

**Intermountain Province  
Subbasin Plan**  
Spokane, Washington



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SUBMITTED TO:

**Northwest Power and Conservation Council**  
Portland, Oregon

ON BEHALF OF:

**Intermountain Province Oversight Committee**  
and  
**Intermountain Province Subbasin Work Teams**

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# 1 Overview of the Intermountain Province Subbasin Planning Process

## 1.1 Introduction to Subbasin Planning and the Columbia River Basin Fish and Wildlife Program

The Northwest Power Planning Council's<sup>1</sup> (Council) 2000 Fish and Wildlife Program<sup>2</sup> (Program) introduced substantial changes from past Programs. The 2000 Program established a basin-wide vision for fish and wildlife, and included broad biological objectives and a corollary set of action strategies to achieve that vision. The Council plans to implement the Program through subbasin plans developed locally in most of the 50 tributary subbasins of the Columbia River; these subbasin plans will ultimately be amended into the Program.

Completed subbasin plans will provide a locally-derived management plan, which includes a subbasin vision, biological objectives, and prioritized strategies; this management plan will be based on an analysis of an assessment of fish and wildlife conditions in that subbasin, and take into consideration an inventory of actions which have been previously implemented in that subbasin. All of the subbasin plans must be consistent with the Council's Program, the Northwest Power Act, Endangered Species Act, Clean Water Act, and Tribal treaty and trust obligations. Subbasin plans are intended to complement, rather than duplicate other planning activities, including those of states, tribes, or the federal government.

Once amended into the Program, the Council will use the recommended management actions outlined in the subbasin plans to guide the review, selection, and funding of projects in that subbasin. Subbasin plans would then, presumably, be updated periodically to reflect: changing conditions in the subbasin; the results of research, monitoring and evaluation activities; and the results of projects that had been implemented in previous iterations. The biological objectives and/or strategies of the management plan would also be updated as appropriate to adaptively respond to changing conditions and new knowledge in each subbasin.

This IMP Subbasin Plan is a response to the Council's request to develop locally-derived subbasin plans for this region. This plan was developed in an open public process, which provided opportunities for participation by a wide range of state, federal, Tribal and local managers, experts, landowners, local governments, and stakeholders.

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<sup>1</sup> Renamed in 2003 as the Northwest Power and Conservation Council. In this document, the organization under both the previous and current names is referred to as "Council."

<sup>2</sup> For additional information about the Council, the Council's Fish and Wildlife Program, Subbasin Planning, the required process for amending the Council's Program, and other Council-related information, see the Council's website at <http://www.nwccouncil.org>. Appendix A presents a summary of key elements of the Council's 2000 Fish and Wildlife Program, including the vision, planning assumptions, scientific principles, and biological objectives.

Subbasin planners in the IMP generally followed guidelines presented in the Council's *Technical Guide for Subbasin Planners* (Council 2001) in development of the IMP Subbasin Plan. Consistent with the basic expectations of a subbasin plan, this subbasin plan includes: an assessment which provides the technical foundation for the plan by describing the current condition of fish and wildlife in the subbasin and identifying limiting factors; an inventory, which provides a summary of recent and ongoing projects to protect, mitigate, and enhance fish and wildlife in the subbasin, along with an analysis of evident gaps; and a management plan, which describes the vision, objectives and prioritized implementation strategies in the subbasin. The plan was developed in accordance with the Council's vision, scientific principles, and biological objectives for the Columbia River Subbasin, as described in the 2000 Fish and Wildlife Program (refer to Appendix A for a summary of key elements of the Program).

The IMP subbasin planners chose to take subbasin planning one step farther by coordinating the subbasin planning process at both a subbasin and provincial level. This approach included a strong emphasis on striving for consistency in subbasin planning approach and format across all six subbasins, discussion of province level considerations in both the assessment and the inventory, development of a province level vision, and where possible a "roll up" of province level biological objectives and strategies. This approach has provided unique opportunities and challenges as subbasin planning has progressed in the IMP. Specifics of the province and subbasin specific approach will be discussed further at appropriate points throughout this document.

## **1.2 Subbasin Planning in the Intermountain Province**

The Intermountain Province is located in the northeast corner of Washington state and the northern Idaho panhandle. There are six subbasins in the IMP: Coeur d' Alene, Pend Oreille, Spokane, Upper Columbia, San Poil, and Lake Rufus Woods.<sup>3</sup> The Coeur d' Alene Subbasin is in Idaho. The Pend Oreille and Spokane subbasins are in Washington and Idaho. The remaining subbasins are within Washington. Additionally, portions of the Upper Columbia and Pend Oreille subbasins extend into Canada geographically (Figure 1.1).

### **1.2.1 Intermountain Province Approach to Subbasin Planning**

In launching the subbasin planning process the Council allowed each subbasin planning group substantial discretion in selecting a specific approach to developing a subbasin plan. Each of the Council's four member states took a slightly different approach to coordinating planning efforts at the state level. The IMP is located in both Idaho and Washington, therefore both state's approaches influenced the preliminary IMP subbasin planning activities.

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<sup>3</sup> When subbasin summaries were initially developed, Lake Rufus Woods was identified as a separate subbasin. Lake Rufus Woods was also treated as a separate subbasin in the last rolling provincial review. When the Council initiated subbasin planning activities, a number of the subbasin boundaries throughout the Columbia basin were changed. As a result of whatever process was used to redefine subbasin boundaries, Lake Rufus Woods was combined with the Upper Columbia Subbasin. Early in the subbasin planning process, subbasin planners in the IMP elected to continue to treat Lake Rufus Woods as a separate subbasin even though no separate funding existed for the subbasin.

# Intermountain Province

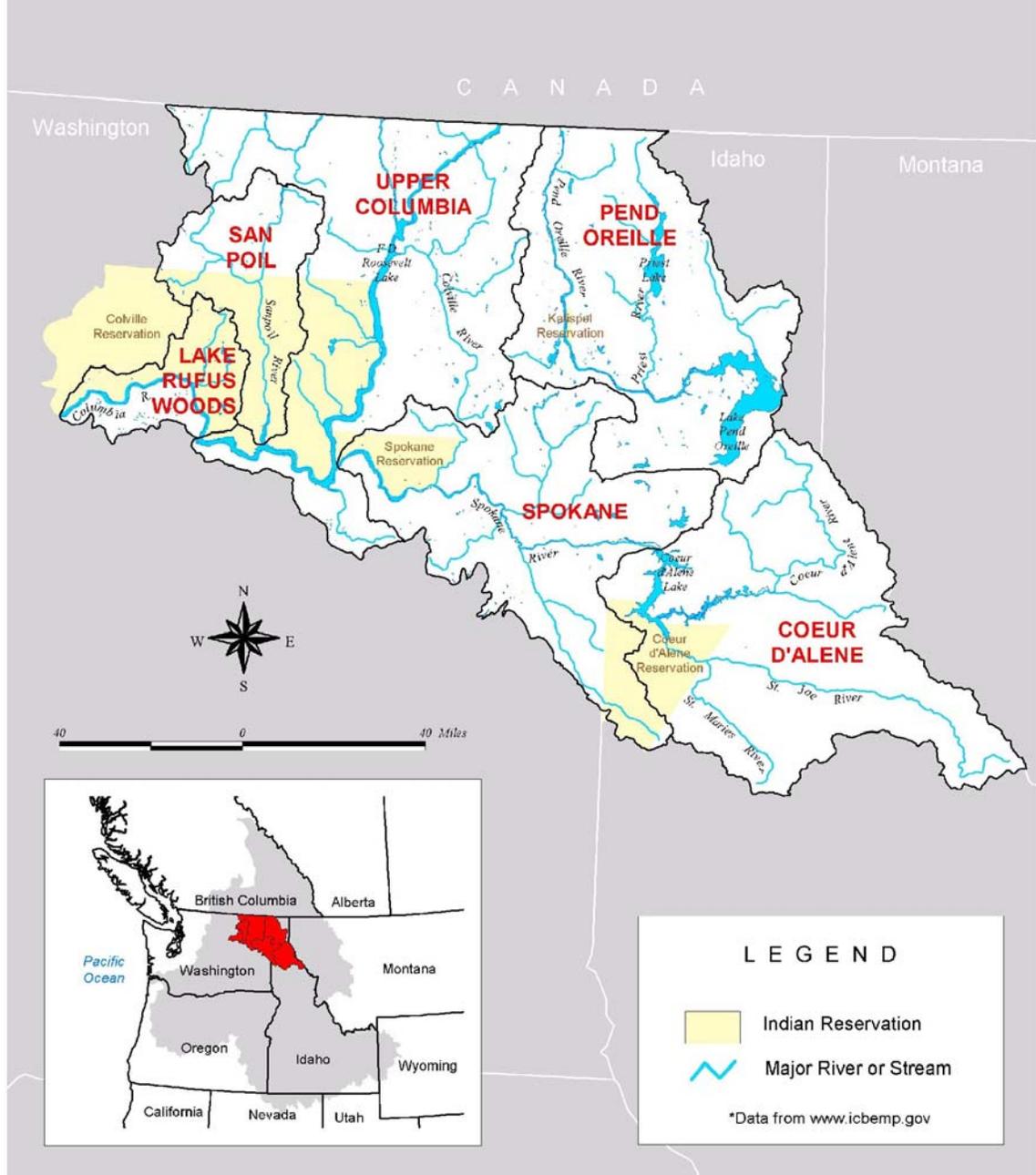


Figure 1.1. Map of the Intermountain Province. Inset map shows the location of the IMP in relation to the Columbia River Basin, including that portion in Canada.

In Washington, subbasin planning coordination generally occurs at the province scale or the geographic areas covered by already existing state salmon recovery boards. In areas not covered by recovery boards or provincial coordination groups, other accommodations had to be made. In Idaho, a statewide coordination group comprised of state and Tribal governments leads the process for developing subbasin plans in specific subbasins.

Section 4(h)(2) of the Northwest Power Act establishes the requirements the Council follows in developing and amending a program to protect, mitigate and enhance fish and wildlife in the Columbia River Basin and its tributaries. The approach of asking states and Tribes to work with a broad range of participants in developing subbasin plans was developed by the Council to address requirements of the Act related to fish and wildlife program development. The Council's final decision on adopting the completed subbasin plans will be guided by the substantive and procedural requirements of the Northwest Power Act.

In the IMP no preexisting structure (salmon recovery board or statewide coordinating group) was in effect within which to implement subbasin planning. Therefore, beginning in January of 2002, a group of interested stakeholders (later named the Advisory Council) from both Idaho and Washington convened for the express purpose of determining how to coordinate subbasin planning activities in the IMP. The Advisory Council had no fixed membership and all meetings were open to anyone who was interested in attending. Substantial ongoing attempts were made to notify and invite a broad range of stakeholders to participate. The Advisory Council developed a preliminary approach to subbasin planning and an organization with which to implement that planning in the IMP. This approach included: identification of a "Level II" group, a provincial coordination group called the IMP Oversight Committee; agreement to pool financial and technical resources in the IMP at a province level; development of a Technical Coordination Group; and preliminary selection of assessment tools. This group also agreed to secure the services of a contractor or contractors to assist local subbasin planners in development of a complete subbasin plan.

The IMP Advisory Council chose to implement subbasin planning in the IMP at a provincial and subbasin level. This approach was chosen, in part, because the IMP planners recognized that coordination and cooperation is key to the success of fish and wildlife management. Planning at a province level enhanced this cooperation. IMP planners also hoped relationships built during the course of the subbasin planning activities would help establish a framework for additional cooperation in the future.

One of the guiding principles developed in the IMP was to favor ecological boundaries over political boundaries. The six subbasins in the IMP are spread over two states and affect five Tribes. Geographically, two of the subbasins in the IMP also extend into Canada. The focus on ecological boundaries was carried through by having extensive public outreach, diverse participation in the technical group, and by inviting the participation of federal, state, Tribal, Canadian, and county representatives in the Subbasin Work Teams.

In addition, the province approach was selected to provide consistency across all six subbasins when they shared common features. For example, the entire IMP is situated in the “blocked area,” that portion of the basin from which anadromous fish have been blocked as a result of construction of Grand Coulee and Chief Joseph dams without provisions for fish passage. In addition, the system of hydroelectric projects in the basin affects aquatic resources, not only in the subbasin where the project occurs, but in adjacent subbasins as well. Therefore, the Advisory Council found that it made sense to look at aquatic resources across the province holistically. For some analyses, the province was a more scientifically appropriate ecological unit than the subbasins individually. Terrestrial resources, in particular, were often better addressed at a provincial scale than at a subbasin scale because terrestrial resources shared similar limiting factors throughout the IMP.

The provincial approach had an added advantage of allowing for economies of scale. Planners in the IMP had limited financial resources, so by pooling resources, more thorough review and analysis could be conducted. This approach allowed the evaluation of the Lake Rufus Woods Subbasin independently of the Upper Columbia Subbasin, which was important to fish and wildlife managers due to the great differences in the physical and biotic environments.

Finally, the provincial approach eliminated much repetition by moving significant portions of the assessment to the province level.

The following sections provide additional detail on the subbasin planning structure and development processes used in the IMP.

### **1.2.2 Structure of Subbasin Planning Groups in the IMP**

The IMP structure and organization was designed to gather the participation of broad range of stakeholders, county governments, agencies and Tribes. These entities collaborated and coordinated on the creation of the subbasin plan and helped to solve problems that arose during the planning process. Towards this end a variety of planning groups were set up. The following sections describe these groups.

An IMP Coordinator, Alison Squier, was hired under contract to the Council to coordinate and manage subbasin planning in the IMP. She served as the communication link between all the contractors, individuals, and committees who worked on this subbasin plan, as well as planning and facilitating advisory council and oversight committee meetings, and preparing agendas, notices, and meeting notes.

#### **1.2.2.1 Advisory Council**

The Advisory Council is the overall outreach group in the IMP. The Advisory Council outreach list includes just over 500 individuals. The group includes private citizens, representatives of non-profit organizations, business, county government, state and federal government, and Tribes. Most of the individuals included in the Advisory Council are local to the IMP but the group also includes individuals from throughout the Columbia River basin. The Advisory Council has no fixed membership.

The Advisory Council met regularly until Subbasin Work Teams were organized and began meeting formally. All Advisory Council meetings were open to anyone who was interested in attending. The regular Advisory Council meetings were replaced by local Subbasin Work Teams meetings after formal subbasin planning activities were initiated in the IMP. The Advisory Council outreach list was used as the update tool, in addition to postings on the Council's website, to provide meeting notification and announce the posting of draft documents, review deadlines, and other subbasin planning news.

#### **1.2.2.2 Oversight Committee**

The Oversight Committee (OC) serves as the lead entity (Level II group) in the IMP. The OC is guided by a "Terms of Reference" document and fixed membership includes representatives from local counties, state and federal agencies, Tribes, and ex-officio Council members. Under the Council's guidelines, the role of the Level II group is to provide subbasin planning policy guidance, organize resources to assist in the planning process, review and package plans for submittal to the Council, and provide coordination and project management. Members of the OC are listed in Table 1.2.2-1.

The OC in coordination with the Advisory Council developed and issued a Request for Qualifications and then a Request for Proposals (RFP) for a contractor or contractors to coordinate outreach and develop the written subbasin plan in the IMP. The RFP stipulated that development of the IMP Subbasin Plan would involve extensive collaboration and coordination with local stakeholders, as well as state, federal and Tribal representatives. The OC in collaboration with the Advisory Council selected through a competitive bid process, two contractors to fulfill the RFP. One of those contractors, GEI Consultants, Inc., was hired to write the subbasin plan on behalf of the OC. The second contractor, Ferry Conservation District, served as the umbrella for a large group of technical subcontractors providing fish and wildlife management expertise in the province. The Ferry Conservation District subcontractors consisted of four tribes: Coeur d' Alene Tribe, Confederated Tribes of the Colville Reservation, Kootenai Tribe of Idaho, the Spokane Tribe of Indians; two state agencies: Idaho Department of Fish and Game and Washington Department of Fish and Wildlife; and eight Conservation Districts: Benewah, Bonner, Ferry, Foster Creek, Kootenai-Shoshone, Lincoln, Pend Oreille, and Spokane. These subcontractors provided technical data used in the assessment, inventory, and research, monitoring, and evaluation plan.

Once the contractors were on board, the OC served in an oversight role to monitor the performance of the contractors, and to ensure consistency in the development of subbasin plans across the six IMP subbasins. Upon request from the Subbasin Work Teams, the OC also resolved questions or provided specific guidance. The OC also provided province level guidance for specific sections of the subbasin plan. For example, at the request of some of the Subbasin Work Teams, the OC identified the duration of the IMP Subbasin Plan as ten years, although this does not preclude development of management objectives and strategies which extend beyond the plan's duration.

Based on review and approval from the Subbasin Work Teams, and consistency with the Council’s guidelines, the OC approved the final subbasin plan for submission to the Council. The OC met on an as-needed basis throughout the subbasin planning process (on average every four to six weeks).

Table 1.2.2-1. Members of the Oversight Committee

Last Name	First Name	Agency/Organization
Arterburn	John	Confederated Tribes of the Colville Reservation
Bagdovich	Mark	US Fish and Wildlife Service
Berger	Matt	Confederated Tribes of the Colville Reservation
Caswell	Jim	Idaho Office of Species Conservation (Chairman)
Dayley	Tom	Northwest Power and Conservation Council (Ex officio member)
Entz	Ray	Kalispel Tribe
Flory	Jason	US Fish and Wildlife Service
Gardinier	Lyle	Ferry Conservation District
Grover	Tony	Northwest Power and Conservation Council (Ex officio member)
Horton	Stacy	Northwest Power and Conservation Council (Ex officio member)
Heuser	Cam	Coeur d' Alene Tribe of Indians
Ireland	Sue	Kootenai Tribe
Kieffer	BJ	Spokane Tribe of Indians
Lembcke	Sandy	Washington Department of Fish and Wildlife
Maroney	Joe	Kalispel Tribe
Mikkelson	Anders	Coeur d' Alene Tribe of Indians
Palensky	Lynn	Northwest Power and Conservation Council (Ex officio member)
Peters	Ron	Coeur d' Alene Tribe of Indians
Robinette	Kevin	Washington Department of Fish and Wildlife
Servheen	Gregg	Idaho Department of Fish and Game
Singer	Kelly	Spokane Tribe of Indians
Soults	Scott	Kootenai Tribe of Idaho
Squier	Alison	IMP Coordinator

### 1.2.2.3 Technical Coordination Group

The ad-hoc Technical Coordination Group is composed of local experts and other interested parties who provided assistance with the technical aspects of subbasin planning. The Technical Coordination Group provided information and data for use in development of the assessment; inventory; and research, monitoring, and evaluation plan. They also served as technical liaison with Subbasin Work Teams, and coordinated with the IMP contractors to review draft documents, and provide technical recommendations or assistance.

The ad-hoc Technical Coordination Group has no fixed membership and all meetings were open to any interested persons. Notices of technical group meetings were sent to a mailing list of approximately 50 individuals and were also posted on the IMP website. The group met on an as-needed basis throughout the planning process (approximately

every four to six weeks). The following persons were on the technical group mailing list (Table 1.2.2-2). Many attended one or more technical coordination group meeting, or participated by assisting in the development of the technical portions of the plan.

Table 1.2.2-2. Technical Coordination Group mailing list

Last Name	First Name	Agency/Organization
Allen	Doug	Washington State Dept of Ecology
Andrews	John	Washington Department of Fish and Wildlife
Arterburn	John	Confederated Tribes of the Colville Reservation
Ashley	Paul	Washington Department of Fish and Wildlife
Baden	Rich	Spokane Conservation District
Bagdovich	Mark	US Fish and Wildlife Service
Baldwin	Casey	Washington Department of Fish and Wildlife
Beals	Jon	Idaho Department of Fish and Game
Beaty	Roy	Bonneville Power Administration
Beich	Dennis	Washington Department of Fish and Wildlife
Berger	Matt	Confederated Tribes of the Colville Reservation
Black	Ross	Eastern Washington University
Brown	Lew	US Bureau of Land Management
Combs	Mitch	Washington Department of Fish and Wildlife
Croft	Linda	US Forest Service
Crossley	Brian	Spokane Tribe of Indians
Dasher	Rhonda	Pend Oreille Conservation District
Dawson	Shallan	Kootenai Shoshone Soil and Water Conservation District
Decker	Meg	Pend Oreille Environmental Team/Selkirk Conservation Alliance
Dekome	Shanda	Idaho Panhandle National Forest
Demers	Dinah	Washington Department of Fish and Wildlife
Donley	Chris	Washington Department of Fish and Wildlife
Duncan	Bill	Teck Cominco Metals Ltd.
Edelen	Walt	Spokane County Conservation District
Edson	Scott	Confederated Tribes of the Colville Reservation
Entz	Ray	Kalispel Tribe
Farmer	Brian G.	Washington Department of Ecology
Fields	Scott	Coeur d' Alene Tribe of Indians
Flory	Jason	US Fish and Wildlife Service
Green	Gerry	Coeur d' Alene Tribe of Indians
Haber	John	USFS – Missoula Office
Hackworthy	K.J.	The Nature Conservancy
Harvey	Geoff	Idaho Department of Environmental Quality

<b>Last Name</b>	<b>First Name</b>	<b>Agency/Organization</b>
Hayden	Jim	Idaho Department of Fish and Game
Hennecky	Ray	Idaho Department of Fish and Game
Heusser	Cam	Coeur d' Alene Tribe of Indians
Horner	Ned	Idaho Department of Fish and Game
Ireland	Sue	Kootenai Tribe
Iverson	Tom	Columbia Basin Fish and Wildlife Authority
Kaney	Lynn	Colville National Forest
Kedish	Gary	US Fish and Wildlife Service
Kieffer	BJ	Spokane Tribe of Indians
Korth	Jeff	Washington Department of Fish and Wildlife
LeCaire	Richard	Confederated Tribes of the Colville Reservation
Lembcke	Sandy	Washington Department of Fish and Wildlife
Maiolie	Melo	Idaho Fish and Game
Marco	Jerry	Confederated Tribes of the Colville Reservation
Maroney	Joe	Kalispel Tribe
Matt	Robert	Coeur d' Alene Tribe of Indians
Mikkelson	Anders	Coeur d' Alene Tribe of Indians
Miller	Monte	Confederated Tribes of the Colville Reservation
Mosier	Dave	Idaho Department of Environmental Quality
Osterman	Deanne	Kalispel Tribe
Paragamian	Vaughn	Idaho Department of Fish and Game
Pavlik	Deanne	Spokane Tribe of Indians
Peone	Tim	Spokane Tribe of Indians
Perry	Patty	Kootenai Tribe
Peters	Ron	Coeur d' Alene Tribe of Indians
Peterson	Pete	Upper Columbia United Tribes, Fish and Forest Agreement
Powell	Scott	Seattle City Light
Robinette	Kevin	Washington Department of Fish and Wildlife
Sawyer	Suzanne	Bonner Soil and Water Conservation District
Servheen	Gregg	Idaho Department of Fish and Game
Shuhda	Tom	US Forest Service
Singer	Kelly	Spokane Tribe of Indians
Smelser	Emily	Kootenai Shoshone Soil and Water Conservation District
Soults	Scott	Kootenai Tribe of Idaho
Spicer	Dave	Idaho Department of Fish and Game
Terra Burns	Mary	Idaho Department of Fish and Game
Thomson	Eric	US Bureau of Land Management
Upton	Carolyn	Idaho Panhandle National Forest

Last Name	First Name	Agency/Organization
Vail	Curt	Washington Department of Fish and Wildlife
Vitale	Angelo	Coeur d' Alene Tribe of Indians
Wainwright	Mimi	Washington Department of Ecology
Ward	Neil	Columbia Basin Fish and Wildlife Authority
Whalen	John	Washington Department of Fish and Wildlife
Yergens	Charlotte	Pend Oreille Conservation District
Young	Frank	Columbia Basin Fish and Wildlife Authority
Zender	Steve	Washington Department of Fish and Wildlife

#### 1.2.2.4 GEI Consultants, Inc. Team

A team of scientists, professional facilitators, GIS analysts, writers and editors assembled by GEI Consultants, Inc. facilitated development of the IMP Subbasin Plan under the direction of the OC. The GEI Team provided services including meeting facilitation for IMP kickoff and closing sessions; six sets of Subbasin Work Team meetings in each of the subbasins; technical development of the aquatic and terrestrial resources assessments, inventory, and management plans for the province and six subbasins; and writing, editing, and graphic preparation of the subbasin plan documents. Members of the GEI Team are listed in Table 1.2.2-3

Table 1.2.2-3. GEI Consultants, Inc. Team

Last Name	First Name	Organization
<b>Project Management</b>		
Pizzimenti	John	Project Manager, GEI Consultants, Inc
Gillin	Ginger	Assistant Project Manager, Lead Fisheries Biologist, GEI Consultants, Inc.
<b>Technical Team</b>		
Smayda	Kathy	Lead Terrestrial Biologist, Smayda Environmental Associates, Inc.
Cox	Dalton	GIS Specialist, Ecosystem Research Group
Haddix	Tyler	Environmental Scientist, GEI Consultants, Inc.
Hartwell	Gibson	Environmental Scientist, Ecosystem Research Group
Overberg	Kristi	Environmental Scientist, GEI Consultants, Inc.
Powell	Madison	University of Idaho / HFCES
Smith	Melanie	GIS Specialist, Ecosystem Research Group
Styskel	Ed	Terrestrial Biologist, Ecological Services, Inc.
<b>Outreach Team</b>		
Hubbard-Gray	Sarah	Outreach Team Leader, Hubbard-Gray Consulting, Inc.
Tribe	Ginny	Facilitator, Professional Facilitator Inc.
Munther	Sherry	Facilitator, Munther Mediation Services
<b>Support Team</b>		
Gable	Gigi	Office Manager, GEI Consultants, Inc.
McClinton	Janie	Administrative Support, GEI Consultants, Inc.
Watson	Beth	Marketing, GEI Consultants, Inc.

#### **1.2.2.5 Subbasin Work Teams**

Subbasin Work Teams were the heart of the subbasin planning effort in the IMP. The Subbasin Work Teams were responsible for development of the IMP subbasin management plans. Each IMP subbasin established its own unique Subbasin Work Team. In a series of six meetings between June 2003 and March 2004, these teams developed a subbasin vision, guiding principles, biological objectives, and strategies for each of the IMP subbasins (Figure 1.2.2-1). Subbasin Work Teams also prioritized the objectives and strategies for the subbasin management plan and contributed to subsequent reviews of drafts of the subbasin plan.



Figure 1.2.2-1. Upper Columbia Subbasin Work Team participants consider objectives and strategies at a Work Team meeting. Pictured are (from l to r) Bill Duncan, Teck Cominco; Tom Shuhda, U.S. Forest Service; Merrill Ott, Stevens County Commissioner; Lyle Gardinier, Ferry Conservation District; Nancy Fritz Cressey, National Park Service; and John Arterburn, Confederated Tribes of the Colville Reservation.

In establishing the Subbasin Work Team, subbasin planners in the IMP wanted to ensure to the fullest extent possible 1) the participation by a broad range of stakeholders, agencies and Tribes; 2) a balance of stakeholder interests and participation on each Subbasin Work Team; 3) an open, fair and collaborative process; 4) consistent

participation throughout the development of subbasin plans; and 5) accountability by Subbasin Work Team members.

To achieve these objectives, the IMP Advisory Council, Oversight Committee, Technical Coordination Group and other interested stakeholders were asked to help identify potential candidates to participate in the Subbasin Work Teams. Formal letters of invitation were sent to prospective candidates, and they were invited to identify other potential participants in the event that they were not the ideal candidate or were unable to participate. Invited participants included county commissioners from all counties in the IMP, local landowners, local business and industry, conservation districts, non-profit groups, representatives of a range of state and federal agencies, and Tribes.

Fixed membership for each Subbasin Work Team was established based on the responses to these letters and participation at the meetings. Each Subbasin Work Team consisted of approximately 10 to 15 members and included a broad representation of interests as well as both technically oriented and non-technically oriented participants. The fixed membership of the Subbasin Work Teams was designed to ensure an equitable and balanced representation of interests on each work team. Members of the Subbasin Work Teams are listed in Tables 1.2.2-4 to 1.2.2-9. Each member participated in at least one meeting; invitees who declined to participate after one or two meetings are not listed as work team members. The hard work of the work team members is greatly appreciated.

Table 1.2.2-4 Coeur d' Alene Subbasin Work Team

Last Name	First Name	Agency/Organization
Bourque	Tom	Terra Graphics Environmental Engineering
Dawson	Shallan	Kootenai Shoshone Soil and Water Conservation District
DeKome	Shanda	US Forest Service (alternate)
Flagor	Bob	Benewah SWCD
Flory	Jason	US Fish and Wildlife Service (replaced Scott Deeds)
Haber	Jon	US Forest Service (visitor)
Hanson	Jerry	Kootenai Shoshone Soil and Water Conservation District
Harvey	Geoff	Idaho Department of Environmental Quality
Heusser	Cam	Coeur d' Alene Tribe of Indians
Horner	Ned	Idaho Department of Fish and Game (replaced Greg Servheen)
Kincaid	Bruce	Coeur d' Alene Tribe of Indians
Mikkelsen	Anders	Coeur d' Alene Tribe of Indians (alternate)
Miller	Charles	Silver Valley Natural Resources Committee
Miller	Stan	Spokane County Utilities Division (retired)
Mosier	Dave	Idaho Department of Environmental Quality
Mikkelsen	Anders	Coeur d' Alene Tribe of Indians (alternate)
Peters	Ron	Coeur d' Alene Tribe of Indians
Ralphs	Bob	Idaho Panhandle National Forest (alternate)
Stevens	Rebecca	Kootenai Shoshone Soil and Water Conservation District
Schlepp	Mike	Kootenai Shoshone Soil and Water Conservation District
Albrecht	Nathan	Coeur d' Alene Tribe of Indians
Upton	Carolyn	Idaho Panhandle National Forest
Vore	Tim	Avista Corporation

Table 1.2.2-5 Pend Oreille Subbasin Work Team

Last Name	First Name	Organization
Blau	Lori	Ponderay Newsprint Company
Buckley	Pat	Pend Oreille PUD (Alternate: Marty Robinson)
Carney	Jim	Landowner
Cobb	Jill	USFS - Idaho Panhandle Nat'l Forest - Priest Lake R.D.
Comins	Don	Pend Oreille Conservation District
Decker	Meg	Pend Oreille Environmental Team/Selkirk Conservation Alliance
Dekome	Shanda	Idaho Panhandle National Forest
Entz	Ray	Kalispel Tribe
Farmer	Brian G.	Washington Department of Ecology
Flory	Jason	US Fish and Wildlife Service
Harvey	Geoff	Idaho Department of Environmental Quality
Jungblom	Scott	Pend Oreille Conservation District
Kaney	Lynn	Colville National Forest (Alternate: Randy Carstens)
Kedish	Gary	US Fish and Wildlife Service
Lembcke	Sandy	Washington Department of Fish and Wildlife
Mack	Carol	Washington State University Extension
Maiolie	Melo	Idaho Fish and Game (Alternate: Tom Bassista)
Maroney	Joe	Kalispel Tribe
Mosier	Dave	Idaho Department of Environmental Quality
Nicholas	Sam	Pend Oreille County Commissioners
O'Hare	Linda	Bonner Soil and Water Conservation District
Peters	Ron	Coeur d'Alene Tribe of Indians
Pineo	Doug	Washington Department of Ecology
Powell	Scott	Seattle City Light
Sawyer	Suzanne	Bonner Soil and Water Conservation District
Soults	Scott	Kootenai Tribe of Idaho
Upton	Carolyn	Idaho Panhandle National Forest
Wainwright	Mimi	Washington Department of Ecology

Table 1.2.2-6 Spokane Subbasin Work Team

Last Name	First Name	Agency/Organization
Allen	Doug	Washington State Dept of Ecology
Crossley	Brian	Spokane Tribe of Indians
DeGraffenreid	Jim	Lincoln County Planning Dept.
Donley	Chris	Washington Department of Fish and Wildlife
Edelen	Walt	Spokane County Conservation District (alternate: Rick Noll)
Farmer	Brian G.	Washington Department of Ecology
Fletcher	Russ	Pend Oreille Conservation District
Flory	Jason	US Fish and Wildlife Service
Green	Gerald I.	Coeur d' Alene Tribe of Indians
Haggin	Bart	Friends of Little Spokane River Valley

Last Name	First Name	Agency/Organization
Howard	Bruce	Avista Corporation
Kedish	Gary	US Fish and Wildlife Service
Kieffer	BJ	Spokane Tribe of Indians
Kinkead	Bruce	Coeur d' Alene Tribe of Indians
Lee	Chuck	Spokane Tribe of Indians
Miller	Stan	Spokane County Utilities Division (alternate: Bill Gilmour)
Mosier	Dave	Idaho Department of Environmental Quality
Pavlik	Deanne	Spokane Tribe of Indians
Peone	Tim	Spokane Tribe of Indians
Peters	Ron	Coeur d' Alene Tribe of Indians
Robinette	Kevin	Washington Department of Fish and Wildlife
Singer	Kelly	Spokane Tribe of Indians
Vore	Tim	Avista Corporation

Table 1.2.2-7 Upper Columbia Subbasin Work Team

Last Name	First Name	Agency/Organization
Arterburn	John	Confederated Tribes of the Colville Reservation
Berger	Matt	Confederated Tribes of the Colville Reservation (or alternate Richard Whitney)
Delgado	Tony	Stevens County Commissioner
Duncan	Bill	Teck Cominco Metals Ltd.
Friedman	Malcom	Stevens County Commissioner
Gardinier	Lyle	Ferry Conservation District (or alternate Lloyd Odell)
Gosal	Kindy	Columbia Basin Trust
Kedish	Gary	US Fish and Wildlife Service
Kelley	Pam	Lincoln
Larsen	Russ	SCPLAC
LeCaire	Richard	Confederated Tribes of the Colville Reservation
Lembcke	Sandy	Washington Department of Fish and Wildlife
Ott	Merrill	Stevens County Commissioner
Pavlik	Deanne	Spokane Tribe of Indians
Picavet	Alexandra	National Park Service (or alternate Nancy Fritz Cressey)
Playfair	Bob	Landowner
Roney	Mike	Three Rivers Ranger District (or alternates Tom Shuhda or Sherri Schwenke)
Simmons	Scott (Pete)	FAST/NRI
Singer	Kelly	Spokane Tribe of Indians
Smith	Gene	Lake Roosevelt Trout Net Pen Coordinator
Sprinkle	Craig	US Bureau of Reclamation (participated as a resource to the work team)
Wainwright	Mimi	Washington Department of Ecology

Table 1.2.2-8 San Poil Subbasin Work Team

Last Name	First Name	Agency/Organization
Arterburn	John	Confederated Tribes of the Colville Reservation (or alternate Sheryl Sears)
Berger	Matt	Confederated Tribes of the Colville Reservation (or alternate Richard Whitney)
Boyd	Carol	US Forest Service
Bremner	Bryan	Citizen
Caudell	Gregg B.	PUD #1 of Ferry County (or alternate Ryan Walsh)
Gardinier	Lyle	Ferry Conservation District (or alternate Lloyd Odell)
Lembcke	Sandy	Washington Department of Fish and Wildlife
Sprankle	Craig	US Bureau of Reclamation (participated as a resource to the work team)

Table 1.2.2-9 Lake Rufus Woods Subbasin Work Team

Last Name	First Name	Agency/Organization
Arterburn	John	Confederated Tribes of the Colville Reservation (or alternate Sheryl Sears)
Berger	Matt	Confederated Tribes of the Colville Reservation (or alternate Richard Whitney)
Delano	David	Chief Joseph Fish Farm (or alternate Dennis Delano)
Egbert	Jim	Landowner
Fischer	Bob	US Army Corps of Engineers
Jones	Chuck	Douglas County
Lembcke	Sandy	Washington Department of Fish and Wildlife
Lynn	Marilynn	Foster Creek Conservation District
McClure	Norman	Landowner
Poulson	Mike	Washington Farm Bureau
Shallenberger	Ed	Columbia River Fish Farms
Sprankle	Craig	US Bureau of Reclamation (participated as a resource to the work team)

Consistent with province level guidelines, the province level vision, and the Council’s guidelines, each of the Subbasin Work Teams established their own ground rules and decision-making processes. All Subbasin Work Team meetings were open to the public, and public participation in the meetings was encouraged, however only the identified Subbasin Work Team members were able to participate in formal decision-making within the group. Each of the six day-long meetings was professionally facilitated and structured around the development and review of specific pieces of the management plan (vision, guiding principles, biological objectives, development of strategies, and prioritization of objectives and strategies). The GEI Consultants team presented summaries of key information derived from the assessment (limiting factors, summary of assessment tools, key considerations) and inventory to assist the Subbasin Work Teams in achieving their tasks. The Technical Coordination Group also assisted and, in some cases, advised the Subbasin Work Teams in their development of biological objectives and strategies. Subbasin Work Team members were asked to complete “homework assignments” between meetings including review of the draft subbasin plans and other pertinent information.

At the start of subbasin planning activities, in order to alert members of the public to the subbasin planning process and invited them to participate, advertisements were placed in a limited number of major newspapers and press releases were sent to approximately 50 newspapers in the IMP. Two open houses were held in each subbasin immediately following the Subbasin Work Team meetings. The first open house was designed as a tool to recruit additional Subbasin Work Team members who might not have been identified through other outreach mechanisms. The open houses were also designed to inform members of the public who were not otherwise able to participate in the Subbasin Work Team meetings about the process and gather their input.

Three newsletters and Subbasin Work Team meeting notices were distributed to a mailing list of over 500 interested individuals. Meeting notices and meeting minutes, drafts of the IMP Subbasin plans, maps, newsletters, links, and other information about the subbasin planning process in the IMP were maintained throughout the process on an IMP web page on the Council's website at [www.intermountainprovince.org](http://www.intermountainprovince.org).

A final one-day facilitated subbasin and provincial meeting was held in May 2004 to provide the Subbasin Work Teams an opportunity to review the completed plan and confirm the management plan contents.

### **1.2.3 Subbasin Planning Process in the Intermountain Province**

The entire plan was developed based on the Council's guidance, specifically the *Technical Guide for Subbasin Planners* and the 2000 Fish and Wildlife Program. The first step was to establish a provincial vision, objectives, and guiding principles. Then the management plan, assessment, and inventory were all developed concurrently and in coordination. The assessment and inventory were developed by the GEI Team with support from the Technical Coordination Group. The management plan was developed by the Subbasin Work Teams with the support of the GEI Team and the Technical Coordination Group. The OC contributed leadership and provincial scale decision-making throughout the process. Public input was solicited throughout the process, including two public open houses held in each of the six subbasins. Figure 1.2.3-1 illustrates the overall planning process in the IMP.

One of the goals of the IMP subbasin planning process was to develop the subbasin plan in an open, inclusive, and transparent process. Toward that end, all drafts of the subbasin plan, as well as newsletters, meeting notices, and meeting minutes, were posted on the IMP page of the Council's website. The IMP was unique in the Columbia Basin for establishing this level of dialogue with the public.

The first draft IMP plan was posted in August 2003, when the document was in rough and incomplete form. Comments from any interested persons were invited. Comments were incorporated and as the process progressed, the plan became increasingly complete and sophisticated. The final document reflects the efforts of many people, including members of the general public, who contributed their time and expertise to enhance this plan.

## ~ IMP Subbasin Planning Process ~

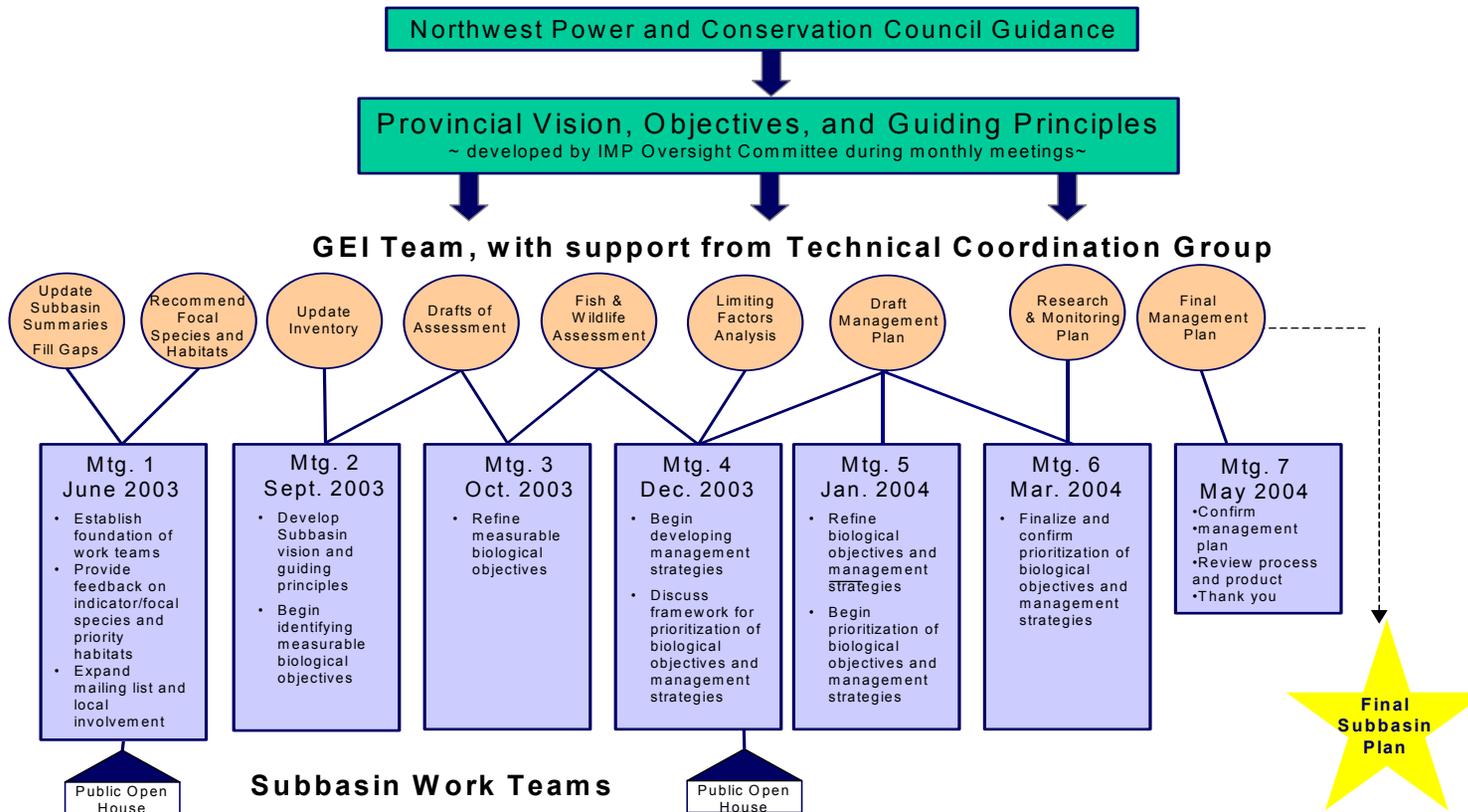


Figure 1.2.3-1. The subbasin planning process in the IMP. The graphic shows how the IMP Provincial vision, objectives, and guiding principles were developed from the Council's guidance, how the assessment and inventory were developed by the GEI Team with support from the Technical Coordination Group, and how the Subbasin Work Teams developed the management plan at the same time as, and in coordination with, the assessment and inventory development.

### **1.2.3.1 Development of the Provincial Vision and Guiding Principles**

On-the-ground subbasin planning activities in the IMP began with a two-day facilitated meeting attended by the IMP OC and interested stakeholders. The purpose of this meeting was to 1) develop a provincial vision statement and broad guidelines for use by Subbasin Work Teams, 2) identify species of concern and key habitats in the province, and 3) identify potential Subbasin Work Team members. The meeting also served to confirm and clarify the overall approach to subbasin planning in the IMP. The Columbia River Basin vision and scientific foundation and principles of the Council's 2000 Fish and Wildlife Program formed the starting point for the provincial vision statement and guidelines.

### **1.2.3.2 Development of the Assessment**

The technical assessment component of the IMP subbasin plans was developed by the GEI Team, in consultation with the Technical Coordination Group, and with ongoing review by the Subbasin Work Teams. Both the aquatic and terrestrial assessments relied on the existing subbasin summaries as starting points. The GEI Team reviewed the subbasin summaries in coordination with the Technical Coordination Group and identified missing data, inaccuracies, and other questions. The information in the subbasin summaries was supplemented with other existing technical information acquired through data searches or provided by province resource managers. The GEI Team used the information to prepare assessments describing the current condition of aquatic and terrestrial resources in each subbasin and the province. The Technical Coordination Group and the Subbasin Work Teams reviewed drafts of the assessment.

For aquatic resources, limiting factors for key focal salmonid fish species were assessed through the use of a Qualitative Habitat Assessment (QHA) model. Details of the methodologies used for the aquatic assessment, including the QHA and the focal species selection, are presented in Section 3, Aquatic Resources.

The assessment of terrestrial resources began with a review and update of the existing subbasin summaries with input from local and regional wildlife managers and current literature. A large number of focal wildlife species were analyzed using the Interactive Biodiversity Information System (IBIS 2003). Each subbasin also identified a list of priority wildlife species, for which local occurrence data were summarized. Key to the analysis of terrestrial resources were the three wildlife-habitat loss assessments conducted for the federal hydrosystem projects within the IMP (Creveling and Renfrow 1986; Kuehn and Berger 1992; Martin et al. 1988). These reports evaluated the quantity and quality of habitat losses for key indicator wildlife species and established the requirements for mitigation of the construction of the Chief Joseph, Grand Coulee, and Albeni Falls dams, and their associated reservoirs. Details of the methodologies used for the terrestrial assessment are found in Section 4, Terrestrial Resources.

### **1.2.3.3 Development of the Inventory**

The inventory identifies and describes fish and wildlife programs and projects that are in place or currently underway. This section of the plan also identifies existing laws, regulations, and management of objectives of the natural resource management entities in

the subbasin. In addition to listing programs and projects, the inventory includes an assessment of the gaps, which are clearly evident when comparing the assessment with the inventory.

The inventory was developed by asking the Technical Coordination Group, conservation districts, state and federal agencies, and Tribes to provide a list of their recent (last five years) and ongoing projects and programs in the IMP. The inventory information was then summarized in a spreadsheet.

Using the limiting factors identified in each of the subbasins, along with the evolving list of strategies being developed in the Subbasin Work Teams, the Technical Coordination Group and the GEI Team developed a condensed list of key limiting factors and strategy types. Each of these limiting factors and strategy types was assigned a numeric code. Then each project or program listed in the Inventory was categorized based on the limiting factor that the project or program was designed to address and the type of strategy that was employed. This information was used to help synthesize the inventory information and to identify gaps where the existing programs are inadequate to address the limiting factors present in the subbasin. A summary of this analysis is provided in the inventory sections for each subbasin.

#### **1.2.3.4 Development of the Management Plan**

The Management Plan includes the subbasin vision, guiding principles, biological objectives, and associated management strategies. The Subbasin Work Teams were responsible for developing and finalizing these Management Plan elements. A unique approach in the IMP was to have the Subbasin Work Teams start work immediately, while the assessment and inventory were still in development. This approach enabled the Subbasin Work Teams to be active participants in the development of the IMP Plan, to more fully consider the assessment and inventory elements, and to allow more time for review and revision of the management plan elements. In addition, the Subbasin Work Teams were able to ask for technical guidance from the technical coordination group as the management plan elements were developed.

The Subbasin Work Teams participated in six all-day meetings. Early meetings of the Subbasin Work Teams were used to educate participants about the Council, the Fish and Wildlife Program, the subbasin planning process, and the goals of subbasin planning. Each Subbasin Work Team established ground rules and agreed on the operating environment. The Subbasin Work Teams developed a subbasin-specific vision statement and guiding principles in the first three meetings. Biological objectives were developed in meetings two, three, and four. Strategies were prepared in meetings three, four, and five. Prioritization of objectives and strategies were completed in meetings five and six. Meeting agendas and notes for all subbasin Work Team meetings are posted on the Council's website for the IMP: [www.intermountainprovince.org](http://www.intermountainprovince.org).

Subbasin Work Teams used information derived from the assessment and inventory to develop biological objectives and strategies. The GEI Team provided "technical briefings" to Subbasin Work Teams and the technical and non-technical representatives

on the teams provided additional information on local conditions and mitigation efforts, including a summary of objectives and strategies from each subbasin summary (prepared for the Council between 2000 and 2001). Over the course of the meetings, the Subbasin Work Teams requested assistance from the Technical Coordination Group to help provide clarification and technical guidance. This input from the Technical Coordination Group helped the work teams refine the subbasin specific biological objectives and strategies.

Biological objectives were developed using a tiered approach, beginning with review of the Columbia River Basin biological objectives identified in the Council's 2000 Fish and Wildlife Program. The Subbasin Work Teams developed subbasin level objectives tiered to the Program objectives. A set of province level objectives was developed by reviewing objectives developed in all of the subbasins, looking for commonalities, and developing a third tier of objective statements intermediate to the basin and subbasin levels. The province level objectives were developed through a number of iterations between the GEI Team and the OC. The Technical Coordination Group and the Subbasin Work Teams assisted in the review of the provincial objectives. Tiering the objectives into basin, province, and subbasin levels provided confidence that the objectives were consistent with the Council's Fish and Wildlife program, including the Council's eight scientific principles (Appendix A). In addition, the linkages between the Council's objectives and the IMP objectives could be displayed. Finally, the resource needs and issues specific to each subbasin could also be represented.

The Subbasin Work Teams developed biological objectives and strategies that relate to the limiting factors in each subbasin, but kept them somewhat broad so they would be adaptive to changing conditions and apply to multiple or refined mitigation measures. Opinions within the Subbasin Work Teams differed regarding the appropriate degree of specificity of the objectives and strategies. The *Technical Guide for Subbasin Planners* does not provide clear guidance on this topic. Some members felt that the objectives and strategies should be broad and simple, so that they could be easily understood and would apply to a wide range of situations. Other members felt that specific, detailed objectives would be more substantive and would provide better guidance for future activities. The final work team product is a compromise between these two perspectives, and is an attempt to capture the best of both approaches.

The decision-making process associated with the development of the objectives and strategies was challenging due to the variety of representatives on the work teams (both technical and non-technical and representing multiple interests). A lot of time was spent helping participants understand the Fish and Wildlife Program and the technical elements associated with evaluating hydropower impacts and the range of possible objectives and strategies associated with mitigation. All of the Subbasin Work Teams should be commended for being able to absorb all that they did and still develop the management plan elements within the limited time available.

The prioritization process began at the fourth Subbasin Work Team meeting when the participants began work on a set of provincial criteria for prioritizing the management

objectives and strategies. An initial set of core criteria were developed by the GEI Team based on the Council's Fish and Wildlife Plan, the IMP Guiding Principles, and OC prioritization guidelines. The Subbasin Work Teams provided comments on the initial set of criteria. Then the IMP OC considered the comments from all six Subbasin Work Teams when they finalized the provincial criteria.

The final provincial prioritization criteria were handed out at the fifth Subbasin Work Team meeting. Work teams were given the option of adding subbasin specific criteria to the provincial criteria if they desired. The Upper Columbia Subbasin and the San Poil Subbasin work teams chose to add specific criteria.

The final provincial prioritization criteria were:

1. Does the objective or strategy protect, mitigate, and enhance fish and wildlife resources likely to be addressed through funding from the NPCC's Fish and Wildlife Program?
2. Is the strategy consistent with addressing the limiting factors, and achieving the biological objectives, identified in this plan:
  - at the subbasin level?
  - at the provincial level?
3. Does the objective or strategy help to achieve multiple objectives within the province or subbasin (e.g., benefit both fish and wildlife, restoration of ecosystems rather than single species)?
4. Will implementation of the objective or strategy result in long-term biological benefits over short-term gains?
5. Does a federal, tribal treaty right, federal trust responsibility, state, or local law/regulation legally require the objective or strategy (e.g., ESA, CWA, federal trust responsibilities, etc.)?
6. Does the objective or strategy help to protect, mitigate, or restore habitat, while avoiding or minimizing impacts to native fish and wildlife species?
7. Does the objective or strategy emphasize restoration of, or provide benefits to, native over nonnative species?
8. Does the objective or strategy address Tribal fish and wildlife use for cultural and subsistence purposes?
9. Does the objective or strategy balance human interests<sup>4</sup> with fish and wildlife needs?
10. Is the objective or strategy feasible (in terms of politics, geography, economic viability, current state of science, achievable time frames, etc.)?

The *Technical Guide for Subbasin Planners* requires that the strategies be prioritized, but it was important to maintain the alignment of the strategies to the objectives since the objectives represent the measurable component that describes the desired outcome. Therefore, the Subbasin Work Teams were asked to prioritize the objectives using the

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<sup>4</sup> For purposes of this exercise, human interests are defined as: recreation, land use (e.g., farming, industrial uses, real estate development), critical area use, customs and culture of local communities, economic stability, etc.

prioritization criteria and then also prioritize the strategies that are related to each of the objectives.

The Subbasin Work Teams were presented with a prioritization spreadsheet. Participants were asked to rank each objective for each criterion from one to ten. The scores for each objective were averaged, and the standard deviation (which indicates level of agreement between respondents) was calculated. Strategies were simply ranked as high, medium, or low. The high, medium and low values for the strategies were converted to numeric values (3, 2, and 1 respectively), and the individual scores were averaged.

The individual scores from this prioritization exercise were used as an initial prioritization effort. The prioritization results were reviewed by the work team at the sixth meeting and adjusted, if deemed appropriate, and confirmed by the work team. The final decisions about the prioritization were made as a consensus decision, with opportunities for people to have a minority opinion that is also presented in the management plans.

Four of the Subbasin Work Teams used the numeric approach described above to prioritize objectives and strategies. In the Pend Oreille Subbasin and the Coeur d' Alene Subbasin, work team members chose to consider the prioritization criteria informally, without using the scoring spreadsheets. Those subbasins also used a consensus decision-making approach to prioritization of objectives and strategies.

### **1.2.3.5 Development of the Research, Monitoring, and Evaluation Plan**

The Council asked subbasin planners to include a Research, Monitoring and Evaluation (RM&E) plan in their subbasin plans. The Council provided guidelines for a very extensive RM&E section in the plans. The Council's guidelines call for a research agenda that describes the specific conditions and situations identified in the subbasin that requires specific research studies to help resolve management uncertainties. The monitoring and evaluation (M&E) portions of the plan are for the purpose of aiding implementation of the subbasin strategies. The Council suggested that subbasin planners should identify: 1) what indicator variables will be monitored, 2) who collects the information and how is it obtained, 3) how the information will be evaluated and used, and 4) how much it will cost.

The OC concluded that the degree of detail outlined in the Council's guidance documents looked more like project monitoring than a coordinated, subbasin-level RM&E plan. In addition, including full monitoring protocols for all monitoring approaches in the IMP would make our subbasin planning document extremely long and unwieldy. In addition, time and available funds do not permit the development of as extensive an RM&E plan as the Council identifies in their guidelines.

To meet the Council's RM&E recommendations to the best of its ability in the IMP, the OC identified a subcommittee to work out an initial approach to RM&E. This subcommittee reviewed federal, state, Tribal, and regional collaborative monitoring efforts. They found that these organizations use a variety of different monitoring

techniques. Typically, monitoring is done as independent efforts that address questions and management problems that are relatively unique to each entity. Monitoring efforts have evolved primarily in response to different organizational mandates, jurisdictional needs, funding availability, issues and questions. Such monitoring efforts have typically included little or no coordination with other agencies. Many of these monitoring efforts are conducted at a project level; however, there is starting to be a greater emphasis on complementing project level monitoring with large-scale efforts.

Several large-scale, comprehensive monitoring programs have operated in the Pacific Northwest in the recent past. Examples of such large-scale, comprehensive monitoring efforts include:

- Aquatic and Riparian Effectiveness Monitoring Program for the Northwest Forest Plan (AREMP),
- PACFISH/INFISH Biological Opinion for the Interior Columbia Basin (PIBO),
- Interior Columbia Basin Ecosystem Management Program (ICBEMP),
- Federal agencies developing a Columbia River Research, Monitoring, and Evaluation (RME) Program as required by ESA Columbia River Biological Opinions (BiOps) and a Columbia River Federal Salmon Recovery Strategy MOU, and
- Comprehensive, monitoring efforts within the states of Oregon, Washington and Idaho.

Currently there are several processes that are trying to address these monitoring differences. A Collaborative System-wide Monitoring and Evaluation Project (CSMEP) led by the Columbia Basin Fish and Wildlife Authority (CBFWA) is focusing on a system-wide monitoring and evaluation of fish status, addressing requirements of NMFS and USFWS biological opinions and recovery plans as well as the Council's Fish and Wildlife Program. There is also the Pacific Northwest Aquatic Monitoring Partnership (PNAMP), which is intended to provide a forum for coordination at the policy level among the federal, state and Tribal interests involved in aquatic ecosystem monitoring activities that includes interested parties outside of CBFWA. Its purpose is to provide information in a coordinated manner at the appropriate scales to inform public policy and resource management decisions through implementation of standard data collection and management protocols.

In light of the various ongoing efforts to develop a regional monitoring plan, the IMP planners have chosen to develop a monitoring plan based on existing monitoring methods described in the scientific literature. Each subbasin has a chapter on RM&E included in this plan.

#### **1.2.3.6 Feedback from Planning Participants on the Subbasin Planning Process**

Subbasin Work Team members asked many questions during the course of the planning process. Many participants asked some of the same questions on multiple occasions, clearly indicating that these were difficult issues. A review of the Subbasin Work Team meeting notes highlighted these concerns (complete meeting notes are available on the

IMP subbasin planning website:

<http://www.nwcouncil.org/fw/subbasinplanning/admin/level2/intermtn/default.htm>

- How does the subbasin planning process fit with other, ongoing planning efforts in the area? In the IMP, subbasin planners tried to address this concern by including a broad range of agencies and the general public in the Subbasin Work Teams. Endangered species recovery plans and total maximum daily load projects were referenced, when appropriate, in the objectives. However, integration of planning processes continues to be a concern.
- How will the IMP address trans-boundary issues? Canadian representatives were invited to participate in the Subbasin Work Teams, but most were unable to attend meetings due to time and budget limitations. Better integration with Canadian concerns should be a goal of the next iteration of subbasin planning.
- Many questions were asked about the BPA, the Council, and their process for funding fish and wildlife projects. Involving both technical and non-technical persons in decision-making required extra time to educate participants in a wide range of topics, including the BPA and Council roles and responsibilities.
- Members of the general public were unfamiliar with the Council and the Fish and Wildlife Program.
- Many people were concerned that the subbasin planning process would lead to additional land use regulations. These concerns were expressed less often as people learned more about the planning process, but the concern has not disappeared.
- Should the plan only focus on problems directly related to the FCRPS, or should it be an overall fish and wildlife plan? Subbasin Work Team members struggled to understand the scope of the plan. Many questions were asked about the appropriate range of objectives that should be considered.
- There was frustration expressed at the tight timeline which required short turnaround times for review of materials.

### ***Final IMP Provincial Wrap-up Meeting***

Subbasin planners in the IMP established a timeline and process specifically designed to allow sufficient time for a final review of the IMP subbasin plans by all participants. On May 5<sup>th</sup> and 6<sup>th</sup> 2004, IMP subbasin planners convened a final review and wrap-up meeting. Although allowing sufficient time to incorporate this review cut down on the time available to make last-minute edits to the final document, and precluded the inclusion of late-arriving recommendations from the Council; IMP subbasin planners thought it provided an important additional level of public involvement and accountability to participants. Additionally, IMP subbasin planners agreed that the expense and effort devoted to development of subbasin plans warranted a thoughtful review and analysis of the process and products. Subbasin planners in the IMP also hoped through the wrap-up meeting to provide constructive recommendations for future planning efforts derived from the on-the-ground experience of those involved in planning efforts in the IMP.

The May 5<sup>th</sup> meeting was a full day province-wide meeting facilitated by the GEI outreach team and the IMP coordinator. The purpose of this meeting was to review the overall IMP subbasin plans as a provincial group, confirm the final contents of the six subbasin management plans, review the process and participation in the IMP, develop specific recommendations for the next iteration of subbasin planning in the IMP, and develop constructive comments about how to improve the overall process and product in the future. An additional important purpose of the meeting was to acknowledge the Subbasin Work Team members for their hard work and explain the next steps of the submission and review process. Invitations were extended to the entire IMP mailing list of just over 500 individuals. Participants included the Subbasin Work Team members from each subbasin, the OC, members of the ad-hoc Technical Coordination Group, Council staff, the GEI technical and outreach team, interested members of the public, and the IMP coordinator.

The purpose of the May 6<sup>th</sup> meeting was to allow the OC and GEI's technical team to review and assess the IMP subbasin plans in comparison to the Council's ISRP/ISAB/PRG review guidelines, the Council's adoptability guidelines, and to review key portions of the provincial level plan. The meeting was co-facilitated by GEI's outreach coordinator and the IMP coordinator.

### **May 5<sup>th</sup> Meeting**

The GEI Team presented a summary overview of the entire completed IMP subbasin plans to the provincial group. Participants then spent the morning in subbasin breakout groups reviewing the final management plans and confirming that the finished plans accurately reflected the work product of each teams. Minor corrections were recorded and in two cases Subbasin Work Team members confirmed their requests to record dissenting opinions. Participants were also asked to post written suggestions or comments regarding the next iteration of subbasin planning on a wall with stations for each subbasin. Detailed notes from the full May 5<sup>th</sup> meeting are available on the IMP website <http://www.nwcouncil.org/fw/subbasinplanning/admin/level2/intermtn/default.htm>.

In the afternoon, the meeting participants split into breakout groups and in a round-robin format visited individual stations to discuss four recurrent themes that were articulated in work team meetings, OC meetings, and/or among the GEI consultant team. Those four themes and a summary of some of the major IMP provincial groups responses, discussion and recommendations follow:

1. Guidelines for Subbasin Planning / Task of Developing the Plan: Were there aspects of the subbasin planning process or direction/guidelines that were problematic for you? How would you improve the process and/or how could the Northwest Power and Conservation Council improve their guidelines and direction for subbasin planning?

#### Summary of critique:

- The lack of clear and consistent guidelines from the Council at the outset of planning was challenging. New guidelines were presented throughout the

planning process. No clear explanation for how and when subbasin plans will be implemented was provided. Subbasin planners were told at the outset that plans would be iterative, but there is no clear mechanism or commitment for this to occur.

- Related to the lack of initial guidelines, different subbasins, provinces and states are using different approaches to develop the technical and public involvement elements of the plans, it is not clear what method was “best”. Subbasin planners had concerns about how the Council will compare these very different processes and products.
- The Council’s expectations regarding stakeholder involvement were not clear. The Council never clearly articulated why subbasin planning should be done and why stakeholder involvement was needed when the obligations are already set in the Power Act. Participants in the IMP process would have liked to see more active participation by Council staff in the subbasin planning process. There was inadequate initial public education about who the Council is, who BPA is, and what the Fish and Wildlife Program is and is not. It was a challenge for new participants, especially non-fish and wildlife managers, to catch-up and get up to speed on background related information (e.g., subbasin summaries).
- The subbasin guidance and tools the Council provided to planners (e.g. EDT, the Technical Guide for Subbasin Planners) were very anadromous fish oriented and were in many cases difficult to adapt to blocked area conditions (e.g. resident fish and wildlife).

#### Summary of recommendations:

- The 2004 subbasin plans need to be living documents that can be and will be adapted in the future.
  - Council should establish full and complete guidelines before the next iteration of subbasin planning process begins. At the outset, these guidelines should 1) describe how the final plans will be reviewed and provide a clear template with evaluation criteria, 2) facilitate development of succinct and simple subbasin plans, and 3) use the information gathered from this first iteration of subbasin planning to improve future subbasin planning guidance.
  - The Council should consult with the local fish and wildlife managers when developing or redefining subbasin boundaries.
  - Council should be more actively involved in the subbasin planning process at the subbasin level, clarify relationship of Power Act requirements in relationship to stakeholder involvement and related expectations from all parties.
2. Development of a Science-Based Management Plan: Did you feel it was challenging 1) for lay people involved in the process to be tasked with developing a science-based management plan, 2) for scientist involved in the process to be tasked with developing a plan, and/or 3) to be tasked with achieving “best-available science” in light of various opinions? Are there other challenges you

experienced relating to the development of a science-based management plan?  
What recommendations or suggestions do you have regarding these challenges?

Summary of critique:

- The process was not layperson friendly based on daylong meetings on workdays, time requirements, and lack of time to educate lay people.
- In the layperson's mind, science is often viewed as controversial and as "opinions" that often don't address or regard potential social, economic and local impacts. Scientists view lay people as having opinions, biases, and values that are not always founded in truth supported by science. Scientists sometimes appeared to struggle with the concept of doing planning and not the technical work they are trained to do. Bridging these disparities between lay people and scientist in the work groups was challenging. Relationships between scientists and lay people improved at the IMP subbasin work team table.
- Given the short timeframe, the science used in the IMP subbasin planning process may not be as solid as the scientific participants would have liked and important scientifically justifiable strategies may have been missed which may result in important science-based strategies and projects not get funding. In addition, some participants felt that good science may have been subsumed by the desire to ensure "fundable" strategies in some cases.
- Doing the best real time management actions within the established science-based framework is challenging and requires that scientists need to ask how they can inform public policy.

Summary of recommendations:

- Lay people need to be informed and educated before the process begins to help them get up to speed, and adequate time needs to be allocated for this up-front education. Lengthen the timeframe and allow the work teams to help develop the agendas based on what information they need next.
  - Allow adequate time to develop assessment first and still have enough time to develop the management plan.
  - Explore how priorities and projects can be better designed and funded based on the involvement of private lands and private landowners.
3. Participation in the Process: Was the IMP Plan development done in an open and inclusive public process? Who was not involved, or didn't stay involved, that would have added value to the process and final plan? How can they be encouraged to participate in the future?

Summary of critique:

- The IMP Plan was developed in an open and inclusive process. The Tribal and private landowners were better represented than in other projects. The Intermountain Province got great representation compared to other provinces, and effectively used the web site and produced periodic newsletters. The GEI

Team, the OC, and others should be commended for facilitating this excellent grassroots effort.

- The group would have liked to have seen more press releases targeted to landowners, and an opportunity for more comments from the general public early on. The process also needs to consider the public's time schedules – for example, all-day meetings may discourage some people.
- It was noted that numerous people/groups/organizations were invited and chose not to participate in the work teams for numerous reasons. Many responded that they preferred to get their information off the Intermountain Province web page. A variety of groups and organizations were identified that would have been nice to have had involved. And it was recognized that all of the groups identified were invited to participate in the IMP planning process other than non-industrial businesses.
- There is a perception by some members of the public that their issues, concerns, and comments were not taken as seriously as those made by the agencies and tribal representatives. This was further confounded by the nature of the Power Act requirements. Everyone's input needs to be fully considered – not just the agency/tribal input.

Summary of recommendations:

- Establish a more reasonable time frame to complete the process – more time needed, but a defined time frame is still needed so it doesn't drag out beyond what is appropriate.
  - Make sure the process considers people's time and other commitments. People who are most directly affected by actions to benefit fish and wildlife need to be more involved.
  - Identify why participants or potential participants quit coming or chose not to be involved. And, follow up with them to evaluate how to get them involved.
  - Continue to use similar methods of information sharing – newsletter, meeting notes, meeting announcements, emails, web site, etc. Identify the "lay people" and draw them out more during the discussions at meetings.
4. IMP Plan Product: Do you feel that the IMP Subbasin Plan is a useful document that will 1) help achieve the subbasin vision, and 2) help you, your organization, and/or community? What improvements to the management plan could be made in future updates? What elements of the plan are the best and will be most useful? What elements of the plan are the least useful? What additional elements/topics should be considered in future subbasin plans?

Summary of critique:

- Challenges that affected quality and content of final document included the Federal Columbia River Power System (FCRPS) broader focus, lack of clarity as to what the scope of the project was (e.g. FCRPS versus non-FCRPS), involvement of both scientists and lay people, disagreements over how specific to be in the objectives and strategies, need for better clarification on

aquatic side between anadromous fish substitution objectives and resident fish activities in general.

- The IMP Plan inventory is the least useful part of the plan and is not linked as well as it could be to the other parts. It is difficult to get project managers to critique their own projects, and adequate time and effort was not available to do a thorough analysis of the inventory. We did not ask ourselves the right questions when initially developing the inventory and then ran out of time. This could be one of the stronger elements of the document in a future iteration.
- Broader discussion of Columbia River operations is missing from the IMP Plan. There was not adequate discussion of the role of Grand Coulee and its effects, and more discussion of hydro operations was needed. Members of the Implementation Team should be involved in subbasin planning efforts
- The IMP planning process did not include discussion of economic impacts of fish and wildlife actions on local communities or the costs associated with implementing various actions. Although such an analysis was discussed at the outset of planning, economics got pushed out of the agenda because there just was not enough time to get everything done in the Subbasin Work Team meetings.

#### Summary of recommendations:

- Need to have a commitment from the Council that the subbasin management plan will be a living document that supports a subbasin management system that builds on work that has been done so far. Subbasin plans won't accomplish the subbasin vision without funding, a commitment to follow-through and opportunities for long-term reviews and revisions are needed.
- Plan needs to more clearly define the funding responsibilities of other agencies (e.g. what is BPA responsible for funding, what are state agencies responsible for funding, what are other federal agencies responsible for funding, etc.)
- Adequate time and resources need to be identified in next iteration so that strategies also address socio-economic issues, risks, political issues, as well as best available science.
- Subbasin plans need to go to the next level to identify actions, include estimates of the costs of various options, and include a budget page with the total necessary budget for subbasins and province.

More complete notes detailing participant comments from these four workstations are posted on the IMP website at

<http://www.nwcouncil.org/fw/subbasinplanning/admin/level2/intermtn/default.htm>.

Meeting participants provided a variety of written ideas and suggestions that should be considered during the next iteration of subbasin planning for each of the six subbasins. These suggestions and comments fell into the following categories (the full set of comments is provided in the complete meeting summary which is posted on the project web page):

- Improvements for the aquatic assessment, clarifications to the inventory, concerns and suggestions relating to the prioritization, improvements to the objectives and strategies, how to improve participation in the process, project funding, improvements to the planning process, long-term monitoring, consistency with legal obligations, resolving controversial issues, expressing varying viewpoints in the final document, matching subbasin boundaries to hydrologic systems, building and strengthening weak links, adding more focus on species with little data, improvements to mapping, continued use of professional meeting facilitation, use of incentive-based management strategies, making clearer connections with operational issues, addressing data gaps, etc.

### **May 6<sup>th</sup> Meeting**

At the May 6<sup>th</sup> meeting the OC and GEI's technical team reviewed the ISRP/ISAB/PRG guidelines and the Council's adoptability guidelines. During a daylong meeting the group reviewed and discussed their self-analysis of the IMP product in comparison to both of these sets of guidelines. A summary of this response will be included in a letter to the Council and the ISRP that will be submitted with this subbasin plan. In addition, these comments will be posted on the subbasin website.

## **1.3 General Description of the Natural Environment of the Intermountain Province**

The IMP is characterized by a diverse landscape ranging from 1,000 feet above mean sea level near the tailwaters of Chief Joseph Dam to 7,690 feet above mean sea level at Illinois Peak in the headwaters of the St. Joe River (National Geographic Maps 2000). The northern and eastern boundaries lie within the Northern Rocky Mountains. These areas are generally characterized as alpine and subalpine forests with a decaying granitic geology (Alt and Hyndman 1994). In the eastern portion of the province, in both the Coeur d' Alene and Pend Oreille Subbasins, the Precambium Belt Supergroup is the predominant bedrock. Belt rocks are a thick layer of sedimentary sandstones and mudstones, approximately one billion years old (Alt 2001).

Much of the southwestern portion of the IMP is within an area known as the Palouse Hills. The Palouse Hills is a softly rounded landscape with rich, fertile, silty soils. Set within this farmland are areas known as scablands, with outcrops of black basalt, broad expanses of raw gravel, and dry stream channels (coulees) (Alt 2001). This landscape was carved during the most recent ice age. About 15,000 years ago, the southern fringe of the glaciers encroached upon the mountain valleys of northern Washington and Idaho. Glaciers dammed the Clark Fork River creating Glacial Lake Missoula. The dam broke and the lake drained catastrophically causing a torrential flood. This happened several dozen times resulting in the landscape seen today (Alt 2001).

## **1.4 Background of Existing Problems**

Several over-riding issues are of critical importance in the IMP: the loss of anadromous fish, the historic lack of funding provided to the province for fish and wildlife mitigation, the lack of information about fish and wildlife in the IMP (a problem related to the lack of funding), and water management of mainstem dams.

The complete loss of the anadromous life history has had a wide array of impacts within the province and is a major focus of this plan. This topic will be discussed in depth in the assessment portions of this plan, and it is also addressed in objectives and strategies outlined in the management plan.

The lack of funding for fish and wildlife in the IMP is, in part, a direct consequence of the loss of anadromous fish. The BPA currently allocates approximately \$139 million annually to protect, mitigate, and enhance fish and wildlife in the Columbia River Basin (CBFWA 2004<sup>5</sup>). The 2000 Fish and Wildlife Program calls for 70 percent of fish and wildlife mitigation funding to go to anadromous fish. Historically, the IMP has not received funding for anadromous fish mitigation because anadromous fish have been lost due to the construction of Chief Joseph and Grand Coulee dams without upstream fish passage facilities. The IMP has received between \$6 and \$11.5 million per year for fish and wildlife between 2001 and 2003, or between 5 and 8 percent of the total mitigation funds available (CBFWA 2004). This level of funding is not proportionate to the magnitude of the impacts experienced by the IMP, which total approximately 40 percent of the wildlife habitat and anadromous fish losses documented to date.

The lack of data is reflected in the assessment and management plan portions of this plan. For example, several of the aquatic focal species, such as white sturgeon and burbot, are addressed only briefly in the assessment because very little is known about them. In addition, in many cases objectives are, of necessity, broad and general. It was not possible to include numeric targets in most of the management objectives because of a lack of quantitative information.

Water management in the mainstem rivers has a profound effect on fish and wildlife in the IMP. Water levels in all the mainstem reservoirs in the IMP, including Lake Pend Oreille, Coeur d' Alene Lake, Lake Roosevelt, and Lake Rufus Woods are controlled by the hydropower system. Decisions about water management affect people throughout the Columbia River Basin and beyond. Therefore, decisions about water management are made on a system-wide basis.

In the IMP Subbasin Plan, the management planning work focused on issues that were conceivably within the control of the local Subbasin Work Teams and fish and wildlife managers. Therefore, although water management in the mainstem is an extremely important issue to the province, this plan largely does not address the topic. Nevertheless, the timing and extent of fill and drawdown has a profound effect on the ability of the reservoirs in the IMP to sustain fish and also affects many wildlife species. Many of the artificial production objectives and strategies described in the management plan are necessary because of operations of the reservoirs.

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<sup>5</sup> available at: <http://www.cbfgwa.org/cfsite/ResultTopics.cfm?TopicID=24>

### 1.4.1 Fisheries

At the turn of the twentieth century, anadromous fish runs in the Columbia River Basin ranged from an estimated 10 to 16 million fish annually (Council 1996), more than any other river system in the world. Spring Chinook and steelhead were relatively abundant in upper Columbia River tributary streams prior to the extensive resource exploitation in the 1860s. By the 1880s, the expanding salmon canning industry and the rapid growth of the commercial fisheries in the lower Columbia River had heavily depleted the mid- and upper Columbia River spring and summer Chinook runs (McDonald 1895), and eventually, steelhead (Mullan et al. 1992). Many factors, including construction of impassable mill and power dams, un-screened irrigation intakes, poor logging and mining practices, overgrazing, and private development of the subbasins, in combination with intensive fishing, all contributed to the decline in abundance of upper Columbia basin salmonids (Fish and Hanavan 1948; Chapman et al. 1982). However, in spite of these impacts, the anadromous fishery in the upper Columbia River was utilized until 1939.

Hydroelectric dam construction began in the basin in the late 1800s and continued through the mid-1980s. Initial excavation for Grand Coulee Dam began in 1933. The full extent of losses in upper Columbia River salmonid runs is difficult to quantify because of limited historical records, but the runs were severely depleted by the 1930s (Craig and Suomela 1941). In a 1947 report on the Columbia Basin Project, the Bureau of Reclamation acknowledged, “many valuable [salmon] breeding areas have been totally eliminated by construction of dams wholly unprovided with fishways.” The report’s author further stated, “a large part of the spawning and rearing areas originally available has either been completely eliminated or so seriously reduced as to be useless” (U.S. Bureau of Reclamation 1947; Scholz et al. 1985). Although the exact amount of fish lost as a result of hydropower development is unknown, the development of both the FCRPS and other hydropower facilities clearly had a significant impact on anadromous fish abundance in the Columbia River (Dauble et al. 2003).

Today, current annual run size estimates average about 2.5 million fish (Dauble et al. 2003), although none of these fish are able to return to the upper Columbia River. In the IMP anadromous fish were eradicated upstream of River Mile (RM) 596.6 (River Kilometer (RK) 959.9) on the Columbia River when Grand Coulee Dam was constructed without fish passage facilities in 1939 (Center for Columbia River History website). Grand Coulee Dam blocked access of Columbia River anadromous salmonids to about 17 percent of their upstream production areas (Dauble et al. 2003). Subsequently, in 1958, Chief Joseph Dam was also built without fish passage facilities, blocking upstream anadromous migrations another 50 miles downstream (Figure 1.2). In all, roughly 37 percent of all anadromous fish losses in the Columbia River basin occurred in the areas blocked by Grand Coulee and Chief Joseph dams (Scholz et al. 1985).

Construction of Grand Coulee Dam without fish passage facilities led to a program that centered on trapping salmon and steelhead at Rock Island Dam to address the upcoming loss of access to over 1,100 miles of anadromous fish habitat (Fish and Hanavan 1948). The Grand Coulee Fish Maintenance Project (GCFMP) (1939-1943) called for: (1) constructing four fish hatcheries in the Okanogan, Wenatchee, Entiat, and Methow river

basins, (2) building a trapping facility to intercept fish bound for spawning sites above Grand Coulee at Rock Island Dam, (3) transferring these fish to hatcheries where they were held in captivity until eggs could be collected, and (4) raising the progeny at the hatcheries until they could be stocked into the Wenatchee, Entiat, Methow, and Okanogan drainages. However, the Okanogan River Hatchery was never built because of the outbreak of World War II.

In addition, kokanee production at the Ford Fish Hatchery in the Spokane Subbasin was developed as mitigation for the loss of anadromous fisheries on the upper Columbia River due to the construction of the Grand Coulee Dam in 1939. This hatchery was built by BPA in 1941.

The attempt to relocate the fish proved to be a failure relative to preserving the upper Columbia River genetics for Chinook and steelhead. Seven years after the relocation attempt, Fish and Hanavan (1948, cited in UCUT 1999) stated:

At the very outset, there was ample reason for doubting of the process of relocation, involving as it did the trapping, hauling and impounding of adult salmon in large numbers, could be accomplished without at least a temporary decline in the production levels. As the program progressed, these doubts were increased by the substantial mortality of adult salmon ... in the hatchery holding pens.

In May 1975, Donald Moos, Director of the Washington State Department of Fisheries testified before the Senate and House Joint Public Works Appropriation Committee that, “Unfortunately the hatcheries were plagued with numerous problems from the very beginning. The brood stock died before ripening, disease was rampant, ... sufficient water of proper temperature was not available, and the hatcheries were never adequately funded. In short, these hatcheries never fulfilled their intended purpose, which was maintenance of the vast numbers of anadromous fish that had formerly spawned upstream of Grand Coulee Dam” (UCUT 1999). Mullan (1987) pointed out that survival to adult for fish released from these hatcheries was generally one percent or less. Regardless of the degree of success of the GCFMP, the current stocks of fish that spawn in the upper Columbia River basin are at least partially descended from the progeny of the program.

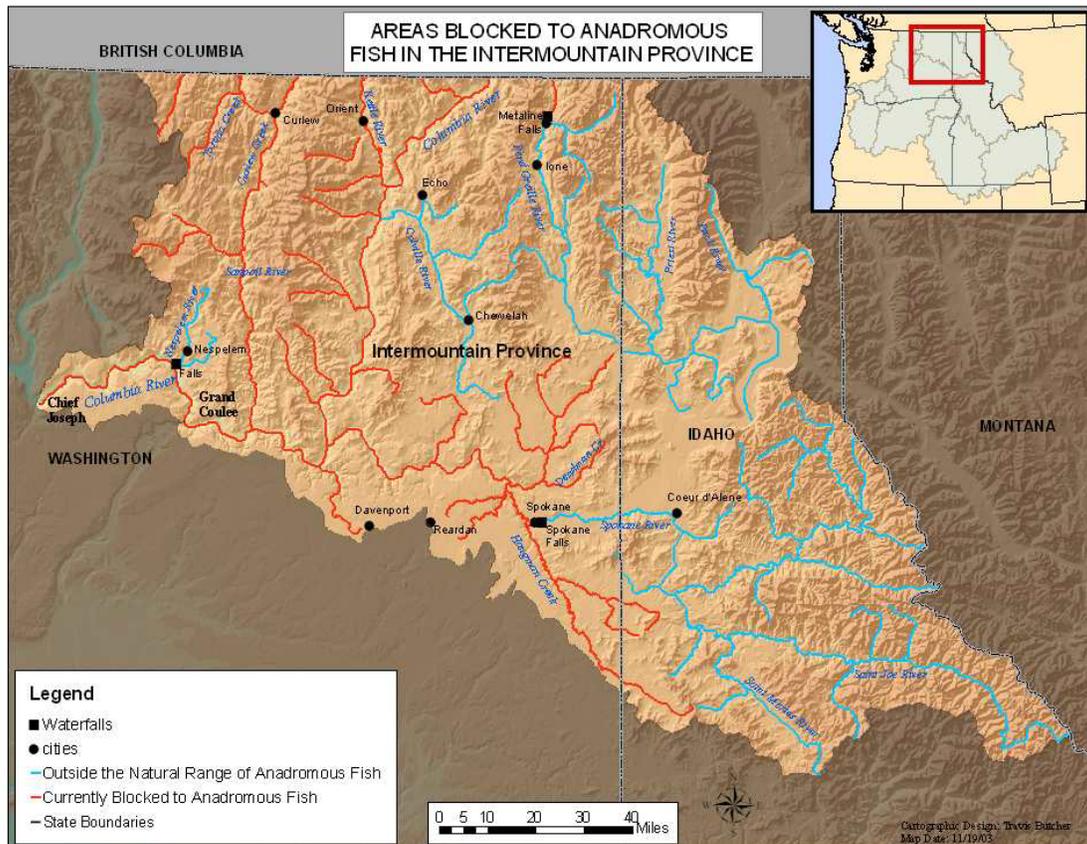


Figure 1.2. Map of the “blocked area” of the Columbia River Basin. The blocked area is that portion of the basin which historically had anadromous fish but no longer does because of the lack of fish passage at Chief Joseph and Grand Coulee dams.

The Colville Tribes reinitiated the question of the fourth Okanogan mitigation hatchery in the 1980s and in 2000, the U.S. Bureau of Reclamation agreed with the Colville Tribes that authorized mitigation for construction of Grand Coulee Dam was not complete.

In addition to the inadequacy and ineffectiveness of direct mitigation for construction of Grand Coulee Dam, the bulk of the Mitchell Act hatcheries built for federal salmon mitigation were constructed primarily in the lower Columbia River province to benefit lower river Tribes and commercial fisheries. The Council’s 2003 draft artificial production review and evaluation basin-level report outlined the failure of these hatcheries to recover salmon and create a viable commercial fishery. The report recommends hatchery production be moved to locations in the upper Columbia and Snake rivers and utilize locally adapted brood stocks. Consistent with these recommendations, the Colville Tribes are currently seeking approval from the Council of a Step 1 conceptual design for a hatchery facility to be located at the base of Chief Joseph Dam. This hatchery facility would help support naturally spawning populations of Chinook salmon in the uppermost tributary of the Columbia River currently accessible to anadromous fish. Once constructed this facility would use the best science currently

available to improve stock genetics and harvest opportunities in the geographically closest location to impacted upper Columbia River Tribes and communities.

In addition to blocking fish passage, Grand Coulee Dam also inundated 135 miles of valuable habitat in the Columbia River mainstem from the dam to within 15 miles of the Canadian border (USGS 2004), 28 miles of the lower Spokane River, 12 miles of the San Poil River and 15 miles of the Kettle River. Other dams within the basin also converted significant sections of river into reservoirs. The creation of these impoundments has changed the once connected fluvial system into a series of slack water environments that are connected hydrologically, but quite isolated biologically. The low velocity impoundments often have non-stratified deep environments with fine sediments, elevated dissolved atmospheric gases, and unnatural flow regimes (CCT et al. 2000). Currently, the Hanford Reach RM 341 to 396 (RK 549 to 639), downstream of the IMP, remains the most significant lotic mainstem habitat within the United States upstream of Bonneville Dam (Dauble et al. 2003). The only other lotic mainstem habitat is a short reach (15 miles) found between the upstream end of Lake Roosevelt and the border with Canada.

In addition to the federal hydropower system, numerous private dams have been constructed in the province. These facilities also converted flowing rivers into slow moving reservoirs with higher temperatures and lower dissolved oxygen levels than found in flowing rivers. In addition, large storage dams built in Canada in the 1960s dramatically changed flow regimes in the upper Columbia River system.

The development of hydropower and the cheap electricity it generated helped promote rapid economic expansion within the Columbia River Basin, which resulted in secondary impacts to fisheries resources. The region's economy shifted from river- and salmon-based to agrarian-based and industrial-based. The economic shift resulted in increased extractive uses of the natural resources. Consumptive use of natural resources is closely associated with aquatic and terrestrial habitat degradation.

Also devastating to the native fish has been the introduction of no fewer than 21 exotic fish species that out-compete or directly prey on native species adding further harm to the native species. Additionally, the reservoirs benefit nonnative species, which further increase nonnative pressure on native species. At present only remnant populations of native resident salmonids remain, including Interior Columbia River redband trout, cutthroat trout, bull trout, and mountain whitefish.

Another impact of the loss of anadromous salmon has only recently been recognized, that is the consequences of the loss of nutrient transport from oceans to freshwater environments (Stockner and Ashley 2003). When migratory adult fish leave their ocean rearing grounds and migrate to lakes, rivers, and streams to spawn, they convey nutrients from one location to another. Since Pacific salmon die within a few days of spawning, the nutrients contained in their carcasses become available to the ecosystem, sometimes far inland from where the nutrients were derived. These salmon-transported nutrients are important for the maintenance of ecosystem biodiversity and fish production (Stockner and Ashley 2003).

Murota (2003) reviewed historic Pacific salmon escapement data for British Columbia and concluded that annual average nitrogen uploading was about 2,400 metric tons and average annual phosphorus loading was about 300 metric tons. No similar statistics are currently available for the IMP. However, Thomas et al. (2003) reviewed the role of marine-derived nutrients in Idaho streams and concluded that nutrient delivery by anadromous salmon may have been ecologically significant under historic spawning densities. It is clear that the loss of anadromous salmon must have resulted in very significant nutrient losses to both aquatic and terrestrial ecosystems in the IMP.

Biological changes created by dams are substantial and well documented (Allen 1995). Allen states, “that because of reduced and altered river flow, dams help to sever the river’s historic connection with its floodplain, leading to reduced productivity in both habitats.” The flood-pulse concept identifies that fish production is strongly dependent on regular inundation of the floodplain (Junk et al. 1989). The river exchanges material and nutrients between the terrestrial environment and aquatic environment creating a symbiotic effect. The river needs to purge itself of fine sediments and detritus and recruit new materials like large woody debris. The process of purge and recruit helps promote a healthy and diverse ecosystem.

Other processes such as hydrological interconnection with ground water are also reduced by dam operations, loss of floodplain connectivity, and irrigation withdrawals that are common in the IMP. Hydrologic function is also impacted by timber harvest, roads, and human development in terrestrial environments. The rate and duration of water entering stream channels is altered and this modifies stream morphology, channel structure, and sediment loads. Changes in vegetation and ground cover can impact hydrological and climatic conditions on a localized basis. All of these activities are associated with the development of the FCRPS and the landscape-wide changes that have occurred as a result. The regulation of free-flowing rivers clearly brings about fundamental change in the structure and function of ecosystems and the fish and wildlife resources that rely on them.

In creating subbasin plans, and to properly manage and rehabilitate damages to the ecosystem that have occurred in the Columbia River basin, the concept of fish and wildlife and ecological function must be merged into one thought. This approach will be used to address synergies between fish and wildlife activities by addressing habitat needs. However, the extent of the impacts such as increasing human demands, a history of established processes, and legal issues make this type of planning difficult. The altered environments in the IMP will exist long into the future as will the need to mitigate for the historic, current and future impacts created by the FCRPS. The subbasin plans are intended to simply guide efforts in a manner that will progress toward future ecosystem improvements.

#### **1.4.2 Terrestrial Resources**

Development and operation of the federal hydrosystem resulted in direct effects on wildlife populations and habitats through construction of facilities and reservoir

inundation. Wildlife continue to be affected via operational and secondary, or indirect, effects. Population growth and the combined effects of industrial, agricultural, and residential development also have had widespread effects on wildlife and their habitats in the IMP. Much of the province has been converted to developed and agricultural land uses, the majority of forest stands are managed for timber production, naturally-occurring fires have been suppressed, and human presence provides a source of disturbance to native wildlife. Habitat conversion and degradation are the two primary limiting factors to native focal wildlife species in the province. Although some of the direct effects can clearly be linked to the FCRPS, secondary effects of the hydrosystem are tightly intermingled with the effects of other land uses in the province.

Comparison of current to historic habitat conditions in the IMP shows that habitats have been greatly modified through direct and secondary effects of the FCRPS and through other land uses and development. Habitat conversion is most evident in the lands currently mapped as urban (about 1 percent of the province) and those mapped as agriculture/pasture/mixed development (about 12 percent of the province).

Chief Joseph and Grand Coulee dams inundated over 200 miles of the Columbia River and portions of many confluent tributary streams and rivers. Riparian habitat, wetlands, alluvial habitat, and estuaries were inundated along the downstream reaches of these rivers and streams. Loss of riparian and wetland habitat also occurred at Albeni Falls, where the reservoir inundated several miles of the Pend Oreille and Clark Fork rivers and shoreline along Lake Pend Oreille. Numerous other non-FCRPS projects located in the IMP contributed to province-wide reductions in riparian habitat. The riverine, riparian, and wetland habitats that were inundated by construction of the hydropower system are habitats with unusually high value to wildlife.

The function of remaining riparian and wetland habitats is in many cases lower than the historic condition. Timber harvest and grazing have caused changes in the soil structure and vegetation cover of riparian zones; loss of mature trees and reduction in large-diameter standing dead and downed trees are examples of changes to the habitat elements in riparian zones. Roads, agriculture, and other human developments are often located within riparian zones because of topography or proximity to water. Reduced riparian zone flooding and fluctuating water levels from reservoir flood control operations are also having continuing impacts on riparian gallery forests and backwater sloughs.

Grasslands in the IMP are estimated to have decreased in area by 19 percent from the historic condition. Grasslands have been modified through dryland and irrigated agriculture, grazing, urbanization, construction of dams for hydroelectric power, irrigation, and flood control.

Shrub-steppe habitats have decreased in area 22 percent from the historic condition, primarily due to agriculture and grazing, and to a lesser extent due to inundation by impoundments. Both the Chief Joseph and Grand Coulee projects resulted in inundation of steppe habitat.

Forested habitats in the IMP have been altered by conversion to non-vegetated habitats and by modification of the vegetative cover. Eastside mixed conifer forest shows a gain of 38 percent from the historic condition, due primarily to forest management and fire suppression which promote shade-tolerant species and reduce the occurrence of shade-intolerant species. All three of the federal hydrosystem projects in the IMP inundated eastside mixed conifer forests. Lower elevation ponderosa pine habitats show a decrease of 66 percent from the historic period. These habitats have been reduced in area by urbanization, grazing, agriculture, timber harvest, and development of hydroelectric, irrigation, and flood control projects. Both the Chief Joseph and Grand Coulee projects inundated significant areas of ponderosa pine.

Western juniper and mountain mahogany woodlands are absent in the current condition mapping, a complete loss of the habitat type. In the IMP, this habitat was located primarily in the Lake Rufus Woods and Upper Columbia subbasins in areas affected by hydroelectric project development, grazing, and agriculture. Higher elevation forested habitat types such as upland aspen and lodgepole pine forest were unlikely to have been inundated by hydroelectric project construction, but secondary impacts of the hydrosystem may affect the current distribution of these habitat types.

The Northwest Power Act of 1980 requires that measures be implemented to protect, mitigate, and enhance wildlife affected by the development and operation of hydropower projects on the Columbia River System. The Council’s Fish and Wildlife Program has included measures and implemented projects to obtain and protect habitat units in mitigation for these calculated construction and inundation losses. Operational and secondary losses have not been estimated or addressed. However, the Fish and Wildlife Program includes a commitment to mitigate for these losses.

Habitat loss assessments were conducted to evaluate the effects of federal hydrosystem project construction and reservoir inundation on wildlife. The loss assessments are available in standard references known as “Brown Books” (Kuehn and Berger 1992; Creveling and Renfrow 1986; Martin et al. 1988). Each assessment reported the number of acres of habitat types that were affected (refer to Table 4.16). In addition, the Habitat Evaluation Procedures (HEP) methodology developed by the USFWS was used to evaluate the quantity and quality of wildlife habitats affected. The HEP models provided an estimate of the value of the lost habitats to various indicator species of wildlife. HEP models provide results in terms of Habitat Units, which are units of value based on both quality and quantity of habitat. Progress made to date toward implementing the recommended mitigation strategies for the direct construction losses is summarized below in terms of Habitat Units by species by hydropower project (Table 1.1).

Table 1.1. Status of mitigation for construction and inundation wildlife-habitat losses: HEP Habitat Units (HUs)

Project	Species	HUs lost	HUs acquired	Percent complete
Chief Joseph <sup>1</sup>				
	Total all species	8,833	1,433	16.2%

Project	Species	HUs lost	HUs acquired	Percent complete
<b>Grand Coulee<sup>2</sup></b>				
	Total all species	111,785	56,680	50.7%
<b>Albeni Falls<sup>3</sup></b>				
	Total all species	28,658	4,822	16.7%

<sup>1</sup> BPA 2002

<sup>2</sup> WDFW 2004

<sup>3</sup> KT 2004

Completion of the construction loss mitigation is the highest priority for the IMP. The riverine, riparian, and wetland habitats affected are habitats with unusually high value to fish and wildlife. Other habitats, such as shrub-steppe, are in relatively low quantity and/or quality in the province. The projects were constructed between 1938 (Grand Coulee), 1952 (Albeni Falls) and 1955 (Chief Joseph). Wildlife-habitat losses remained unmitigated until after implementation of the Northwest Power Act and completion of the loss assessment studies. At this time, mitigation for the Albeni Falls Project is approximately 17 percent complete, Grand Coulee is 51 percent complete, and Chief Joseph is 16 percent complete. Losses have affected wildlife each year since the projects were constructed, and will continue to affect wildlife each year that they remain unmitigated.

Operational impact assessments have not been conducted for any of the three FCRPS hydroelectric projects. This Subbasin Plan identifies the types of operational effects that may occur, and proposes a schedule for performance of assessments, development of mitigation plans, and implementation of mitigative actions for each of the three federal projects.

Assessments of secondary effects of hydroelectric development for the three IMP federal hydroelectric projects have not been prepared. Secondary effects of FCRPS development in the IMP are wide-reaching and are intermingled with effects of other land use developments. This Subbasin Plan identifies the types of secondary habitat and wildlife species effects that have occurred as a result of federal hydrosystem development and other human uses in the province, and describes subbasin objectives for wildlife and wildlife-habitat protection, restoration, and mitigation based on consideration of current conditions of wildlife populations and habitat.

## 1.5 Out-of-Basin Effects

The San Poil and Coeur d' Alene subbasins are headwaters subbasins and so are not subject to impacts from other upstream subbasins. The other four subbasins in the IMP are all downstream of other Columbia River subbasins that have the potential to affect water quality, quantity, and migratory fish and wildlife. The Pend Oreille Subbasin is downstream of the Clark Fork River in Montana. The Upper Columbia Subbasin is downstream of the Columbia and Kootenai rivers in British Columbia and Montana. The Lake Rufus Woods Subbasin is downstream of all subbasins in the IMP but includes the Nespelem River watershed that is a headwater watershed.

### **1.5.1 Upstream Pollutant Sources**

Teck Cominco Ltd. owns the smelter at Trail, British Columbia which released approximately 360 metric tons per day of smelter slag into the Columbia River from 1900 to 1998 (USGS 2004). Contamination has been found downstream in the U.S. portions of Lake Roosevelt. A study by the USGS reported that Lake Roosevelt bed sediments were contaminated with arsenic, lead, and other metals based upon high concentrations, impaired benthic invertebrate communities, and laboratory sediment bioassays (USGS 2004). The impacts of the contaminants on aquatic life have not been well documented.

In 1999, the Colville Tribes petitioned the Environmental Protection Agency (EPA) to conduct an assessment at the Upper Columbia River. The petition expressed concerns about risks to human health and to the health of the environment from contamination in the river. In December 2000, EPA completed a preliminary assessment of the Upper Columbia River and determined that a sampling investigation was necessary. In mid-2001, EPA collected samples from the Upper Columbia River to learn more about the types and amounts of pollution in the sediments. The results of the sampling were released in November 2002 in a draft Site Inspection Report. Sampling results suggest that further investigation of contamination in the Upper Columbia River is warranted.

Negotiations about cleanup measures are ongoing. In December 2002, the U.S. Environmental Protection Agency asked Teck Cominco to pay for a study of the contamination. However, jurisdictional issues remain and, as of this writing (February 2004), no agreement on studies or cleanup has been reached. In 2004, EPA is contracting a six-part study of existing information on the river. Also, the USGS is continuing to study the effects of airborne contaminants.

### **1.5.2 Upstream Dams**

Several large dams are upstream of the IMP, including Hungry Horse, Libby, Mica, Keenleyside, and Revelstoke dams. These dams have modified flow regimes in the Pend Oreille, Kootenai, and Columbia rivers in the IMP. The exact effect of these modified flow regimes on fish and wildlife has not been quantified. However, in general it is known that the timing, duration, and magnitude of normal high and low flow periods have changed. Rapidly shifting intra-daily fluctuations dramatically alter the historic hydrograph of all river systems where hydroelectric generation occurs. These changes have resulted in changes in the abundance and species composition of fisheries in downstream areas.

These dams also affect water quality. For example, elevated water temperatures in the winter have impacted spawning habitat for burbot in the Kootenai River below Libby Dam (Paragamian 1993). Spill over the dam results in increases in total dissolved gases (TDG) to levels in excess of saturation. High levels of TDG can cause gas bubble disease (GBD), which can injure or kill fish. Water quality studies have found that TDG levels in the Columbia River exceed the water quality standards established by Washington, Oregon, the Colville Tribes, and the Spokane Tribe of Indians. Work is currently underway to establish a Total Maximum Daily Load (TMDL) for TDG and other pollutants in the Columbia River.

### **1.5.3 Climatic Events**

Changes in climate can have major impacts on fish, wildlife, and plant species. Data suggests that the precipitation that has fallen in the Washington Cascades has shifted from mainly snowfall to more rain over the last 20 years. The change in precipitation form has major impacts to the way dams are operated and runoff patterns. Smaller spring runoff influences: reservoir fill-rates, channel geomorphology, and flood frequency altering ecosystem structure and function. Drought conditions become more frequent making water less available to fish and wildlife thus limiting habitat quantity. Global warming even at a small increase in temperature could have a major impact on coldwater fish that inhabit desert or arid environments where high summer water temperatures currently and historically are stressful to fish. Although such factors are impossible to address at the subbasin or even provincial scales, their influence on ecosystems has the potential to overshadow the results of efforts outlined in this plan.

### **1.5.4 International Issues**

Two of the subbasins in the IMP, the Pend Oreille and the Upper Columbia, include portions of Canada, complicating coordination of fish and wildlife management. Canadian representatives were invited to participate in the Subbasin Work Teams, but most were unable to because of time and budget constraints. However, there are some objectives in the Pend Oreille Subbasin Management Plan that address bull trout concerns in the Canadian portion of the subbasin. These objectives were initially suggested by Canadian representatives. In addition, a Canadian representative from Teck Cominco was a member of the Upper Columbia Subbasin Work Team.

## **1.6 Organization of this Document**

The document begins with an executive summary summarizing the key elements of the planning process and features of this plan (Table 1.6-1). Section 1 provides an overview of the planning process and its participants, and a review of aquatic and terrestrial resources on the province scale. Section 1 also describes the methods used by the planning participants to develop the assessments, inventories, and management plans.

Section 2 contains the province level inventory and management plan for the IMP, including the province level vision, guiding principles, objectives, and strategies. The province level plan tiers to the Council's 2000 Fish and Wildlife Program vision, scientific principles, and objectives (refer to Appendix A); it also provides the framework within which each of the six IMP subbasin management plans were developed.

Section 3 includes the assessment of aquatic resources in the province, and Section 4 includes the assessment of terrestrial resources in the province. The specific methodologies and data sources used for the assessments are described in the respective sections.

Sections 5 through 52 are organized by subbasin, beginning with the Coeur d'Alene, Pend Oreille, and Spokane subbasins, and followed by the Upper Columbia, San Poil, and Lake Rufus Woods subbasins. These sections present the subbasin-specific

assessment information and inventories of current and historic programs for aquatic and terrestrial resources, respectively. The management plan follows, incorporating subbasin objectives and strategies for both aquatic and terrestrial resources. Sections 5 to 11 cover the Coeur d' Alene Subbasin; Sections 12 to 19 cover the Pend Oreille Subbasin; Sections 20 to 27 cover the Spokane Subbasin; Sections 28 to 35 cover the Upper Columbia Subbasin; Sections 36 to 43 cover the San Poil Subbasin; and Sections 44 to 52 cover the Lake Rufus Woods Subbasin. References are located in Section 53.

A variety of appendices have been prepared to provide additional useful information to the reader. Appendix A provides key elements of the Council's approach to Fish and Wildlife Subbasin Planning that emerged from their 2000 Fish and Wildlife Plan, including the vision, assumptions for planning, scientific principles, and biological objectives. Appendix B is a quick reference to the acronyms used in this document. Appendix C is a list of the province level focal wildlife species analyzed in Section 4. Appendix D shows the degree of association between focal wildlife species and specific habitats used for breeding. Appendix E shows the critical ecological functions provided by certain focal wildlife species. Appendix F includes a list of alternative funding sources (non-BPA) for future projects. Appendix G presents recent wildlife harvest data for key species in each of the subbasins. Appendix H is a summary of ongoing or recently completed projects in the IMP. Appendix I includes the references for the Research, Monitoring, and Evaluation Plan. Appendix J includes copies of the comment letters that were received on the third and fourth draft.

Table 1.6-1. Organization of this document

<b>Section</b>	<b>Contents</b>
Executive Summary	Summary of Key Elements of the Plan
1	Overview of IMP and Subbasin Planning
2	Province Level Management Plan and Inventory
3	Province Level Assessment of Aquatic Resources
4	Province Level Assessment of Terrestrial Resources
5 through 12	Coeur d' Alene Subbasin
13 through 20	Pend Oreille Subbasin
21 through 28	Spokane Subbasin
29 through 36	Upper Columbia Subbasin
37 through 44	San Poil Subbasin
45 through 52	Lake Rufus Woods Subbasin
53	References
Appendix A	2000 Fish and Wildlife Plan
Appendix B	Acronym Index
Appendix C	Province Level Focal Species
Appendix D	Association Between Focal Wildlife Species and Specific Habitats Used for Breeding
Appendix E	Critical Ecological Functions Provided by Certain Focal Wildlife Species
Appendix F	Alternative Funding Sources (Non-BPA) for Future Projects
Appendix G	Recent Wildlife Harvest Data
Appendix H	Summary of Ongoing or Recently Completed Projects in the IMP
Appendix I	References for Research, Monitoring, and Evaluation Plan
Appendix J	Comments Received on Third and Fourth Draft