



Yakima Tributary Access & Habitat Program

Strategic Plan

Updated 2007



Yakima Tributary Access & Habitat Program
SCW Resource Conservation & Development Council
With funding from the
Bonneville Power Administration

Table of Contents

<i>Chapter 1: PROGRAM SUMMARY</i>	<i>1</i>
1.0 INTRODUCTION	1
1.1 BACKGROUND	1
1.2 Program Structure	3
1.3 Program Overview	4
<i>Chapter 2: COMMUNICATION</i>	<i>6</i>
2.0 INTRODUCTION	6
2.1 OUTREACH and COLLABORATION	6
2.2 INTERNET INFORMATION	7
<i>Chapter 3: PROJECT PRIORITIZATION</i>	<i>8</i>
3.0 INTRODUCTION	8
3.1 TRIBUTARY ASSESSMENTS	8
3.2 HABITAT ENHANCEMENT	8
3.3 PRIORITIZATION PLANS	8
<i>Chapter 4: PROJECT DEVELOPMENT & IMPLEMENTATION</i>	<i>10</i>
4.0 INTRODUCTION	10
4.1 DESIGN DEVELOPMENT	10
4.2 ENVIRONMENTAL REGULATIONS	11
4.3 AGREEMENTS	12
4.4 PROJECT IMPLEMENTATION	12
4.5 IMPLEMENTATION REPORTING	12
<i>Chapter 5: MONITORING</i>	<i>14</i>
<i>Chapter 5: MONITORING</i>	<i>15</i>
5.0 INTRODUCTION	15
5.1 PROGRAM FUNCTION	15
5.2 PROJECT INSTALLATION & PERFORMANCE	15
5.3 BIOLOGICAL RESPONSES	15
<i>Chapter 6: FUNDING</i>	<i>18</i>
7.0 INTRODUCTION	18
7.1 FUNDING SOURCES	18
<i>Attachments</i>	<i>21</i>
Attachment 1: Executive Summaries 2002-2006 From Annual Reports to BPA	22
Attachment 2: Kittitas County Prioritization Plan	27
Attachment 3: YTAHP Monitoring Plan 2007	30

CHAPTER 1: PROGRAM SUMMARY

1.0 INTRODUCTION

The Yakima Tributary Access and Habitat Program (YTAHP) was developed to restore salmonid passage, protect fish from diversion entrainment, and to enhance riparian and instream habitat on Yakima River tributaries that historically supported salmonids. The program objectives are to: a) screen surface water diversions with NOAA Fisheries and WDFW compliant screens to prevent fish entrainment into artificial waterways; b) provide fish passage at man-made barriers, such as diversion dams, culverts, siphons and bridges; c) enhance instream and riparian habitat and function in fish bearing streams; and d) provide information and assistance to landowners voluntarily contributing to the improvement and conservation of natural resources.

The YTAHP developed from a number of groups actively engaged in watershed management, and/or habitat restoration within the Yakima River Basin. Current YTAHP membership includes: South Central Washington Resource Conservation and Development (RC&D - program administrator), Kittitas County Conservation District (KCCD), North Yakima Conservation District (NYCD), Washington Department of Fish and Wildlife (WDFW), Kittitas Conservation Trust (KCT), Washington Department of Ecology (Ecology), Yakima Basin Joint Board (YBJB), and the Yakama Nation (YN). Future membership is open to entities with similar interests and goals and may include the South Yakima Conservation District and Benton County Conservation District.

Bonneville Power Administration's Fish and Wildlife Program (BPA) has funded the Yakima Tributary Access and Habitat Program through the Action Plan in 2002, then through the provincial review process since 2003. The first two years were focused on program development, establishing contacts and building relationships. In addition, tributary assessments were initiated, a consulting engineer engaged, and 11 early action projects were designed, six were implemented. YTAHP has evolved into an efficient and effective watershed restoration program; implementing numerous projects throughout the Yakima Basin (see Attachment 1) in a prioritized and coordinated manner.

YTAHP is supported by various private and governmental entities throughout the basin. Through its diverse core team membership, the YTAHP has proven capable of working with landowners to successfully implement projects with significant benefit to native salmonids. YTAHP has successfully coordinated efforts of other resource management entities and co-managers in the Yakima Basin to gain additional benefits for fish and wildlife from the proposed projects.

The program may evolve through time, based on resource needs and core team membership. This strategic plan will evolve with the program to reflect the current role and goals of the YTAHP. The general mission will remain the same, to increase the habitat available to native salmonids.

1.1 BACKGROUND

Many factors, occurring over more than a century, have contributed to a decline in native salmonid populations within the Yakima River Basin. Commercial harvest beginning in the 1800s, unscreened surface water withdrawals, construction of dams and other man-made fish barriers, habitat degradation, introduction of hatchery fish, introduction of non-

native species, predation pressure, urban development, agricultural and timber practices, climatic cycles and other causes have all played a role in the decline of salmonid populations.

The significance of these declines is reflected in recent listings under the Endangered Species Act (ESA) in the Middle Columbia region, which includes the Yakima River Basin. The United States Fish and Wildlife Service (USFWS) listed the Columbia River bull trout (*Salvelinus confluentus*) distinct population segment as threatened on June 10, 1998 and the National Oceanic and Atmospheric Administration (NOAA) Fisheries listed the Middle Columbia River steelhead (*Oncorhynchus mykiss*) as threatened on March 25, 1999.

Properly screening irrigation diversions to prevent entrainment is mentioned in several planning and fish recovery documents including the Yakima Subbasin Plan, Yakima Basin Salmon Recovery Plan, Yakima Watershed Plan, federal Biological Opinions and other resource plans as critical to fish recovery. Since at least 1881 Washington State has had laws requiring the protection of fish life by screening water diversions. While these laws have been on the books for more than a century (see Chapter 77.55 and Chapter 77.57 RCW), they have been difficult to implement and enforce. The YTAHP facilitates a voluntary program in which landowners can come into compliance with current fish passage and screening laws with considerable cost sharing advantages—a win-win situation for native fish and landowners.

There has been active screening of Yakima River mainstem diversions for nearly 20 years through the Fish Passage and Protective Facilities Program, a cooperative effort lead by the United States Bureau of Reclamation (BOR) with Bonneville Power Administration (BPA) Fish and Wildlife Program funding. Phases I (1980s) and II (1990s to 2006) of the Program resulted in the completion of numerous projects that protect fish from entrainment into artificial irrigation waterways and provide passage through diversion dams and other man-made obstructions. Several of these projects were large, multi-million dollar efforts that are now operational, screening diverted river water for irrigation and other purposes.

In spite of these significant past efforts, there are still hundreds of unscreened or improperly screened diversions and other passage and habitat problems for fish in the Yakima Basin tributaries. There are hundreds of identified passage barriers; total barriers, and partial, seasonal, or life stage barriers. Barriers include culverts, bridge structures, pushup dams, inadequate flow, concrete dams and channel constrictions. The removal of full adult barriers, juvenile barriers, partial and seasonal barriers allows access to the often less disturbed upper watershed habitat throughout the Yakima Basin. Fish passage for all life stages not only provides spawning accessibility for adults, but valuable tributary rearing habitat for juveniles; protecting them from the often high and variable flows of the mainstem Yakima and Naches Rivers. The YTAHP contributes to other recovery efforts in the basin to reestablish salmonid populations in all historical areas.

The ESA listing of steelhead and bull trout in the Yakima Basin has increased pressure to comply with current passage and screening laws. Lack of habitat availability has also been identified as a key factor in reduced productivity of these listed species. The YTAHP was designed to continue to address screening and passage needs in Yakima River tributaries as well as enhance instream and riparian habitat features in the basin using a well-coordinated, prioritized approach.

1.2 PROGRAM STRUCTURE

The YTAHP core team members work with project cooperators, and facilitate coordination of local, state, tribal and federal agencies with interest and experience in fish and habitat enhancement activities, water management, and/or stewardship of the land. The YTAHP acts as a liaison between regulatory agencies, funding entities and private landowners, ultimately leading to project implementation.

The YTAHP is organized into four functional groups/teams (Table 1). Members of these teams will freely interact within and between teams to efficiently move projects through to completion. It is expected that individuals will serve on more than one team and that teams will change to best meet the needs of individual projects. In addition, other members and/or entities will be included as appropriate. The groups are described below.

1. Administration

The RC&D joined the YTAHP core team as the program administrator. They have an intergovernmental contract with the BPA to implement and administer the Yakima Tributary Access and Habitat Program. The RC&D has entered into inter-local agency agreements with other core team members that describe work expected, methods of payment and records maintenance for the program. In addition, the RC&D organizes regular program meetings and fulfills the program reporting requirements to BPA.

2. Program Management

The YTAHP was organized to facilitate collaboration of the local, state, tribal, and federal entities with interest and experience in fish recovery activities. Currently the Core Team for YTAHP is comprised of RC&D, NYCD, KCCD, WDFW, YN, KCT, YBJB, and Ecology. Core team members will work cooperatively to manage and provide direction to the program.

Additional entities often join in the YTAHP core team discussions and may participate in project planning and implementation if their goals and objectives align with YTAHP principles and funding allows.

3. Project Sponsors

Any member of the Core Team can be a project sponsor, however, most projects are sponsored by one of the local entities NYCD, KCCD, or KCT. Project sponsors are responsible for coordinating communication between the different groups in YTAHP, facilitating project planning and funding, as well as the construction and implementation activities. In addition, project sponsors will be responsible for obtaining landowner agreements and monitoring the structural integrity of implemented projects. Access agreements should be maintained at each barrier removal project to facilitate biological monitoring activities pre and post implementation.

4. Technical Work Group

The technical work group (TWG) consists of project sponsors, agency and/or consulting engineers, the permit coordinator, biologists, and regulators. The TWG will complete and review engineering designs and provide technical assistance on all proposed projects. The TWG provides a consistent review group with common guidelines and engineering standards and includes regulatory agencies to assist in the preparation of permit application packages such that permit review and issuance is rapid and effective. It is anticipated that engineers, fabricators, and biologists from the WDFW, conservation

district engineers, consulting engineers, and other stakeholders and regulators will participate in the TWG.

WDFW is designated as lead entity for completing environmental and cultural resource permit application packages. The permitting coordinator will work with the regulatory entities, namely BPA, NOAA Fisheries, USFWS, DHAP, USACOE, Ecology, WDFW, local governments, the YN, and others as appropriate.

In addition, members of the technical work group will facilitate and coordinate biological monitoring for YTAHP projects.

1.3 PROGRAM OVERVIEW

Below is a brief overview of some of the primary functions and processes that occur in the YTAHP. More details can be found in the respective chapters.

Communication

Communication is an important component to the success of YTAHP. Communication efforts include outreach to local communities, prospective cooperators, and coordination with other Yakima Basin Watershed groups. Tributary teams are designed to bring together local stakeholders, offering information on the extent and impacts of human-made obstacles to fish passage and help prioritizing implementation of projects. The TWG provides early and ongoing communication with regulators to ensure project compliance. Cooperation with other recovery groups will reduce duplication of efforts and parlay available funding, leading to greater watershed benefits. (See chapter 2)

Project Prioritization

All of the major tributaries in Kittitas and North Yakima Counties have been inventoried using WDFW Salmonid Screening, Habitat Enhancement and Restoration (SSHEAR) protocol. Based on those surveys, landowner cooperation, relationship to other projects, and the Priority Index (PI) numbers for barriers and the Screening Priority Index (SPI) numbers for diversions, projects are prioritized for implementation. (See chapter 3)

Project Development and Implementation

Successful project implementation by the YTAHP is a result of a highly collaborative and cooperative process with a diverse group of participants with varying conservation interests. Project sponsors exhibit a high degree of finesse in the development and management of these projects to get to the implementation phase. Project planning undergoes technical review from several sources, ranging from private landowners to hydraulic engineers. Once a project plan has been reviewed and accepted by the TWG, the applicable permits and environmental authorizations must be obtained. Throughout the planning and review process, the project sponsor must obtain and maintain access and maintenance agreements with the cooperators and other private landowners. The project sponsor is also responsible for contracting services necessary for project completion. (See chapter 4)

Monitoring

The YTAHP is responsible for monitoring the program and its results. Core team members will continue to update plans as appropriate to reflect current YTAHP participation and operation. Completed YTAHP projects are monitored for their effectiveness in achieving their intended objectives. Structural integrity and function are

evaluated post implementation. Biological response variables will be monitored through time at selected barrier correction projects. (See chapter 5)

Water right holders are required by Ecology to meter their weekly rates of water use and report that data to Ecology annually. Ecology retains a permanent database for monitoring water use over time. YTAHP projects almost always incorporate a water-metering component in coordination with Ecology's Water Metering Program.

Funding

Through their fish and wildlife program, Bonneville Power Administration provides the base funding for the YTAHP. This long-term funding provides leverage for project sponsors when applying for additional grants requiring matching funds (e.g. SRFB, EQIP, etc). Additional contributions come from in-kind services from the core team and project participants. The majority of YTAHP projects include a cost share and/or in-kind component from the private landowner. (See chapter 6)

Table 1. Yakima Tributary Access and Habitat Program Functional Groups/Teams.

Team	Membership^{1,2}	Responsibilities
Administration	RC&D	Grant administration, accounting, invoice preparation, coordinating with BPA and core team on budget tracking and project updates for grantor(s), BPA reporting
Program Management (Core Team)	RC&D WDFW KCCD NYCD YN KCT YBJB Ecology BPA	Program organization and schedules, assigning tasks and tracking progress, program consistency, forming partnerships, updating planning documents, producing applications for funding, finding and organizing technical support, producing the program annual plans, and other functions as necessary.
Project Sponsors	Core Team	Plan and coordinate projects, facilitate landowner and community involvement and outreach, oversee project management
Technical Work Group	WDFW NOAA USFWS YN KCCD COE NYCD Ecology BPA YBJB KCT Local Gov DHAP	The technical work group (TWG) provides the engineering, biological, and fabrication technical assistance. The permitting coordinator participates with the TWG as well.

CHAPTER 2: COMMUNICATION

2.0 INTRODUCTION

Communication is vital to the success of the Yakima Tributary Access and Habitat Program. Communication efforts include outreach to local communities in the program area to both inform and solicit potential project cooperators, and coordination with other groups working on fish enhancement, conservation, and/or land management in the Yakima Basin. Internal collaboration by YTAHP core team members and its participants is integral to the program's success.

2.1 OUTREACH AND COLLABORATION

The YTAHP has established positive working relationships with local communities, landowners, watershed groups, regulatory agencies, and the organizations that core team members represent. The program receives broad-based support from local, regional and state entities concerned with private landowner rights, natural resources conservation, and salmon recovery.

Outreach

The rapport between conservation districts and their local communities has helped facilitate the implementation of YTAHP projects and gain support for the program. The traditional role of conservation districts has been to conserve natural resources while assisting landowners through implementation of beneficial land management practices. During 2000 and 2001, fish screening workshops were held in both Kittitas and Yakima Counties to share with local communities the current laws on fish screening and passage and the resulting implications that recent ESA listings of steelhead and bull trout may have within the Yakima River Basin. In these workshops, the Conservation Districts and the Kittitas County Water Purveyors (KCWP) introduced YTAHP as a future program, amongst others, to assist landowners in voluntary compliance with state and federal screening and passage laws.

Ongoing outreach efforts are multifaceted and are made through meeting presentations, printed materials, local media, local agricultural groups and workshops, tours, and as outlined below.

- NEWSPAPERS, RADIO, TELEVISION AND NEWSLETTERS
- Regular meetings of KCCD, NYCD
- Presentations to agricultural groups (local Farm Bureau, cattleman, hay growers), municipalities, and others
- School and community group involvement in projects
- Posters and maps at local NRCS offices with landowner testimonials

When a private landowner cooperates with the YTAHP to implement a project, they are included as an integral member of the team. Landowners are apprised of the comparable costs of maintenance and operation of their corrected barriers or and removal of the barrier, and of other alternatives in terms of effectiveness, time, equipment and safety. Contact will be maintained with those landowners from the identification of the project through the completion and monitoring of the project. Landowners will play a key role in monitoring the project and informing core team members of its operation and function.

Individual landowners have also provided outreach opportunities for the YTAHP. Neighbors have taken notice when projects are implemented and have asked participants about the program. This has increased awareness and participation in the YTAHP.

Tributary Teams

Tributary teams have been formed in each county for some watersheds where there was sufficient landowner interest. North Yakima Conservation District and Kittitas County Conservation District organized these teams for selected watersheds to facilitate discussions within their respective counties. Each tributary team consists of a lead contact and local participants including the landowners, irrigators, and others that may be affected by or would like to contribute to the program activities. Members of the core team work with tributary teams to provide technical assistance and offer information on the programs available to assist landowners in compliance with screening and passage criteria as well as enhancing habitat in and near the streams.

Tributary teams have assisted in SSHEAR surveys and tributary reports by providing access to the creeks and historical knowledge of the systems. Tributary teams help develop project implementation plans for their respective tributaries (tributary plans) and prioritize projects based on SSHEAR surveys and individual tributary assessments.

Collaboration

The YTAHP is based on a collaboration of entities interested in improving fish and wildlife habitat and/or assisting landowners in conserving natural resources. The Yakima Basin is home to diverse parties, including irrigation and agricultural interests, municipalities, tribal interests, local, state and federal agencies, private landowners, developers, recreational interests and environmental groups. The YTAHP often collaborates with these entities on projects, resulting in broad-based support for the program. Through coordination with other organizations, YTHAP hopes to reduce duplication of effort and to ensure actions taken address broad watershed issues.

When a YTAHP project is proposed, representatives from interested agencies and groups are included in the planning process as part of the TWG. This facilitates project development incorporating the interests of many stakeholders early in the planning process. Projects can often be implemented more rapidly and create greater benefits to the watershed through collaborative processes. Oftentimes, efforts to work with other groups results in cost-share opportunities through joint planning, engineering or in-kind contributions.

In addition to project planning, a collaborative approach has been taken to monitor the biological response variables to projects implemented by YTAHP. We are currently coordinating our efforts with those of the Yakima-Klickitat Fisheries Program (YKFP), the Yakama Nation Fisheries Department (YN), WDFW fish program, and the Yakima Basin Fish and Wildlife Recovery Board.

2.2 INTERNET INFORMATION

Information about the YTAHP and featured projects can be found on the Internet at www.kccd.net and at <http://nycd.scc.wa.gov/index.html>. General YTAHP information, requests for potential project cooperators to contact their local core team member, photographs, and links to pertinent sites, such as WDFW, the department of agriculture, fish screening laws, ESA, Clean Water Act (CWA), and screen manufacturers can be found on these websites.

CHAPTER 3: PROJECT PRIORITIZATION

3.0 INTRODUCTION

Major tributaries within North Yakima and Kittitas Counties have been inventoried and barriers prioritized according to WDFW SSHEAR survey methods. Addressing existing barriers and unscreened or inadequately screened diversions are the key elements of the Yakima Tributary Access and Habitat Program. Project implementation is prioritized based on the biological benefits to native salmonids.

3.1 TRIBUTARY ASSESSMENTS

Initial SSHEAR surveys provided a ranking of tributaries for existing and potential salmonid habitat. Barriers and diversions within each stream were identified and scored quantitatively based on biological factors at each site. Biological variables evaluated include status of fish species present, life stages impacted, migration timing of affected species/life stages, upstream habitat available, historical abundance, current and historical water quality and other habitat features. The prioritization list is ecologically based which means that addressing the highest rated barriers and diversions represents the greatest potential benefit for native salmonid species within the Yakima Basin.

The identified barriers and diversions are re-ranked according to the SSHEAR protocol upon implementation of a project. The YTAHP tries to implement projects from the most downstream-identified barrier or diversion and work upstream. This approach provides the most immediate benefits to migrating fish upon implementation. Projects may be proposed out of “order” when they present high biological priority and/or extraordinary opportunity (such as strong local and/or entity support, supplemental funding, or address specific ESA compliance issues) and expected benefits will be realized in the short term (2 to 3 years).

3.2 HABITAT ENHANCEMENT

The YTAHP provides voluntary opportunities to landowners to improve habitat, including; water quality, instream flows, riparian habitat, instream complexity, and water use efficiency. Often times, these projects are not identified in the tributary assessments, but are recognized by the core team as a critical component in watershed health and salmon recovery.

Habitat enhancement projects will be introduced to the core team and go through the technical review process, just like a screening or passage project. Core team members and TWG members have expertise advising project proponents on methods to protect and enhance fish and wildlife habitat when working near streams. Instream actions may include using bioengineering tools for bank stability, grade controls, and instream habitat complexity. Riparian and upland habitat enhancement activities benefit from the conservation district’s programs associated with erosion control and irrigation efficiencies programs. In addition, livestock control fencing and planting native vegetation in the riparian buffer provides great benefit to fish and wildlife habitat restoration.

3.3 PRIORITIZATION PLANS

Yakima and Kittitas Counties are similar in that both include agricultural communities with irrigated lands. Both counties have many unscreened or improperly screened diversions and instream structures that impede fish passage. For these reasons, the YTAHP is applicable and highly effective at addressing fish passage and habitat

concerns. There are several differences in the current population growth rates and land use management practices between the two counties. For this reason, projects are prioritized based on individual needs and circumstances.

Kittitas County

A three-tiered approach to project prioritization in Kittitas County enables YTAHP to focus on the immediate biological needs of fish and wildlife as well as systematically plan for future development in Kittitas County. Priority Index numbers and Screening Priority Index numbers associated with SSHEAR surveys are critical to focusing restoration efforts where the largest overall benefits to natural resources will be gained. The three planning tiers in Kittitas County include: 1) Immediate Projects; 2) Stream reaches from the mainstem Yakima River, upstream to Town Ditch; and 3) Focused Watersheds. The Kittitas County Prioritization Plan can be reviewed in Attachment 2.

North Yakima County

Tributaries in North Yakima County were prioritized based on the PI and SPI numbers from SSHEAR surveys and where the greatest benefits to salmonids are likely to occur. The majority of projects have been focused in the Cowiche and Ahtanum Watersheds; working upstream from the mouths. These two large watersheds were selected initially due to their high potential for salmonid use. As those watersheds near completion (in terms of screening and passage compliance), efforts have been more widespread, providing safe passage to migrating salmonids within different watersheds.

CHAPTER 4: PROJECT DEVELOPMENT & IMPLEMENTATION

4.0 INTRODUCTION

Project sponsors use the tributary assessments to approach landowners and initiate project development based on their prioritization score and overall habitat benefits to fish. Alternatively, a landowner can approach a core team member with a potential project. Once a project has been proposed, the project sponsor introduces the project to the core team and initiates the technical review process. Project sponsors facilitate the project development and management while regularly keeping the core team and TWG involved, providing essential biological, engineering and permitting assistance (Figure 2). During planning and implementation of projects, core team members work to incorporate components that enhance fish habitat.

4.1 DESIGN DEVELOPMENT

The YTAHP project sponsors are responsible for selecting engineers (in-house or consulting) to plan, design, and provide construction oversight during implementation. The selected engineers will work with core team members, project sponsors, and TWG participants during the planning and design phases.

Engineering and Procurement

A key component of projects will be engineering designs and procurement of materials. The YTAHP can take advantage of the conservation districts' ability to use the Counties' small works rosters to procure engineering services, materials, and construction labor contracting for projects estimated to be less than \$200,000. For projects estimated to be greater than \$200,000 the option of using existing BPA contracts with engineering firms may be used.

The Yakima Basin has a significant resource base of qualified and experienced engineers, biologists, fabricators and contract managers. The following are current sources of technical assistance that may be consulted for YTAHP projects within the Yakima Basin. Several of these groups are included in the core team and are regular TWG participants.

1. **Washington Department of Fish and Wildlife (WDFW).** WDFW has biologists and engineers who specialize in watershed restoration, including fish passage and screening issues. Additionally, the WDFW's Technical Applications Division within the Habitat Program has longstanding experience and expertise in screen design, fabrication, installation, operation, and maintenance.
2. **National Marine Fisheries Service (NMFS).** NMFS has provided engineering support for YTAHP projects as well as other fish protection facilities in the Yakima Basin. Their concurrence is required as part of the Habitat Improvement Program's Biological Opinion (HIP BO) agreement between BPA and NMFS on fish screening and passage projects.
3. **Conservation Districts.** The conservation districts in the Yakima River Basin currently retain engineers who provide the engineering and designs for several YTAHP projects. Conservation Districts offer expertise in irrigation efficiency,

water quality, and water conservation practices as well as enhancement of riparian buffers.

4. **Natural Resources Conservation Service (NRCS).** NRCS has programs and personnel that assist with watershed improvement projects on private land. Many of their programs complement the YTAHP goals and many projects have incorporated both programs, resulting in increased benefits to the watershed.
5. **Washington Department of Ecology (Ecology).** Ecology provides information to confirm adjudicated water rights during the planning process. In addition, water meters are typically installed with new fish screening projects as part of Ecology's Water Metering Program to assist landowners in compliance with state laws mandating metering on all surface water diversions. Ecology also participates in solving sediment management issues associated with project implementation.
6. **WDFW Yakima Construction Shop (YCS).** The experts in this shop are members of the Technical Applications (TAPPS) division. They provide technical assistance to complex screening and passage issues. In addition, this shop provides custom fabrication of screens and materials to implement YTAHP projects. Representatives from the YCS often are on site to help contractors install the fish screens, ensuring compliance with all state and federal requirements.
7. **Manufacturers and Fabricators.** Established and new businesses are available to manufacture pump screens and materials or fabricate parts of screens. Many businesses are updating their designs and materials to meet new screen requirements and other habitat needs.

Technical assistance from other sources is sought out and used as each project dictates based on the unique components associated with planning and implementation.

4.2 ENVIRONMENTAL REGULATIONS

The required federal, state, and local authorizations and permits (Figure 1) will be obtained prior to project implementation. The YTAHP has designated a core team member from WDFW as the permit coordinator to facilitate a streamlined permitting process; a programmatic approach is pursued when feasible to collectively address permitting needs and reduce permit review time.

The YTAHP permit coordinator works closely with an Environmental Compliance Specialist at BPA to ensure compliance with federal regulations such as the Endangered Species Act (ESA), National Historic and Preservation Act (NHPA), and National Environmental Policy Act (NEPA). The Joint Aquatic Resources Permit Application (JARPA) addresses the Shoreline Management Act and Critical Area Ordinance through local government, the Clean Water Act through the United States Army Corps of Engineers and the Department of Ecology, and the Hydraulic Code of the State of Washington through the WDFW. In addition, each project must be in compliance with the State Environmental Policy Act (SEPA), which requires a public comment period for most projects. The above permits and approvals are necessary for nearly every YTAHP project; others may be required based on the individual project components.

Consideration of environmental permitting is a critical component of project planning and implementation. Regulators are consulted early in project development by the project sponsor or permit coordinator and asked to participate in the technical review of proposals. Early involvement of the appropriate regulators results in well-planned projects that do not experience significant delays in the permitting process. The permit coordinator works with project sponsors to ensure all approvals are obtained prior to project implementation and will assist the project sponsors in monitoring projects for compliance with the associated provisions.

4.3 AGREEMENTS

Cooperative agreements with property owners describing site access, individual roles and responsibilities, and cost share responsibilities for installation and maintenance of new structures will be necessary prior to construction. In addition, access agreements with the landowners will be sought out to allow biological monitoring at barrier removal project sites.

Contracts for the procurement of materials and implementation of structures will be handled through the project sponsors and the project engineer.

4.4 PROJECT IMPLEMENTATION

Prior to groundbreaking activity associated with project implementation, the appropriate agreements, approvals and contracts must be in place. Once the project is ready for implementation, the project sponsors and engineer will provide construction oversight to ensure the project is constructed as designed and according to the environmental provisions. The project sponsor is responsible for monitoring the physical structures as well as the operation and maintenance after implementation (chapter 5).

4.5 IMPLEMENTATION REPORTING

Project sponsors will document each project's progress through photographs and oral reports to the core team.

Upon completion of a project, it will be the responsibility of the project sponsor and permit coordinator to ensure all of the reporting requirements to the appropriate regulatory and funding agencies are met.

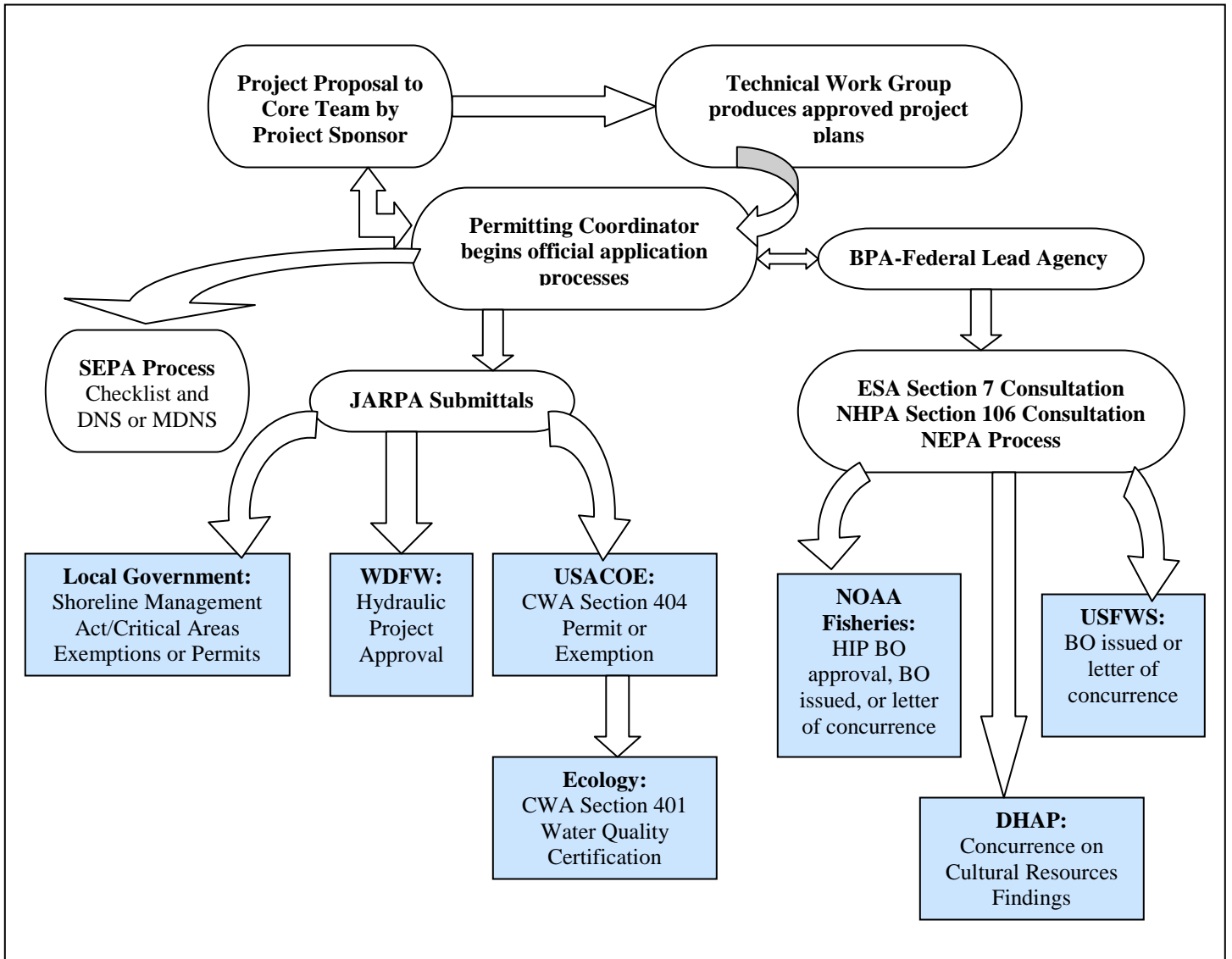


Figure 1. Project Permitting Flowchart. This is a general diagram detailing the YTAHP permitting process prior to project implementation. Shaded boxes represent permits or authorizations that will be obtained.

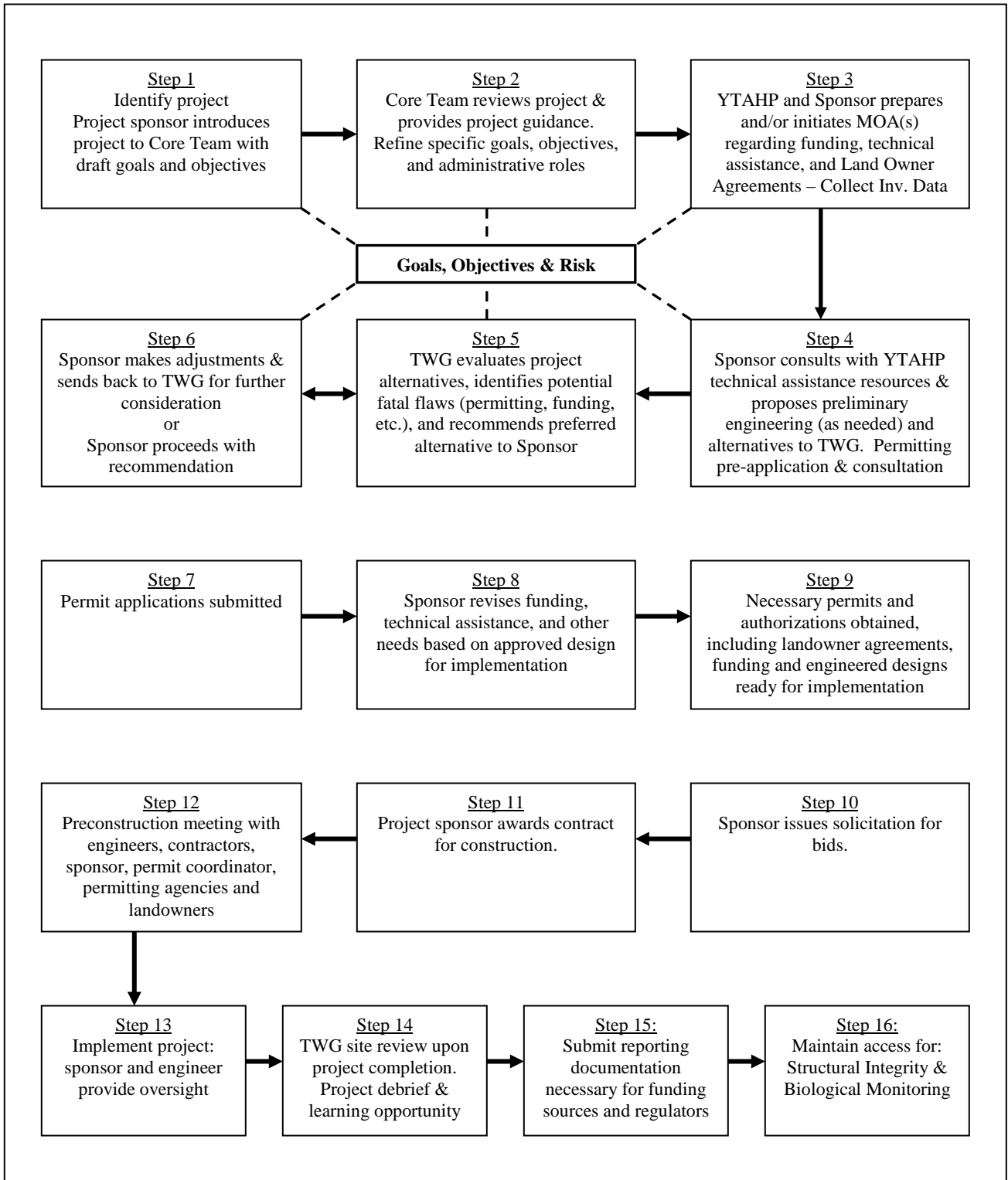


Figure 2. Flow chart for planning and implementation of a typical YTAHP project.

5.0 INTRODUCTION

A monitoring component is an essential part of successful restoration programs. It is important to monitor the effectiveness and efficiency of the overall program function as well as the effects of individual projects. The YTAHP core team is comprised of several different entities in collaboration, ensuring that the goals and objectives are carried out as stated in the strategic plan and in compliance with the overall mission of fish recovery. In addition, each project is monitored for structural integrity and function as well as biological response variables resulting from the implementation.

5.1 PROGRAM FUNCTION

YTAHP core team members meet monthly to discuss program function, project development, funding opportunities, and issues impacting fish recovery within the Yakima Basin. These meetings facilitate the discussions on how the YTAHP is functioning. The diversity of core team membership ensures that resource needs are met for all interested parties and that the founding principals of the YTAHP are being followed.

The strategic plan will be dynamic and updated as necessary based on monitoring the evolution of YTAHP and how it functions. The update process will entail reviewing program objectives or project documentation and implementation, identifying problems or issues, then developing strategies for resolution and building those strategies back into out-year planning processes.

5.2 PROJECT INSTALLATION & PERFORMANCE

Newly constructed projects will be monitored to ensure the structures are stable and functioning as designed at several different flows. The project sponsors and TWG participants will visit project sites to assess compliance with federal and state passage and screening criteria as well as their overall functionality as it was designed. If problems with the structure and/or function are discovered during these assessments, adaptive maintenance will be applied as quickly as possible to correct the problem.

In addition, project sponsors will communicate regularly with landowners responsible for maintaining the new structures to check on their operation and maintenance requirements. Knowledge gained through these monitoring efforts will be shared with the core team and will lead to more efficient and effective projects in the future.

Instream flows are often increased with the implementation of YTAHP projects because irrigators are supplied water meters to measure their actual water use. Oftentimes, there is no control structure or head gate associated with gravity diversions to control the amount of water diverted; resulting in excess water diverted. The YTAHP core team can access the water use database maintained by Ecology to determine how much water is maintained instream due to projects implementation by comparing water use over time.

5.3 BIOLOGICAL RESPONSES

The main goal of the YTAHP is to increase habitat availability and quality for native salmonids in the Yakima Basin. There has been little research on the actual biological benefits of habitat improvement projects. The YTAHP core team hypothesize that

species richness and migratory salmonid abundance will increase upstream of man-made barriers once passage has been corrected. The YTAHP has implemented a monitoring approach that will monitor fish abundance trends above and below barrier correction projects. The YTAHP biological monitoring plan is detailed in Attachment 3.

Many YTAHP projects involve a riparian buffer planting component as part of the restoration activities. These native plantings will be monitored and maintained through time to ensure invasive species do not over take disturbed areas and that native species thrive, establishing a healthy and functional riparian buffer.

Table 1. Summary of monitoring activities within YTAHP and in coordination with other natural resource managers.

Type	Purpose	Responsible Team	Parameters	Timing/ Frequency	Methods
Program Function	Are we doing what we said we would do?	Core Team	Project prioritization, selection, and implementation	Ongoing	Discussions at monthly meetings, update planning documents
Installation & Performance	Is the structure and function of the project as it was designed?	Project Sponsor and Technical Work Group	Screening and passage criteria, site specific	At project completion; and/or at intervals after project completion	Site assessments, landowner interviews
Biological Responses	Do trends suggest that species composition and/or abundance change post barrier correction?	Core Team and Technical Work Group	Biological presence, species richness, salmonid abundance, new spawning areas	Baseline pre-project and long-term monitoring post-implementation	Electrofishing surveys, redd surveys, snorkel surveys, collaboration with other entities and programs.

CHAPTER 6: FUNDING

6.0 INTRODUCTION

Bonneville Power Administration's Fish and Wildlife Program has funded the Yakima Tributary Access and Habitat Program since 2002. This funding facilitates program administration and management as well as some project planning and implementation. Project sponsors successfully use this long-term, baseline-funding source as leverage in obtaining matching funds from other grant sources. Additional contributions come from in-kind services of the core team and project participants. It is expected that some or all work will have a cost share component from landowners and irrigators.

6.1 FUNDING SOURCES

Core team members and others working with project cooperators actively pursue grant funds for project implementation. Several funding sources are currently available for salmon recovery or other fish enhancement efforts. Other sources support aspects important to habitat, such as water quality and erosion control. Some funding sources are listed below.

1. Bonneville Power Administration, (BPA)

The Bonneville Power Administration funds fish enhancement programs (on a priority, scientifically evaluated basis) as mitigation for the installation and operation of the dams and power generating facilities in the Columbia River Basin. BPA currently has a provincial review process for each subbasin of the Columbia River to solicit, review and select projects for funding. This process occurs once every three years for each subbasin. Currently BPA funds the YTAHP Core Team and implementation of some projects. This base funding provides a source of matching funds for leverage in obtaining other grants.

2. Washington State Salmon Recovery Funding Board, (SRF Board)

The Salmon Recovery Funding Board administers grants to provide funding of habitat protection and restoration projects and related programs and activities that produce sustainable and measurable benefits for fish and their habitat. Local governments, private landowners, conservation districts, Native American tribes, non-profit organizations, and special purpose districts are eligible to receive funding.

Each project proposal must be submitted to a local lead entity group for review by a technical panel and a group of local citizen representatives. The lead entity groups then submit a prioritized list to the SRF Board. The Yakima River Basin established a lead entity in 1999, the Yakima River Basin Salmon Recovery Board (YRBSRB). In 2006, the Yakima Subbasin Fish & Wildlife Planning board (formed in 2001 to write the Subbasin Plan) combined with YRBSRB to form the Yakima Basin Fish and Wildlife Recovery Board.

3. Yakima River Basin Water Enhancement Program, (YRBWEP)

The Yakima River Basin Water Enhancement Project Act of 1994 authorizes activities to reduce water diversions by improving conveyance and distribution systems and on farm irrigation facilities and by changing water operations and management. Conserved water will be used to increase instream flows and supplement drought-year irrigation needs. The Conservation Advisory Group was

formed to assist in this program and was tasked with formulating a Conservation Plan. One component of YRBWEP is water conservation grants, which may be applicable to YTAHP, especially the habitat and water use efficiency objectives.

4. Natural Resources Conservation Service, (NRCS)

The US Department of Agriculture's Natural Resources Conservation Service sponsors technical assistance and cost share programs that may dovetail with or complement YTAHP projects. These include: Conservation Reserve Enhancement Program (CREP), Environmental Quality Incentives Program (EQIP), Wildlife Habitat Incentives Program (WHIP), Forestry Incentives Program (FIP), Wetlands Reserve Program (WEP), and Core 4 Conservation for Agriculture's Future.

5. Mitchell Act Funds

The Mitchell Act (16 U.S.C. 755-757; Act of May 11, 1938, as amended) authorizes the Secretary of Commerce to conduct activities for the conservation of fishery resources in the Columbia River Basin. This Act specifically directs that salmon hatchery be established, that engineering and biological surveys and experiments be conducted, and that fish protective devices be installed on diversions. It also authorizes agreements with State fishery agencies and the construction of facilities on State-owned lands.

6. Fisheries Restoration and Irrigation Mitigation Act, (FRIMA)

The Fisheries Restoration and Irrigation Mitigation Act of 2000 (PL 106-502) created a new federal partnership offering cost-share funding opportunities for voluntary fish screening and passage projects associated with water diversions in Idaho, Oregon, Washington, and western Montana. The U.S. Fish and Wildlife Service administers the program.

7. Washington State Conservation Commission, (WSCC)

The mission of the Washington State Conservation Commission is to protect, conserve and enhance the natural resources of the state. The WSCC provides leadership, partnership and resources to support locally governed conservation districts in promoting conservation stewardship. There may be funding available for passage, screening, water use efficiency or habitat projects directly from the WSCC or in partnership with the NRCS.

8. Water Infrastructure Program (WIP)

The Washington State Legislature has provided funding through the Washington State Department of Ecology for projects to support improving instream flows. These funds are available through a competitive grant process, requiring the projects meet certain conditions. Grant funding is provided solely for irrigation infrastructure improvement projects and other water management actions that benefit stream flows and enhance water supply. Project benefits must resolve conflicts between water uses for municipalities, agriculture, and fish restoration. The stream flow or fish habitat improvements gained from the project must be proportional to the investment of state funds.

9. National Fish & Wildlife Foundation (NFWF)

The National Fish and Wildlife Foundation provides grants on a competitive basis to projects that sustain, restore and enhance the Nation's fish, wildlife, plants and their habitats through the Keystone Initiative Grants, Community Salmon Funds, and other Special Grant Programs, including Columbia Basin Water Transactions Program. Since 2002, the NFWF has worked in partnership with the Bonneville Power Administration to administer the Columbia Basin Water Transactions Program. The program supports entities working to increase tributary flows for fish in the Columbia River Basin through water transaction projects.

10. Washington Department of Ecology

Washington State Department of Ecology provides cost-share funding for the design, purchase, and installation of source water meters. The long-term goals of metering are to install Supervisory Control and Data Acquisition equipment on surface water diversions and have data transmitted automatically to Ecology and have data on water use available in real or near-real time.

11. Other Appropriations

There may be other funds made available by congress or Washington State that could be distributed through the SRF Board. The YTAHP will work with the Yakima Basin Fish and Wildlife Recovery Board to access such funds. In addition, core team members and project sponsors will continuously seek new funding sources to ensure implementation of important YTAHP projects. American Rivers, Mid-Columbia Regional Fisheries Enhancement Group, and the Native Fish Habitat Initiative-Pacific Northwest Fund are a few additional grant sources explored by YTAHP proponents.

ATTACHMENTS

1. Executive Summaries from Annual Reports 2002-2006
2. Kittitas County Prioritization Plan
3. YTAHP Biological Monitoring Plan

ATTACHMENT 1: EXECUTIVE SUMMARIES 2002-2006 FROM ANNUAL REPORTS TO BPA

EXECUTIVE SUMMARY 2002

This report covers activities conducted by the Yakima Tributary Access and Habitat Program under Bonneville Power Administration (BPA) grant project # 2002-025-00 for fiscal year 2002. The Yakima Tributary Access and Habitat Program (YTAHP, Program) was organized to restore salmonid passage to Yakima tributaries that historically supported salmonids and improve habitat in areas where access is restored.

Specifically, this program is designed to a) screen unscreened diversion structures to prevent fish entrainment into artificial waterways; b) provide for fish passage at man-made barriers, such as diversion dams, culverts, siphons and bridges; and c) provide information and assistance to landowners interested in contributing to the improvement of water quality, water reliability, and stream habitat.

The YTAHP developed from a number of groups actively engaged in watershed management, and/or habitat restoration within the Yakima River Basin. These groups include the Washington Department of Fish and Wildlife (WDFW), Kittitas County Conservation District (KCCD), North Yakima Conservation District (NYCD), Kittitas County Water Purveyors (KCWP), and Ahtanum Irrigation District (AID). The US Bureau of Reclamation (Reclamation) and Yakama Nation (YN) both participated in the development of the objectives of YTAHP. Other entities that will be involved during permitting or project review may include the YN, the federal Natural Resources Conservation Service (NRCS), the US Fish and Wildlife Service (USFWS), the National Marine Fisheries Service (NMFS), and US Army Corps of Engineers (COE).

Achievements of YTAHP with BPA Action Plan funding during FY 2002 were to:

- Establish contracts with RC&D and YTAHP participants.
- Determine contract mechanism for MWH engineering services.
- Provide engineering designs and services for 11 early action projects, including inverted siphons, pump and gravity diversion screening, diversion metering, rock weirs for improved fish passage, headgates and fishways. These designs were used to submit for project implementation funding through the Washington Salmon Recovery Funding Board.
- Complete 6 early action projects on Ahtanum Creek - One gravity diversion was replaced with a pump and pump end screen and 5 pump end screens were installed.
- Conduct two topographic surveys - One for the City of Yakima on the Fruitvale diversion for the North Yakima Conservation District to support the installation of a pumping plant, which would eliminate the need to divert directly from the Naches River and build the gravel berm each year during low flows. Another for the Taylor Ditch system for the North Yakima Conservation District to support as feasible, opening the ditch for habitat and at the same time maintaining irrigation deliveries.
- Procure materials for use in future YTAHP projects, including siphon pipe, delivery pipe, rock, screens, and water meters. These materials will act as match and support the completion of these subsequent YTAHP projects.

Overall, with broad agency support and Action Plan funding through BPA, the YTAHP has achieved substantial enhancements that support aquatic species and which will leverage subsequent work through engineering designs and materials. The program was also able to establish the personnel and equipment support for beginning the stream assessment process on tributaries in Yakima and Kittitas Counties. Completion of this year's effort has provided significant inroads to working on the private lands in two counties, which will be vital to future efforts by YTAHP and others to protect and enhance Yakima River Basin habitat.

EXECUTIVE SUMMARY 2003

Due to the late start in awarding the contract in FY02 it was decided to engineer and procure those items that would facilitate completions of projects in FY 03 and 04 of the contract.

The objectives of YTAHP are listed below and also include subtasks detailed in the report:

1. Conduct Early Action Projects
2. Review Strategic Plan
3. Restore Access, including stream inventory, prioritization, and implementation
4. Provide opportunities to improve habitat and conserve resources

The BPA Action Plan funding supported activities of the program, which are described in this report. These activities are primarily related to objective 1 (conduct early action projects) and parts of objectives 2-4.

The work supported by the Action Plan funding will support a series of scheduled projects and be expanded by complementary funding through NRSC EQIP, Irrigation Efficiencies, WA State Salmon Recovery Funding Board and other local, state and federal programs.

Projects completed FY 03:

- The Cooke Creek siphon and screen/bypass was completed on time and within budget.
- Tributary survey teams were trained and surveys of tributaries in Yakima and Kittitas counties commenced in December of 2002. By the end of September 2003 Cowiche Creek in Yakima County was completed as well as Coleman and Cooke Creeks in Kittitas County.
- Screens were installed on the Hernandez/Ringer diversion and the Eslinger diversion in cooperation with the NRCS office in Kittitas County.
- YTAHP submitted six applications to the Salmon Recovery Funding Board and three were selected and funded.
- Two miles of fencing of riparian zones on the NF Ahtanum was completed by the North Yakima Conservation District in cooperation with the Department of Natural Resources and the Ahtanum Irrigation District.

EXECUTIVE SUMMARY 2004

The objectives of YTAHP are listed below and also include subtasks detailed in the report:

1. Design, Implement and Construct Projects to restore fish access to Yakima River tributaries.
2. Update YTAHP Strategic Plan
3. Restore salmonid access to tributaries that historically supported those species, remove passage barriers, and screen diversion structures to prevent entrainment into artificial waterways.

The BPA YTAHP funding supports activities of the program described in this report. These activities are primarily related to objective 1, above. YTAHP funding enables completion of priority projects, which improve fish access, protect fish from entrainment in irrigation canals and improves habitat. YTAHP funds are complemented by funding through NRCS EQIP, Irrigation Efficiencies, WA State Salmon Recovery Funding Board and other local, state and federal programs.

Projects completed in FY 04:

- The Cowiche Creek, Pellicer site barrier removal and instream habitat improvements.
- The Ahtanum Creek, Diversion-14 barrier removal, diversion screening and fish bypass.
- Lower Wilson Creek, Eaton project removed two full-span barriers and installed two pump screens; and, the Snowden barrier removal and pump screen.
- Tributary survey teams continued to survey tributaries in Yakima and Kittitas counties. By the end of September 2004, about 20 additional miles of streams were assessed in Yakima County. In Kittitas County 71 additional miles have been assessed.
- Five Pump Screens were installed on Cowiche Creek.

EXECUTIVE SUMMARY 2005

The YTAHP goal is to:

1. Design, implement and construct projects to restore fish access to Yakima River tributaries and screen diversion structures to prevent entrainment into artificial waterways.

The BPA YTAHP funding supports activities of the program described in this report. These activities are primarily related to the goal above. YTAHP funding enables completion of priority projects, which improve fish access, protect fish from entrainment in irrigation canals and improves habitat. YTAHP funds are complemented by funding through NRCS EQIP, Irrigation Efficiencies, US Fish and Wildlife, WA State Salmon Recovery Funding Board, WA State DOE Conveyance Infrastructure Grant, and other local, state and federal programs. During the 2005 fiscal year, \$659,618.00 in funding from other sources was obtained to help implement YTAHP projects.

Projects completed in FY 05:

- The Coleman Creek project entailed removing a perched culvert that created a fish passage barrier and screening an irrigation diversion. In addition a bridge was installed, stream banks and flood-prone areas were re-graded and re-vegetated, and rock weirs were installed to control grade. (Matching funds: \$101,774 from Salmon Recovery Funding Board)
- The Little Naneum Creek / Bull Canal siphon enabled fish passage by eliminating the check-up dam on Little Naneum Creek that moved the Bull canal across the creek, and separated Bull Canal from the creek by routing it below the creek via the siphon. Fish can no longer access Bull Canal at this location and, thus, are not entrained in the canal en route to agricultural fields. The siphon opened access to about a mile of habitat on Little Naneum creek. (Matching funds: \$65,623 from WS-DOE Conveyance Infrastructure Grant)
- Cowiche Creek Garretson project, removed a fish passage barrier, installed a compliant fish screen, improved instream habitat and stabilized the stream bank. (Matching funds: \$22,250 from WS-DOE, Conservation Commission, and WDFW)
- Cowiche Creek Thornton project, riparian and instream enhancement for rearing. Removed a livestock corral from the stream bank, installed three instream structures (rocks, LWD) to improve habitat, established a riparian buffer for at least ten years, fenced and re-vegetated the buffer area. (Matching funds: \$34,000 USFW)
- Ahtanum Creek Lesh project, barrier removal and fish screen. Constructed instream riffle and rock diversion weir, installed a modular fish screen, improved bank stability along 50 feet of one stream bank. (\$ Matching funds: \$76,750 from SRFB and Conservation Commission)
- East Wilson Creek diversion removal opening 500 feet of habitat.
- Dry Creek, fish screen installed and 50 feet of streambank planted.
- Swauk Creek habitat enhancement with streambank planting and root wads.
- Wilson Creek, 1,700 feet of streambanks planted.
- Lower Wilson Creek, bridge installed for livestock crossing.
- Tributary survey teams continued to survey tributaries in Yakima and Kittitas counties. By the end of September 2005, a total of approximately 106 miles of streams were assessed in Yakima County and 134 miles in Kittitas County have been assessed.
- Six Pump Screens were installed, 5 on Cowiche Creek in Yakima County and 1 on Dry Creek in Kittitas County. A total of over 200 acre-feet of water is protected by fish compliant screens.

EXECUTIVE SUMMARY 2006

The YTAHP goal is to:

1. Design, implement and construct projects to restore fish access to Yakima River tributaries and screen diversion structures to prevent entrainment into artificial waterways.

The BPA YTAHP funding supports activities of the program described in this report. These activities are primarily related to the goal above. YTAHP funding enables completion of priority projects, which improve fish access, protect fish from entrainment in irrigation canals and improve habitat. YTAHP funds are complemented by funding through NRCS EQIP, Irrigation Efficiencies, US Fish and Wildlife, WA State Salmon Recovery Funding Board, WA State DOE Conveyance Infrastructure Grant, and other local, state and federal programs. During the 2006 fiscal year, \$316,500.00 in funding from other sources was obtained to help implement YTAHP projects.

Projects completed in FY 06:

- Shaw/Knox: installation of a rock weir grade control to open passage to 1.28 miles of upstream habitat, head gate and screen for 3.5 cfs, associated bank armor, armored off-channel access inlet providing fish access to the off-channel pond and lower forested side channel and large woody debris.
- Snow Mountain Ranch: modify diversion dam to enhance upstream fish access, install pump screen for 1.05 cfs, prevent further stream bed degradation, promote bed load retention throughout the project reach, preserve the surface water connection to the existing upper north side channel, enhance fish habitat throughout the project reach (approximately .2 miles), enhance floodplain connectivity and floodplain storage during high flow.
- Wilson Creek Habitat (Eaton): In late 2004 the stop-logs were removed from a surface water diversion structure and Wilson Creek began down-cutting into the silt that had deposited in the channel. The risk was high that if Wilson Creek experienced a high discharge, large amounts of silt would be scoured from the former impoundment area, thus producing highly undesirable turbidity downstream. The property owner and Kittitas County Conservation District (KCCD) improved the channel and channel margins to assist in the improvement to water quality and enhancement of fish habitat.

ATTACHMENT 2: KITTITAS COUNTY PRIORITIZATION PLAN

Introduction

YTAHP has completed numerous successful projects in Kittitas County. In 2003, project prioritization was focused on the lower reaches of tributaries up to the Ellensburg Water Company's Town Ditch. Projects were to be completed sequentially from the mainstem of the Yakima River, upstream when possible. In order to maintain the sequential implementation of projects, it is vital that YTAHP projects are evaluated and re-prioritized based on the biological benefits to fish and wildlife. One factor affecting the successful implementation in this sequence includes the willingness of landowners to cooperate with YTAHP Core Team members and project sponsors. YTAHP Core team members are looking at ways to address this issue.

Project Prioritization

A three-tiered approach to project prioritization will enable YTAHP to focus on immediate biological needs of fish and wildlife as well as systematically plan for future development in Kittitas County. There is a need to evaluate the successful implementation of YTAHP projects, changes in landownership, and changes in land use planning to re-prioritize projects based on current information. In addition, Priority Index Numbers (PI) and Screening Priority Index Numbers (SPI) associated with SSHEAR surveys need to be updated based on previous project implementation. YTAHP will refocus restoration efforts to provide the biggest benefit to natural resources by using the SSHEAR index system as a baseline for project prioritization as defined in the strategic plan.

Tier One – Immediate Projects

The first tier will focus on consolidating our gains from previously implemented projects. Projects downstream from completed barrier removals should be the immediate focus, along with systems that we've invested a significant amount of time and resources into already. In general, projects on tributaries are prioritized sequentially, moving upstream from the confluence with the Yakima River; as projects are completed, the re-gained habitat is connected to the mainstem and available to anadromous fish. Tier one projects are listed below in Table 1 and should be the immediate focus for YTAHP within the upcoming fiscal year.

Table 1. Tier one projects for YTAHP in Kittitas County.

Creek	Project	Implementation	PI#	SPI#
Reecer	Durand Diversion	2007	13.32	14.66
Reecer	City Floodplain/ Fagalde pipeline	2007	9.44	9.28
Currier	Pautzke	2008	8.55	8.04
Currier	Pott	2007	10.1	11.36
Currier	EWC Siphon	2007	9.56	6.57
Cherry	Jacobs/Nisbet	2008	10.74	9.47
Parke	Barrier Ferguson Rd		?	?
Little Naneum	Kuntz Diversion		?	?
Little Naneum	Alexi Diversion		?	?
Jack	Culvert Replacement	2008	?	?
Indian	Culvert Replacement	2008	?	?
Sorenson	Weirs BOR screen site	2007	?	?

Tier Two – Stream Sections below Town Ditch

The second tier projects focus on providing accessible rearing habitat below the Town Ditch. The prioritization of these projects should involve an analysis of index values to determine what habitat is most valuable and where we will see the most biological benefits for YTAHP investments. Index values from previous SSHEAR assessments will be reviewed and re-prioritized based on completed projects, landowner changes, and current land use planning activities in Kittitas County. Areas of valuable habitat projects, such as riparian buffer protections should be considered in tier two as well. Projects within this tier are important but fall behind those tier one projects on the prioritization list. Tier two projects should be implemented as time and resources allow.

Table 2. Tier two projects for YTAHP in Kittitas County.

Creek	Project	Problems	Expected implementation
Reecer	Deneen Riparian Restoration	Passage barriers	2008
Cooke	Barriers below Siphon		
Little Naneum	Barriers below Siphon		

Tier Three – Focused Watersheds

The third tier takes a watershed approach to habitat restoration. The focus of this tier is to concentrate on systems where the potential upstream habitat gain for salmonids is high in relation to the number of barriers and screens that need to be addressed downstream. These are watersheds in which we expect to see recolonization by federally threatened steelhead and bull trout. Each of these creeks currently has sufficient spawning gravels, instream temperatures, and rearing habitat to support healthy resident and anadromous salmonid populations.

Table 3. Tier three projects for YTAHP in Kittitas County.

Creek	Needs
Manastash	
Swauk	Instream flow studies, water trust coordination
Swauk	Correct rock weirs upstream of Hwy 97
Taneum	Passage at Bruton Diversion
Taneum	Habitat and riparian restoration projects

Additional Planning

YTAHP needs to coordinate with the Kittitas County Planning Department to be active participants in growth management planning. If relationships are developed now, screening and passage compliance could be incorporated into the Comprehensive Plan. In addition, developers may be interested in riparian enhancements associated with watershed conservation and improvement activities. YTAHP Core Team Members could be instrumental in assuring effective riparian buffers are incorporated into any restoration activities associated with County growth.

Beyond the projects covered in the three tiered prioritization approach, YTAHP needs to plan for the long term. In coordination with the Yakima Basin Fish and Wildlife Recovery Board, YTAHP should develop a conceptual plan for the Naneum Watershed, especially through the agricultural zone. This area will likely be developed and we can use the conceptual plan as a basis for mitigation activities.

ATTACHMENT 3: YTAHP MONITORING PLAN 2007

Purpose

The Yakima Basin in Central Washington is home to over 600,000 acres of irrigated agriculture lands and numerous municipalities, with a population nearing 400,000. The 214 mile Yakima River and its 6,155 square mile watershed provide habitat for resident and anadromous fish species, including Chinook and coho salmon, as well as federally threatened Middle Columbia River Steelhead and Columbia River Bull Trout. In an effort to enable private landowners to actively participate in salmon, steelhead, and bull trout recovery, the Yakima Tributary Access & Habitat Program (YTAHP) was formed to provide fish passage at man-made barriers, screen irrigation diversions and improve in-stream and riparian habitat conditions. The investment of funding and other resources into these habitat projects warrants an evaluation of their effectiveness at achieving their objectives.

Bonneville Power Administration (BPA) through the Northwest Power and Conservation Council's Fish and Wildlife Program currently provides the base funding for YTAHP. Since 2002, over 15 major projects have been implemented in addition to well over 20 NOAA Fisheries and WDFW compliant pump screens installed due to YTAHP efforts. Future YTAHP funding from BPA is contingent upon monitoring and evaluating projects to determine their effectiveness in providing fish passage and preventing entrainment within artificial irrigation waterways. The following outlines the proposed protocol for basin wide projects in order to monitor the biological indicators associated with such habitat improvement projects.

Program Background

YTAHP has been working with landowners to implement restoration projects since it was first funded in 2002 by the BPA. YTAHP has been successful at using this funding as leverage for matching funds from various other grant sources to implement fish passage, screening, and habitat enhancement projects. YTAHP complements other basin efforts focused on water conservation, habitat enhancement, and fish recovery.

During planning, design and implementation phases, YTAHP focuses on using conservation measures that will minimize negative impacts to fish and wildlife and ultimately benefit all fish species, especially salmonids, within the project reach. Every effort is made to ensure projects are compliant with WDFW and NOAA guidelines for fish passage (juvenile and adult) and screen design.

The following outlines the proposed protocol for projects in Kittitas and Yakima Counties in order to monitor the biological response variables associated with such habitat improvement projects.

Monitoring Approach

The installation and performance of projects implemented under YTAHP will be monitored for their structural components and operational function. Physical project evaluation will determine if facilities and structures were installed per project plans, whether facilities function according to engineer's designs and within the regulatory agencies' guidelines and criteria. The project sponsors coordinate with the landowners and irrigators to facilitate this monitoring activity.

Upland and riparian monitoring will occur at sites where native vegetation has been planted to ensure the new plants are well established and experience sufficient survival. Exotic species will be controlled via mechanical or physical removal. Project sponsors coordinate with the WCC to conduct the majority of upland and riparian monitoring.

The YTAHP Monitoring Team is a small, volunteer subset of the Core Team, assembled to develop a monitoring plan to evaluate biological response variables at specific project locations and in two representative watersheds. Trends in fish presence, species diversity, abundance, and spawning use will be monitored through time on a project specific level and at a watershed scale in two selected watersheds. Baseline population data will be compiled from the selected tributaries to assess changes through time in species richness above and below passage improvement projects. It is our intention to facilitate and incorporate data sharing between agencies and programs within the basin to report the most complete information.

Installation and Performance Monitoring

The structural components of a project will be monitored after implementation including ensuring that the project was installed as designed and checking on the routine operation and maintenance (O&M) of structures at each site (fish screens and instream structures). Physical monitoring is a major part of each YTAHP project and is conducted by project sponsors to ensure compliance with regulations and that the project is operating and functioning as it was designed. Photo documentation will be available from each site visit through the project sponsor's office. The following questions will be addressed during the physical project monitoring:

1. Is barrier removal or fish passage designed and implemented in accordance with the best available science and technology?
2. Do installed fish screens and instream structures meet state and federal regulations for compliance?
3. Is the project functioning as planned and meeting the needs of the resource, the water user/ landowner/operator?

Riparian and Upland Habitat Monitoring

For YTAHP projects with a riparian and/or upland planting component, the newly planted areas will be evaluated upon site visits. The revegetation of riparian and upland habitat and the stream bank grading and preparation will meet USDA-NRCS standards and specifications. Riparian and upland habitat project monitoring will focus on vegetation survival, control of exotic species, and soil/bank stability through photo-documentation and written observations to determine the degree of success. Indications of successful riparian enhancement include, but are not limited to:

- a) Bare soil spaces are small and well dispersed, no greater than baseline conditions (end of monitoring period).
- b) Soil movement, such as active rills or gullies and soil deposition around plants or in small basins, is absent or slight and local (immediately following construction).
- c) If areas with past erosion are present, they are completely stabilized and healed (within one year).
- d) Plant litter is well distributed and effective in protecting the soil with few or no litter dams present (end of monitoring period).

- e) Native woody and herbaceous vegetation, and germination micro-sites, are present and well distributed across the site (end of monitoring period).
- f) Vegetation structure is resulting in rooting throughout the available soil profile (end of monitoring period).
- g) Plants have normal, vigorous growth form, and a high probability of remaining vigorous, healthy and dominant over undesired competing vegetation (70% of planted trees and shrubs at < 5 ft apart on center) (end of monitoring period).
- h) High impact conditions are confined to small areas necessary for access or other special management situations (throughout construction period).
- i) Stream banks have less than 5% exposed soils with margins anchored by deeply rooted vegetation or coarse-grained alluvial debris (end of monitoring period).
- j) It is expected that natural site potential vegetation will be present within approximately nine years.
- k) Weeds (including noxious and invasive species) do not account for more than 20% of the area covered within the riparian and/or upland enhancement zone (end of monitoring period).

Fish Monitoring

Little research exists on the actual biological benefits of habitat improvement projects (Roni et al. 2002) and the rates of salmonid recolonization above previously impassable barriers. The YTAHP Monitoring Team hypothesizes that species richness and salmonid abundance will increase above man-made barriers through time, once passage is provided and additional habitat becomes available. The YTAHP proposes to implement a two-tiered approach to monitoring fish species richness and abundance as biological indicators in passage improvement and artificial waterway screening projects. The first level of monitoring will be project specific before implementation/construction and annually for two years after project completion. The second level of monitoring will be extended *watershed-based* surveys in systems with high potential for increased salmonid use during all life stages. The YTAHP Monitoring Team will exercise adaptive management to implement this monitoring protocol. The best available science and new biological information will be considered and applied for annual project monitoring.

All YTAHP fish monitoring data will be entered and maintained by WDFW in a centralized database. Monitoring reports will be generated by the YTAHP monitoring team and included in annual reports provided to Bonneville Power Administration as a part of the annual program report.

In addition to YTAHP's fish population monitoring efforts, existing baseline population data will be gathered from the selected tributaries to assess changes through time in species richness near project sites. It is our intention to facilitate and incorporate data sharing between agencies and programs within the basin to report the most complete information.

Electrofishing Methods

Electrofishing will be conducted by or supervised by qualified biologists with the appropriate sampling permits, and in accordance with National Marine Fisheries Service Guidelines (2000). The best available science and new biological information will be

considered and applied during project monitoring and YTAHP monitoring protocol will adapt to new information, resources, and techniques.

Fish Sampling

Backpack electrofishing will be used as the primary means of gathering fish abundance data in selected tributaries. The electrofishing guidelines established by NMFS (2000) will be strictly adhered to. Experienced crews will sample in the late summer/fall when flows are low enough that creeks can be sampled effectively and safely and the risk of encountering spawning and/or incubating salmonids is lowest.

Sites will be selected where a man-made fish passage barrier currently exists or where YTAHP has corrected one and site access is permitted. Many of these sites may also include artificial irrigation canals with or without NOAA/WDFW approved fish screens. For each sampling location, a 50-meter stream section will be isolated with block nets. A section will be sampled on the upstream and downstream sides of man-made barriers; and when possible, a 50-meter section within the irrigation waterway downstream from the point of diversion. We will use multiple-pass removal/depletion methods as described by Zippen (1958) to obtain fish abundance data. A minimum of two electrofishing passes will be performed such that the number of salmonids captured on the last pass is no greater than half of the number of salmonids captured on the previous pass.

Fish will be held in large coolers and fresh water will be added periodically to ensure cool temperatures and adequate levels of dissolved oxygen such that they remain in good condition. To aid in the safe and efficient handling of fish, they will be lightly sedated then measured to fork length (mm). Once species and lengths are recorded, they will be immediately placed in a recovery cooler and not released until they are fully recovered. Rainbow trout/steelhead (*Oncorhynchus mykiss*), bull trout (*Salvelinus confluentus*), and other salmonids will be processed first so they can be released into the flowing water as quickly as possible.

Species Abundance & Richness Trend Monitoring

The monitoring protocol described will provide consistent and reliable, trend data related to specific biological response indicators through time. Questions that YTAHP hopes to address include:

1. What fish species are present in the project area before and after implementation?
2. Are the existing fisheries resources, including threatened or endangered species, being protected and enhanced by the project?
3. Has the general distribution of fish throughout the newly accessible and/or enhanced habitat changed?

The first level of monitoring will be project specific. Proposed projects would be sampled in the previously described method before implementation/construction, and annually for two years after project completion. Sample locations will remain constant throughout the monitoring period. Data pre and post implementation will be examined to detect differences in species richness and abundance through time. We hypothesize that species richness and salmonid abundance will increase above man-made barriers once passage is corrected. In addition, where screens have been installed, irrigation ditches will be sampled when possible and we expect that once screens are in place we will see

a significant decrease in the number of anadromous salmonids in artificial irrigation waterways.

The second level of monitoring will be extended, watershed-based surveys in systems with high potential for increased salmonid use at any life stage. Cowiche Creek in Yakima County and Reecer/Currier Creeks in Kittitas County have been selected due to the number of barriers identified in the systems and the high potential each has for supporting native salmonids. Projects will be completed sequentially from the mainstem of the Yakima and Naches Rivers, upstream when possible. YTAHP intends to provide access to the upper watersheds of these systems for salmonid utilization. Four to five sites within each watershed will be sampled annually in the fall using the previously described methods for at least five years. The sample locations will occur throughout the watersheds, in different reaches where proposed or completed barrier correction projects occur. The YTAHP hypothesizes that through time; there will be an increase in salmonid abundance and richness above the corrected barriers in the upper watersheds.

Spawning Surveys

In areas with suitable salmonid spawning habitat, limited redd surveys will be conducted. Once again, specific projects will be the focus of redd surveys within the Cowiche and Reecer Creek Watersheds where suitable and accessible habitat occurs. One half mile stretch below selected barriers and one half mile above the barrier will be walked during peak spawning times for coho (fall) and steelhead (spring) within each watershed. Two individuals will walk a section of stream and look for redds and carcasses. All redds will be marked with a GPS location and flagged in the field. Carcasses will be examined to determine their origin (hatchery or wild) and their sex. Surveys will occur three times at about 10 day intervals when conditions allow. All spawning surveys will be coordinated with other agencies that already conduct similar surveys. In order to have comparable data, YTAHP will adopt the methods of the lead agency conducting redd counts for the specific species (ie: WDFW – bull trout, YN – coho, USFS – steelhead). YTAHP efforts will be coordinated with other entities that conduct extensive redd surveys within the Yakima Basin in an effort to share information and eliminate redundant surveys. With improved fish passage and less entrainment, it is expected that over time (several generations), redd counts will increase and expand to the upper watersheds.

Risk Assessments

Two species of fish in the Yakima Basin are listed under the Endangered Species Act as threatened. The following describes potential affects on these fish from monitoring activities and what will be done to minimize any negative outcomes. WDFW personnel will be the project leads for monitoring efforts involving electrofishing. They have the appropriate sampling permits to conduct scientific research in waters containing species listed under the Endangered Species Act. Protocol will be strictly adhered to and every effort will be made to prevent harm to any species. If incidental take or injury shall occur to a federally listed species, WDFW will report the incident to the appropriate federal Service as soon as possible according to the terms in the sampling authorization.

Steelhead

Federally threatened Middle Columbia River Steelhead are present within the Yakima River Basin. Based on low steelhead counts at Prosser and Roza Dams, historical redd counts (both available at www.ykfp.org), and gene flow data from Pearsons et al. (2003); it is not likely that the anadromous form of *O. mykiss* encountered within the Yakima Basin exceeds 4% of all *O. mykiss*. Previous electrofishing surveys within YTAHP

selected tributaries (WDFW, unpublished data) indicate that the majority of *O. mykiss* encountered are less than 250 mm fork length. McMichael et al. (1998) determined that injury rates associated with electrofishing to *O. mykiss* less than 250 mm fork length in Yakima Basin tributaries was only 5% when using a multiple pass sampling approach similar to our proposed methods. Cumulative electrofishing mortality rates were calculated to be only 10% of injured fish (McMichael et al. 1998). Based on the low probability of encountering *O. mykiss* of the anadromous life history form, and low incidences of injury, we feel that the risks associated with the proposed methods will have discountable effects on Middle Columbia River Steelhead. A 4d collection permit has been obtained from NOAA Fisheries to conduct our sampling within waters occupied by steelhead.

Bull Trout

Bull trout occurred historically throughout most of the Yakima River subbasin. Today, however, they are fragmented into relatively isolated stocks and federally listed as threatened. Although bull trout were probably never as abundant as other salmonids in the Yakima River basin due in part to their requirements for cold, clear water, they were certainly more abundant and more widely distributed than they are today (WDFW 1998). Within the Middle Columbia River Unit, the United States Fish and Wildlife Service (USFWS) recognizes 14 subpopulations (USFWS 2002). WDFW conducts spawning surveys annually to monitor these subpopulations. Based on redd counts from 1984 to 2005, one stock is healthy, four are depressed, five are critical, and four are of unknown status (WDFW unpublished data). Adult bull trout in the Yakima Basin often begin migrating into their spawning streams in July-August and hold until spawning in September-November. Their eggs incubate until emergence in March-April, depending on stream temperature. The majority of bull trout spawning occurs above 3000 feet in elevation within the Yakima Basin (WDFW 1998). Most of YTAHP's sampling efforts are in lower elevation reaches of tributaries during the time adult bull trout are spawning in the headwaters. Spawning bull trout locations are well documented, and they will be avoided during any instream sampling. For these reasons, we believe there is little chance of encountering any threatened bull trout in our monitoring efforts and any impacts would be discountable.

Measures of Success

YTAHP recognizes that habitat above and around project sites may not be recolonized immediately by species that previously were denied access to upper reaches of streams. A monitoring approach that will enable detection of large-scale changes in species richness and abundance within individual project sites on a short-term basis as well as a broad, watershed scale for an extended time period has been proposed. It is difficult to extrapolate findings from one watershed to adjacent watersheds, however, given limited monitoring resources within the YTAHP statement of work, we have come up with a manageable monitoring plan that will provide specific information on the biological benefits of our projects. It is generally assumed that removal of fish passage barriers and implementation of correctly designed fish passage structures leads to reestablished access for salmonids. Roni et al. (2002) supports this assumption by prioritizing restoration efforts into five general categories: (1) habitat reconnection, (2) road improvement, (3) riparian restoration, (4) instream habitat restoration, and (5) nutrient enrichment. The highest category includes removing passage barriers and screening diversions as a means of re-connecting habitat.

Although restoring watershed processes is generally the preferred approach to attain watershed health and function. Restoring “process” (i.e. channel migration; re-connection of off-channel habitat) often involves a different temporal scale than site-specific projects, such as those implemented by the YTAHP. Site specific remedies are warranted when considering near-term benefits to threatened species (i.e. steelhead and bull trout). In addition, fish passage was listed as a limiting factor throughout the Yakima Basin in the Salmon Recovery Plan and the Yakima Subbasin Summary. YTAHP projects are contributing to the overall watershed recovery by enabling fish access to valuable tributary habitat.

Estimated Monitoring Costs

The monitoring plan described above will provide meaningful information about the biological benefits of fish passage, screening, and habitat enhancement projects. The YTAHP Monitoring Team is a small, volunteer subset of the Core Team, assembled to develop a monitoring plan. There are however, no dedicated personnel to conduct the surveys. For the preliminary monitoring, staff have conducted the surveys in addition to their full time positions and with the assistance of in-kind matches from other agencies and interested parties. The projected cost for implementation of YTAHP’s monitoring plan is below. This is a preliminary estimate for the first complete year of monitoring, based on preliminary sampling and personnel availability. In the future, personnel outside of the YTAHP Core Team may not be available to participate in monitoring efforts. Monitoring efforts and protocol will be adjusted based on funding levels and available personnel.

YTAHP: \$ 16,074

Match: \$ 14,476

Materials: \$ 500

Total: \$ 31,050

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