan. Most notably, it does not quantify the economic impacts of changes in spending associated with three types of economic benefits quantified in the NED analysis. One, it does not show the economic impacts of spending in recreational and commercial fisheries that would accompany future increases in salmon/steelhead populations. Two, it does not quantify the economic impacts of spending associated with the construction and other economic activity that would be generated as new water supplies support future economic and population growth in the Yakima River basin. Three, it does not show the economic impacts of changes in spending that would accompany the increased security of water supplies for current users of groundwater above Parker Gage, including the changes that would occur as the Integrated Plan reduced litigation over demands to curtail these uses during drought years and facilitated the groundwater-users' voluntary acquisition of senior water rights. Because of these omissions, the analysis below understates the Integrated Plan's overall, expected impacts on the economies of the 4-state study region, the rest of the State of Washington, and the state as a whole.

3.2.2 Economic Impacts of Construction Expenditures

Construction expenditures associated with each of the Integrated Plan's various components would fuel economic activity in the four-county study area and across the State of Washington. Table 13 summarizes the economic impacts associated with the Integrated Plan's construction expenditures. The impacts summarized in the table represent the sum of the economic impacts of construction expenditures over the 18-year implementation period described in the Integrated Plan. They do not represent annual impacts.

Direct output represents spending on labor, materials, equipment, and per diem that takes place in each of the study areas. About $1.7 billion would be spent within the four-county study area, and about $0.9 billion would be spent across the rest of Washington. Direct personal income is a subset of direct output. It represents the portion of direct output going toward labor. This includes workers working on the construction site as well as the workers responsible for manufacturing and supplying the materials and equipment purchased for construction. Direct job years represent the years of full- and part-time employment supported by construction expenditures, including both workers on the construction site as well as the workers responsible for manufacturing and supplying the materials and equipment purchased for construction.

[16] The Tri-Cities are Kennewick, Pasco, and Richland, Washington.

[17] A small portion of the Yakima River basin extends into a fifth county, Klickitat County, but this is a small and remote portion of the basin with no cities or towns. The Integrated Plan will not have direct economic effects in this area.

Indirect impacts summarize the supply-chain effects and represent the output, personal income, and employment for workers and business owners in industries that support the direct economic activity. Induced impacts summarize consumption-driven effects and represent the additional spending by households attributed to the direct and indirect changes in personal income.

Table 13. Summary of Economic Impacts, by Type, from Construction Expenditures

REGION / IMPACT MEASURE	DIRECT	INDIRECT	INDUCED	TOTAL
Four-County Study Area				
Output	$1,740,000,000	$207,000,000	$399,000,000	$2,346,000,000
Personal Income	$1,129,000,000	$67,000,000	$120,000,000	$1,316,000,000
Job Years	21,700	1,700	3,500	26,900
Rest of Washington				
Output	$911,000,000	$387,000,000	$1,030,000,000	$2,328,000,000
Personal Income	$450,000,000	$99,000,000	$288,000,000	$837,000,000
Job Years	6,000	2,000	7,100	15,100
Total Washington State				
Output	$2,651,000,000	$593,000,000	$1,430,000,000	$4,674,000,000
Personal Income	$1,579,000,000	$166,000,000	$408,000,000	$2,153,000,000
Job Years	27,700	3,600	10,700	42,000

Notes: Calculated with cost estimates for the Integrated Plan and 2009 IMPLAN base data. For more information see Reclamation and Ecology 2012b.

In total, the Integrated Plan's construction expenditures would support about $2.3 billion in output within the four-county study area. Of that output, about $1.3 billion would go toward personal incomes that would support about 26,900 job years, only a portion of which would accrue to the labor force residing locally. Additional impacts would spread across the rest of the state (about $2.3 billion in output, of which about $0.8 billion would go toward personal incomes that would support about 15,100 job years).

3.2.3 Operations and Maintenance Expenditures

In addition to the construction expenditures described above, several of the Integrated Plan's components would require annual O&M activities that would fuel economic activity in the four-county study area and across the state.

The direct spending associated with O&M would support additional supply-chain (indirect) and consumption-driven (induced) impacts for workers and business owners in the four-county study area and elsewhere in Washington. Table 14 summarizes the direct, indirect, and induced economic impacts attributed to O&M spending when it reaches its highest level once all the projects and programs within the Integrated Plan have been completed or activated.

Table 14. Summary of the Economic Impacts of the Highest Level of Annual O&M Expenditures

REGION / IMPACT MEASURE	DIRECT	INDIRECT	INDUCED	TOTAL
Four-County Study Area				
Output	$11,000,000	$5,000,000	$4,000,000	$20,000,000
Personal Income	$5,000,000	$1,000,000	$1,000,000	$7,000,000
Jobs	60	20	30	110
Rest of Washington				
Output	$0	$300,000	$600,000	$900,000
Personal Income	$0	$100,000	$100,000	$200,000
Jobs	0	< 10	< 10	< 10
Total Washington State				
Output	$11,000,000	$5,300,000	$4,600,000	$20,900,000
Personal Income	$5,000,000	$1,100,000	$1,100,000	$7,200,000
Jobs	60	25	35	120

Notes: Calculated with cost estimates for the Integrated Plan and 2009 IMPLAN base data. For more information see Reclamation and Ecology 2012b.

Given the types of O&M activities the Integrated Plan would require, this analysis assumes all direct impacts would occur within the four-county region. Direct output represents the sum of all O&M expenditures, about $11 million at their highest annual level. Direct personal income represents the portion of those expenditures spent on labor, about $5 million. To calculate the number of direct jobs supported by O&M expenditures (60), labor expenditures were divided by average annual wages from relevant occupations in Washington.[18] These 60 jobs represent an equivalent of 60 full- and part-time jobs for 1 year.

In total, the Integrated Plan's highest level of annual O&M expenditures would generate about $20 million in output within the four-county study area. Of that output, about $7 million would go toward personal incomes that would support about 110 jobs. Additional impacts would spread across the rest of the state (about $0.9 million in output, of which about $0.2 million would go toward personal incomes that support fewer than 10 jobs).

3.2.4 Changes in Agricultural Production

As described in the NED analysis, the Integrated Plan would increase market-based reallocation of water from lower- to higher-value crops. It would also increase the overall water supply so the amount of water available to proratable irrigators during severe drought years rises from 30 percent to 70 percent of their full entitlements. With more water available during severe drought years, and with more market-based reallocation of water, the Integrated Plan would increase agricultural production during severe drought years, relative to the Baseline Scenario without the Integrated Plan. To model the economic impacts of changes in agricultural output during severe drought years, the analysis estimates the Integrated Plan's effects on gross farm

[18] Average wages across the state for different occupations were compiled from U.S. Bureau of Labor Statistics (2012).

earnings, distributes them across different types of crops, and maps them to the corresponding agricultural industry sectors in the IMPLAN model.

Table 15 summarizes the economic impacts associated with this change in agricultural production. Since the entirety of the change in agricultural production occurs within the four-county study area, by definition, all direct economic impacts also occur within the four-county study area. Direct output (about $400 million) represents the difference between gross farm earnings during a severe drought year with the Integrated Plan and gross farm earnings without it. Changes in direct output for each affected agricultural sector were fed into IMPLAN, and the model estimated the associated changes in direct personal income and jobs. These 7,200 jobs represent both full-time and part-time jobs.

Table 15. Summary of Economic Impacts of Changes in Agricultural Production, Severe Drought Year

REGION / IMPACT MEASURE	DIRECT	INDIRECT	INDUCED	TOTAL
Four-County Study Area				
Output	$400,000,000	$137,000,000	$153,000,000	$690,000,000
Personal Income	$87,000,000	$52,000,000	$46,000,000	$185,000,000
Jobs	7,200	1,500	1,400	10,100
Rest of Washington				
Output	$0	$64,000,000	$36,000,000	$100,000,000
Personal Income	$0	$14,000,000	$9,000,000	$23,000,000
Jobs	0	500	200	700
Total Washington State				
Output	$400,000,000	$201,000,000	$189,000,000	$790,000,000
Personal Income	$87,000,000	$66,000,000	$55,000,000	$208,000,000
Jobs	7,200	2,000	1,600	10,800

Notes: Calculated with data described previously in this analysis and 2009 IMPLAN base data.

To calculate the indirect and induced impacts of this change in agricultural production, the direct impacts were run through IMPLAN. The impacts in the table do not include downstream impacts tied to agricultural production, such as food processing, transportation, and restaurant sales. In total, the Integrated Plan's impact on agricultural production during a severe drought year would generate about $690 million in output within the four-county study area. Of that output, about $185 million would go toward personal incomes that support about 10,100 jobs. Additional impacts would spread across the rest of the state (about $100 million in output, of which about $23 million would go toward personal incomes that support about 700 full- and part-time annual jobs).

As described in the NED analysis, the Integrated Plan's irrigation-related benefits would not occur every year. Rather, the Integrated Plan would increase agricultural production during severe drought years.[19] The results of this analysis describe the economic impacts associated

[19] As described in the NED analysis, severe, 1-year droughts are assumed to occur every 5 years with a severe, 3-year drought occurring every 20 years.

with changes in agricultural production attributable to the Integrated Plan during a severe drought year. While these impacts do represent annual impacts, insofar as they accumulate within a given year, they do not represent a continuous stream of annual impacts.

3.2.5 Summary of RED Results

Table 16 summarizes the RED findings for the four-county study area and Table 17 summarizes the findings for the statewide economy. In interpreting the results, it is important to understand and consider the timing of the impacts. Each table shows separately the economic impacts of construction expenditures, O&M expenditures, and changes in agricultural production during severe drought years. The values describing construction-related impacts represent the Integrated Plan's average annual effects during the implementation period summarized in Figure 4. In reality, these economic impacts would fluctuate from year to year as the overall construction effort varies. The values describing O&M-related impacts represent the plan's effects beginning in the year in which all projects have been constructed and all programs have been activated. In all other years, the economic impacts tied to O&M expenditures would be less than those in the tables. The values describing agriculture-related impacts represent the plan's effects during a severe drought year. During non-drought years, agricultural production would be similar to production without the Integrated Plan.

Table 16. Summary of Economic Impacts in the Four-County Area, by Type of Expenditure

TYPE OF EXPENDITURE	DIRECT	INDIRECT	INDUCED	TOTAL
Construction (annual average during implementation period)				
Output	$97,000,000	$11,000,000	$22,000,000	$130,000,000
Personal Income	$63,000,000	$4,000,000	$7,000,000	$73,000,000
Jobs	1,200	100	200	1,500
O&M (annual following implementation)				
Output	$11,000,000	$5,000,000	$4,000,000	$20,000,000
Personal Income	$5,000,000	$1,000,000	$1,000,000	$7,000,000
Jobs	60	20	30	110
Agricultural Production (severe drought year only)				
Output	$400,000,000	$137,000,000	$153,000,000	$690,000,000
Personal Income	$87,000,000	$52,000,000	$46,000,000	$185,000,000
Jobs	7,200	1,500	1,400	10,100

Notes: Based on data described previously in this analysis and calculated with 2009 IMPLAN base data.

Table 17. Summary of Economic Impacts in Washington, by Type of Expenditure

TYPE OF EXPENDITURE	DIRECT	INDIRECT	INDUCED	TOTAL
Construction (annual average during implementation period)				
Output	$147,000,000	$33,000,000	$79,000,000	$260,000,000
Personal Income	$88,000,000	$9,000,000	$23,000,000	$120,000,000
Jobs	1,500	200	600	2,300
O&M (annual following implementation)				
Output	$11,000,000	$5,300,000	$4,600,000	$20,900,000
Personal Income	$5,000,000	$1,100,000	$1,100,000	$7,200,000
Jobs	60	25	35	120
Agricultural Production (severe drought year only)				
Output	$400,000,000	$201,000,000	$189,000,000	$790,000,000
Personal Income	$87,000,000	$66,000,000	$55,000,000	$208,000,000
Jobs	7,200	2,000	1,600	10,800

Notes: Based on data described previously in this analysis and calculated with 2009 IMPLAN base data.

Table 18 summarizes the findings in the four-county study area and across the state. It also puts the findings in perspective by showing their values as a percentage of the overall economy. For example, the findings suggest that average annual construction-related expenditures would support about $130 million in output in the four-county study area per year, which represents about 0.4 percent of the four-county study area's current total annual output.

Table 18. Summary of Economic Impacts Relative to the Greater Economy

	FOUR-COUNTY STUDY AREA		WASHINGTON	
Type of Expenditure	Total Impacts	Total Impacts as a Percentage of Overall Economy	Total Impacts	Total Impacts as a Percentage of Overall Economy
Construction (annual average during implementation period)				
Output	$130,000,000	0.4%	$260,000,000	< 0.1%
Personal Income	$73,000,000	0.7%	$120,000,000	< 0.1%
Jobs	1,500	0.6%	2,300	< 0.1%
O&M (annual following implementation)				
Output	$20,000,000	< 0.1%	$20,900,000	< 0.1%
Personal Income	$7,000,000	< 0.1%	$7,200,000	< 0.1%
Jobs	110	< 0.1%	120	< 0.1%
Agricultural Production (severe drought year only)				
Output	$690,000,000	2.1%	$790,000,000	0.1%
Personal Income	$185,000,000	1.7%	$208,000,000	0.1%
Jobs	10,100	3.9%	10,800	0.3%

Notes: Based on data described previously in this analysis and calculated with 2009 IMPLAN base data.

3.3 Environmental Quality

The Environmental Quality (EQ) evaluation was conducted in a workshop setting by a team of staff from Reclamation and Ecology along with senior environmental consultants to the agencies. Members of the team had all worked on the PEIS for the Integrated Plan and have expertise in environmental analysis, engineering, and Yakima Project operations.

The process used during the EQ workshops involved five major steps:

1. Identifying environmental resource categories from the PEIS that were most important for decision-making;
2. Prioritizing the resource categories;
3. Dividing some resource categories into subcategories to better capture the benefits and impacts of the alternative;
4. Weighting the EQ categories or subcategories; and
5. Scoring the benefits and impacts of the EQ categories or subcategories.

The EQ resource categories selected by the team are listed in Table 19 along with a brief explanation of the resource categories. The categories identified were those that have the most effect on the purpose and need[20] for the Integrated Plan and those that would potentially be most impacted by the plan. The PEIS identified the needs of the Yakima River basin as improvements to resident and anadromous fish populations and irrigation and municipal and domestic water supply; as well as the ability to adapt to climate change.

The team considered the need for creating subcategories of the resource categories to allow for more refined evaluation of the benefits and impacts. Subcategories were assigned as shown and further explained in Table 19.

Table 19. EQ Resource Categories

EQ Resource Category	EQ Resource Subcategories	Background
Water Resources	Agriculture	The water resource category is intended to capture the non-monetized benefits of improved water supply and to incorporate instream flows which are not monetized. As used here, agriculture and municipal water includes the benefits that would occur from improved water supplies that have not been monetized in the NED or RED, such as benefits of a more stabilized economy. Instream flows are included to represent the benefits other than fish that accrue from improved streamflows, such as improved water quality, aesthetics, etc.
	Municipal	
	Instream Flows	
Fish	Fish Abundance	Fish abundance accounts for overall improvements in fish populations, health, and distribution that will occur under the plan. Fish passage refers to ecosystem benefits of providing fish with access to more habitat.
	Fish Passage	
Threatened and Endangered	Spotted Owl	Spotted owl, steelhead, and bull trout are federally listed species. Greater sage-grouse is a federal candidate species.
	Steelhead	

[20] The purposes of the Integrated Plan are to implement a comprehensive program of water resource and habitat improvements in response to existing and forecast needs of the Yakima River basin and to develop an adaptive approach for implementing these initiatives and for long-term management of basin water supplies that contributes to the vitality of the regional economy and sustains the health of the riverine environment.

EQ Resource Category	EQ Resource Subcategories	Background
Species	Bull Trout	
	Greater Sage-Grouse	
Land Use	Protection and Enhancement of Ecosystems and Biodiversity	Protection and enhancement of ecosystems and biodiversity refers to the impact of the alternatives on overall ecosystem preservation and restoration in the basin as it relates to land use.
Vegetation and Wildlife Habitat	Shrub-Steppe	Shrub-steppe, old growth, and riparian areas are the primary vegetation and habitat types that would be affected by the Integrated Plan.
	Old Growth Forest	
	Riparian	
Recreation	Water-Based	Water-based recreation includes recreation opportunities on or around reservoirs and rivers. Land-based recreation includes recreation activities on land such as hiking, camping, horseback riding, and off-road vehicle use.
	Land-Based	

There are a number of resources that were discussed in the PEIS that are not included in the EQ evaluation. The Reclamation and Ecology team decided to focus the EQ evaluation on those resources that would be most important in deciding whether to implement the Integrated Plan. Other resources such as water quality, groundwater, air quality, visual resources, noise, transportation and utilities were not considered to have a significant effect on decision making at the programmatic level. Individual projects implemented under the Integrated Plan may significantly affect those resources and they may be important for decision-making at a project-specific level; those effects would be considered during project level analyses.

The team discussed whether to include hydropower and private property acquisition in the EQ evaluation, but decided against including them. Hydropower impacts identified in the PEIS are those that would occur from subordinating power at the Roza and Chandler Powerplants, and those impacts can be monetized. The Integrated Plan requires the acquisition of considerable amounts of private property; however, Reclamation and Ecology are committed to only acquiring private property from willing sellers. Also, the costs of property acquisition are included in the NED analysis and have been monetized. Therefore, hydropower was not considered a category in the analysis and property acquisition was not included as a subcategory used to evaluate impacts to Land Use.

The team prioritized the six resource categories based on two criteria. Four resource categories that most affect the purpose and need were rated as being of primary priority—water resources, fish, threatened and endangered species, and land use. The other two categories were rated as being of secondary priority. The categories with the highest priority were weighted higher than the two secondary priority resources. All resource categories were assigned weights based on their priority and so that the numbers totaled to 1.0.

The team then weighted the EQ subcategories. Similar to the prioritization process, the subcategories were assigned weights based on how the subcategories would meet the purpose and need of the Integrated Plan and potential impacts of the plan on the resources. The subcategory weights also total to 1.0. The category weights were then multiplied by the subcategory weights to obtain the final weights for the EQ resources. Table 20 presents the weights of the categories and subcategories.

Table 20. EQ Categories and Weightings

Category	Category Weight	Subcategories	Subcategory Weight	Final Weight
Water Resources	0.2	Agricultural Water	0.40	0.08
		Municipal Water	0.20	0.04
		Instream Flows	0.40	0.08
Fish	0.2	Fish Abundance	0.50	0.10
		Fish Passage	0.50	0.10
Threatened and Endangered Species	0.2	Spotted Owl	0.30	0.06
		Steelhead	0.30	0.06
		Bull Trout	0.30	0.06
		Greater Sage-Grouse	0.10	0.02
Land Use	0.2	Protection and enhancement of ecosystems and biodiversity	1.0	0.2
Vegetation and Wildlife Habitat	0.1	Shrub Steppe	0.333	0.033
		Old Growth	0.333	0.033
		Riparian	0.333	0.033
Recreation	0.1	Water-Based	0.50	0.05
		Land-Based	0.50	0.05
TOTALS	1			1

After the EQ resource categories were identified, ranked, and weighted, the team rated the impacts. Typically EQ evaluations compare the impacts between action alternatives of a proposal. For this proposal, there is only one action alternative and a no action alternative that includes ongoing activities that would have some effect on the purpose and need. The team decided that impacts would be rated based on comparing the impacts of the Integrated Plan and the No Action alternatives to existing baseline conditions.

During the rating process, the Reclamation and Ecology team rated the No Action alternative based on the conditions that would result from the habitat and conservation projects included in the No Action alternative. For the Integrated Plan alternative, the team considered the effects of the combined package of elements. For example, the rating of fish benefits and impacts included the effects of the storage, conservation, and fish passage elements, as well as watershed improvements that would accrue under the habitat/watershed protection and enhancement element. Throughout the rating, the team assumed that the Integrated Plan included mitigation measures that were identified in the PEIS as being required by regulations for individual projects. For both alternatives, the team considered impacts and benefits over a 50-year time frame to be consistent with the time frame used for the PEIS modeling of water supply and instream benefits. The team also considered potential impacts of climate change, changes in vegetation and wildlife, and anticipated development that would occur in the next 50 years for both alternatives.

To compare the effects of the two alternatives, the team developed a scale which accounts for both positive and negative impacts. The scale uses a 0 rating to indicate no change relative to existing conditions. The scale is listed below:

0 = no change from existing conditions

3 = major positive impact	-3 = major negative impact
2 = moderate positive impact	-2 = moderate negative impact
1 = minor positive impact	-1 = minor negative impact

The impacts were scored using the same consensus-based approach as the prioritizing and weighting process. Resource subcategories were assigned an impact rating from +3 for a major positive impact to -3 for a major negative impact with a 0 rating indicating no overall change to existing conditions. For example, agricultural water was rated +3 under the Integrated Plan because agricultural water needs would be met under most which meets the objective of providing a water supply of 70 percent proratable water rights during drought years under most modeling scenarios, while the No Action alternative was rated -3 because prorationing would get worse under most scenarios.

To determine the final EQ score, the team multiplied the resource category significance scores for both the Integrated Plan and No Action alternative by the subcategory weight. This resulted in a +0.24 score for agricultural water under the Integrated Plan and a -0.24 score under the No Action Alternative. The resulting numbers reflect both the significance of the effect and the relative importance of the resource category and subcategory for the Yakima River basin as a whole. Table 21 displays the final results of the EQ evaluation.

Table 21. EQ Evaluation Results

EQ RESOURCE CATEGORY			No Action Alternative		Integrated Plan	
		Weight	Significance	Score	Significance	Score
Water Resources	Agriculture	0.08	-3	-0.24	3	0.24
	Municipal	0.04	-3	-0.12	3	0.12
	Instream Flows	0.08	-2	-0.16	3	0.24
	Subtotal	0.2		-0.52		0.60
Fish	Fish Abundance	0.1	1	0.1	3	0.30
	Fish Passage	0.1	0	0	3	0.30
	Subtotal	0.2		0.1		0.60
Threatened and Endangered Species	Spotted Owl	0.06	-1	-0.06	1	0.06
	Steelhead	0.06	-1	-0.06	2	0.12
	Bull Trout	0.06	-1	-0.06	2	0.12
	Greater Sage-Grouse	0.02	-1	-0.02	1	0.02
	Subtotal	0.2		-0.2		0.32
Land Use Management	Protection and Enhancement of Ecosystems and Biodiversity	0.20	0	0	3	0.60
	Subtotal	0.2		0		0.60
Vegetation and Wildlife Habitat	Shrub Steppe	0.033	-1	-0.03	1	0.03
	Old Growth Forest	0.033	-1	-0.03	1	0.03
	Riparian	0.033	1	0.03	3	0.10

EQ RESOURCE CATEGORY			No Action Alternative		Integrated Plan	
	Subtotal	0.1		-0.03		0.17
Recreation	Water-Based	0.05	0	0	2	0.10
	Land-Based	0.05	0	0	2	0.10
	Subtotal	0.1		0		0.20
Total		1		-0.65		2.49

To portray the scoring results on a relative basis, the category scores for each resource were normalized so that they are compared to the -3 to 3 scale. On this normalized scale, the highest negative impact for each category would be scored -3 and the highest positive impact would be scored +3. The normalized score does not include the weightings shown on Table 21. Table 22 shows the normalized results for the EQ Category scores. Figure 21 graphically portrays those results.

Table 22. Normalized EQ Category Scores

Category	No Action Alternative	Integrated Plan
Water Resources	-2.61	3.00
Fish	0.51	3.00
Threatened and Endangered Species	-1.00	1.59
Land Use	0	3.00
Vegetation and Wildlife	-0.30	1.68
Recreation	0	2.01

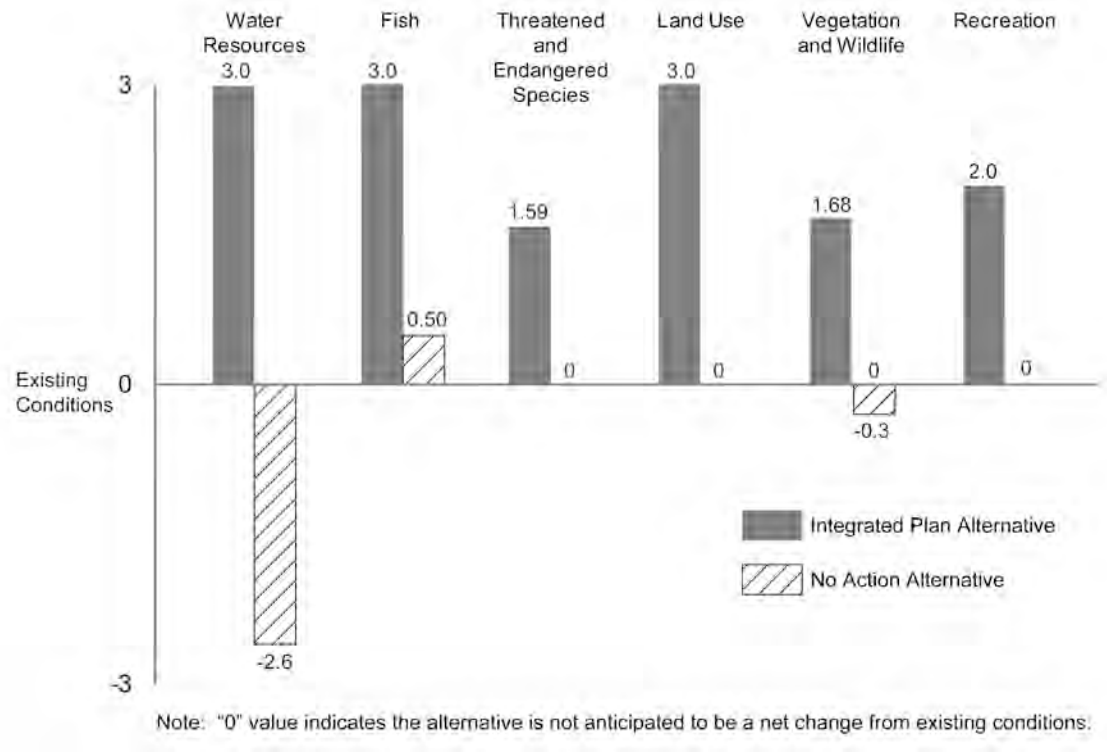


Figure 21. Environmental Quality Scores for the Integrated Plan and No Action Alternatives

For all categories considered, the Integrated Plan provides improvements over existing conditions whereas the No Action alternative would have negative effects except for a minor improvement to fish.

3.4 Other Social Effects

Other Social Effects (OSE) were analyzed by the same team and at the same workshops and meetings as the EQ analysis. The OSE account is intended to include perspectives that are not included in the NED, RED or EQ accounts. The team identified two resource categories to include in the OSE account—cultural resources and sustainability benefits. Cultural resources were included in the OSE account rather than the EQ account in an attempt to represent the broad importance of cultural resources that extends beyond the physical environment. Sustainability benefits were included a category to capture the broad purpose of the Integrated Plan. OSE accounts often include environmental justice, but the team decided not to include that category since the Integrated Plan PEIS did not identify the potential for environmental justice impacts. The OSE categories are listed and described in Table 23.

Table 23. OSE Resource Categories

OSE Resource Category	OSE Resource Subcategories	Background
Cultural Resources	Historic Structures	Three subcategories are included under cultural resources. Impacts to historic structures and cultural and archaeological resources are those that would occur during project construction when historic structures such as Yakima Project dams are modified or cultural resources are disturbed. The subsistence subcategory is included to capture the impacts or benefits to culturally important resources such as salmon and hunting, fishing, and gathering.
	Cultural and Archaeological Resources	
	Subsistence Resources	
Sustainability Benefits	Improve Water Resource Reliability	Sustainability benefits are intended to capture overall benefits of the Integrated Plan to water resource reliability and ecosystem resilience to climate change. The category is divided into two subcategories—improved water resource reliability and increased resistance of the ecosystem to climate change.
	Overall System Resilience to Climate Change	

The OSE categories and subcategories were weighted as shown in Table 24 along with the weights assigned to each. Sustainability benefits were weighted higher than cultural resources because of their overall potential to influence long term resilience to climate change. The subsistence resources subcategory was weighted slightly higher than impacts to historic and cultural resources while the sustainability subcategories were given equal weight.

Table 21. OSE Categories and Rankings

Category	Category Weight	Subcategories	Subcategory Weight	Final Weight
Cultural	0.40	Historic Structures	0.30	0.12
		Cultural and Archaeological Resources	0.30	0.12
		Subsistence Resources	0.40	0.16

Category	Category Weight	Subcategories	Subcategory Weight	Final Weight
Sustainability Benefits	0.60	Improve Water Resource Reliability	0.50	0.30
		Overall System Resilience to Climate Change	0.50	0.30
TOTALS	1			1

The team used the same scale as described in Section 3.3 to evaluate the effects to OSE under the Integrated Plan and No Action Alternative. Table 25 displays the final results of the OSE evaluation.

Table 22. OSE Evaluation Results

OSE RESOURCE CATEGORY			No Action Alternative		Integrated Plan	
		Weight	Significance	Score	Significance	Score
Cultural	Historic Properties	0.12	0	0.00	-1	-0.12
	Cultural and Archaeological Resources	0.12	0	0.00	-1	-0.12
	Subsistence Resources	0.16	1	0.16	3	0.48
	Subtotal	0.40		0.16		0.24
Sustainability Benefits	Improve Water Supply Reliability	0.30	-2	-0.600	3	0.90
	Overall System Resilience to Climate Change	0.30	0	0.00	2	0.60
	Subtotal	0.60		-0.60		1.50
Total		1.00		-0.44		1.74

To portray the scoring results on a relative basis, the category scores for each resource were normalized to the -3 to 3 scales. On this normalized scale, the highest negative impact for each category would be scored -3 and the highest positive impact would be scored +3. The normalized score does not include the weightings shown on Table 25. Table 26 shows the normalized results for each OSE Category score. Figure 22 shows the results in graphical format.

Table 26. Normalized OSE Category Scores

Category	No Action Alternative	Integrated Plan
Cultural	0.40	0.60
Sustainability Benefits	-1.00	2.50

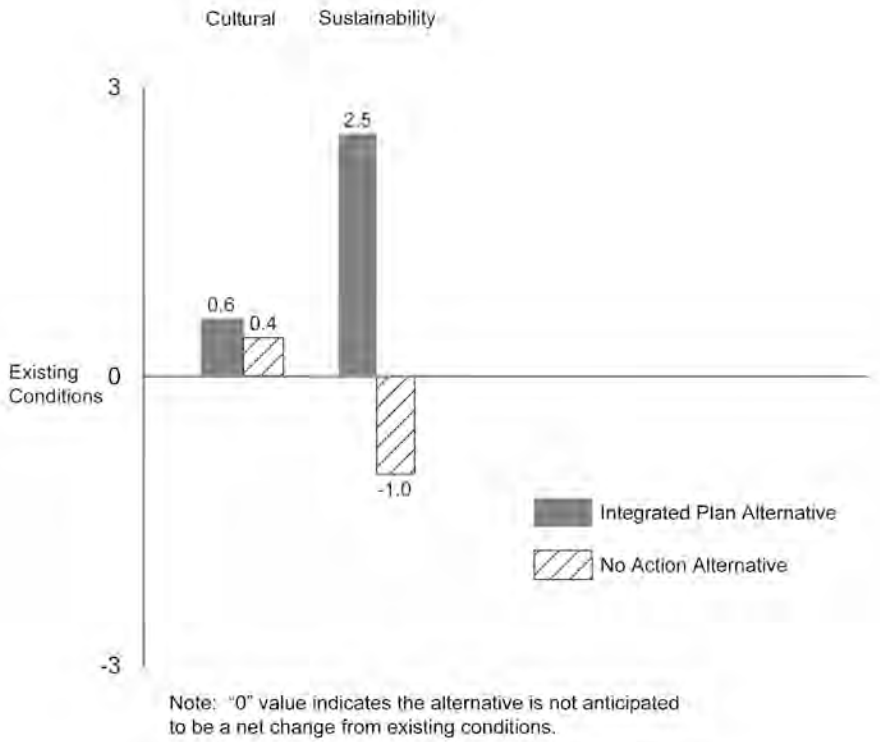


Figure 22. Other Social Effects Scores for the Integrated Plan and No Action Alternatives

The Integrated Plan would have minor positive benefits to cultural resources, primarily from benefits to subsistence resources. For sustainability benefits, the Integrated Plan provides minor improvements while the No Action alternative would have minor negative impacts.

4.0 Financial Feasibility

This section describes financial feasibility considerations for the Integrated Plan. Sections 4.1 to 4.6 address cost allocation performed in accordance with the Federal Principles and Guidelines (Water Resources Council, 1983). Section 4.7 addresses typical cost repayment.

4.1 Cost Allocation

Cost allocation is undertaken for multipurpose projects in order to identify an equitable distribution of costs among the purposes. This section describes how a preliminary cost allocation was performed for the Integrated Plan and presents the results. This cost allocation is based on programmatic level analysis of project features and benefits. Implementation of the Integrated Plan would provide more accurate information on plan benefits and costs. Further, additional information may be developed as the plan elements are refined, such as allocation of water from reservoirs to meet the multipurpose aspects of the plan and benefits for a more reliable water supply for all post 1905 water users. The cost allocation would be expected to be adjusted accordingly when sufficient additional information is available to support the analysis. For more complete information on the preliminary cost allocation, see Reclamation and Ecology 2012c.

Methods used in cost allocation for Federal water resource projects include the Separable Costs – Remaining Benefits (SCRB) method; the Alternative Joint Expenditures (AJE) method and the Use of Facilities method. The AJE method was used in the preliminary cost allocation of the Integrated Plan. In brief, the AJE method separates out the specific costs that clearly should be associated with a single purpose. It then follows a step-by-step procedure to allocate the joint costs that remain. Allocated joint costs are added to specific costs for each purpose, to determine that purpose's share of total project costs.

4.2 Purposes Used in Preliminary Cost Allocation

The Integrated Plan provides benefits in multiple areas. As listed in the Final PEIS (Reclamation and Ecology 2012d), these include:

- Watershed protection, ecological restoration and enhancement addressing instream flows, aquatic habitat, and fish passage;
- Improved water supply reliability during drought years for agricultural and municipal needs;
- Efficient management of water supplies for irrigated agriculture, municipal and domestic uses, and power generation;
- Improved ability of water managers to respond and adapt to potential effects of climate change; and
- Improved vitality of the regional economy and environmental sustainability of the Yakima River system.

In order to perform the preliminary cost-allocation these benefits can be grouped into three primary purposes:

- Ecological Restoration
- Agricultural Irrigation
- Municipal and Domestic Water Supply

At this time, the Integrated Plan does not include provision of power generation facilities. It is possible that power facilities may be added to water storage or conveyance systems at a future time, either by the Federal Government, state government or through arrangement with a privately-owned power utility. Since power features are not included at this time, it is not necessary to allocate costs to the power generation purpose.

Additional benefits of the Integrated Plan include improved recreational opportunities, especially on acquired lands, and flood damage reduction from water storage and floodplain restoration projects. However, these benefits have not been quantified, and would depend on future decisions about specific projects and features. Because of this, the economic value of those benefits has not yet been estimated in monetary terms. Therefore, recreation and flood damage reduction are not identified as individual purposes in the preliminary cost allocation. However, these benefits may be allocated at a later date if additional information is developed.

4.3 Costs and Benefits Used in Preliminary Cost Allocation

Costs used in the preliminary cost allocation include construction cost, operations, maintenance and replacement costs, and interest during construction. Construction costs and O&M costs are summarized in Section 2 of this technical memorandum. Replacement costs and interest during construction were estimated specifically for purposes of the preliminary cost allocation and are described in Reclamation and Ecology 2012c.

The NED benefits of the integrated plan are summarized in Section 3.1 of this technical memorandum. These benefits were used in applying the AJE procedure for the preliminary cost allocation.

4.4 Identification of "Specific Costs"

The AJE Method of cost allocation requires identification of "specific costs" or those that can be attributed to just a single purpose. Costs of the following components of the Integrated Plan were identified as specific costs for the preliminary allocation.

- **Costs specific to the Ecological Restoration purpose:**
  - Fish Passage at Cle Elum Lake Dam
  - Fish Passage at Bumping Lake Dam
  - Fish Passage at Clear Creek Dam
  - Fish Passage at Tieton, Kachess and Keechelus Dams
  - KRD Canal modifications to improve flow in local creeks
  - Wapatox Canal improvements to improve flows in the Naches River
  - Mainstem Floodplain Restoration Program
  - Tributary Habitat Enhancement Program

- Land Acquisition Program

The total specific cost for this purpose is $920 million, including construction, IDC, and OM&R.

Fish passage at Box Canyon Creek provides ecological benefits but was not identified as a "specific" cost in this category. This is because it accompanies the Kachess Inactive Storage project which has benefits for irrigated agriculture.

- **Costs specific to the Agricultural Irrigation purpose:**
  - Kachess Inactive Storage (drawdown would be used exclusively for irrigation supply in drought years).
  - Fish passage at Box Canyon Creek (this project would accompany the Kachess Inactive Storage project).

The total specific cost for this purpose is $197 million, including construction, IDC, and OM&R.

The Wymer Downstream Conveyance system was also considered for possible designation as a cost specific to agriculture. However the project team concluded that the improved operational flexibility afforded by this conveyance system has benefits for management of fish flows and water temperature, and therefore this is considered to be a joint cost between agriculture and ecological restoration.

- **Costs specific to the Municipal and Domestic Uses purpose:**
  - Municipal water conservation

The total specific cost for this purpose is $16 million. This cost consists solely of O&M costs, due to the programmatic nature of the municipal water conservation action.

Of the remaining components of the Integrated Plan not listed above (e.g. storage projects, groundwater infiltration, agricultural conservation, etc.), no subfeatures were identified that can clearly be identified as "specific costs." Therefore all of the remaining projects were treated in full as "joint cost" items.

4.5 Definition of "Single-Purpose Alternatives"

The AJE Method requires that a "Single Purpose Alternative" (SPA) be defined for each of the three purposes discussed in Section 4.1: Ecological Restoration, Agricultural Irrigation, and Municipal and Domestic Supply. This is defined as the cost of a comparable alternative project that would provide equivalent benefits in the same geographic area as the proposed project would, for just one of the purposes of the multipurpose project. An SPA must be a project that would be reasonable for the Federal Government to plan and construct.

A SPA was defined for each of the three purposes discussed in Section 4.2. These include groups of select projects at full size as well as downsized projects from the Integrated Plan that, collectively, could meet the objectives of just one purpose instead of all three purposes. Each of the three SPAs was identified solely to carry out the cost-allocation procedure, and the SPAs are not proposed for implementation. The SPAs are summarized in Tables 23 through 25.

Table 23. Projects Included in SPA for Ecological Restoration

Projects Specific to this Purpose and Included at Full Size • Fish Passage at Cle Elum Lake Dam • Fish Passage at Bumping Lake Reservoir Dam • Fish Passage at Clear Creek Dam • Fish Passage at Tieton, Kachess and Keechelus Dams • KRD Canal modifications to improve flow in local creeks • Wapatox Canal improvements to improve flows in the Naches River • Mainstem Floodplain Restoration Program • Tributary Habitat Enhancement Program • Land Acquisition Program
Other Projects Included at Full Size • Keechelus-to-Kachess Conveyance • Cle Elum Pool Raise • Groundwater Infiltration
Downsized Projects • Bumping Lake Reservoir Enlargement (enlarged to 87 KAF instead of 198 KAF) • Wymer Reservoir (80 KAF instead of 162.5 KAF) • Wymer Downstream Conveyance (500 cfs instead of 1,000 cfs) • Agricultural Conservation (50% of the program cost)

KAF = thousand acre-feet; cfs = cubic feet per second

Table 24. Projects Included in SPA for Agricultural Irrigation

Projects Specific to this Purpose and Included at Full Size • Kachess Inactive Storage • Fish Passage at Box Canyon Creek
Other Projects Included at Full Size • Bumping Lake Reservoir Enlargement • Keechelus-to-Kachess Conveyance • Agricultural Conservation • Market Reallocation • Groundwater Infiltration
Downsized Projects • None

Table 25. Projects Included in SPA for Municipal and Domestic Supply

Projects Specific to this Purpose and Included at Full Size • Municipal Conservation • Municipal Aquifer Storage and Recovery (ASR)
Other Projects Included at Full Size • Market Reallocation • Cle Elum Pool Raise
Downsized Projects • Bumping Lake Reservoir Enlargement (enlarged to 68 KAF instead of 198 KAF)

KAF = thousand acre-feet

4.6 Results of Preliminary Cost Allocation

Cost allocation results are presented in Tables 26 and 27, using 2012 present values and 2026 future values, respectively (see discussion of future value, below). Additional data on the cost allocation is included in Appendix B. Using results expressed in 2012 present value, the allocation indicates the following breakdown among the three project purposes:

- Ecological Restoration: $2,440 million (69.3 percent)
- Agricultural Irrigation: $729 million (20.7 percent)
- Municipal and Domestic Water Supply: $351 million (10.0 percent)

In many projects, a single facility or group of facilities is completed at the same time, and benefits begin to accrue in that year. Cost allocation then values all costs and benefits to that same year. The Integrated Plan is different, in that it contains a suite of many projects which are scheduled to be completed at different times. For consistency with Reclamation procedures, the year 2026 was selected as a common year for computation of the future value of all costs and benefits. This is the year when all of the discrete capital projects are scheduled to be operational based on the implementation schedule contained in the Integrated Plan. Results of the cost allocation are therefore provided for both 2012 and 2026.

4.7 Cost Repayment

Reimbursable project functions included in the Integrated Plan are agricultural irrigation and municipal and domestic water supply. Construction costs allocated to agricultural irrigation are generally reimbursable without interest, while those allocated to municipal and domestic supply are reimbursable with interest. For the Integrated Plan, cost-share partners such as the State of Washington, local governments or other parties, may participate in reimbursement.

Ecological restoration is generally a non-reimbursable function that is typically expected to be borne by the U.S. Treasury in combination with the state and other cost-share partners.

It is anticipated that the State of Washington would be a partner in funding many of the elements of the Integrated Plan. At this time specific cost-sharing provisions between the State and Federal government have not been determined.

Table 26. Preliminary Cost Allocation – 2012 (Present Value)

ITEM	PROJECT PURPOSES			TOTAL ($M)
	Ecological Restoration	Agriculture	Municipal & Domestic	
1 Costs to be Allocated	0	0	0	3,520
Construction Costs	0	0	0	3,121
IDC	0	0	0	139
Capitalized OM&R	0	0	0	260
Annual OM&R	0	0	0	14
2 Benefits[1]	6,200	800	395	7,395
Benefits (Present Value)	6,200	800	395	7,395
3 Single Purpose Alternative Cost[2]	2,642	1,222	406	0
Construction Costs	2,349	1,100	350	0
IDC	101	49	21	0
Capitalized OM&R	191	73	35	0
Average Annual OM&R	11	4	2	0
4 Justifiable Expenditure[3]	2,642	800	395	0
5 Specific Costs[4]	920	197	16	1,133
Construction Costs	843	179	0	1,022
IDC	18	11	0	29
Capitalized OM&R	59	7	16	82
Average Annual OM&R	3	1	0	4
6 Remaining Justifiable Expenditure[5]	1,722	603	379	2,704
7 Percent Distribution	63.7%	22.3%	14.0%	100.0%
8 Remaining Joint Cost[6]	1,520	532	335	2,387
Construction Costs	1,337	468	294	2,099
IDC	70	24	15	110
Capitalized OM&R	113	40	25	178
Average Annual OM&R	7	2	1	10
9 Total Allocation[7]	2,440	729	351	3,520
Construction Costs	2,180	647	294	3,121
IDC	88	36	15	139
Capitalized OM&R	172	47	41	260
Average Annual OM&R	10	3	2	14

All values are expressed in 2012 dollars.
IDC = Interest During Construction; OM&R = Operations, Maintenance and Replacement

1. Benefits from Reclamation and Ecology,2012b.
2. Construction Cost from Reclamation and Ecology 2012c.
3. Lesser of values from Row 2 and Row 3.
4. Total costs of all project elements that are unique to just one purpose.
5. Values from Row 4 minus values from Row 5.
6. Using total column at far right, subtract value in Row 5 from value in Row 1. Then allocate the resulting value to the purposes, using percentages from Row 7.
7. Total allocation is the sum of Specific Costs from Row 5 and Remaining Joint Costs from Row 8.

Table 27. Preliminary Cost Allocation – 2026 (Future Value)

ITEM	PROJECT PURPOSES			TOTAL ($M)
	Ecological Restoration	Agriculture	Municipal & Domestic	
1 Costs to be Allocated	0	0	0	6,096
Construction Costs	0	0	0	5,405
IDC	0	0	0	241
Capitalized OM&R	0	0	0	450
Average Annual OM&R	0	0	0	25
2 Benefits[1]	10,736	1,385	684	12,806
Benefits (Present Value)	10,736	1,385	684	12,806
3 Single Purpose Alternative Cost[2]	4,575	2,116	703	0
Construction Costs	4,068	1,905	606	0
IDC	175	84	37	0
Capitalized OM&R	331	127	60	0
Average Annual OM&R	19	8	3	0
4 Justifiable Expenditure[3]	4,575	1,385	684	0
5 Specific Costs[4]	1,593	341	28	1,962
Construction Costs	1,460	310	0.0	1,770
IDC	31	19	0.0	50
Capitalized OM&R	102	13	28	142
Average Annual OM&R	5	0.9	0.6	7
6 Remaining Justifiable Expenditure[5]	2,981	1,044	656	4,682
7 Percent Distribution	63.7%	22.3%	14.0%	100.0%
8 Remaining Joint Cost[6]	2,632	922	580	4,133
Construction Costs	2,315	811	510	3,635
IDC	121	42	27	190
Capitalized OM&R	196	69	43	308
Average Annual OM&R	11	4	2.5	18
9 Total Allocation[7]	4,225	1,263	607	6,096
Construction Costs	3,775	1,120	510	5,405
IDC	152	62	27	241
Capitalized OM&R	298	81	71	450
Average Annual OM&R	17	5	3.1	25

All values are expressed in 2012 dollars.
IDC = Interest During Construction; OM&R = Operations, Maintenance and Replacement

1. Benefits from Reclamation and Ecology, (2012b).
2. Construction Cost from Reclamation and Ecology 2012c.
3. Lesser of values from Row 2 and Row 3.
4. Total costs of all project elements that are unique to just one purpose.
5. Values from Row 4 minus values from Row 5.
6. Using total column at far right, subtract value in Row 5 from value in Row 1. Then allocate the resulting value to the purposes, using percentages from Row 7.
7. Total allocation is the sum of Specific Costs from Row 5 and Remaining Joint Costs from Row 8.

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Glossary

acre-foot	The volume of water that could cover 1 acre to a depth of 1 foot. Equivalent to 43,560 cubic feet or 325,851 gallons.
adjudication	The judicial process through which the existence of a water right is confirmed by court decree.
anadromous	Fish that migrate from saltwater to freshwater to breed. Going up rivers to spawn.
aquifer	A water-bearing stratum of permeable rock, sand, or gravel.
aquifer storage and recovery (ASR)	A system that injects potable water via wells into aquifers during periods of excess capacity and withdraws the water for municipal supply during periods of peak demand or limited supply.
cfs	Flow rate in cubic feet per second.
drought	A condition of water-supply scarcity that requires the Yakima Project to reduce deliveries to proratable (junior) water users below their full entitlements.
dry year	A year in which drought occurs, requiring the Yakima Project to limit deliveries to proratable (junior) water users below their full entitlements.
economic benefits	An economics term measuring an increase in economic welfare (e.g., the value of goods and services available to consumers, and profit for producers). Gross economic benefits measure the total increase in economic welfare, without consideration of the costs incurred to achieve them. Net economic benefits account for the costs.
endangered species	A species that is in danger of extinction throughout all or a significant portion of its range. To term a run of salmon "endangered" is to say that particular run is in danger of extinction.
Endangered Species Act	16 U.S.C. §1531 et seq. (1973). The Endangered Species Act (ESA) provides a program for the conservation of threatened and endangered plants and animals and the habitats in which they are found.

Environmental Quality (EQ)	This account provides the mechanism for displaying information relative to the effects of proposed alternatives on significant resources. "Significant" in this context means resources that are likely to have bearing on the decision-making process.
Feasibility Investigation Reports (feasibility study)	Detailed investigation specifically authorized by the U.S. Congress to determine the desirability of seeking congressional authorization for implementation of a preferred alternative.
fish passage	Providing facilities or management approaches at existing dams to achieve up and downstream passage of targeted fish species.
flow	The volume of water passing a given point per unit of time. Often measured in cubic feet per second (cfs).
groundwater infiltration	A hydrologic process where surface water is diverted and conveyed to a designed recharge system (ponds, canals, or spreading areas), where water moves downward from to the ground surface into the groundwater.
habitat	The combination of resources and the environmental conditions that promotes occupancy by individuals of a given species and allows those individuals to survive and reproduce.
harvest	Ocean and in-river harvest (commercial, sport and Tribal) of fish.
instream flows	Water flows within a defined stream channel. Instream flows may support aquatic habitat, wildlife, recreation, or aesthetics.
mainstem	The principal channels (Yakima and Naches rivers) within the Yakima River Basin, into which all of the tributary streams in the drainage basin flow.
market reallocation	Voluntary transfer of water rights from willing sellers to willing buyers, on a temporary or permanent basis.
mitigation	To offset known impacts to an existing natural resource.
National Economic Development (NED)	The Federal objective is to contribute to national economic development consistent with protecting the Nation's environment. The NED account measures the beneficial and adverse monetary effects of each alternative in terms of changes in the value of the national output of goods and services.

National Environmental Policy Act (NEPA)	A Federal law that requires Federal Government agencies to consider the effects of their actions on environmental resources and the public and to seek public comment on those actions. 1969 as amended (Pub. L. 91-190, 42 U.S.C. 4321-4347, January 1, 1970, as amended by Pub. L. 94-52, July 3, 1975, Pub. L. 94-83, August 9, 1975, and Pub. L. 97-258, § 4(b), Sept. 13, 1982)
Other Social Effects (OSE)	This account serves as a repository for alternative effects that are not reflected in the other three accounts. Examples may include safety and health issues, long-term productivity, energy consumption issues, and others.
Parker Gage	A flow-measurement device on the Yakima River where the total water supply available (TWSA) is measured for the Yakima Project for the period April through September. The Parker gage is located just south of the City of Union Gap on the Yakima River.
Principles and Guidelines	A Federal document that describes Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies.
proratable (entitlement/water rights)	Yakima Project junior water rights related to storage water that, in water-short years, receive less than their full right on a prorated basis. For the Yakima Basin, over half of the surface water entitlements are proratable under a 1945 Consent Decree, including all of the surface water supply for Roza Irrigation District and Kittitas Reclamation District, over half of the Yakama Nation's Wapato Irrigation Project, a large share of the Sunnyside Division, and many other irrigation water right holders.
prorationing	The process of equally reducing the amount of water delivered to junior (i.e., "proratable") water right holders in dry years.
recruitment	Ocean population at the mouth of the Columbia River, excluding any ocean harvest.
Regional Economic Development (RED)	This account evaluates the beneficial and adverse impacts of each alternative on the economy of the affected region, with particular emphasis on income and employment measures. The affected region reflects the geographic area where significant impacts are expected to occur. Impacts can be measured in both monetary and nonmonetary terms.

RiverWare hydrologic model	Yakima Project RiverWare model; a daily time-step reservoir and river operation computer model of the Yakima Project created with the RiverWare software.
State Environmental Policy Act (SEPA)	A state policy that requires state and local agencies to consider the likely environmental consequences of a proposal before approving or denying the proposal and provides for public comment (Chapter 43.21C RCW).
Storage Study	Yakima River Basin Water Storage Feasibility Study; a multiyear evaluation completed in 2009 of the viability and acceptability of several storage augmentation alternatives, including a potential water exchange, for the benefit of fish, irrigation, and municipal water supply within the Yakima River Basin.
total water supply available (TWSA)	The total water supply available for the Yakima River Basin above the Parker gage for the period April through September.
water year	The 12-month period from October through September. The water year is designated by the calendar year in which it ends and which includes 9 of the 12 months. For example, the year ending September 30, 1992, is called the "1992 water year."
watershed	The total land area draining to any point in a stream.
wilderness	"A wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and community of life are untrammeled by man, where man himself is a visitor who does not remain… an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions" The Wilderness Act of 1964 (Public Law 88-577).
wild and scenic	The National Wild and Scenic Rivers System was created by Congress in 1968 (Public Law 90-542; 16 U.S.C. 1271 et seq.) to preserve certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations.

Yakima Project	A Federal land-reclamation project that provides irrigation water for a 175-mile strip of fertile land on both sides of the Yakima River in south-central Washington. There are seven divisions in the project: Storage, Kittitas, Tieton, Sunnyside, Roza, Kennewick, and Wapato. Storage dams and reservoirs on the project are Bumping Lake, Clear Lake, Tieton, Cle Elum, Kachess, and Keechelus. Other project features are 5 diversion dams, canals, laterals, pumping plants, drains, 2 powerplants, and transmission lines.

YAKIMA RIVER BASIN INTEGRATED WATER RESOURCE MANAGEMENT PLAN
BUDGET SUMMARY – 2013-2015 CAPTIAL BUDGET REQUEST

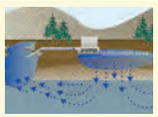
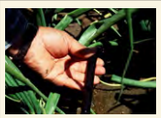
Integrated Plan Element	Integrated Plan Projects	Current Biennium (Federal and State)	13-15 Budget Request (State)	2013-2016 Total (Federal, State, Local)	Completed Cost – Full 30 Year Implementation
Habitat	Tributary/Mainstem Enhancement	$225,000[1]	$2,400,000	$18,000,000	$480,000,000
	Watershed Acquisitions	$750,000[1]	$1,700,000	$9,000,000	TBD
Fish Passage	Cle Elum Reservoir	$700,000[3]	$2,200,000	$18,000,000	$90,000,000
	Box Canyon Creek	0	$100,000	$1,000,000	$1,000,000
	Keechelus, Kachess, Tieton Reservoir	0	$500,000	$3,000,000	$312,000,000
Operational Modifications	Keechelus to Kachess Pipeline	$2,500,000[1]	$500,000	$5,000,000	$200,000,000
	Subordination of Power Generation (Roza and Chandler)	$225,000[2]			TBD
Surface Storage	Cle Elum Pool Raise	0	$1,800,000	$18,000,000	$18,000,000
	Kachess Inactive Storage	$450,000[3]	$7,000,000	$55,000,000	$280,000,000
	Wymer Reservoir	$625,000[1]	$500,000	$7,000,000	$1,430,000,000
	Bumping Reservoir Enlargement	$625,000[1]	$500,000	$7,000,000	$571,000,000
Aquifer Storage and Recovery (ASR)	Kittitas County ASR	$200,000[1]	$400,000	$4,000,000	TBD
Water Conservation	Agricultural Conservation	0[4]	$2,200,000	$15,000,000	$430,000,000
	Municipal Conservation	0[5]	$100,000	$200,000	Programmatic Element
Market Driven Water Reallocation	Water Bank/Exchange Programs	0[6]	$100,000	$600,000	Programmatic Element
TOTALS		State:$4,925,000 Fed:$1,375,000 Tot: $6,300,000	$20,000,000	$160,800,000	$3,812,000,000

[1]State of Washington funded
[2]Yakama Nation, USGS, Irrigation Districts, and Reclamation funded
[3]Reclamation funded
[4]Does not include Ecology and Reclamation funding for existing YRBWEP conservation efforts
[5]Does not include funding by municipalities for water system conservation programs
[6]Does not include Ecology and Kittitas County funding for existing water banks and exchanges

Yakima Basin Integrated Water Resource Management Plan – Three-Year Funding Request

Project		Description More information: http://www.ecy.wa.gov/programs/wr/cwp/YBIP.html	Funding (Millions)			Funding (3 Years)	Total Cost (Rounded)
			2014	2015	2016		
	Tribs/Mainstem Habitat Enhancement	The fish habitat enhancement program will address mainstem floodplain and tributary habitat restoration priorities through habitat enhancement, flow restoration, fish barrier removal, and screening diversions. Actions will improved spawning, incubation, rearing, and migration conditions for all salmonid species; implement key strategies described in the Yakima Sub-basin Plan; and complete most of the actions described in the Yakima Steelhead Recovery Plan. Funding would be used to construct Habitat Enhancement Projects identified as top priorities by the Habitat Subcommittee to address critical tributary habitat areas in the basin. Projects are being chosen in cooperation with NOAA Fisheries, USFWS, and the Salmon Recovery Board director. Habitat enhancement is authorized under YRBWEP Title XII.	$5	$6	$7	$18	$480
	Watershed Lands Acquisition	Acquisition of critical habitat is a keystone to ecological restoration of the Yakima River Basin. Funding would be used to secure an agreement for purchase of a large tract of property in the Teanaway drainage and to purchase forest land in the Naches watershed. This early action item is being funded by the State of Washington. Acquisition and effective management of watershed land will improve water supply and water quality and protect sources of cold water habitat needed for fish spawning and rearing.	$3	$3	$3	$9	$100
	Cle Elum Fish Passage	The project will open approximately 29.4 miles of stream habitat to salmon and steelhead. Funding would be used to initiate hydraulic modeling, cultural surveys, and design data collection. NEPA has been completed.	$5	$6	$7	$18	$90
	Box Canyon Creek Fish Passage	Initial funding would be used to complete design for fish passage at Box Canyon Creek, a Kachess Reservoir tributary that serves as critical habitat for bull trout, an Endangered Species Act (ESA) threatened species.	$0	$1	$0	$1	$1
	Keechelus, Kachess, Tieton Fish Passage	Initial funding will be used to design upstream and downstream fish passage at these existing reservoirs. Fish passage will open approximately 53 miles of stream habitat to salmon and steelhead.	$1	$1	$1	$3	$312
	Clear Lake Fish Passage	Funding would be used to complete feasibility level designs and site specific environmental compliance to improve passage for bull trout at Clear Lake Dam.					
	Keechelus to Kachess Conveyance	The project will convey water from Keechelus Reservoir to Kachess Reservoir, providing additional storage in Kachess reservoir to serve downstream needs and improving instream flow conditions in the upper Yakima River. Funding would be used to initiate site specific environmental compliance, perform preliminary geologic investigations, collect design data, and perform feasibility level designs.	$1	$2	$2	$5	$200

YAKIMA RIVER BASIN WATER ENHANCEMENT PROJECT WORKGROUP

Project		Description More information: http://www.ecy.wa.gov/programs/wr/cwp/YBIP.html	Funding (Millions)			Funding (3 Years)	Total Cost (Rounded)
			2014	2015	2016		
	Subordinate Power Diversions	Funding would be used to quantify impacts to fisheries downstream of the Roza Dam diversion on the Yakima River and to identify the degree of subordination that would be appropriate to meet fish and power needs at this location.					
	Cle Elum Pool Raise	Spillway gates will be modified to allow Cle Elum Reservoir to be raised three feet, providing an additional 14,600 ac-ft of water that would be available for instream flow support in the Cle Elum and Yakima Rivers and to meet irrigation demand. A three-foot raise of the Cle Elum pool is authorized as part of YRBWEP Title XII legislation. Funding would be used to complete site specific environmental compliance and to initiate design data collection and final designs.	$4	$7	$7	$18	18
	Kachess Inactive Storage	The outlet at the existing Kachess Reservoir will be lowered to allow for an additional 80 feet of reservoir level draw down, providing access to another 200,000 ac-ft of water for drought relief. Funding would be used to initiate site specific environmental compliance, perform preliminary geologic investigations, collect design data, and perform feasibility level designs for a tunnel or pumping plant to tap 200,000 acre-feet of inactive storage in the reservoir.	$15	$20	$20	$55	$280
	Wymer Reservoir Assessment	Funding would be used to initiate site specific environmental compliance, perform preliminary geologic investigations, collect design data, and perform feasibility level designs associated with developing a 162,500 ac-ft reservoir at Wymer. Water from the enlarged reservoir would be used to improve both instream flows and out-of-stream water supplies in the basin.	$1	$2	$4	$7	$1,430
	Bumping Lake Enlargement	Funding would be used to initiate site specific environmental compliance, perform preliminary geologic investigations, collect design data, and perform feasibility level designs associated with creation of an additional 156,000 ac-ft of new water storage at Bumping Lake through construction of a new dam downstream of the current dam. Water from the enlarged reservoir would be used to improve both instream flows and out-of-stream water supplies in the basin.	$1	$2	$4	$7	$571
	Groundwater Infiltration	Late-winter and early-spring flow will be diverted to ponds, canals, and spreading areas and allowed to infiltrate into the aquifer to be stored for later use to improve flow conditions and meet irrigation demand. Funding would be used to perform site specific environmental compliance, reconnaissance field investigations and feasibility level designs for a pilot groundwater infiltration and storage project in the Kittitas Valley. The pilot project is expected to be the basis for a future full scale project.	$1	$1	$2	$4	$110
	Agricultural Conservation	Agricultural water conservation measures (piping and automating canals, on-farm water conservation improvements, etc.) will conserve approximately 170,000 ac-ft of water in good water years, substantially less in drought years.	$5	$5	$5	$15	$430
	Municipal/ Domestic Conservation	A multi-stakeholder advisory committee of municipal and domestic water conservation (including local and environmental stakeholders) will be convened to organize outreach to local elected officials and provide liaison with Reclamation, Ecology, and the Washington State Department of Health. (implementing leak control – promoting low impact landscaping and efficient indoor water use	$0	$0.1	$0.1	$0.2	Program
	Market Reallocation	Stage 1 of the program will continue existing water marketing and banking activities and reduce current barriers to water transfers. Stage 2 will focus on facilitating water transfers between irrigation districts.	$0.2	$0.2	$0.2	$0.6	Program

October 2012 - Ecology Publication Number 12-12-017

Partial List of Yakima Basin Integrated Plan Briefings and Presentations* made by Mike Schwisow, other speakers indicated.

5/29	John Stuhlmiller, Director of Government Relations, Washington Farm Bureau
6/4	Rep. Judy Warnick
8/8 & 9	Rep. Kathy Haigh and Rep. Larry Springer – WAWGG Vineyard Tour
8/14	John DeVaney, Executive Director, Yakima Valley Growers and Shippers
8/14	Ann George, Administrator, Hop Growers of Washington
8/20	Kate Woods, Legislative Director, Rep. Doc Hastings – Bumping Lake tour (IC)
8/30	K.D. Chapman, Policy Analyst, House Democratic Caucus
9/5	Yakima Valley League of Women Voters, Presentation (Garrity, Eberhart)
9/6	Cathleen Koch, Administrator, City of Prosser
9/27	Holly Johnson, Government Relations Director, Washington State Grange
10/6	Chinook Pass Cabin Owners Assn., Presentation (Rigdon, Eberhart, Revell)
10/12	Maia Bellon, Water Resources Program Manager, Dept. of Ecology
10/13	Washington League of Women Voters, Presentation (Ring, Eberhart)
10/15	Gary Chandler, Vice President for Government Relations, Assn. of Washington Business
10/16	Washington Cattlemen's Association, Presentation (Eberhart)
10/16	Yakima City Council, adopted resolution (Brown)
10/17	YVCOG Presentation (Sandison, Leita)
10/18	Bob Lee, Committee Staff, Senate Ag and Rural Economic Development Committee
10/22	Ag Lobby
10/25	Barry Thom, Deputy Regional Director, NMFS (Rigdon, Garrity, Malloch)
10/26	Washington Farm Bureau, Government Relations staff
10/29	David Porter, EDA, U.S. Dept. of Commerce (Leita, Jewell, Eberhart, Malloch)
11/7	Wash. Assn. of Wine Grape Growers Board of Directors
12/10	Sunnyside City Council
12/11	Grandview City Council
12/17	DOE Water Resources Advisory Committee
12/17	Washington Water Policy Alliance

Contacted and scheduling City Council resolution action for:
City of Toppenish – adoption of Resolution of Support 12/10
Port of Grandview

*Does not include YBIP presentations by members of the Yakama Nation or Yakima Basin Conservation Campaign, or staff from DOE or USBR.

Kittitas County Impacts Analysis

Land Use and Economic Impacts Resulting from the Habitat/Watershed Protection and Enhancement Element of the Yakima Basin Integrated Plan

Background

- Kittitas County Concerns with the Targeted Watershed Enhancements and Protections Component
  - Disparity Upon Kittitas County
  - Tax Burden Shifts
  - Future Land Use
  - Land Management/Ownership
  - Long-term Impacts

Response to Concerns

Kittitas County began a study to consider the impacts of the TWPEC in November of 2011 with funding assistance of the Department of Ecology.

URS Corporation

John Knutson, PE
Julie Blakeslee, AICP
Will Guyton
Marissa Gifford

Cascade Economics LLC

Michael Taylor, PhD
Janet Baker, M.F.

PRR Inc.

Amy Danberg
Amanda Sullivan

Citizen Advisory Committee

Tony Aronica
Central WA Resource Energy Collaborative

William Boyum
DNR (retired)

David Gerth
Kittitas Conservation Trust

Jim Halstrom
WA State Horticultural Association

Anna Lael
Kittitas County Conservation District

Brian Lenz
Puget Sound Energy

Richard Low
Teanaway Valley Resident

Pamela McMullin-Messier
Professor of Sociology, CWU

Jason Ridlon
Alpine Lakes Trail Riders

Tracy Rooney
Teanaway Snowmobile Club, Teanaway Resident

Jill Scheffer
Forterra

Jan Sharar
Kittitas County Conservation Coalition

Art Solbakken
Solbakken Company

David Whitwill
Central Washington Homebuilders Association

Cynthia Wilkerson
The Wilderness Society

Land Use Analysis

- Impacts considered on a per-action basis.
- Considered the existing land use designation and zoning.
- Assumed implementation of the preferred alternatives (including ownership).
- Assumed the principles of the lands subcommittee would be realized:
  - Historical “working land” uses would remain.
  - Recreation opportunities improved/enhanced.

Land Use Analysis Results

Table ES.1
Land Use Analysis Summary

Option Name	Current Zoning	Post-IWRMP Action	Estimated Acreage	Potential Use Considerations	Anticipated Change to Use Considerations
Upper Yakima River Basin High Elevation Watershed Preferred Option (Teanaway)	Commercial Forest	Acquisition as a Consortium/ Community or as State Ownership	40,179 acquired	Public Access and Use Recreation Access Environmental Protection Logging/Timber Utility Access Grazing Opportunities Dams (when federally-funded) Residential/Agricultural Development Solar Development	↑ ↑ ↑ NC NC NC N/A ↓ ↓
	Forest and Range		6,113 acquired		
	Rural-3		846 acquired		
Upper Yakima River Basin Forest Habitat Preferred Option (Taneum and Manastash)	Commercial Forest	Acquisition for Public Land	63,005 acquired	Public Access and Use Recreation Access Environmental Protection Logging/Timber Utility Access Grazing opportunities Dams (when federally-funded) Residential/Agricultural Development	↑ ↑ ↑ NC NC ↑ N/A ↓

Notes: ↑ = improves or increases ↓ = degrades or decreases NC = little to no change N/A = not applicable

Land Analysis Results Continued

Table ES.1 (cont.)
Land Use Analysis Summary

Option Name	Current Zoning	Post-IWRMP Action	Estimated Acreage	Potential Use Considerations	Anticipated Change to Use Considerations
Upper Yakima NRA	Unzoned (public land)	Designation of Public Land as NRA and Wilderness	99,818 designated as NRA	Public Access and Use Recreation Access Environmental Protection Logging/Timber Utility Access Grazing Opportunities	↑ ↑ NC NC NC NC
			19,964 designated as Wilderness	Public Access and Use Recreation Access Environmental Protection Logging/Timber Utility Access Grazing Opportunities	NC NC ↑ ↓ ↓ ↓
Manastash-Taneum NRA	Unzoned (public land)	Designation of Public Land as NRA	35,000 designated as NRA	Public Access and Use Recreation Access Environmental Protection Logging/Timber Grazing Opportunities	↑ ↑ NC NC NC
Wild/Scenic River Designations for the Upper Cle Elum, Waptus, and Cooper Rivers	Unzoned (public land)	Wild and Scenic River Designation on Public Land	15,719 designated as Wild and Scenic	Public Access and Use Recreation Access Environmental Protection Dams (when federally-funded) Residential/Agricultural Development	↑ NC ↑ ↓ NC

Notes: ↑ = improves or increases ↓ = degrades or decreases NC = little to no change N/A = not applicable

Land Use Analysis Results Continued

Table ES.1 (cont.)
Land Use Analysis Summary

Option Name	Current Zoning	Post-IWRMP Action	Estimated Acreage	Potential Use Considerations	Anticipated Change to Use Considerations
Wild/Scenic River Designations for the North, Middle, and West Forks of the Teanaway River	Unzoned (public land)	Wild and Scenic River Designation on Public Land	7,632 designated	Public Access and Use Recreation Access Environmental protection Dams (when federally-funded) Residential/Agricultural Development	↑ NC ↑ ↓ NC
Shrub-Steppe Habitat Preferred Option (Eaton Ranch)	Forest and Range	Land Acquisition and/or Conservation Easement	11,620 acquired	Public Access and Use Recreation Access Environmental protection Utility Access Grazing Opportunities Residential/Agricultural Development Wind Farms	↑ ↑ ↑ ↓ NC ↓ NC

Notes: ↑ = improves or increases ↓ = degrades or decreases NC = little to no change N/A = not applicable

Economic Impacts Analysis

- Quantify impacts identified – positive or negative.
- Impacts considered on a per-action basis.
- Considered the existing land use designation and zoning.
- Assumed implementation of the preferred alternatives (including ownership).
- Assumed the principles of the lands subcommittee would be realized:
  - Historical "working land" uses would remain.
  - Recreation opportunities improved/enhanced.

Economic Impacts Analysis

- Impacts are organized for consideration by major category (forestry, agriculture, recreation, land development, county revenues and expenditures, etc.)
- Results presented under two scenarios:
  - With Public Investment
  - Without Public Investment

Table ES.2 Summary of Annual Economic Impacts, County Revenues, and County Expenditure Obligations			
Option Name	**Category**	**With Public Investment**	**Without Public Investment**
Upper Yakima River Basin High Elevation Watershed Preferred Option (Teanaway)	Hiking	$196,719	$0
	Snowmobiling	$0	$0
	Construction	-$500,000	-$500,000
	TOTAL	**-$303,281**	**-$500,000**
	County Revenues	$24,280	$24,280
	County Expenses	$50,000	$0
Upper Yakima River Basin Forest Habitat Preferred Option (Taneum and Manatash)	Camping	$83,183	$0
	Hiking	$41,539	$0
	TOTAL	**$124,722**	**$0**
	County Revenues	$6,922	$6,922
	County Expenses	$50,000	$0
Upper Yakima NRA	Snowmobiling	$43,921	$4,392
	Non-motorized rec	$308,188	$30,819
	Camping	$83,183	$8,318
	TOTAL	**$435,292**	**$43,529**
	County Revenues	$0	$0
	County Expenses	$200,000	$50,000
Manastash-Taneum NRA	Motorized rec.	$254,740	$25,474
	Camping	$83,183	$8,318
	TOTAL	**$337,923**	**$33,792**
	County Revenues	$0	$0
	County Expenses	$150,000	$50,000
Wild/Scenic River Designations	**TOTAL**	**$0**	**$0**
	County Revenues	$0	$0
	County Expenses	$100,000	$100,000
Shrub-Steppe Habitat, Preferred Option (Eaton Ranch)	Agriculture	-$100,000	-$100,000
	Wildlife Viewing	$39,126	$39,126
	Resort Operation	-$150,000	-$150,000
	TOTAL	**-$210,874**	**-$210,874**
	County Revenues	-$16,000	-$16,000
	County Expenses	$50,000	$50,000
TOTAL ECONOMIC IMPACT By Major Sector	Agriculture	-$100,000	-$100,000
	Construction	-$500,000	-$500,000
	Recreation	$1,133,782	$116,447
	Accommodations	-$150,000	-$150,000
	TOTAL	**$383,782**	**-$633,553**
	County Revenues	$15,202	$15,202
	County Expenses	$600,000	$250,000
NET TOTAL		**-$201,016**	**-$868,351**

Economic Analysis Results Continued

Table ES.3 Summary of Impacts on Annual Sales, Income, and Employment				
Impact Category	With Public Investment		Without Public Investment	
	Direct	Total	Direct	Total
Employment (jobs)	9.9	10.8	-2.9	-4.9
Personal Income	$295,393	$332,003	-$62,157	-$117,996
Output (Sales)	$336,932	$440,860	-$495,209	-$680,072

Economic Analysis Results Continued

Table ES.4 Change in Spending in Urban and Rural Kittitas County, Under "With" and "Without" Public Investment Scenarios ($ per year)				
	With Public Investment		Without Public Investment	
	Urban	Rural	Urban	Rural
Private Sector Spending	$441,401	-$223,450	-$552,535	-$223,944
Public Sector Spending	$0	$252,909	$0	$96,406
SUBTOTAL	$441,401	$29,459	-$552,535	-$127,538
TOTAL SPENDING	$440,860		-$680,072	

Economic Analysis Results Continued

Table ES.5 Change in Tax Revenue in Urban and Rural Kittitas County, Under "With" and "Without" Public Investment Scenarios ($ per year)				
	With Public Investment		Without Public Investment	
	Urban	Rural	Urban	Rural
Sales Tax Revenue	$7,913	$1,396	-$1,093	-$193
Payment in Lieu of Taxes	$0	$15,202	$0	$15,202
SUBTOTAL	$7,913	$16,598	-$1,093	$15,009
TOTAL SPENDING	$24,512		$13,916	

Economic Mitigation Strategies

- Key Considerations:
  - Analysis predicts new service-related costs associated with the TWPEC of the integrated plan unique to Kittitas County.
  - Relying on PILT revenue as mitigation is risky.
  - Investments in recreation infrastructure are necessary to receive the predicted benefits.
  - Funding will be needed to implement the preferred alternative for the Teanaway acquisition as a Community Forest.

Mitigation Recommendations

- Federal PILT – Increase of $17,666.80 per year.
- State PILT – Increase of $36,296.00 per year.
- Maintenance Endowment Fund
  - $15 million one time payment recommendation
  - Earnings utilized as a revenue source for ongoing expenditures.
  - Annual 4% ROI, $600,000 per year in earnings.
  - Principle to remain in perpetuity.

Mitigation Recommendations Continued

- Community Forest Operations and Forest Health Practices Fund
  - Support the implementation and operation of the Community Forest Board and forest management upon Teanaway acquisition.
  - Model is to be self-sustaining, but considering the current state of the land, significant time will be needed to achieve that goal.
  - Amount not quantified at this time.
- Investment Fund
  - Utilized for recreational improvements/enhancements.
  - $5 million initial investment.

Next Steps

- Kittitas County Board of Commissioners Action.
- Incorporation into the Integrated Plan.

Early Actions Update

YRBWEP Workgroup Meeting
Dec. 12, 2012

Presented by:
Andrew Graham
HDR Engineering, Inc.

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State of Washington

Projects With Funding for Early Actions (Spring 2012)

- K-to-K Conveyance
- Kachess Inactive Storage
- Ground Water Infiltration
- Kittitas Valley Delivery System
- Cle Elum Fish Passage
- Power Subordination
- Tributary Habitat Enhancement
- Wymer Reservoir
- Bumping Reservoir
- Watershed Land Acquisition

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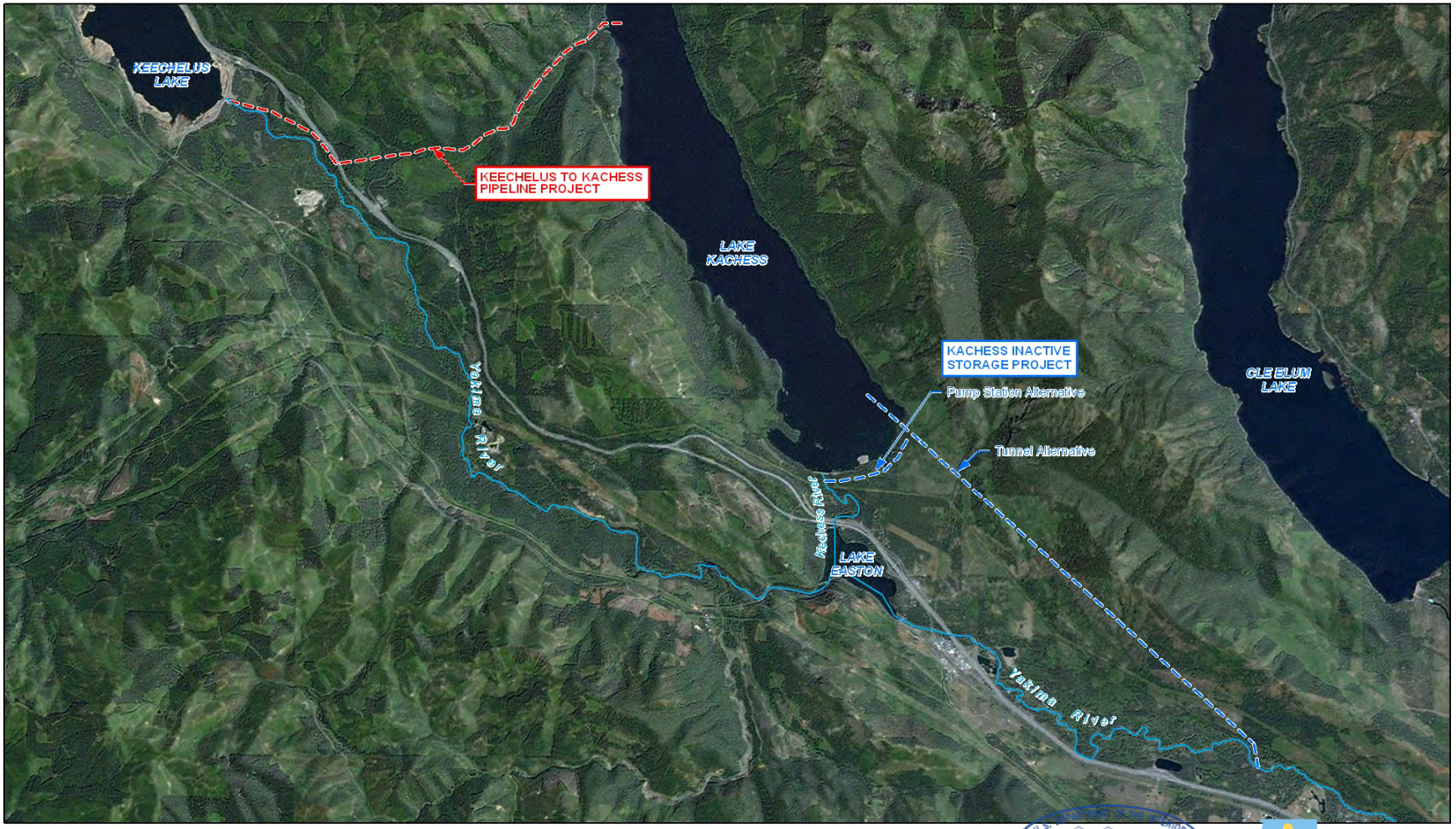
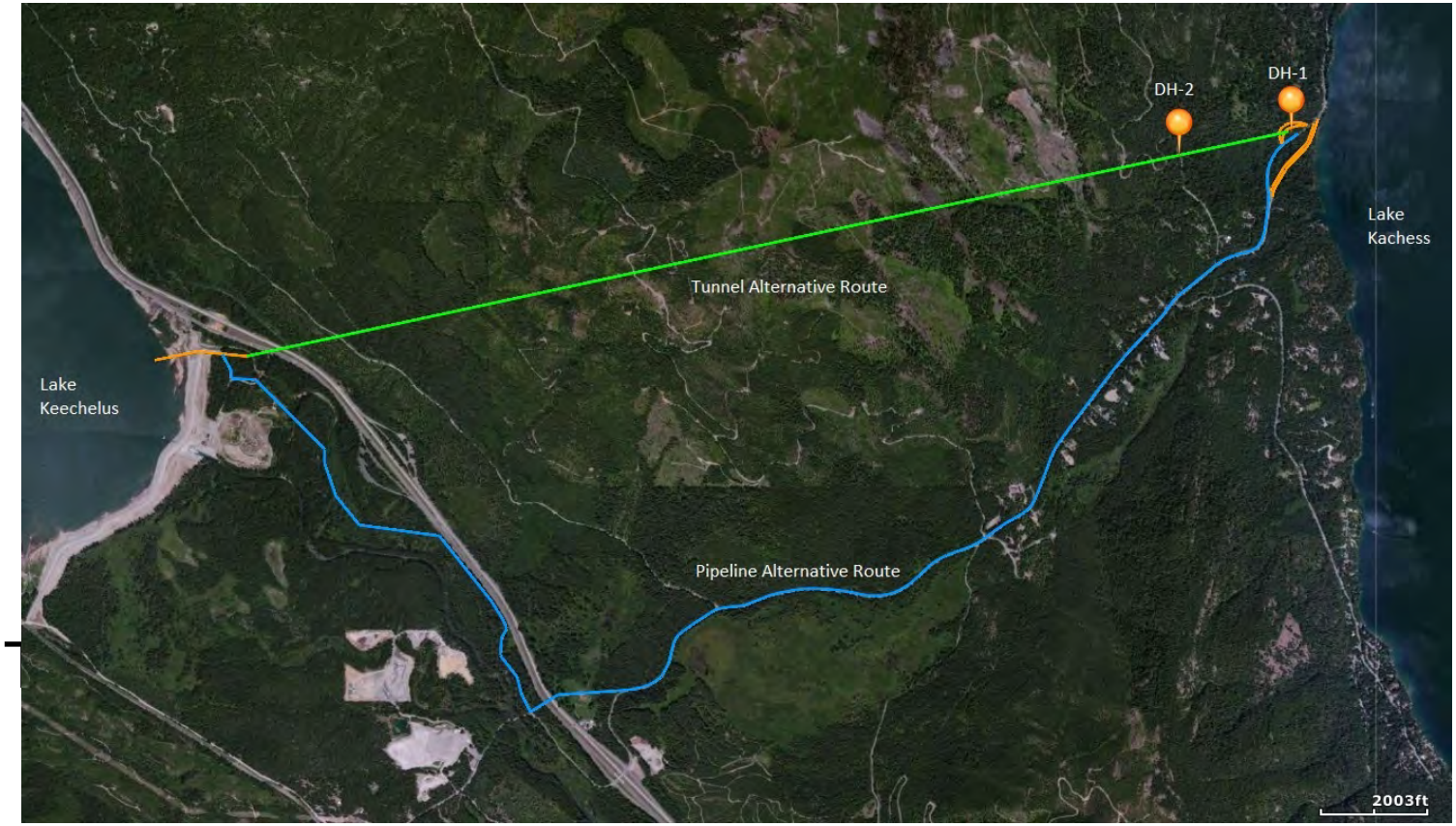
Area of K-to-K and Kachess Projects



K-to-K Conveyance Alternatives



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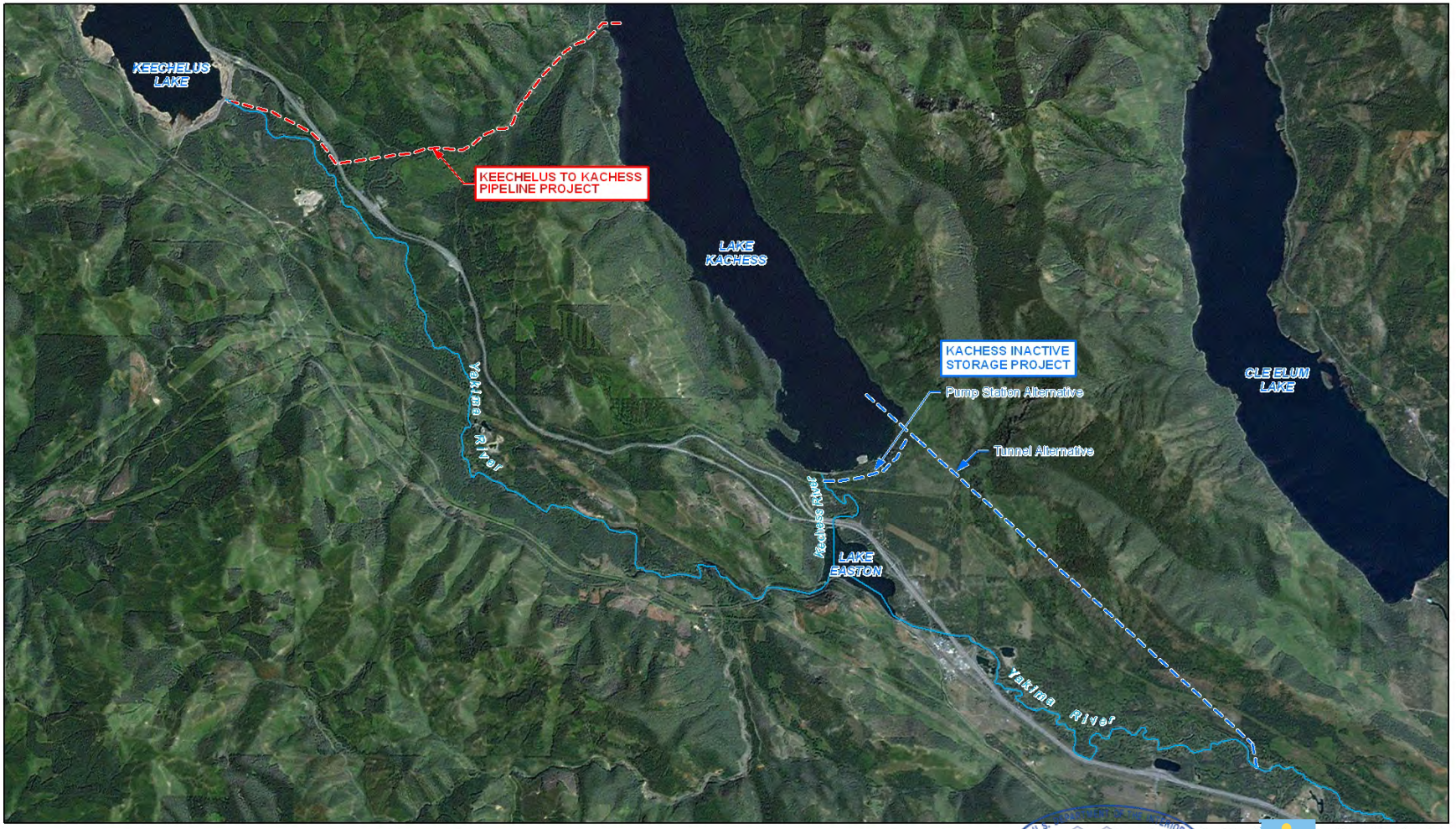
Kachess Tunnel and Pump Station Alternatives



Kachess Inactive Storage Project: Pump Station Alternative

-

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Kachess Inactive Storage: Alternate Pump Station Sites and Borehole Locations

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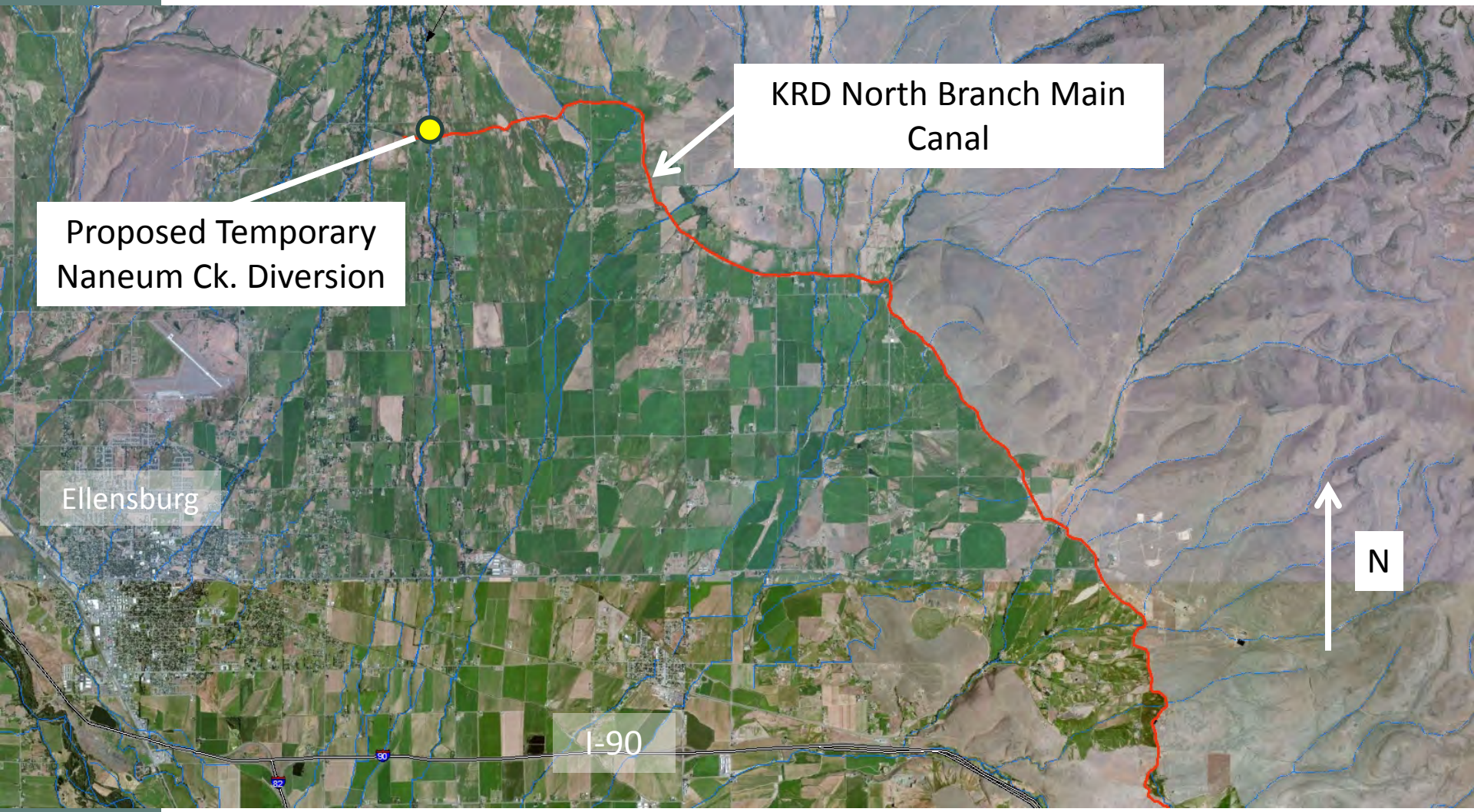
Ground Water Infiltration - KRD Pilot Area



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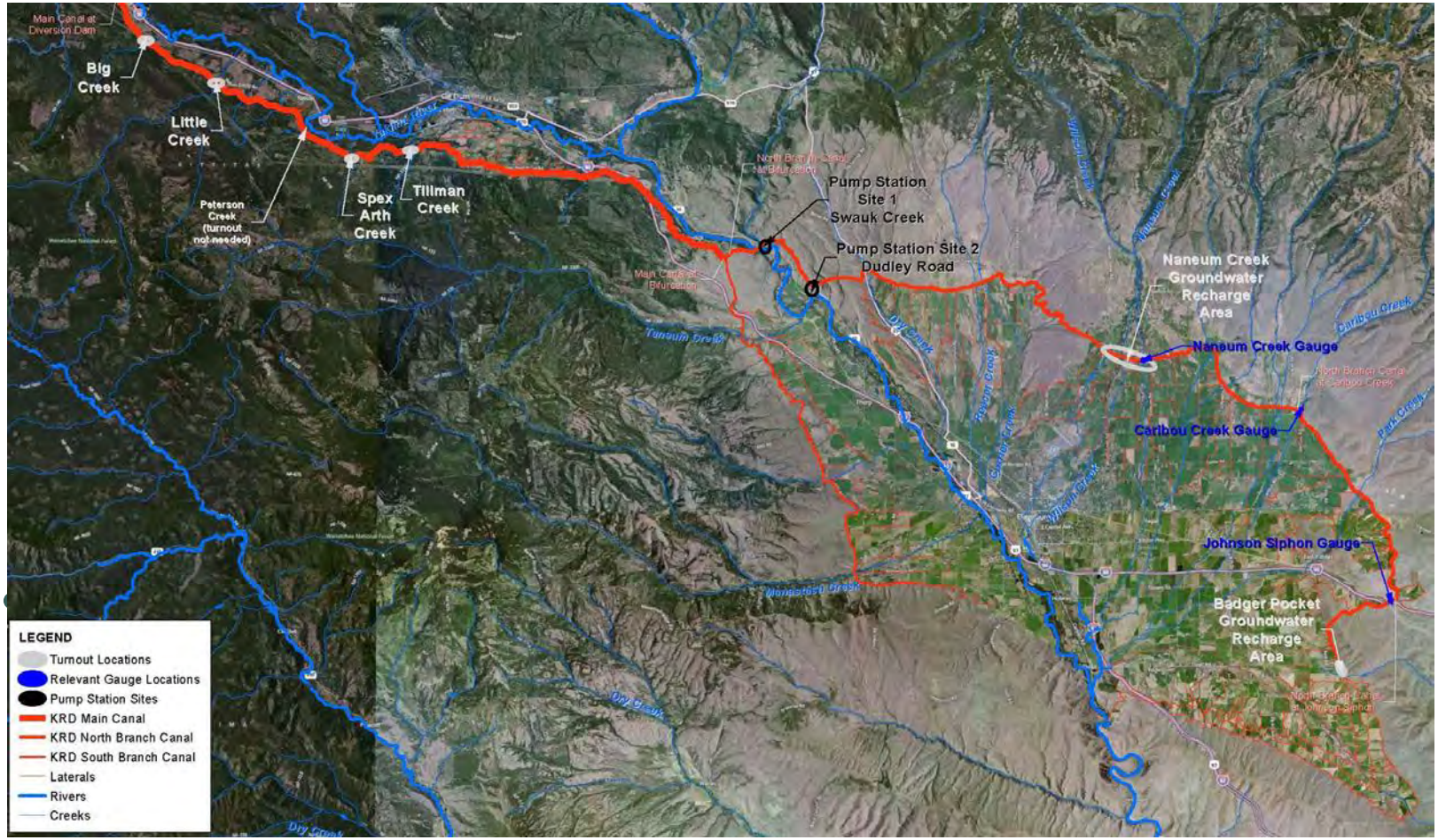
Kittitas Valley Delivery System for Ground Water Infiltration and Stream Flow Improvement



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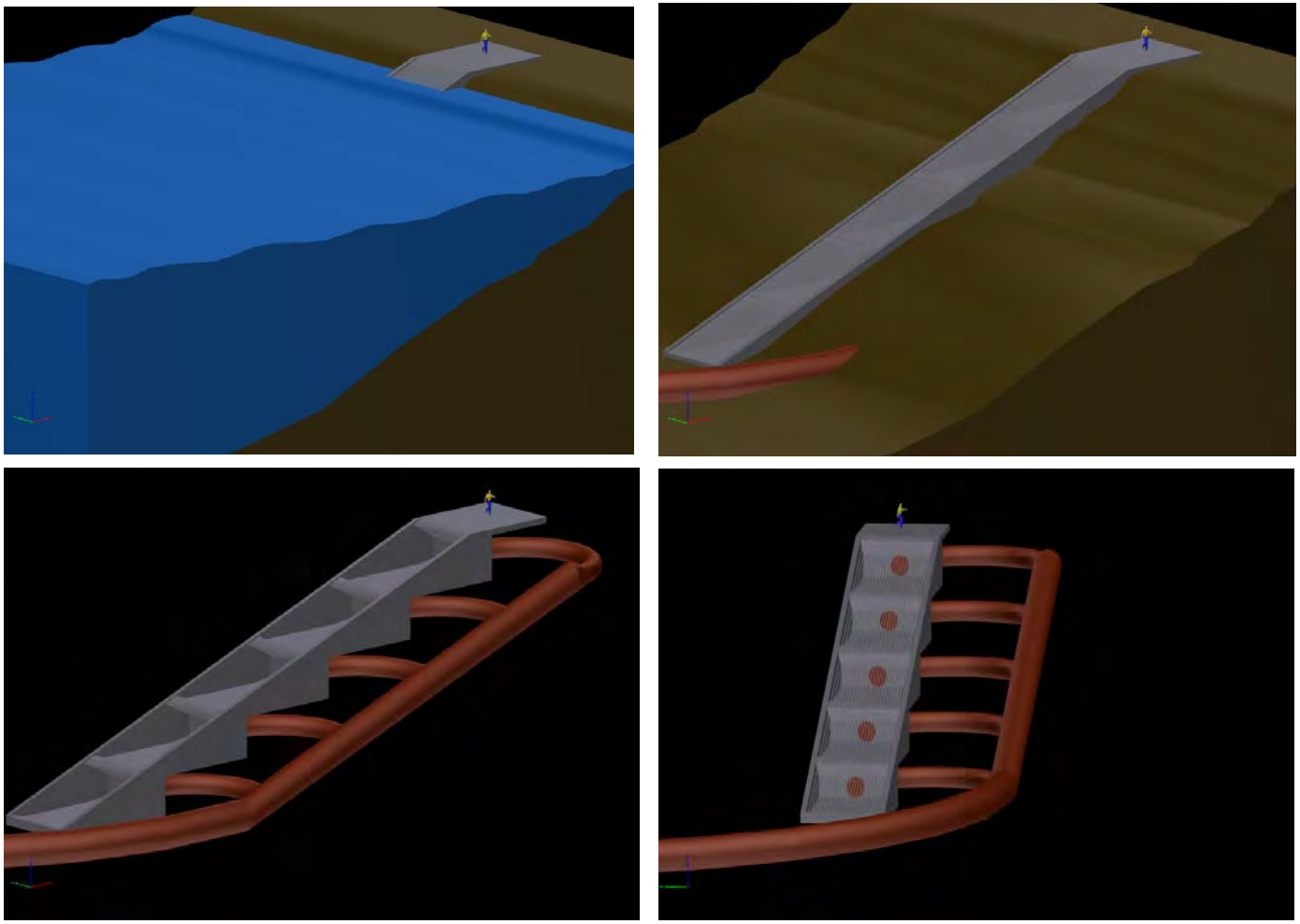
Cle Elum Fish Passage
Ramp-Along-Bank Concept



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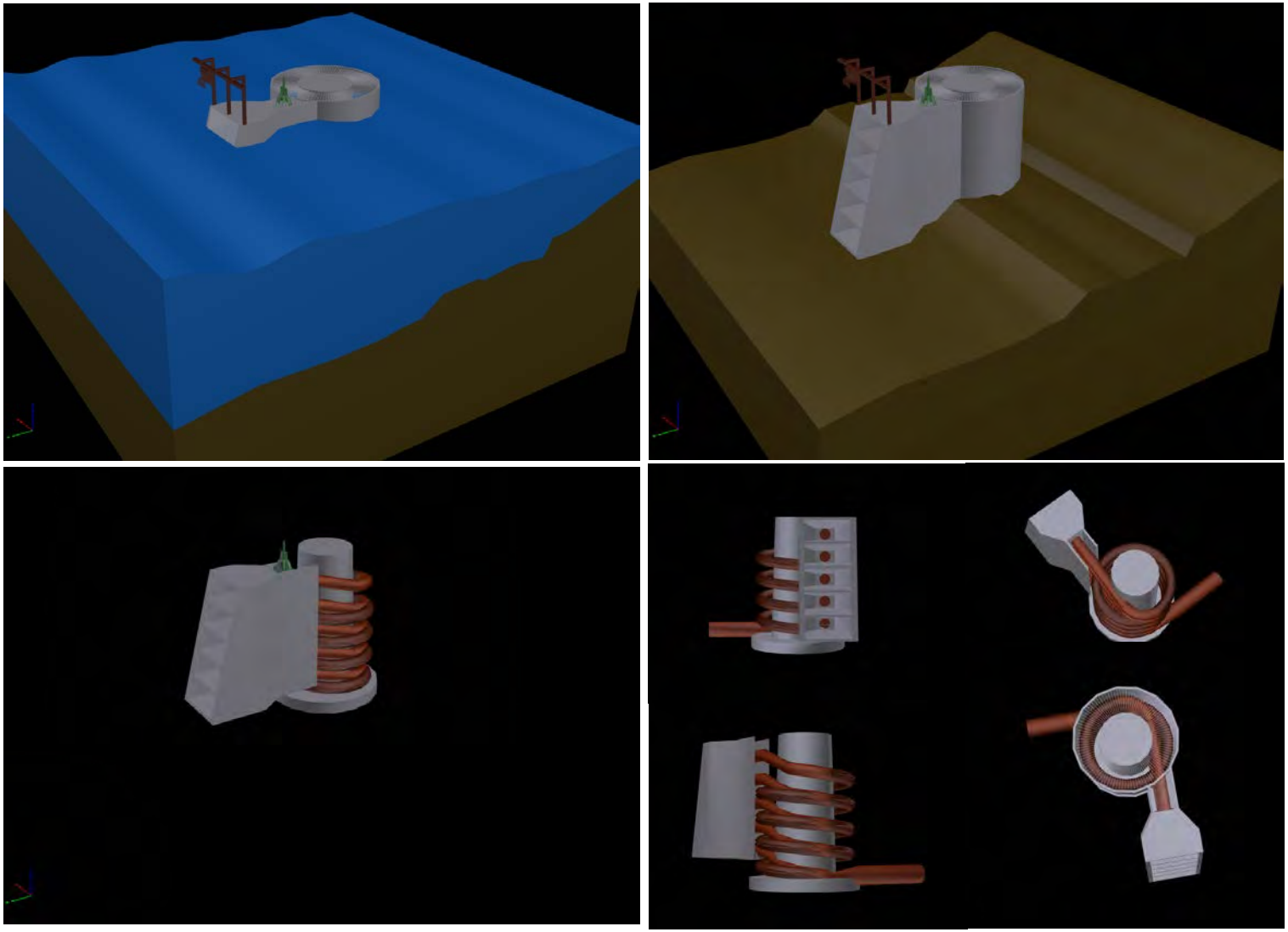
Helix & Inlet Concept



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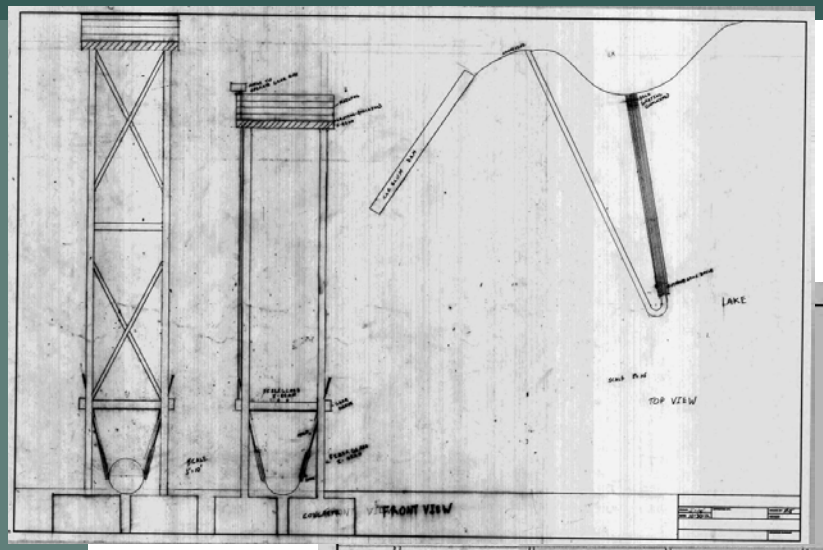
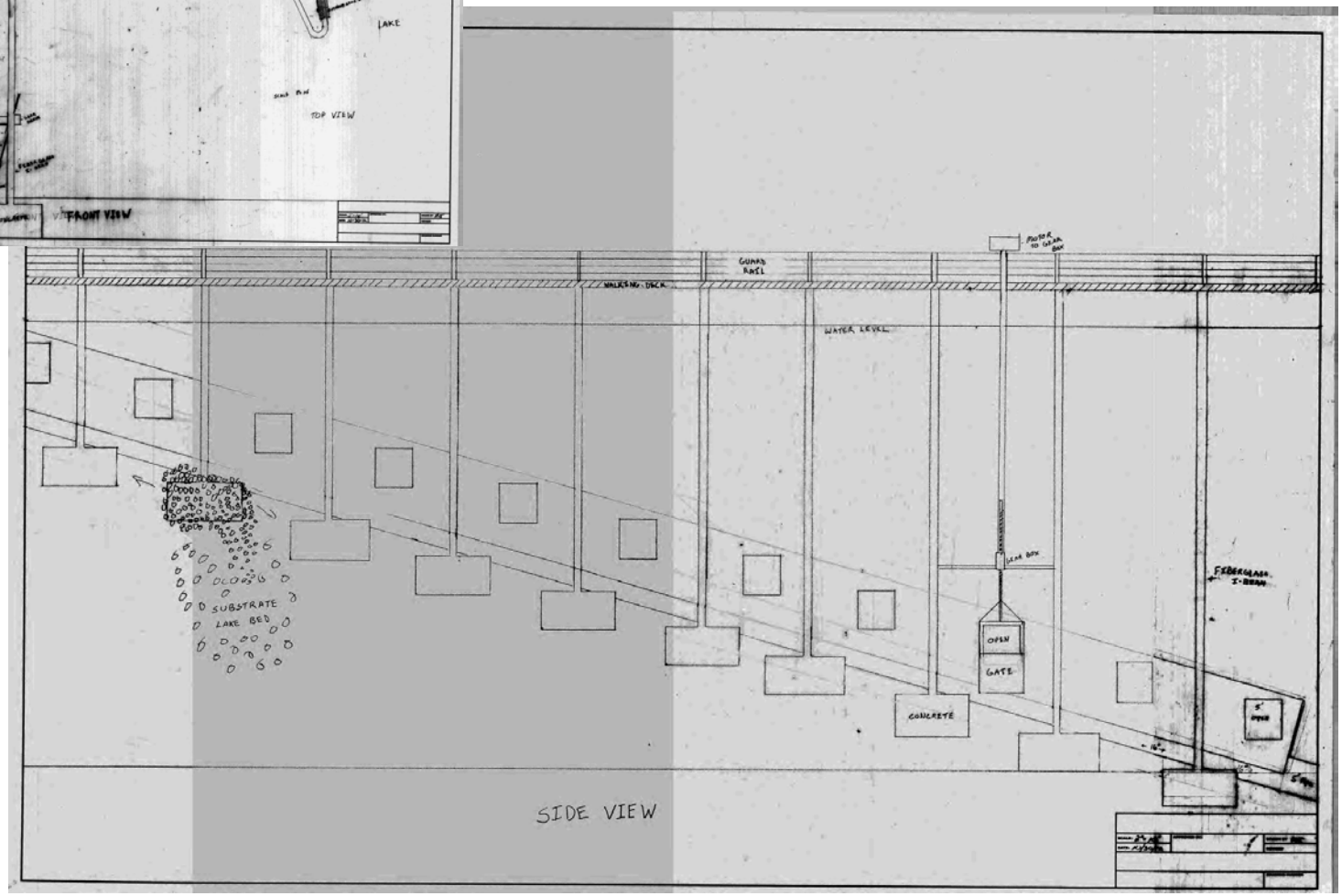
TROUGH-RAMP CONCEPT





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Roza Reach Smolt Survival Study

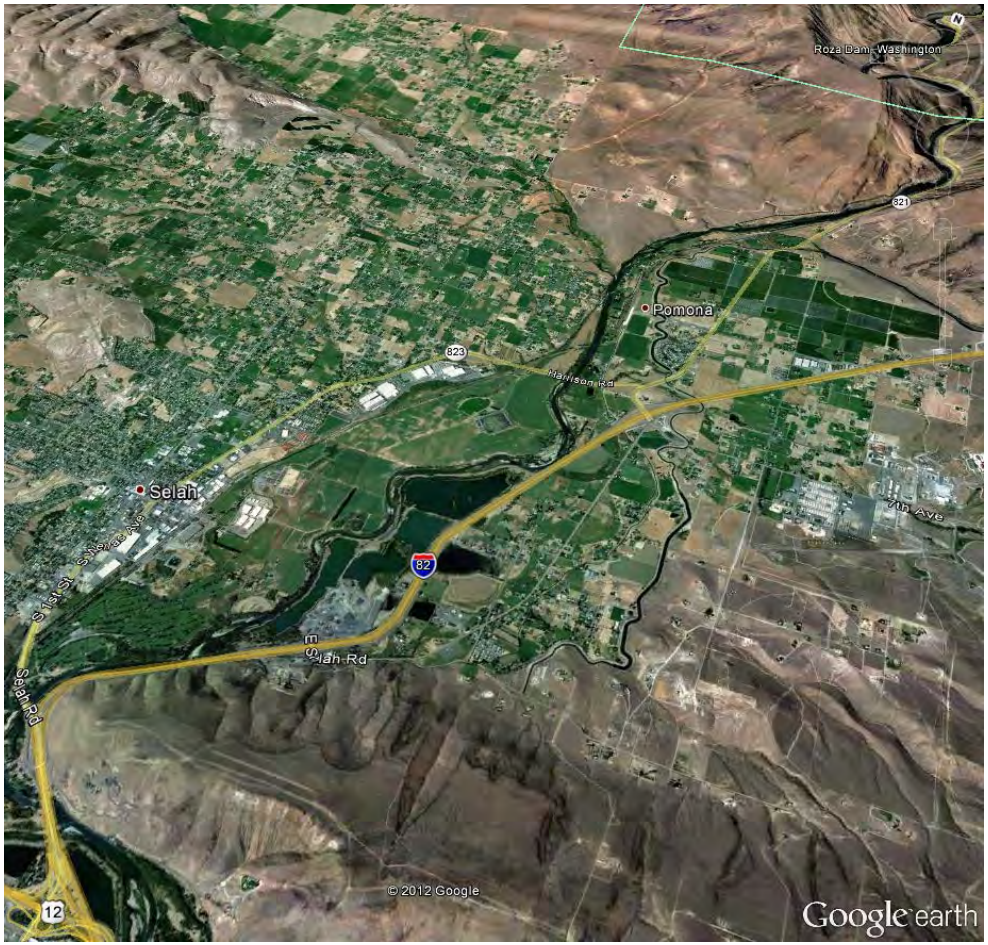
- A three year study (2012 – 2014)

- Year 1 summary

✓1 early season, low flow release (<600 cfs) & 2 late season, high flow releases (>3000 cfs)

✓Reach survival rates: early-low flow = 61%; late-high flows = 96% & 98%

✓Question: What factors influencing survival: flow, temperature, migratory disposition?



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Roza Reach Smolt Survival Study

➢Study direction for Years 2 and 3

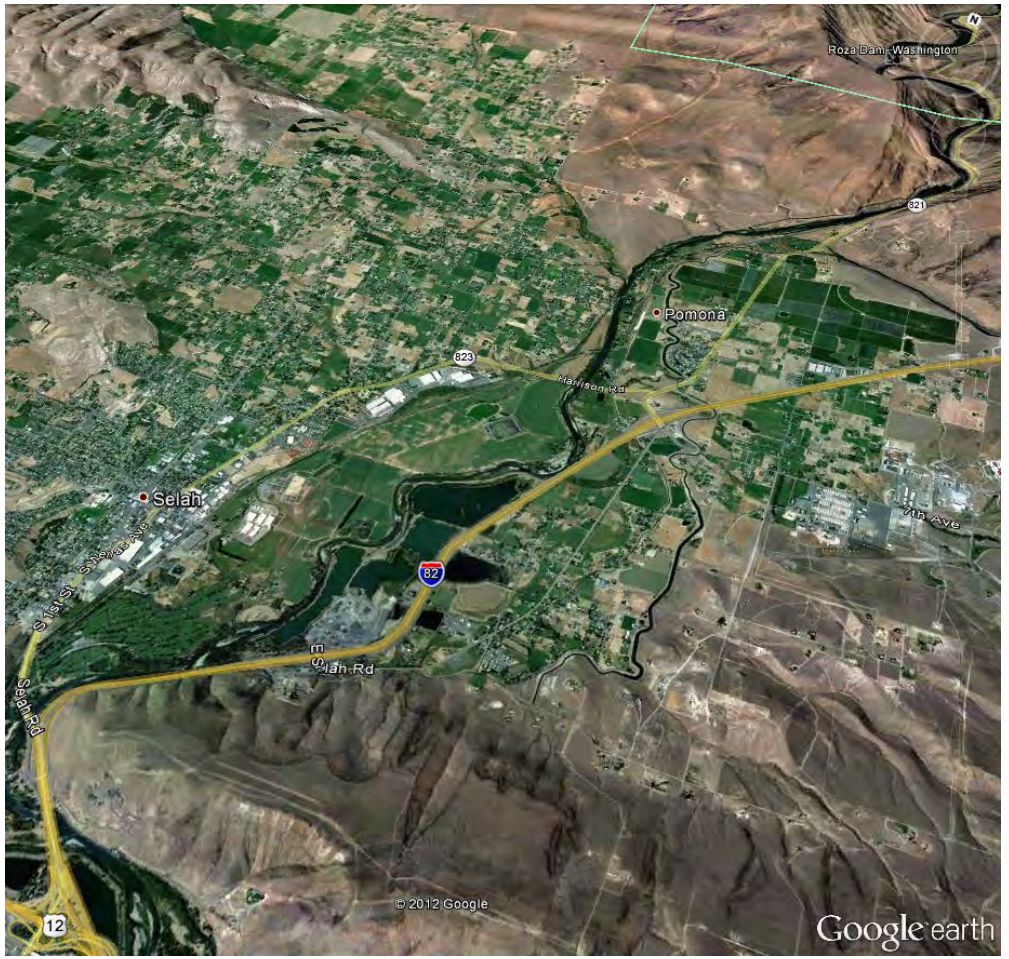
✓Focus test releases in the 1000 to 2500 cfs range

✓Focus test releases between mid-March to mid-April

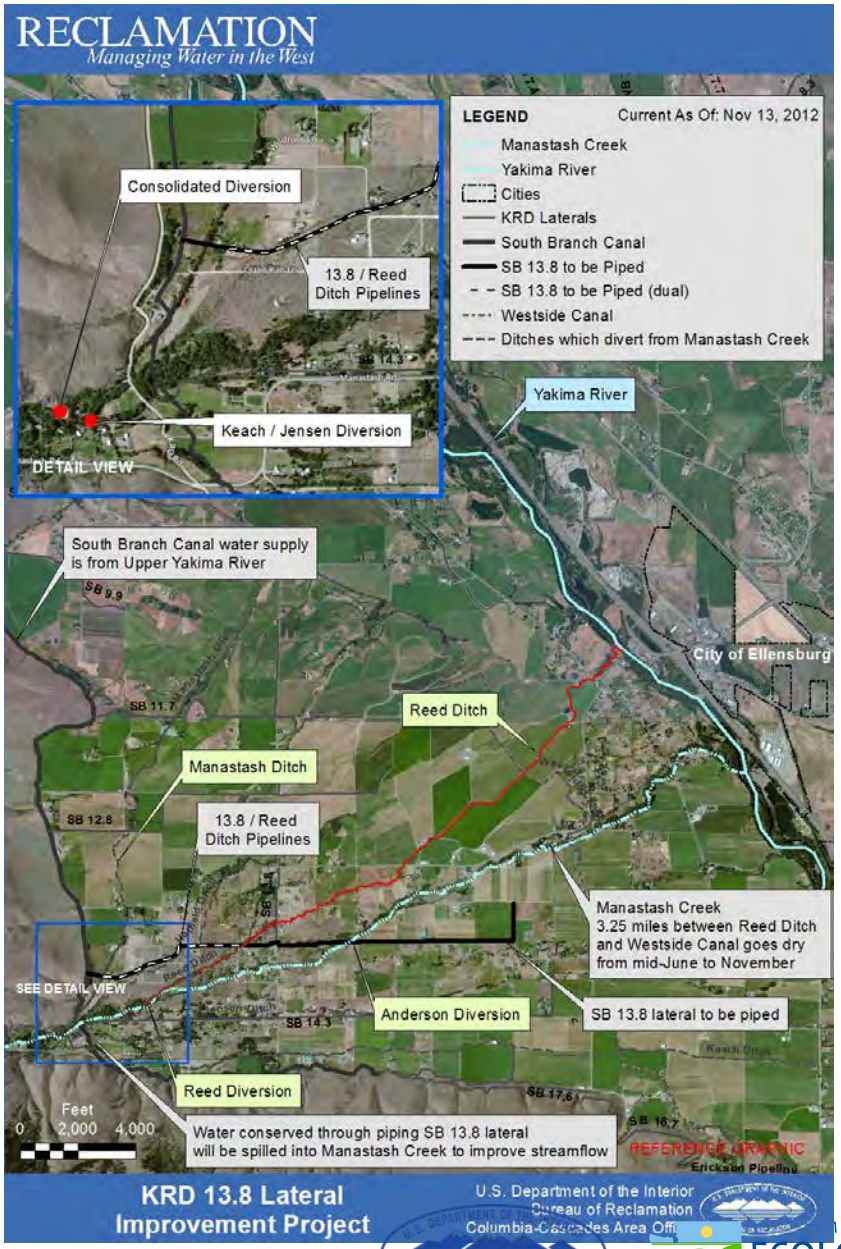
✓"…collect data that minimizes the effect of confounding explanatory variables, so that flow effects on emigration survival can be quantified independent of these other influential factors."

✓Intend to monitor avian predation.

✓Intend to evaluate dam route passage survival.



Habitat Restoration – Manastash Creek Project



Other Early Action Activities

- Wymer Reservoir
  - Geotechnical exploration;
  - Value engineering and temperature modeling
  - Consideration of alternate pump station site
- Bumping Reservoir –Geotechnical exploration
- K-to-K Conveyance Alternatives and Environmental Analysis
- Teanaway Property and Eaton Ranch – land appraisals

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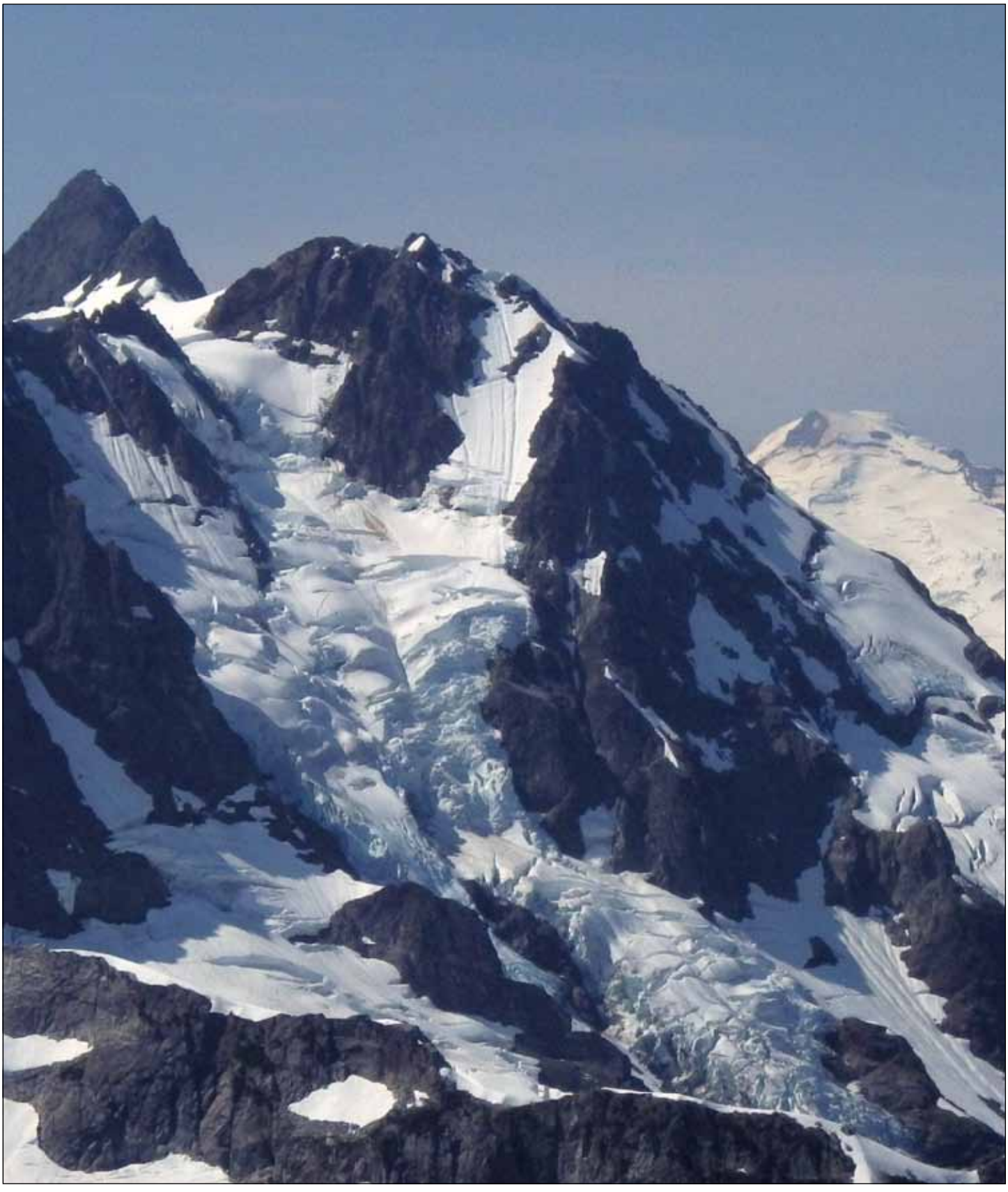
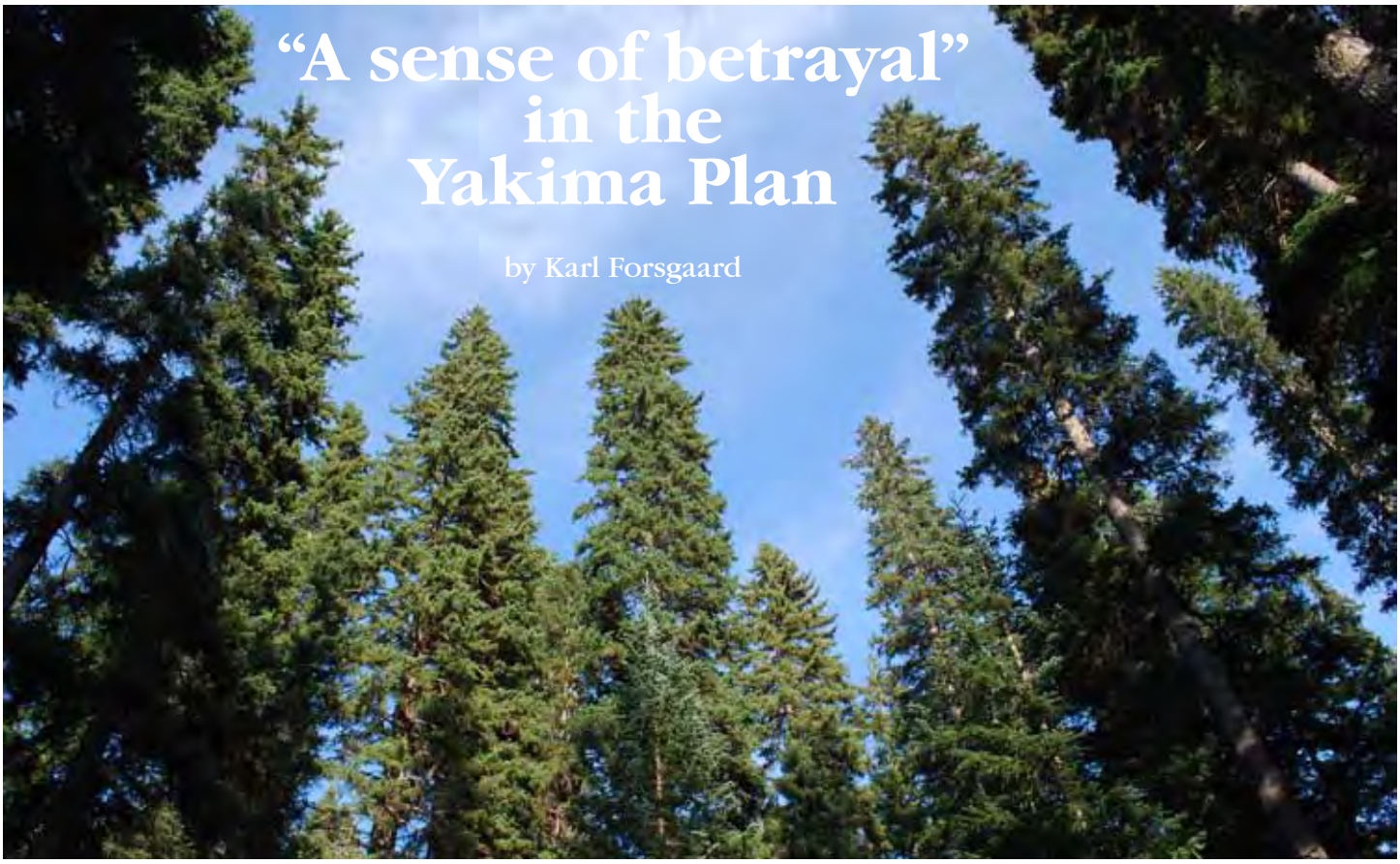
THE WILD CASCADES

THE JOURNAL OF THE NORTH CASCADES CONSERVATION COUNCIL SUMMER/FALL 2012





"A sense of betrayal" in the Yakima Plan

by Karl Forsgaard

In the Spring 2012 *TWC*, we reported on criticism of the proposal for motorized National Recreation Areas (NRAs) in the Upper Yakima, Teanaway, Manastash and Taneum basins of Okanogan-Wenatchee National Forest, north and south of I-90 in Kittitas County. The NRA proposal would legislatively dedicate 41,000 acres to "backcountry motorized" use, i.e., off-road motorcycles, ATVs and 4x4s on trails, and snowmobiles traveling cross-country.

The NRA proposal came from a subcommittee of the Yakima "Workgroup" convened by the U.S. Bureau of Reclamation and Washington State Department of Ecology to promote construction of two new dams in the Yakima Basin, including a dam that would drown and destroy more than 1,000 acres of ancient forest at Bumping Lake. With an estimated cost of up to $5 billion, the Yakima Plan is the largest project in the State of Washington since WPPSS.

Objections to the NRA proposal

The Yakima subcommittee published the NRA proposal and its map without consulting dozens of conservation organizations working in this geography, and without even consulting the National Forest's Cle Elum Ranger District that manages almost all of the land in the proposed NRAs. When the NRA proposal was published in January, the Cle Elum District Ranger had not yet seen it.

The NRA proposal was not mentioned in the Yakima water plan's Draft Environmental Impact Statement (DEIS), but it was published the day after the DEIS public comment period closed, and then it was incorporated into the Final EIS, so the public was denied an opportunity to comment on it, in violation of the National and State Environmental Policy Acts.

In the nine months since the NRA proposal was published, its authors have not apologized for any of this, nor have they promised to do anything differently in their future work on public lands legislation. In other words, the supporters of the NRA proponents are encouraging them to continue following this new model of behavior, even though it harms our conservation community, poisoning relationships for years to come.

The Final EIS says the NRAs would "attract more users," i.e., more off-road vehicles (ORVs) into the headwaters. ORVs have a well-documented history of detrimental effects on soils, water, fish and wildlife habitat. They also degrade recreational experiences for other users and drive them away. It is absurd for the NRA proponents to assert that the NRA designations and consequent increased ORV use would improve the quality of fish habitat or improve the recreational experience of the non-motorized majority of recreational users of the National Forest.

Bumping Lake ancient forest near Cedar Creek. — KARL FORSGAARD PHOTO

The Cle Elum District Ranger continues to object to the NRA proposal for many reasons, including:

- lack of District capacity and resources to manage the NRAs, to the detriment of the rest of the District
- difficulty of obtaining reliable adequate funding
- lack of user advocacy for this designation as a critical need
- lack of opportunity for public comment on the NRA proposal.

The NRA proposal would statutorily lock in ORV use, and the Forest Service would lose its administrative authority to close trails or areas that become seriously damaged by ORVs. The NRA proposal would set a horrible national precedent for public lands legislation, and a horrible national precedent for trails. And once it

enters the legislative process, any legislative proposal can morph into something far worse than whatever the Yakima Workgroup drafts. Kittitas politicians have made it clear that they want the NRAs to lock in ORV use, and one of the sponsors admitted that ORV lock-in is the whole point of the NRA deal.

We urge the Yakima Plan supporters to take the trail-by-trail ORV designations out of the Yakima Plan and keep them in the National Forest processes where they belong. Keep them administrative and amendable, not statutory and locked in. Avoid setting a horrible precedent.

With an estimated cost of up to $5 billion, the Yakima Plan is the largest project in the State of Washington since WPPSS.

Surprise, surprise: supporters include some big-name conservation groups

In addition to the negative impacts on habitat and quiet recreation, what's really alarming about the NRA proposal is that it did not come from ORV advocacy groups (who may not yet know about it), but from organizations historically associated with conservation – organizations with words like "Wilderness," "Rivers," "Wildlife" and "Trout" in their names. In March 2012, NCCC was among 26 conservation organizations, including Sierra Club and Audubon, that signed a letter objecting to the NRA proposal. Another letter from three more conservation organizations said that the NRA proposal "undermines" existing Forest Service processes. A supporter of the Yakima Plan acknowledged that the NRA proposal had "raised tension and mistrust" in the conservation community. The existence of this real "sense of betrayal" was communicated to other groups who were still undecided, but the undecideds were undoubtedly the target of political arm-twisting, and at least two more groups have decided to support the Yakima Plan.

In June, the Mountains to Sound Greenway Trust board of directors voted to support the goals of the Yakima Plan, declining to table it to allow more time to conduct due diligence and fix process defects. The Greenway support letter says "we are impressed" with the Yakima Plan proposal and that it is "an extraordinary achievement in compromise and collaboration." Only one Greenway Trust board member voted against signing this letter.

Canoeists on Bumping Lake with Nelson Ridge and Mt. Aix. — KARL FORSGAARD

In July, the Washington Trails Association staff and board also voted to support the Yakima Plan. WTA's letter says "WTA is saddened by the inundation of trail miles and flooding of old-growth forest that will be caused by raising Bumping Lake," referring to the giant trees along Bumping Lake Trail #971 that would be inundated under the Plan that WTA now supports. WTA's letter says WTA wants to advocate for hikers, but it doesn't explain why WTA needs to support the Yakima water plan in order to advocate for hikers.

Some have said they needed to support the Plan in order to be "at the table," citing the adage that "you're either at the table or on the menu." They were wrong, because plenty of conservation organizations, including NCCC, are now at the table while refusing to support the Plan.

NCCC helps avoid review process limited to those who agree

In August, the Yakima Plan proponents' website linked a video of Governor Christine Gregoire being interviewed by the Yakima Herald newspaper about the Yakima Plan. She states "We have a Plan….We have *everybody* agreed. That's unprecedented. … Everybody now is on the same page. That's never happened. …If we can't go as a group … then we give a ready excuse to the Legislature and Congress to say no. So, [if] we stay united, we succeed. [If] we divide yet again, we will get nothing, and that's what's happening around the West." In other words, to obtain $5 billion to build the dams, the proponents must convince Congress that there is no opposition to their Yakima Plan, and they will say "we have everybody agreed" even when Sierra Club, Audubon and 27 other organizations did not agree.

Also in August, the sponsors of the NRA proposal issued invitations to many conservation organizations in Washington to participate in a series of meetings with a professional facilitator (Ross Strategic) funded by BuRec and Ecology on behalf of the Workgroup. The facilitated meetings are reviewing the lands component of the Plan, i.e. they do not directly deal with the proposed dams. The main discussion topic in the lands component is the NRA proposal, but the sponsors' invitations omitted *half* of the 26 organizations that had signed the March letter objecting to the NRA proposal.

The meeting invitations also required that participants *"have agreed that they are supportive of the overall purposes and intent of the Yakima … Plan."* In a subsequent "clarification" message, the sponsors were still requiring *"support in order to participate."* NCCC and allies objected that these provisions were overbroad and ambiguous, as the Plan EIS is about 900 pages long, endless arguments could be made about what overall "purposes and intent" are contained in the Plan, and the

Continued on page 12

"A sense of betrayal" *continued from page 11*

sponsors' "support" requirement could be interpreted as a barrier to participation by advocates with legitimate concerns about the Plan. It was unfair and counterproductive for the sponsors to seek a purported resolution of this controversy by requiring participants to take what could be interpreted as an oath of loyalty to the Plan in order to even be heard. In their "clarification" message, the sponsors put our word "controversy" in quotation marks, implicitly denying the existence of a controversy (since controversy would disprove that "everybody agreed"). However, the sponsors ultimately abandoned their attempt to require Plan support from participants, and the facilitated meetings began in September attended by many who do not support the Plan.

We believe the facilitated meeting process should be open and transparent. Because of the controversy about the Plan, and due to past concerns about Plan process, NCCC and allies asked for information on how the meetings will be facilitated, including copies of any contracts or memoranda or instructions or direction from BuRec or Ecology relating

NCCC supports an open, transparent process that allows supporters and opponents to review all aspects of the Yakima Plan.

to the facilitator's work. The sponsors (and Ross) refused to provide such information, even though BuRec and Ecology are using public money – taxpayer dollars – to pay Ross as facilitator of the meetings.

Pushing the envelope on the agenda

In September the facilitated meetings began, and the facilitator asked participants to submit topics for discussion. NCCC and allies submitted several topics, some of which the facilitator agreed to cover, such as the Sierra Club/NCCC/ALPS proposal for new Wilderness in this National Forest, and how to define limits on ORV use. However, other proposed discussion topics were deemed by the BuRec-funded facilitator to be "outside of the scope of this process," including:

Bumping Lake hikers in ancient forest near Cedar Creek. — KARL FORSGAARD PHOTO

- lack of opportunity for public comment on the NRA proposal
- reasons why it would be better to take the ORV designations out of the Yakima Plan and leave them in the National Forest travel management and forest planning processes where they belong
- ways that ORV designations in the Yakima Plan would set a bad precedent and negatively impact future lands protection efforts in Washington and nationally
- risks of negative changes to proposed legislation during the legislative process
- past policy statements of The Wilderness Society et al. opposing statutory mandates for ORV use in lands legislation.

In stating that these topics "will not be discussed" and "I will not be considering them as I assist the Workgroup," the facilitator also wrote that some of our proposed discussion topics "have not been worded in the spirit of developing advice." We disagreed with that characterization, because all of these topics are worthy of advice to the members of the conservation community, including advice on how to avoid setting a bad precedent. The sponsors and their facilitator may not want to talk about it, but that does not mean it is not advice.

These facts (and many more) strongly suggest that the Yakima Plan supporters and their facilitator are seeking to neutralize opponents of the Plan and its NRA proposal by gathering their comments without changing anything significant in the Plan and its NRA proposal. Nonetheless, some opponents are providing their comments in the hope of making the bad precedent less bad. A Plan supporter admitted that from a wildlife habitat perspective, it would be "untenable" to continue the current level of ORV use on the lands proposed for NRAs, let alone increase it as called for by the Plan.

In October, the facilitated meetings will pursue more detail in subgroups that were being organized as we went to press, on such topics as recreational uses, boundaries, Wild & Scenic River designations, and connecting with ORV advocates.

Despite the depressing picture that emerges from the many betrayals in this story, there are still good things to celebrate. The giant trees of the Bumping Lake ancient forest are still there to be enjoyed, and perhaps someday WTA will change its mind about protecting Bumping Lake Trail #971. Dozens of Sierra Club and NCCC members spent a glorious weekend there in September at Sierra Club's annual campout, hosted by Friends of Bumping Lake at the Maykut family cabin, which would be inundated by the proposed new dam. We are grateful to the veteran conservationists in the 29 organizations who signed letters in March about the NRAs, and the 1,500 citizens who sent DEIS comment letters opposing the new dams, and the unknown others who have resisted political arm-twisting and refrained from supporting the Plan and its proposed dams and NRAs.

December 11, 2012

Wendy Christiansen
Columbia-Cascades Area Office - Bureau of Reclamation
1917 Marsh Road
Yakima, WA 98901-2058

Derek Sandison
Director, Office of Columbia River- Department of Ecology
15 W. Yakima Ave, Suite 200
Yakima, WA 98902-3452

Re: Yakima Workgroup Meeting – December 12, 2012

Dear Ms. Christiansen & Mr. Sandison:

Friends of the Earth is a national environmental organization that defends the environment and champions a healthy and just world. Friends of the Earth is a part of Friends of the Earth International, a global grassroots environmental network representing more than two million activists in 77 different countries.

Friends of the Earth has been involved in Yakima Basin issues in south central Washington State since the mid-1970s. In Congress, we successfully helped defeat a new Bumping Lake dam in the Okanogan-Wentachee National Forest. We also supported passage of the Yakima River Basin Water Enhancement Project bill in 1979, to improve fish passage facilities including fish screening as well as increase water conservation.

On March 30, 2012, we joined with 15 other local, state and national environmental and conservation organizations in commenting to the Bureau and Department of Ecology on the Final Programmatic Environmental Impact Statement for the "Integrated Water Resource Management Plan, Yakima River Basin Water Enhancement Project, Benton, Kittitas, Klickitat, and Yakima Counties, Washington." See http://www.washington.sierraclub.org/uppercol/pdf/Yakima_FEIS_Conservationists-comments_3-2012.pdf.

Our comments concerned early actions taken prior to the release of the Draft Programmatic Environment Impact Statement and lack of alternatives to a large Bumping Lake irrigation dam that would destroy ancient forests and endangered species habitat for bull trout and spotted owls, and a large Wymer irrigation dam that would destroy endangered species habitat for sage grouse. In addition we commented on the proposal that was added after the close of the public

comment period for the Draft Programmatic Environment Impact Statement to designate National Recreation Areas for off-road vehicle use. We requested a written response to our Final Proposed Environmental Impact Statement comments. To date, we have received no reply so we repeat our request for a written response.

Friends of the Earth is also a member of the Green Scissors Campaign, along with budget watchdog Taxpayers for Common Sense, and the free-market think tank R Street Institute. Since its inception in 1994, the Green Scissors Campaign has fought to make environmental and fiscal responsibility priorities in Washington by eliminating subsidies and programs that both harm the environment and waste taxpayer dollars. In 2012, the Green Scissors Campaign identified the proposed $1.4 billion for a new Bumping Lake Dam and Wymer Dam as harmful to the environment and a waste of taxpayer dollars. We request that a copy of the Green Scissors 2012 report be made part of the December 12, 2012 Workgroup meeting.

Sincerely,

Erich Pica, President
Friends of the Earth

Sightline Daily
News & Views for a Sustainable Northwest

Sightline Institute

How to Avoid a Federal Budget Train Wreck

Saving taxpayers $700 billion in wasteful, environmentally damaging spending.

John Abbotts on November 26, 2012 at 9:00 am

In Washington DC, lawmakers' attention is turning quickly to avoiding the so-called "fiscal cliff." Unless the lame duck Congress can fashion a more sensible compromise, a set of measures automatically go into effect in January 2013: The Bush-Cheney tax cuts will expire for everyone, and "sequestration" will mandate budget cuts of $1.2 trillion over ten years, with half the reduction coming from the military and half from the civilian budget. Both House Speaker John Boehner and President Obama are warning about the dangers of Congressional inaction, but a compromise is far from certain.

There is a better path, however, one that combines environmental responsibility with fiscal rectitude and that already has bipartisan support. Back in June 2012, when Congress fashioned this provision in order to avoid a default on the total federal debt, the Green Scissors Campaign, a left-right coalition, proposed a better idea. They recommended steps for Congress to slash spending on environmentally destructive programs and subsidies that would save $700 billion over ten years, more than 60 percent of the impending budget cuts the government now faces. The cuts would still leave us $500 billion short of meeting the reduction that Congress targeted, but the Green Scissors approach would allow for a much less draconian and much more achievable budget agreement that combined tax increases with cuts in other programs over ten years.

Let's take a look at how the Green Scissors recommendations would affect the Northwest.

But first, a bit of background. The Green Scissors Campaign formed in 1994 to eliminate subsidies and programs that both harm the environment and waste taxpayer dollars. Last June, the Campaign issued its 2012 Report, proposingto eliminate federal energy, agriculture, transportation, insurance, and public land and water programs that either directly or indirectly place American land, air, or water in jeopardy. The report is a collaboration between the three partners (Friends of the Earth, Taxpayers for Common Sense, and R Street, a free-market advocacy group), and only those programs that all three agreed were both wasteful and environmentally harmful were included in the list of recommendations.

The proposed cuts include:

- $269.78 billion from energy programs, including $158.7 billion of fossil fuel subsidies.
- $167.09 billion of agricultural subsidies, including $89.82 billion of federal crop insurance disaster aid.
- $212.02 billion of transportation subsidies, including $125.80 billion of general revenue transfers to the Highway Trust Fund.
- $101.8 billion of federal flood, crop and nuclear insurance subsidies.
- $24.99 billion from wasteful or environmentally damaging public lands and water projects.

As Green Scissors recognizes, these subsidies can themselves result in additional jobs. But they can be jobs in "dirty energy," such as fossil and atomic fuel, or other technologies that damage the environment. In addition, such subsidies provide benefits "to one class not available to others."

To take just one example that's especially relevant to Cascadia, every year the federal government subsidizes timber sales. The government actually pays more for costs associated with preparing public lands for loggers, than it receives in receipts from the sale of the timber. Removing these subsidies would save an estimated $600 million over 10 years. Moreover, special tax treatments for profits from logging are estimated to cost taxpayers $1.5 billion over the same time period.

Yet another example is crop insurance, where just five crops, cotton, corn, rice, soybeans and wheat, together receive $52 billion, over 90 percent of the subsidies over 10 years.

Northwest growers clearly benefit from the wheat subsidies, but as Green Scissors recognizes, federal policy,"showers subsidies on favored crops and large-scale" businesses that can thrive without government support; "while everyone else is left picking up the scraps." For example, wheat sales in Washington rank as the state's third highest crop by production value in 2011. But subsidies are considerably lower for apples, milk, and potatoes; these rank first, second, and fourth, respectively, among Washington crops. In Oregon, wheat ranked fifth by value in 2011. Similarly in Idaho, for 2010, the most recent year reported, wheat ranked fourth in production cash receipts, behind milk (first), cattle and calves, and potatoes, in order.

As with energy, agriculture, and timber, many of the programs that Green Scissors targets have elements across the nation. But in some cases, the Report identifies wasteful subsidies within Cascadia:

Nukes in Idaho. To quote from the report, "perhaps the largest and most egregious subsidy for the nuclear industry is federally-backed loan guarantees." This program has $2 billion in loan guarantees for uranium enrichment facilities. In Cascadia, the Areva Company's Eagle Rock Uranium Enrichment Facility in Idaho Falls, Idaho is likely to be a major recipient of the subsidy.

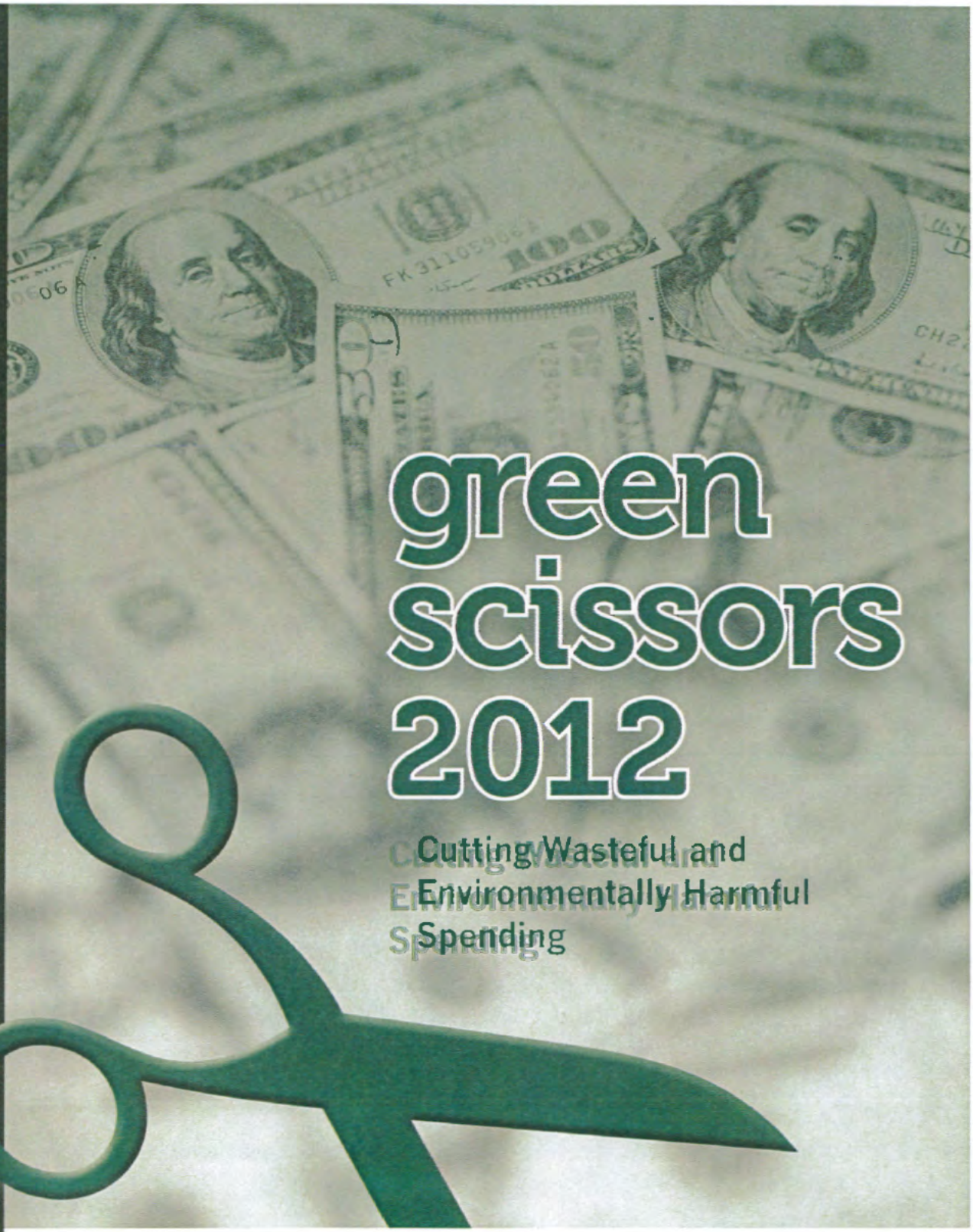
Bridges in Oregon. The report notes that "increasingly scarce transportation dollars continue to fund wasteful pet projects, many of which promote sprawl and damage the environment, instead of fixing crumbling bridges and worn-out roads." One project in this category is the controversial Columbia Bridge Crossing. Sightline has already commented in blog posts on this troubled program, including its current cost estimate of $3.5 billion. In fact, the project is facing new troubles in the aftermath of the election because Clark County, Washington voters essentially enacted the Green Scissors recommendation by rejecting a proposed sales tax increase, which means that the federal government cannot offer construction funds, and the project cannot proceed under state law, until county voters have a change of heart. (As of November 14, with 3200 votes left to count, Proposition 1 was losing by 19,000 votes, with a 56 percent "no" vote.)

Dams in Washington. The US Bureau of Reclamation is the country's dam-building agency whose projects include the Grand Coulee Dam. Yet the Green Scissors report concludes that while most Bureau of Reclamation dam projects have been justified to provide water for irrigation, along with substantial indirect subsidies to agricultural irrigators, "They often serve little or no national interest, are not economically justified, have serious negative environmental impacts, and are based more on political power than national priority."

Green Scissors Campaign identifies two specific Cascadian dam projects for elimination: the Columbia Basin Irrigation Project, estimated to cost $1-4.6 billion over 10 years, which is the largest all-federal irrigation project managed by the Bureau. Congress and its auditing arm evaluated the project, concluding that taxpayers and ratepayers, not irrigators, would pay most of the costs. In addition, the Yakima River Basin Water Enhancement Project is estimated to need $1.4 billion for new dams in Washington. One proposed dam would flood sage grouse habitat and cost over $1 billion.

If policymakers are serious that "all options should be on the table" in order to avoid the fiscal cliff, then the Green Scissors budget cuts should get the first look. They represent fiscal and environmental waste. Cutting them out of the federal budget would mean aggravating special interests, but the benefits would accrue to taxpayers and the nation's natural heritage.

John Abbotts, a self-described science nerd, earned a graduate degree in biochemistry from the University of Washington. He returned to the UW in the 1990s as research staff on a project related to Hanford cleanup. At different times during the 2000s, he served as research consultant to Sightline. Still recovering from a minor stroke, he occasionally submits material that Sightline staff turn into blog posts.



green scissors 2012

Cutting Wasteful and Environmentally Harmful Spending

Friends of the Earth

TAXPAYERS COMMONSENSE
MAKING GOVERNMENT WORK

R Street
Free markets. Real solutions.

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INTRODUCTION

Friends of the Earth

For more than 40 years, Friends of the Earth's mission has been to ensure a more healthy and just world. Dealing with large societal problems like global warming requires coordination and resource mobilization only governments can bring to bear, making government intervention essential if we are to succeed in protecting the environment and public health. Government regulation is one necessary tool to tackle today's most pressing environmental problems, and laws like the Clean Air Act and the Clean Water Act have been hugely successful. In addition, properly-targeted, well-designed government investments can help us move towards a clean, sustainable energy future by spurring the development of technologies to transition us away from dirty energy.

However, while the government is necessary for environmental protection, not every government action is good for the environment. Too often government is captured by the wealthiest and most established industries, which are oftentimes the dirtiest. When this happens, government actions which should promote public health end up harming it. But the solution cannot be a knee-jerk denunciation of all government that leaves profit-driven corporations as the protectors of the public good. Instead, we need to separate the good from the bad, keeping government programs that help us build a more healthy and just world and eliminating programs that do the opposite.

Friends of the Earth co-founded the Green Scissors project back in 1994 because we believe that respectfully working with those concerned about the budget to end subsidies for activities contributing to environmental destruction is an important first step in protecting the environment and public health. Over 18 years later, Green Scissors remains an important opportunity to make real change. We are proud to work with groups espousing different views in order to advance our agenda of protecting people and the environment. While we may disagree with our Green Scissors partners on many things, we can agree that the programs in this report are both wasteful and environmentally harmful. By working together, we have a better chance of getting them eliminated. If groups as different as those in the Green Scissors coalition can agree these programs should end, then we feel it must make sense.

TAXPAYERS FOR COMMON SENSE

MAKING GOVERNMENT WORK

Since 1995, Taxpayers for Common Sense (TCS) has been a leader of the Green Scissors Coalition. A cornerstone of our natural resource work, Green Scissors targets federal spending, tax expenditures, and other subsidies that cost taxpayers both upfront and over the long-term with their environmental liabilities.

TCS is a non-partisan budget watchdog dedicated to cutting wasteful spending and subsidies in order to achieve a responsible and efficient government that operates within its means. TCS believes the federal budget is about more than just dollars; it is about what we want to accomplish as a country.

Our 17 years of energy, transportation, water, public lands, and farm policy expertise leads us to approach subsidies included in the Green Scissors report from a fiscal perspective. Subsidies are federal expenditures that shift the costs of business from industry to the taxpayer and take different forms: preferential treatment to one industry over another in the tax code; direct payments from the government; market-distorting public financing; limitations of liability that shift corporate risks to the taxpayer; and giving away taxpayer assets below market value.

INTRODUCTION

REPORT METHODOLOGY

The numbers in *Green Scissors 2012* represent the potential cost to taxpayers, not necessarily the expected cost to taxpayers, over a ten-year period. This distinction is especially important in the case of loan guarantees because the potential risk to taxpayers can be significantly higher than the cost estimate the Congressional Budget Office (CBO) allocates against the budget. The one place where the potential risk is not used is for insurance guarantees. We do not use potential taxpayer risk there because the insurance liability on a massive project like a nuclear reactor is almost impossible to calculate and almost infinite. We have used different methodologies for different insurance programs depending on the available sources, all of which are explained below.

Whenever possible *Green Scissors 2012* relies on the most recent government sources available, primarily the Joint Committee on Taxation (JCT), the Government Accountability Office (GAO), and the Office of Management and Budget (OMB) for the value of subsidies. In a very few instances where no governmental numbers are available, we have used peer-reviewed academic publications. These instances are all footnoted in the report.

In the past, Green Scissors has used five-year projections because five-year totals are standard for the Joint Committee on Taxation. However, the ongoing debate about the budget and spending priorities has focused on ten-year numbers. In response, instead of using the five-year estimates we have traditionally used, this year's Green Scissors report calculated the potential savings for a ten-year window or over the life of a project if that is less than ten years. To get ten year numbers, we averaged the numbers available and used the average for years without data. This sacrifices a level of accuracy, but the numbers remain illustrative of the savings that could be achieved.

Obviously, it is impossible to know what the government will do ten years into the future and so several assumptions have to be made.

ENERGY

For more than a century, the federal government has been subsidizing the energy sector. Fossil fuels like coal, oil, and natural gas were the recipients of these initial subsidies and these industries remain on the federal dole. Every part of the nuclear fuel chain has been heavily subsidized for more than 60 years. More recently, alternative fuels are being subsidized in the quest for an amorphous goal of "energy security" or for their reported environmental benefits. Unfortunately, many of these technologies are damaging to the environment—some even more so than conventional energy sources. The energy section of the report details billions of dollars in potential cuts to three major energy sectors: fossil fuels, nuclear, and alternative fuels. Energy subsidies now cost taxpayers tens of billions of dollars each and every year.

Subsidies for energy take many forms including funding for research and development, tax preferences, direct subsidies, foregone revenue, loan guarantees, and more. Years of political wrangling have resulted in a large, intricate web of energy subsidies. Digging into this complicated system, Green Scissors identifies billions of taxpayer dollars that could be saved by cutting subsidies both environmentally harmful and fiscally wasteful.

This year's Green Scissors report offers more than $275 billion in total energy cuts over ten years.

LOAN GUARANTEES

The latest scandal over energy subsidies has centered on the Department of Energy's Title 17 Loan Guarantee Program. Created in the Energy Policy Act of 2005, Title 17 was billed as a way to get a small number of innovative, low-emission technologies off the ground but in reality the program has always been little more than a taxpayer handout for mature and environmentally harmful technologies that cannot compete on the open market. Well before the first loan guarantee failed, the Green Scissors coalition warned about the dangers this program posed and called for Congress to eliminate it. Currently, Congress has given DOE the authority to put taxpayers on the hook for roughly $37 billion in new loan guarantees: $18.5 billion for nuclear reactors, $4 billion for uranium enrichment, $6 billion for carbon capture and sequestration (mostly for coal fired power projects), $2 billion for advanced coal, $4.5 billion for renewable energy, efficiency and transmission, and $2 billion that can be used at DOE's discretion. Congress should stop DOE from risking taxpayer money on this flawed program.

DEPARTMENT OF ENERGY'S TITLE 17 LOAN GUARANTEE PROGRAM	*CURRENT AUTHORITY (in millions)*
Nuclear Power Facilities	$18,500
Carbon Capture and Sequestration	$6,000
Renewable Energy, Efficiency, and Transmission	$4,500
Uranium Enrichment	$4,000
Advanced Coal Gasification	$2,000
Unallocated	$2,000
TOTAL	**$37,000**

FOSSIL FUELS

With gas prices hitting pocketbooks hard, massive budget deficits, and oil company revenues reaching new highs, subsidies provided to the fossil fuel industry are again attracting enormous attention. As pressure mounts for fundamental reform of the tax code, the time is ripe to eliminate subsidies for fossil fuels. To achieve this, the nation will need to get beyond partisan rancor. Unfortunately, virtually all we have seen up to this point is a flurry of intense political rhetoric; partisan votes on subsidy reform have deepened the divide between the parties. Despite the increased focus on cutting subsidies, these often century-old giveaways remain on the books.

The detailed chart estimates the ten-year price tag for many of the subsidies the fossil fuel sector receives. It includes cuts to subsidies for the traditional oil, gas, and coal industries, which are major polluters.

NUCLEAR

The environmentally risky nuclear industry receives enormous federal subsidies. Since the 1950s it has benefited from federal supports for insurance, research and development, production tax credits, and borrowing. These subsidies and others remain on the books.

The latest attempt to give new subsidies for nuclear power is President Obama's proposal to spend $452 million of taxpayer money over five years to pay for the design and licensing costs of the country's first two small modular reactors. This would put taxpayers on the hook for roughly half the cost of designing and licensing these environmentally and financially risky investments. Congress has already appropriated $67 million for this initiative and the Department of Energy has already moved forward with a Funding Opportunity Announcement. These are costs that should be borne by industry, not taxpayers.

Today, perhaps the largest and most egregious subsidy for the nuclear industry is federally-backed loan guarantees. Provided through the Department of Energy, the loan guarantee program currently has $18.5 billion in congressionally directed budget authority for nuclear reactors and another $2 billion for uranium enrichment facilities. In addition, DOE has stated it intends to give $2 billion more for uranium enrichment. Two conditional loan guarantee commitments have been issued for nuclear projects: Southern Company's Vogtle reactor in Georgia and Areva's Eagle Rock Uranium Enrichment Facility; several other applicants are pending.

Most of these applicants or pending commitments are blatantly bad investments for taxpayers. One project that continues to remain on the DOE loan guarantee docket is the United States Enrichment Corporation's Advanced Centrifuge Project in Piketon, Ohio. For years the project has received tens of millions of dollars in federal support and kept its place in line for a loan guarantee, despite a dire financial outlook for the company. As of June 13, stock prices were trading at $.94 per share and the NYSE had threatened to delist the company altogether. In order to prop the company up the House included a $150 million authorization in the National Defense Authorization Act in May 2012. Taxpayer money should not be funneled into this flawed private company.

The chart summarizes current nuclear industry subsidies.

NUCLEAR	TOTAL 2013–2022 *(millions)*
Loan Guarantees for Nuclear and Uranium Enrichment	$22,500
Nuclear Waste Fund Liability Payments[1]	$17,200
Price-Anderson Act[2]	$8,000
Mixed Oxide — Fissile Materials Dispositions — Construction	$6,854
Inertial Confinement Fusion Ignition and High Yield Campaign	$4,748
Non-Defense Environmental Cleanup	$2,353
Stand-by Support	$2,000
Fuel Cycle R&D	$1,863
Reactor Concepts Research and Development	$1,149
Credit for Production of Advanced Nuclear	$930
Modification to Special Rules for Nuclear Decommissioning Costs	$900
Nuclear Energy Enabling Technologies	$747
Small Modular Reactor Program	$452
Treatment of Certain Income of Electric Cooperatives	$391
TOTAL	**$70,086**

1 This number is the Blue Ribbon Commission's estimate of liabilities that the federal government will owe if nuclear waste is not accepted in the next ten years.

2 For Price-Anderson we used the low end of the range of $800 million to billions per year that Doug Koplow found in *Nuclear Power: Still Not Viable without Subsidies.*

AGRICULTURE

Washington wastes billions of taxpayer dollars annually on misguided agricultural policies. Instead of providing a safety net for America's family farmers—the reason many political leaders say they support the programs—federal agricultural policy increasingly showers subsidies on favored crops and large-scale agricultural business that can thrive without governmental support, while everyone else is left picking up the scraps.

As Congress and the president scour the budget for savings, federal agricultural policy must be sustainable and ensure taxpayer dollars are providing an appropriate safety net, rather than distorting the market to the benefit of favored and powerful interest groups.

COMMODITY CROPS

From direct payments based on a farm's past production, disaster payments, ethanol mandates, marketing assistance, and on and on, billions of tax dollars are spent every year supporting American agriculture. Little of what is seen in the produce aisle, however, benefits from federal agriculture subsidies. The bulk of these, nearly 90 percent, are given to only a handful of producers growing corn, cotton, wheat, rice, and soybeans. The vast majority of these commodity crops create pesticide and fertilizer pollution that can harm our water resources and ecosystems. And these taxpayer dollars often simply pad the profits of already successful producers. Perhaps the most egregious are for direct commodity payments. The program was created in 1996 as a temporary measure that has since not been allowed to expire. It pays owners of land that historically grew certain commodities, whether or not that crop is still grown. Direct payments have helped lead to quickly escalating farmland prices that make it difficult for younger farmers to gain a hold. Other commodity supports distort the business decisions of farmers and provide an incentive for producers to grow crops on marginal and highly erodible land. Eliminating select commodity supports, including direct payments, would save taxpayers more than $52 billion.

AGRICULTURE	TOTAL 2013–2022 *(millions)*
Major Commodity Crops	
Corn	$22,179
Wheat and Wheat Products	$11,134
Soybeans	$7,617
Upland Cotton	$6,843
Rice	$4,336
Crop Insurance Disaster Aid	$89,816
CAFOs — Environmental Quality Incentives Program	$16,046
Biological and Environmental Research — Biological Systems Science	$3,115
Open Loop Biomass	$2,669
Market Access Program	$2,100
Biomass Crop Assistance Program	$1,960
Foreign Market Development Program	$345
Re-Powering Assistance	$341
Biomass Research and Development	$328
Municipal Solid Waste	$200
Forest Biomass for Energy Program	$150
Community Wood Energy Program	$50
TOTAL	**$169,229**

TRANSPORTATION

The nation's transportation system is at a crossroads. The nation's airports, highways, and rail lines suffer from wasteful and environmentally harmful projects, ineffective programs, a growing list of maintenance needs, and lack of sustainable funding.

HIGHWAY TRUST FUND

By 2013, the Highway Trust Fund, the nation's road and transit account, will be insolvent as the federal gasoline taxes supporting it no longer provide enough revenue to cover current spending levels. Meanwhile, increasingly scarce transportation dollars continue to fund wasteful pet projects, many of which promote sprawl and damage the environment, instead of fixing crumbling bridges and worn-out roads. Unfortunately, recent proposals from Congress and the president are little more than budget gimmicks that would backfill the Highway Trust Fund with unrelated funding mechanisms and deficit spending. Most of these proposals would take years to generate funds or amount to little more than transfers from the Treasury, and they undermine the user-pays principal requiring drivers to pay for the transportation system's costs.

Though the nation's air system has fared better than surface transportation, it is not without its problems. The recent adoption of a four-year reauthorization continues to pour taxpayer dollars into little-used general aviation airports and wasteful, environmentally harmful air subsidy programs. Furthermore, the Federal Aviation Administration continues to receive general funds for operations, unfairly subsidizing air travelers at the expense of all taxpayers.

With the national debt growing by the minute, we should eliminate wasteful and environmentally harmful spending while prioritizing scarce federal spending on the projects and programs that matter most.

TRANSPORTATION	TOTAL 2013–2022 *(millions)*
General Revenue Transfers to Highway Trust Fund	$125,800
General Revenue Transfers to the Airway and Airport Trust Fund	$50,000
Airport Improvement Program Grants to General Aviation-Dominated Airports	$22,000
DesertXpress Project (NV)	$6,500
I–73 Project (SC)	$2,400
Essential Air Service Program (excludes Alaska)	$1,650
Knik Arm Crossing (AK)	$1,500
Outer Bridge Portion of Ohio River Bridges Project (IN & KY)	$1,300
Columbia River Crossing	$1,180
St. Croix River Crossing Project/Stillwater Bridge (MN & WI)	$650
Juneau Access Road (AK)	$500
Gravina Island Access (AK)	$300
Charlottesville Bypass (VA)	$244
TOTAL	**$214,024**

INSURANCE

The federal government maintains a host of insurance programs that harm the environment by subsidizing dangerous and destructive behavior. These programs are mentioned throughout the report and summarized in the chart below. In addition to their environmental impacts, the insurance programs listed in this section cost taxpayers billions of dollars and displace productive private industries. These programs provide incentives for insured parties (quite often large, profit-making businesses) to behave less carefully than they otherwise would by saving businesses from paying the true cost of their risk. Broadly, the insurance programs can be divided into three categories: flood insurance, crop insurance, and energy insurance.

FLOOD INSURANCE

The National Flood Insurance Program (NFIP), a federally managed program run through the Federal Emergency Management Agency, almost certainly has the highest public profile of the federally run insurance programs. Created in 1968 and modified to something resembling its current form in 1973, NFIP involves the federal government taking on almost all liability for flooding in the United States. The program is intended to promote conservation and break even for taxpayers but, in the end, does neither.

On the surface, NFIP seems to include strong protections for the environment. In order to participate in flood insurance, a community has to adopt building and zoning codes that, in theory, discourage construction in the most flood-prone areas and protect wetlands. Communities can receive discounted flood insurance rates for adopting more stringent zoning codes and making themselves safer against flood. Despite these apparent safeguards, the program has, on balance, encouraged at least as much construction in flood-prone areas as it has discouraged. In large part because FEMA has never done high quality flood maps of the entire nation (an effort to do so is ongoing), many areas identified as reasonably "safe" are anything but. As a result, construction takes place in flood-sensitive areas anyway. Likewise, the program has made little progress in encouraging people to move out of the most flood-prone areas.

The program has also failed to meet its creators' promises to break even in the long run. In fact, the program is a model of mismanagement. On one hand, it pays large fees to agents and insurers for "servicing" policies under the "Write Your Own" program which lets these private interests collect commissions and fees from the program without taking on any real insurance risk for flooding. On the other, it has run up significant debts—more than $17 billion as of the spring of 2012—and has no practical way to ever pay them back. These debts, which Congress eventually will have to forgive, mean flood insurance costs taxpayers roughly $400 million a year.[1]

CROP INSURANCE

In recent years, taxpayer-subsidized crop insurance has become the largest single federal support for agriculture. In 2011 alone, it cost taxpayers more than $11 billion. In reality, the program functions as more of a payment program to farmers than "insurance," and it damages the environment and provides significant assistance to many who do not need it.

Although it has some things in common with conventional insurance, and indeed is sold through 15 competing insurers (all of which charge the same federally set price for the same coverage), crop insurance does far more than protect farmers against things like wind and hail. In fact, most of the payments made under the program reimburse farmers for unexpected market fluctuations in the price of their crops rather than actual losses of them. And, on average, taxpayers pick up more than 60 percent of farmers' monthly premiums while simultaneously reimbursing the program for its catastrophic losses.

All of this harms the environment. Just four crops—cotton, corn, wheat, and soybeans—receive 80 percent of the subsidies. More importantly, since

1 The number is derived by dividing the total (unpayable) debt that NFIP has run up by the number of years it has been in existence. For information about the NFIP's current indebtedness see, e.g.: Federal Emergency Management Agency, "Rethinking the NFIP," November, 2011, http://www.fema.gov/business/nfip/nfip_reform.shtm

PUBLIC LANDS & WATER

Our nation's waterways and publicly owned lands provide valuable resources for the nation to enjoy. But billions of dollars in revenue is lost to undervalued, publicly owned resources, and profitable extractive industries benefit from outdated and unnecessary subsidies.

PUBLIC LANDS & WATER	TOTAL 2013–2022 *(millions)*
Special Tax Treatment for Timber Gain	$4,500
Forest Products	$3,355
Expensing of Timber Growing Costs	$2,400
Amortization & Expensing of Reforestation Expenditures	$2,200
Upper Mississippi River Navigation Locks Project	$2,095
Increased Inland Waterway Subsidy (over 5 years)	$2,000
1872 Mining Law Reform	$1,529
Inner Harbor Navigation Canal Project (Industrial Canal) Lock Replacement (LA)	$1,300
Percentage Depletion, Non-Fuel Minerals	$800
Stop Federal Beach Replenishment	$700
Livestock Protection Program	$620
Expensing and Exploration, Non-Fuel Minerals	$600
Money Losing Timber Sales	$565
Dallas Floodway Extension, Trinity River Project	$459
Grand Prairie Area Demonstration Project (AR)	$450
Fort Worth Central City Project	$435
Special Rules for Mining Reclamation Reserves	$400
Delaware River Deepening Project (PA, NJ, DE)	$334
Forest Service Salvage Fund	$210
Fair Value Grazing Fees	$191
St. Johns Bayou Basin/New Madrid Floodway Project (MO)	$159
BLM Public Domain Forestry	$97
Timber Purchaser Election Road Construction	$10
Eliminate the Inland Waterways Users Board	$8
TOTAL	**$25,317**

TIMBER SUBSIDIES

One particularly egregious program is money-losing timber sales. Every year the federal government conducts timber sales where it actually pays more money for the costs associated with preparing the area for loggers than it receives in receipts from the sale of the timber. This practice has been going on for decades. A series of reports from the Government Accountability Office highlights the shortcomings of Forest Service accounting practices, finding they are inadequate to allow forest managers to properly manage their properties or to even know which timber sales are losing money. Despite these reports the Forest Service has not changed its practices. Given our current fiscal crisis, now is the perfect time to stop paying companies to take valuable timber off our federal lands.

DELAWARE RIVER DEEPENING: $335 MILLION

The Delaware River Deepening project is an economic and environmental boondoggle. Costing nearly $350 million, the project's justification depends entirely on speculative cost savings from importing cheaper goods. The purported imports have shifted over the years, from oil to fresh produce. Despite major criticism from the GAO and other independent analysts, including analysis that the project will only return ten cents for every taxpayer dollar, the Corps continues to pursue this project that threatens major ecological harm to the Delaware River and Bay.

ST. JOHNS BAYOU/NEW MADRID FLOODWAY: $159 MILLION

Despite the Corps operation of the St. Johns/New Madrid Floodway in June 2011 to reduce flood heights and protect Cairo, Illinois, agricultural interests are pursuing this project to cut off the floodway from the Mississippi River. Closing one of the last remaining natural floodways will increase flooding risks and cost taxpayers millions more in damages when the floodway is once again operated.

FORT WORTH CENTRAL CITY PROJECT: $435 MILLION

The Fort Worth-Central City project is just one portion of a larger project known as the Trinity River Vision, the total cost of which has increased to nearly $1 billion. The project is a Corps flood control effort to reroute the Trinity River in Fort Worth, Texas through construction of a new dam, a 1.5 mile-long bypass channel, and numerous flood gates in order to create an urban waterfront community to the tune of $435 million—a wastefully speculative development. The Corps should better utilize its flood control dollars.

DALLAS FLOODWAY EXTENSION, TRINITY RIVER PROJECT: $422 MILLION

Neighboring the Fort-Worth Central City project, the Dallas Floodway Extension, Trinity River Project is another Corps flood control project on the Trinity River. Under this project, the Corps seeks to extend existing levees while cutting a 600-foot wide swath (swale) through the Great Trinity Forest. The project's principal economic justification is increased flood control for downtown Dallas. Yet, most of these benefits could be obtained for a fraction of the project cost by simply raising one of the existing Dallas levees and conducting a voluntary buyout in flood-prone neighborhoods. This would provide the most effective flood protection for the area, with dramatically less impact on the floodplain.

FEDERAL BEACH REPLENISHMENT: $700 MILLION

Beach replenishment projects are one of the most egregious examples of public dollars subsidizing private benefits. Beach nourishment is intended to address the problem of beach erosion and protect property from storms. However, many experts con-

BUREAU OF RECLAMATION

The U.S. Bureau of Reclamation (BuRec), within the Department of the Interior, is primarily a dam-building agency. It was established to encourage development and irrigated agriculture in the seventeen western states of the continental U.S., and has been used by western members of Congress to bring money to their home districts for the last century. The BuRec now constructs water resource projects that supply water for irrigation and urban use and generate hydropower. Its largest projects include the Hoover Dam on the Colorado River in Nevada and the Grand Coulee Dam on the Columbia River in Washington. It also constructed the Teton Dam in Idaho, which suffered a catastrophic failure in 1976. As a result of BuRec and Army Corps projects, today most of the major U.S. rivers are dammed, impacting fish resources and degrading river ecosystems.

Most of the BuRec dam projects have been justified solely to provide water for irrigation and provide substantial indirect subsidies to the irrigated agricultural community. They often serve little to no national interest, are not economically justified, have serious negative environmental impacts and are based more on political power than national priority.

There is no current economic justification for the depth and array of subsidies the BuRec program provides to irrigated agriculture. The recipients of irrigation water from most BuRec projects compete with neighboring irrigators who receive none of the federal subsidy supplied by the BuRec. In some cases, BuRec water is so cheap it leads to irrational choices like growing alfalfa in arid areas to supply food for dairy cattle.

The key subsidy incorporated into the BuRec program is the nominal repayment of project construction costs over 50 years at zero interest, meaning irrigators pay only a small fraction of the cost to construct the projects supplying their water. Reclamation law goes further, however, and provides an additional subsidy based on the BuRec's one-time calculation of the irrigators' "ability-to-pay" for each project. Project costs exceeding the "ability-to-pay" are cross-subsidized, largely by hydroelectric power purchasers, effectively spreading the irrigators' costs across regional residents. A July 1996 GAO study revealed that irrigators were scheduled to repay less than half of the total project costs allocated to irrigation, while the rest would be cross-subsidized by other project beneficiaries.[1]

The BuRec has built more than 600 dams over the last century and a recent BuRec study suggested nearly one hundred potential sites for new surface storage.[2] Too often BuRec projects are both economically and environmentally wasteful. While there are many questionable BuRec projects, a few new proposals deserve special attention. These projects are not the product of a system designed to identify the greatest national needs but instead political calculations by irrigators and Congress. Now is the time to end the BuRec's involvement in projects economically unjustified and environmentally harmful.

COLUMBIA BASIN IRRIGATION PROJECT: $1 – $4.6 BILLION

Located in central Washington State, the Columbia Basin Irrigation Project (CBIP) is the largest all-federal irrigation project managed by the BuRec.[3] At Grand Coulee Dam, water is pumped uphill, and then through canals and reservoirs for use by agricultural interests. Water diverted from the Columbia River is thus made unavailable to generate hydropower, and support threatened salmon runs. In the 1980s independent economists and the GAO scrutinized the BuRec's proposals to expand the CBIP, found that taxpayers and ratepayers (not irrigators) would pay most of the costs, and prompted the BuRec to withdraw expansion proposals for a while.[4]

1 *United States Government Accountability Office.* "Information on Allocation of Repayment of Costs of Constructing Water Projects." July 3, 1996. http://www.gao.gov/products/RCED-96-109

2 U.S. House of Representatives Committee on Natural Resources. "Water Storage Vital to Rural Communities, Job Creation, Economic Growth." February 7, 2012. http://naturalresources.house.gov/News/DocumentSingle.aspx?DocumentID=278395

3 *Northwest Power and Conservation Council.* "Columbia Basin Project." http://www.nwcouncil.org/history/columbiabasinproject.asp

4 *United States Government Accountability Office.* "Issues Concerning Expanded Irrigation in the Columbia Basin Project." January 31, 1986. http://www.gao.gov/products/RCED-86-82BR; Norman K. Whittlesey, Walter R. Butcher, and Marion E. Marts. "Water Project

RECENT VICTORIES

Green Scissors is intended to serve as a resource for citizens and policymakers seeking to implement these cuts so that we can better protect our environment and do right by taxpayers. Since we started producing Green Scissors, many of the wasteful and environmentally harmful programs we have highlighted have been cut or allowed to expire. Looking back at the past 18 years, we are proud to have helped save U.S. taxpayers billions of dollars by directing attention to possible cuts groups across the political spectrum can agree on. We have also seen several Green Scissors victories in the past year and we look forward to many more. Our work is far from done, but with each small victory we continue the momentum towards creating an environmentally and fiscally healthy budget.

In recent years, despite deep divisions between the political parties, Congress has continued to cut programs and subsidies recommended for elimination by the Green Scissors report. At the end of 2009, Congress allowed tax subsidies for several enviroumentally harmful energy sources to expire and stopped funding the Yucca Mountain high-level radioactive waste repository, which had already cost taxpayers more than $10 billion. The Obama Administration also halted the domestic portion of the Global Nuclear Energy Partnership, which some estimates have put at $500 billion. Several wasteful and environmentally harmful programs have also been cut in the past year since the 2011 Green Scissors report was released.

DIRTY ENERGY TAX CREDITS ELIMINATED IN THE PAST YEAR

Tax credits for refined coal and liquid coal production were allowed to expire on December 31, 2011. Ending support for liquid coal, which has twice the life cycle greenhouse gas emissions of conventional gasoline as well as all of the environmental impacts of mining and burning coal, was a significant victory. Unfortunately, some in Congress are already looking for ways to reinstate these credits. This year Senator Stabenow (D-MI) included an extension of both these credits in an amendment to the transportation bill that also extended renewable energy tax incentives.

CORN ETHANOL TAX CREDIT

Congress allowed the Volumetric Ethanol Excise Tax Credit, which had been costing taxpayers $6 billion per year, to expire on December 31, 2011. This lavish gift rewarded the oil industry for using corn ethanol, an environmentally harmful biofuel that increases global warming, soil erosion, air and water pollution, and global food prices.