



USDA Forest Service; CTUIR Wildlife Mitigation Plan for the John Day and McNary Dams, Columbia River Basin; CTWSRO Integrated Resource Management Plan; ODFW District Wildlife Management Plans; Wy Kan Ush Me Wa Kush Wit, CRITFC. See references and related projects sections.

**Subbasin.**

Lower Columbia- Willamette River watershed

**Short description.**

Re-establish the native riparian vegetation on public lands on Multnomah Channel bottomlands; assess vegetation and wildlife habitat on 309 acres of wetland; develop enhancement strategy; develop watershed protection plan.

**Section 2. Key words**

**2. Key words. Key words**

Mark	Programmatic Categories	Mark	Activities	Mark	Project Types
X	Anadromous fish	<input type="checkbox"/>	Construction	X	Watershed
X	Resident fish	<input type="checkbox"/>	O & M	X	Biodiversity/genetics
X	Wildlife	<input type="checkbox"/>	Production	<input type="checkbox"/>	Population dynamics
X	Oceans/estuaries	<input type="checkbox"/>	Research	X	Ecosystems
<input type="checkbox"/>	Climate	X	Monitoring/eval.	<input type="checkbox"/>	Flow/survival
<input type="checkbox"/>	Other	X	Resource mgmt	<input type="checkbox"/>	Fish disease
		X	Planning/admin.	<input type="checkbox"/>	Supplementation
		<input type="checkbox"/>	Enforcement	X	Wildlife habitat en-
		<input type="checkbox"/>	Acquisitions		hancement/restoration

**Other keywords.**

**Section 3. Relationships to other Bonneville projects**

**3. Relationships to other Bonneville projects. Relationships to other Bonneville projects**

Project #	Project title/description	Nature of relationship
9206800	Willamette Basin Acquisition	Targets acquisition of critical fish and wildlife habitat in the Willamette Basin
9705900	Securing Wildlife Mitigation Sites-Oregon	Umbrella project, Provides project location, priority, and data tracking information

		(Planning/Implementation)
95-65	Assessing Oregon Trust Agreement Using GAP Analysis	Tool used to analyze and rank potential projects in the basin for implementation(Planning)
92-84	Oregon Trust Agreement Planning Project	Methods developed for assembling trust agreement and list of potential projects(Planning)
9107800	Burlington Bottoms Mitigation Site	First wildlife mitigation project implemented in the Willamette basin Continues as an enhancement and O&M project(Implementation)

## Section 4. Objectives, tasks and schedules

### 4. Objectives, tasks and schedules. Objectives, tasks and schedules

#### *Objectives and tasks and tasktasks*

Obj 1,2,3	Objective	Task a,b,c	Task
1	Establish riparian habitat.	a	Site preparation, planting, and maintenance
2	Assessment of habitat conditions	b	Topography and hydrology
		c	Survey of biological communities
3	Habitat enhancement feasibility	d	Hydrologic control feasibility study
4	Watershed protection	e	Watershed protection and enhancement plan

#### *Objective schedules and costs schedules and costsand costs*

Objective #	Start Date mm/yyyy	End Date mm/yyyy	Cost %
1	2/1998	6/2002	35.30%
2	3/1998	11/1999	47.80%
3	4/1999	9/1999	6.30%
4	7/1999	10/1999	6.30%
5	3/1998	11/1999	4.30%
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## Abstract

Combining the efforts of BPA and Metro, over 1100 acres of Willamette River bottomland along the Multnomah Channel is or will soon be under public ownership for wildlife habitat protection and enhancement. This complex of emergent tidal marshes, forest wetlands, sloughs, and small lakes are diverse and species-rich. On the 306 acres Metro has acquired to date, there is very high potential for wetland enhancement. Over 24 acres of degraded riparian habitat area along the Multnomah Channel and creeks on Metro's property will be re-vegetated with native plant material in 1998. More information is needed to characterize the bottomland's ecosystem and to develop appropriate enhancement objectives and opportunities. Topographic, hydrologic, and wildlife habitat assessment information will be acquired in 1998 and 1999. Utilizing Metro's GIS, this data will be used to develop site plans and designs for wetland enhancement projects. A watershed management plan for streams draining the adjacent Tualatin Mountains onto Burlington Bottoms will be developed.

## **Section 7. Project description**

### **7. Project description. Project description**

#### **a. Technical and/or scientific background.**

##### **1. Council program**

The Council's Fish and Wildlife Program is very clear in stating that construction and operation of the federal Columbia Basin hydro power system is a cause of habitat loss for wildlife, and that it is Bonneville's responsibility to mitigate for those losses. The losses due to construction have been assessed, independently audited and verified (see report by Beak Consultants), and adopted into the Council program. These losses include losses of HU's for all major wildlife species at each hydro project, and have been prioritized by habitat types with target species. The Council wildlife program goal is to "fully mitigate for wildlife losses from hydro power in the Columbia River Basin." Specifically the program says "The goal of this program's wildlife strategy is to achieve and sustain levels of habitat and species productivity as a means of fully mitigating wildlife losses." Acquisition of HU's is the Council's "preferred method" for wildlife mitigation. This can be done either by habitat acquisition via purchase or easement, or enhancement of existing habitat to provide additional HU's (if possible). The implementation component of this project consists of specific projects to provide HU's of the highest possible priority habitat type for target species, to provide crediting to Bonneville for documented hydro power losses.

In addition to the Council program, the assessments and calculations of wildlife losses mitigation credits are found in multiple documents written over a period of six years (Bedrossian et. al. 1985; Noyes et. al. 1985a, 1985b, 1985c, 1985d, 1986; Preston et. al. 1987; Rasmussen and Wright 1990a, 1990b, 1990c, 1990d).

The Council program is also very clear in calling for Bonneville to develop short-term interim five-year agreements with wildlife managers, specifically the state of Oregon and the appropriate Indian tribes. In the eyes of the OWC, this project, fully funded through 2001, will allow Bonneville to meet this goal. Additionally it will provide the framework to reach the Council's goal of Bonneville developing long-term agreements for all wildlife mitigation in Oregon.

## **2. The Oregon Trust Agreement Planning Project and the GAP analysis:**

The BPA Oregon Trust Agreement Planning Project (OTAP) was initiated in 1992 by the OWC to create a list of potential wildlife mitigation opportunities by priority, and to attempt to determine the costs of mitigating wildlife losses in Oregon. The end result of this project was the "Brown Book", which identified 287 potential sites using Council and OWC developed criteria as a basis for determining priority (please see Methods section). This information originated from OWC project sponsors, various tribal and state management and mitigation plans, and the Oregon Natural Heritage Database. At the time of completion these potential sites were "available", and the OWC had developed cost estimates for general habitats within the mitigation area, based on estimates from certified appraisers. The findings of the "Brown Book", and its corresponding database, lay somewhat dormant until 1995 (please see History).

Starting in 1995, at the request of Bonneville, the "Assessing Oregon Trust Agreement Planning Project Using GAP Analysis" project was conducted by the ODFW Wildlife Diversity Program. It was designed to assess the findings of the Brown Book, upgrade and provide more detailed information on the 287 previously identified sites (and to include any new sites that had since been identified), and to develop more refined methods to evaluate the project potential contribution to the mitigation of target species and habitat. Additionally, the role a project might play in conservation planning, within the range of habitat types and condition statewide, was determined. Specifically, the primary goal of this project was to prioritize and depict the contribution of each proposed mitigation site to target species and habitats as well as overall bio-diversity in the state and/or eco-region within which it is found. It is important to note that the primary objective of the mitigation program is to mitigate for habitats and species lost through construction. That objective is met and often exceeded when potential mitigation sites are selected using a GAP analysis.

The GAP project developed a series of databases and Geographic Information System (GIS) data layers, a tool used by the OWC to evaluate potential mitigation projects. Combined with the findings of the OTAP, a suitability analysis determined which projects were suitable for BPA mitigation now and which remaining projects could be implemented in the near future. Multiple queries of landscape level GIS data were conducted as part of the GAP analysis portion of the project. The results characterized the potential contribution to the mitigation target species and habitats. Future work by the OWC has and will involve the refinement of existing information and the generation of new projects based on criteria and methodology developed during this project.

Please see the Methods part of this section for specific information on GAP analysis and the criteria used and/or developed.

Site specific project background is as follows:

Based on observations at similar sites along the lower Columbia River, the river bottomlands adjacent to western bank of the Multnomah Channel were historically rich in species and diverse in wildlife habitat. These wetland complexes were influenced by the Columbia River tidal prism, the seasonal flows of the Willamette and Columbia Rivers, and the stream flows from adjacent watersheds in the Tualatin Mountains. Operation of dams on the Columbia and Willamette Rivers, farming and grazing activities on the channel bottomland, and logging and development in the adjacent small watersheds have contributed to habitat degradation in these bottomlands.

Recently, public agencies are focusing efforts on protecting and enhancing these diminishing resources. In 1991, BPA acquired 417 acres of the Multnomah Channel bottomland referred to as Burlington Bottoms. This was purchased to mitigate for loss of wildlife habitat due to construction of dams on the lower Columbia River and Willamette River Basins. In 1995, voters of the Portland metropolitan region passed a bond measure that provided funds to Metro, a regional government, to acquire land for the protection of open spaces, including the area along the Multnomah Channel. To date, Metro has acquired 309 acres toward its goal of protecting 600 contiguous acres of river bottomland along the channel for wildlife habitat. With the adjacent Burlington Bottoms, this provides wildlife habitat protection for a total of 1017 contiguous acres. Multnomah Channel bottomlands are in close proximity to the Sauvie Island Wildlife Refuge, operated by ODFW, across the channel on Sauvie Island.

A total of \$3 million has been dedicated by Metro to the acquisition of land for protection along the Multnomah Channel. In addition to bottomland acquisitions, Metro has and will continue to purchase land in the adjacent Tualatin Mountains watersheds that affect the bottomlands. No funds are available for enhancement for these properties.

The problems that will be addressed in this proposal include:

1. loss of riparian habitat;
2. paucity of information on the existing wildlife habitat quality and use;
3. identifying viable fish and wildlife enhancement and restoration opportunities;
4. developing implementation plans for specific enhancement and restoration projects;
5. long-term protection of fish and wildlife habitat in adjacent watersheds affecting Multnomah Channel bottomlands.

#### Analogous Model Study

The problems and the approach toward solutions are analogous to another project managed by the principal investigator and project manager: Smith and Bybee Lakes Wildlife Area. Smith and Bybee Lakes are a tidal, freshwater marsh system very similar and in close proximity to the Multnomah Channel properties. Located at the confluence of Willamette and Columbia Rivers, it is nearly 2000 acres of wetland meadows, marshes, sloughs and open water with associated riparian and upland forests. With a management plan adopted in 1990, Metro has managed the area primarily for wildlife habitat protection

and enhancement, while providing passive recreational opportunities. The project manager for this grant application is also one of the authors of the management plan and manager for seven years of Smith and Bybee Lakes Wildlife Area.

With the goal to manage and restore the lakes system faithful to its former natural conditions, to the extent possible, initial management efforts focused on documenting existing conditions and investigating the functions and complexities of the former tidal marsh system. The lakes basins were cut off from their direct connection to the Willamette and Columbia Rivers in 1982 with a local dam construction, resulting in a loss in influences of the rivers' hydrology in driving the system. Essentially, the basins were converted from tidal marshes to reservoirs. Studies either conducted directly by or under the direction of the project manager included a water quality diagnostic study (Morgan, 1996) a survey of the biota, including aquatic and terrestrial plant communities, aquatic macroinvertebrates, herpetiles, mammals, and birds (Ev, et al. 1994), a paleolimnological study (Eiler, et al. 1995 ), hydrologic and transport modeling (Wells, 1992), and feasibility of restoration (Morgan, 1996). With the information gathered in the above referred studies, restoration goals were established with the assistance of a technical advisory committee composed of state and federal natural resources managers and local experts. A concept design for a water control structure was developed by the project manager, accompanied by a strategy for hydrologic control, vegetation management and habitat enhancement. Funding partners were developed to assist in implementation, scheduled for 1998.

**b. Proposal objectives.**

**Objectives**

1. Establish riparian vegetation on Multnomah Channel, tidal creeks, and streams.  
Native riparian vegetation has been severely impacted by cutting and grazing along most of the 1.8 mile of Multnomah Channel bank and along 0.5 miles of the tidal creek and streams on Metro's current landholdings. Native plants have been replaced by exotic pasture grasses and Himalaya blackberry. To stabilize the banks and enhance fish and wildlife habitat, a native riparian plant community will be planted and maintained (approximately 5 years) in these areas until establishment. Plant genotype appropriate for the site will be used. For example, Oregon ash seedlings developed from local parent trees will be used to insure leaf emergence will occur synchronously with the seasonal floods of the river.  
Product: Approximately 24 acres of native riparian vegetation will be established.  
Estimated cost: \$33,600

2. Assessment of existing habitat conditions.  
No detailed inventory or assessment of plant or animal communities exist for properties currently owned by Metro, although rudimentary field surveys have been made by Metro personnel. Although data is being acquired at Burlington Bottoms that is indicative of that expected on Metro property, detailed site-specific plant community characterization and wildlife inventory is essential to

guide protection and enhancement efforts. Non-biotic factors that significantly control or influence habitat conditions will be characterized; namely, hydrology and topography.

Product: A report with maps characterizing plant communities and potential and documented wildlife use of Metro's recent and anticipated land acquisitions, which totals 600 acres.

<u>Estimated Costs:</u>	\$28,000	Biological Assessment
	\$ 9,500	Topography
	\$ 7,900	Hydrology

3. Determine ecosystem components, habitat types, and species which will be targeted for enhancement.

Recognizing that external conditions beyond our control have and will continue to change (i.e. river hydrology, introduction of pest species), realistic targets will be determined based on the assessment work, with the over-arching mission of remaining faithful to former natural conditions to the extent possible.

Consideration will be given to local seed sources, native species that are either currently supported or are capable of being supported given feasible habitat modifications, migratory routes, connectivity to other ecosystems, and the role of these targeted habitat types and species in the larger ecosystems.

Product: Detailed maps of existing and potential habitat types.

Estimated Cost: \$6,000

4. Determine feasibility of habitat enhancement.

Once habitat type (i.e. plant assemblages) and species are targeted, the enhancement strategy will be developed by on a feasibility study. For example, if expansion of the open water margins that support the existing *Scirpus lacustris* and *Carex aperta* assemblage is deemed high priority, then the data acquired in meeting Objective 1 (i.e. site hydrology and topography) will be used to determine the feasibility of implementation and maintenance costs for optimizing growing conditions for these assemblages.

Product: Report results may include location and design of an adjustable weir used to regulate inundation area and periodicity.

Estimated Cost: \$6,000

5. Develop watershed protection strategy for streams entering the properties from adjacent Tualatin Mountains.

Where Metro owns significant portions of the watersheds of two streams entering the Multnomah Channel bottomlands from adjacent Tualatin Mountains, most of the drainages are private-held. This requires development of watershed management strategies in cooperation of other landowners. Most land parcels are relatively large, limiting the number of landowners within these small watersheds.

Product: A watershed management strategy document will be developed by consensus with the principal landowners. Land use analysis and mapping using GIS will accompany documents.

Estimated Cost: \$4,000

**c. Rationale and significance to Regional Programs.**

This project is consistent with all known local, state, federal, and tribal laws. The NWPPC has approved similar projects in Oregon and other states. BPA has successfully implemented several projects in Oregon in the last seven years. The project is covered under the BPA Wildlife and Watershed Programmatic EIS documents (BPA 1997b, BPA 1997c, BPA 1997a). The project is consistent with several areas of the Council's Fish and Wildlife Program. Specifically, it is consistent with Section 7.6 of the FWP which calls for watershed based habitat restoration focusing on protecting of wild and natural populations. It is also consistent with Section 11 of the Program which identifies wildlife resource needs. See project scientific/technical background and history sections.

**d. Project history**

The history of this project is two-fold: first is the history of Bonneville wildlife mitigation efforts, to give the reviewer an understanding of project structure and how it fits within the regional program. Second is the history of Oregon's efforts to work with Bonneville, the Council and the Wildlife Working Group (CBFWA Wildlife Caucus) to give the reviewer an understanding of how the project developed, current status and funding assumptions. This includes a history of the Oregon Trust Planning Project and GAP Analysis.

**1. History of Bonneville Wildlife Mitigation Efforts**

**. History of Bonneville Wildlife Mitigation Efforts. History of Bonneville Wildlife Mitigation Efforts**

Under the Northwest Power Act, the Council is required to include in its Fish and Wildlife Program measures to "protect, mitigate, and enhance" fish and wildlife affected by the development and operation of hydroelectric facilities on the Columbia River and its tributaries. Bonneville's Administrator is required to use his funds and authorities to carry out such mitigation in a manner consistent with the Council's Program.

**Prior to 1988:** At the Council's direction, Bonneville funded wildlife loss studies for construction of and inundation by the major hydroelectric dams. The first studies completed were those for Libby and Hungry Horse Dams. The Council reviewed the losses, amended its Program to specify the number of acres of habitat and species that would constitute adequate mitigation and authorized Bonneville to proceed with mitigation projects.

Rather than carry out the mitigation itself, Bonneville undertook negotiations with the State of Montana with the intent of having Montana undertake the mitigation. Because year-to-year contracts with Montana were not viewed as an administratively practical way of acquiring and maintaining habitat, the Council and the region's utilities encouraged Bonneville to consider establishing a trust fund, giving Montana flexibility to acquire and maintain habitat as the opportunity arose.

Bonneville was initially reluctant to consider trust funds because they felt such arrangements would give them inadequate control over the outcome of the mitigation. Bonneville eventually decided that a trust fund would be a good idea. In exchange, it could get the state to agree to: 1) a once-for-all-time settlement of Bonneville's wildlife obligation and; 2) to a hold harmless clause which would make the state liable for any additional mitigation which might be required by the Council or anyone else during the next 60 years.

**Council position on wildlife agreements:** Bonneville asked for the Council's response to this type of mitigation trust, and the Council replied in a July 14, 1987 letter from Chairman Bob Duncan. Basically the Council said that trusts are a good funding vehicle, but that once-for-all-time settlements were not in tune with either the Northwest Power Act or with FERC practice regarding mitigation at private hydroelectric facilities. This position was reiterated in subsequent amendments to the Program and is reflected in the current Council Program, where the Council endorses agreements (short-term (Section 11.3D and long-term Section 11.3E ) as the preferred method for implementing wildlife mitigation.

**Montana trust:** During 1988, Bonneville negotiated with Montana to reach an agreement on a wildlife mitigation trust for Libby and Hungry Horse Dams. The Council was not invited to participate in these negotiations and was not briefed on them by Bonneville. Shortly before the end of the Governor's term, the state reached an agreement with Bonneville, including a once-for-all-time settlement, and hold harmless conditions.

Although the mitigation to be achieved under the agreement was based on the Council's Program, and the Program called for Bonneville funding of a Montana trust "upon approval by the Council", the Council was not asked to approve this agreement and did not do so. Given Montana's determination to enter into the agreement before the end of the Governor's term, the Council did not attempt to block the agreement but did send a letter on December 20 from Chairman Trulove to Bonneville expressing concern that the proposed trust agreement had not received a public airing or Council approval. The Council noted that the Montana Trust should not be considered a precedent for future wildlife mitigation.

**Wildlife Rule:** In November 1989, the Council took up wildlife mitigation for most of the remaining federal hydroelectric projects in the Columbia River basin. Because there was widespread disagreement about the loss estimates and the hydro power share of those losses, the Council did not make any determination about the total mitigation due at any of these projects. Instead, the Council amended the Program to include a wildlife mitigation goal of achieving 35% of the agency-submitted losses during the next decade, using the agency estimates as a "starting point".

The Wildlife Rule established a two-track process (including project specific criteria) for implementation of wildlife projects. One track called for projects to be submitted to Bonneville under the Implementation Planning Process. Once projects are reviewed and

selected for inclusion in the Bonneville Annual Implementation Workplan the Council's Wildlife Advisory Committee reviews them. The other track permits agreements if agreed to by all parties for a particular facility.

**Dworshak trust:** In 1990, the Nez Perce approached Bonneville about the possibility of an agreement for the Nez Perce portion of wildlife mitigation for Dworshak Dam. Following initial contacts with Bonneville, the tribe informed the Council and the state of Idaho of its decision to seek a settlement. At Bonneville's urging, the state and the tribe began working on a joint agreement and memorandum of understanding for the entire Dworshak project. Both parties worked with Council staff during this period and progress reports were made to the Council. Because of renewed interest expressed in agreements at this time Council Chairman Tom Trulove wrote to the Bonneville Administrator and other interested parties reiterating the Council's views on mitigation agreements (copy attached). In January 1991, the state and the tribe signed a memorandum of agreement delineating each party's share of the project and agreeing to negotiate jointly with Bonneville for an agreement. The parties negotiated extensively over the spring and summer, with a staff member from the Council present for the early discussions but excluded from the later discussions.

Once again, Bonneville insisted that the agreement be conditioned upon a once-for-all-time settlement and hold harmless agreement from the other parties. In this instance, Bonneville requested Council approval of the adequacy of the proposed mitigation (but not of the other terms of the agreement, such as the full settlement). Bonneville notified the Council that it needed advice from the Council at the Council's February 26, 1992 working session so that it could meet a March closing date for a key parcel involved in the settlement, the Pene Lands. Because of the short time, the Council again was unable to provide adequate opportunity for public comment on the proposed agreement. The Council notified Bonneville that, based on the information available from the parties, the mitigation was likely to succeed and would satisfy Bonneville's wildlife obligation. However, the Council advised Bonneville that an amendment to the Program was needed, and that the Council would be required to give full consideration to comments received in the amendment proceedings before making a final decision on the amendment.

**Conforth Ranch:** In June 1991, the Council approved Bonneville implementation of the Conforth Ranch wildlife mitigation project. Because of concerns over the project by the Port of Umatilla, the Council instructed Bonneville to work with the Port to address the Port's concerns while proceeding with acquisition of the property. After several months of negotiating with the Port, (no agreement was reached) Bonneville announced its intent to acquire the Conforth property in early December 1991. Following the Bonneville announcement, Senator Packwood and Representative Bob Smith of Oregon, wrote the Secretary of Energy requesting that he overturn the Bonneville decision to acquire the ranch because of local opposition to the project. After meeting with the parties, the Bonneville Administrator announced that his decision to acquire the Conforth property was being put on hold for 45 days in order continue discussions with the parties and to consider other alternatives.

On February 12, 1992 the Administrator announced his decision on the Conforth project in a letter to Chairman Hallock. Bonneville's decision was to purchase a one year option on the Conforth Ranch from the Trust for Public Lands. The letter also stated that it was Bonneville's decision to meet its responsibilities for wildlife mitigation "through long-term trust agreements with States, tribes, and other agencies." Though it was not clear in the letter what the extent of the policy was, Bonneville has since clarified that its intent is to do no more wildlife mitigation absent trust agreements. Discussions with Bonneville staff indicate that this policy will apply to previously Council approved projects as well as to new projects.

**Washington Interim Trust and Council rule-making to amend wildlife rule:** In 1993 Washington and BPA signed an interim five year agreement. The agreement guarantees \$45 million Washington's wildlife managers over a five year period. This was not a trust agreement, only a stream of funds. The Washington coalition and BPA agree to continue to negotiate for a long-term agreement. During this time the Council issued a draft rule which endorsed agreements as a preferred method to achieve wildlife mitigation and calls on BPA to enter into short term agreements, similar to the Washington agreement, with Oregon and Idaho and to negotiate long term agreements over the next 3 years. Bonneville states in comments on draft rule that it will not enter into short-term agreements. Bonneville then announces that its FY 94 and FY95 budgets contain no funds for new wildlife projects, including implementation of activities called for in Phase 4 of the draft wildlife rule.

The Council adopted the final rule in November 1993. The rule continued to call for short-term (Section 11.3D) agreements and states that if Bonneville cannot enter into such agreements in 90 days then the Council will solicit projects from the agencies and tribes and approve them for implementation. If short-term agreements are not in place thereafter the Council will call for project proposals each October thereafter; long term agreements are to be in place in 3 years. Bonneville failed to enter into short-term agreements with states and tribes and Council solicited project proposals in late February, 1994.

Since 1994 Bonneville has funded only a few new, individual wildlife mitigation projects outside the above agreements. This was due to the agreements using most or all of the available funds and a lack of any stable commitment from Bonneville to fund wildlife mitigation. In August of 1995 the Council completed a Wildlife & Resident Fish rule-making that included an amendment to establish specific funding percentages for Bonneville's Direct Program budget under the MOA: 70% for anadromous fish and 15% each for Resident Fish and Wildlife. Thus from FY96 through FY01 the region's wildlife managers have or will have approximately \$15M per year (plus interest) for wildlife mitigation. While most of the available funds through FY98 will be used finishing up the Washington Interim Agreement, some funds have been available for use on other individual projects, notably the Chief Joseph and Southern Idaho projects. Unfortunately, in the history of Bonneville wildlife mitigation under the Council's program, little of Oregon's losses has been mitigated.

## **2. Oregon Wildlife Coalition**

In 1991 the Oregon Wildlife Coalition (OWC) was formed made up of wildlife managers from the Oregon Department of Fish & Wildlife (ODFW), the Confederated Tribes of the Warm Springs Reservation in Oregon (CTWSRO), the Confederated Tribes of the Umatilla Indian Reservation (CTUIR), the Burns-Paiute Tribe (BPT), and the US Fish and Wildlife Service (USFWS). The Coalition developed proposals to address Bonneville concerns for having an “outcomes” based approach and then submitted a proposal for an Oregon planning process to the Council later that year. From fall of 1991 to June of 1992 the OWC negotiated with Bonneville over funding the proposal, which in July of 1992 became the Oregon Trust Agreement (OTA) Planning Project (BPA #92-84).

In October of 1993, after a year of development the OWC publishes an Oregon planning document, the “Brown Book”. Then in January of 1994 they begin meeting to formulate a strategy for trust negotiations with Bonneville and in February the Coalition requests in writing that Bonneville begin negotiations. This met the Council’s deadline for trying to get to interim agreements within 90 days after the rule went into effect. In March Bonneville responded positively and identifies its’ lead negotiators.

Between April and July five coalition sessions were held; Bonneville attended 3 of those meetings. At the initial meeting it was agreed that the parties would develop principles of negotiation. The parties exchanged documents on these issues and agreed that the negotiations should initially focus on technical issues that would define the biological basis for mitigation before the issue of money was to be discussed. Bonneville negotiators agreed to this strategy. It was agreed that the focus of the discussions would be the “Brown Book” losses and the Oregon mitigation planning proposal. It was proposed that a technical committee, including both Bonneville staff and coalition members would work together to develop the technical proposal. Bonneville stated that they would have to get the administrators concurrence before they could commit to such a procedure. The process then broke down when it became apparent that no funds would be available and that Bonneville was moving away from trusts. The coalition stopped meeting for over a year.

During these years the Council’s wildlife advisory group had become the Wildlife Working Group (WWG, and also the CBFWA Wildlife Caucus), made up of all the wildlife managers in the Columbia Basin. They meet regularly to help implement the Council’s wildlife rule and in doing so developed, reviewed and adopted habitat assessment tools and strategies. Once it became apparent from the Council’s 1995 rule-making and the MOA negotiations that wildlife funding would become stable at approximately \$15M per year through 2001, the WWG started discussions of both long- and short-term funding for future wildlife mitigation in the Basin. Various strategies were discussed, but all agreed that Oregon had not received a reasonable share of funds spent to date. In the end a budget was developed and adopted by the WWG covering Bonneville funds through 2001 (attached). This budget called for Oregon’s wildlife mitigation to receive \$275K in FY97, \$500K in FY98, \$4M in FY99, \$5M in FY00 and \$6M in FY01. The first two years are for planning and coordination, the next three for project implementation.

In helping develop this budget as members of the WWG, Oregon's coalition members agreed to come together once again to start developing strategies on how best to implement wildlife mitigation in Oregon. Also at this time a project to reaffirm the original findings of the OTA Planning Project was completed. This project, Assessing Oregon Trust Agreement Planning Process Using GAP Analysis (BPA #95-65), provided a more rigorous scientific/policy filter on the sites originally identified in the "Brown Book" and demonstrated the validity and applicability of that effort.

The OWC has met continually since this time and developed a coordination and planning budget for FY97, which due to contracting problems was not initiated until fall of 1997. This allowed the entities involved to provide staff dedicated to this planning and implementation effort. For FY98, since much of the coordination for this year was using FY97 funds, the coalition developed and proposed the initiation of a small group of projects scattered throughout the state along with some continued funding of planning and coordination. For the current year specific implementation project areas have been identified for acquisition, enhancement or O&M along with a small coordination budget.

**e. Methods.**

**1. For selecting implementation projects:**

**OTAP:** The OTAP consisted of two parts. The first was the compilation of a database which contained information about potential mitigation sites. The second component of the OTAP consisted of gathering land values from recent land sales and appraisals within the geographic areas and habitat types where mitigation activities were likely to occur. The information originated from OWC project sponsors, various tribal and state management and mitigation plans, and the Oregon Natural Heritage Database. A range of potential acquisition costs was also calculated. This range was based upon the assumption of complete mitigation for the wildlife losses in Oregon.

Criteria developed by the Council, as well as by the OWC are used to evaluate each site to determine a baseline mitigation potential. Please see the Brown Book for further detail regarding these criteria.

**ASSESSING OTAP:** The primary goal of the project was to prioritize and depict the contribution of each proposed mitigation site identified in OTAP to target species and habitats as well as overall biodiversity in the state and/or ecoregion within which it is found. It is important to note that the primary objective of the mitigation program is to mitigate for habitats and species lost through construction. That objective can be met and exceeded when potential mitigation sites are selected using a GAP analysis.

**GAP Analysis:** The National GAP Analysis Project began in 1988 with the states of Idaho and Oregon. It was coordinated by the USFWS from the Washington D.C. office (Scott and LaRoe 1993; Pennisi 1993). Today the U.S. Geological Survey spearheads the

effort with over 200 collaborating organizations including businesses, universities, and local, state, and federal governments representing 32 states (Scott 1994).

One of the primary objectives of the project includes establishing ecological and social datasets, based on geographic location within each state, which will eventually lead to an analysis of the health and degree of “protectedness” of biodiversity in the United States (Scott et. Al. 1993; Machlis et. Al. 1994). Thus, the term GAP refers to the gaps in protection designed for the biological ecosystems upon which all life is dependent. The fundamental unit of analysis and protection is the vegetation or habitat type. The vegetation/habitat types are considered catalysts and therefore predictors of wildlife occurrence and in general, biodiversity itself.

The GAP project is considered a proactive rather than reactive form of focusing and directing land management activities. Traditional wildlife management has dealt with individual species and often only after the species has reached an elevated level of peril (Scott 1994). In many cases the management or protection comes only after the species has been designated as “at risk of extinction” (Forman and Gordon 1986; Harris 1984). Reactive management is costly, narrowly focused (often a single species), occurs relatively frequently, species in the same habitat type are dealt with separately (eg. spotted owl and marbled murrelet), and in some cases may occur too late (eg. Snake River sockeye salmon).

The information compiled and generated by the GAP Analysis program is intended to be used for the development of a biodiversity management plan. This approach also differs from historic management by considering common as well as rare species through the realization that all species are equally worthy of management and protection (Scott 1994). Rather than waiting for complex ecological, social, and economic problems, which may drive species near to extinction, GAP gathers the known information about communities and the nature of their protection before it is too late. This allows land managers to 1) assess the current land management situation, 2) identify important areas in need of further research, 3) develop and analyze management options, and 4) take steps towards insuring protection of biodiversity before additional species become threatened or endangered with extinction.

The BPA GAP Project adopted many of the techniques and objectives of the national program described above. New methods were also developed which may assist with similar activities in the future. It is hoped that through the use of these tools the BPA wildlife mitigation projects in Oregon will continue to be planned using the most current scientific method available. And while providing necessary credits to BPA for the wildlife losses a robust network of protected areas will be dedicated to complement existing refugia for target species and others.

**Review and develop criteria for prioritization of project sites:** the first step towards developing prioritization criteria was to review the work which had been conducted for the OTAP. The previous project involved the formulation of a Joint Advisory Committee which decided to employ a “coarse filter/fine filter” approach using two sets of criteria. The first set was used as a coarse filter to “weed-out” some of the more than 500

potential project nominations. The second set of criteria was used to rank the remaining potential projects based on mitigative and biological qualities. The coarse filter criteria which were statutory or otherwise crucial consisted of the following:

1. Projects must be located within a pre-determined geographic area. A map showing the geographic limitations of consideration is included (*Figure 1*).
2. Projects must complement activities of regional, federal and state wildlife agencies, and tribes.
3. Project does not impose funding responsibilities of others on BPA.
4. Project does not adversely affect State or Federally listed Threatened or Endangered species.

The use of these criteria was effective at removing approximately half of the projects originally submitted. The remaining 287 projects were then ranked using the following fine filter criteria:

1. Directly mitigates impacts from hydro power development on-site. Score 0 or 1  
First consideration should be given to high quality on-site opportunities
2. Protect and/or enhance high priority habitat and indicator species as adopted by the Northwest Power Planning Council. Score 0 or 1.
3. Protect or enhance natural ecosystems and species diversity over the long term.  
Score: 1 = proposal addresses either naturally self-sustaining ecosystem or species diversity,  
2 = previously natural self-sustaining ecosystem that needs management actions to restore it to  
a natural self-sustaining ecosystem that will provide species diversity, and 3 = natural self-sustaining ecosystem that provides maximum species diversity.
4. Provides a direct benefit to State or Federal listed T&E, Federal and State Candidate, or sensitive animal species. Score 0 or 1
5. Provide habitat benefits to both wildlife and anadromous, State Sensitive, culturally significant, or T&E fish species. Score 0 or .5

During the review of the criteria and database products from the OTAP it became apparent that the previous project's strength was found in the use of existing BPA and NWPPC procedures. But, it lacked the use of current scientific methodology found in the fields of Conservation Biology and Landscape Ecology. To add those elements in this project, a series of OWC meetings was scheduled for the spring of 1996 after coordination with other conservation planning efforts (*Figure 2*) and a review of current literature pertaining to biodiversity conservation planning, GAP Analysis, and GIS techniques. A list of questions which would form the basis of project prioritization criteria was put together and discussed during the OWC meetings (*Appendix A*).

**HEP:**

**2. To obtain HU’s to provide mitigation credit to Bonneville:** each specific implementation project will use HEP and various enhancement, restoration or management techniques to provide and/or maintain habitat units as contracted with Bonneville.

**Methods**

**Task A. Site Preparation, Planting, and Maintenance**

This objective was derived on the (a) basis of historical data, (b) loss of critical habitat in the region , and (c) expediency in re-capturing the site.

(a) According to historical survey notes of 1853 and 1854 (Christy, 1993), these bottomlands at the base of the Tualatin Mountains were “sparsely timbered”, with ash, willow, cottonwood and oak, to “wet prairie”, with “groves of ash timber.” Vegetation in open areas were not documented. Based on remnant native plant assemblages along the channel wetlands, the prairies were likely dominated by Columbia sedge, slough sedge, soft-stemmed bulrush, meadow barley, wapato, and several other species of sedge.

(b) Much of the wetlands that historically occurred along the Multnomah Channel has been converted to agricultural uses. To re-establish the forested wetland communities, especially along the channels and streams, would restore diminished resources.

(c) Since agricultural disturbances such as cultivation and grazing recently ceased on Metro’s properties after their purchase, the window of opportunity to cost-effectively recapture these sites for native plant populations is open for a relatively-short duration. These site are either already infested or in close proximity to exotic pest plant species (i.e. reed canarygrass, Himalaya blackberry) that will quickly dominant the site unless management action is taken.

Early implementation of re-establishment of forested wetlands on these properties will focus on riparian areas, where soils, hydrology, and topography clearly indicate conditions are supportive of a riparian forest assemblage. The areal extent to which trees will be planted is also based on existing trees in the relatively-undisturbed portion of the property.

The initial planting will cover approximately 24 acres, following the plan listed below for the 5-year “free-to-grow” period.

Activity	Description	Timing	Cost/ac.
Site preparation	Suppression of pasture grasses and bush, 2-ft dia. scalp; apply pre-emergent	Late winter	\$160
Plant Material	Purchase, handle and store the following trees using correct source: Oregon ash, Pacific willow, black willow, black	Fall Prior to planting	\$420

cottonwood, Bigleaf maple, Western red cedar, black hawthorne, Douglas fir, crabapple

Planting	Plant on 7-ft. centers (890 seedlings/acre)	Late Winter	\$150
Tube Protection	Purchase and install protective tubing on hardwoods to reduce animal depredation	At planting	\$120
Year 1 Maintenance	Brush competitive growth	June, Aug.	\$300
Year 2 Maintenance	Replace trees lost; brush or spot spray competition	Feb.; June	\$250
Year 4,5 maintenance	Suppress competitive growth	As needed	N/A
TOTAL			\$1,400/acre

As time and resources permit, additional plant material (i.e. willow, red-osier dogwood) will be gathered on-site in the form of cuttings to supplement the purchased plant material.

Timely monitoring and appropriate response to plants' needs are essential to establishment of a native riparian forest community. With the first year being the most critical for survival, the site will be monitored at least three times during the growing season for vigor, depredation, and competition from other plants. A stock survey will be conducted in fall, 1999 to assess overall needs.

Factors that may limit successful establishment of a riparian forest community and mitigating measures are:

1. Competition from Other Plants  
Adequate site preparation, including suppressing pasture grasses, brushing, and scalping for each seedling, will reduce initial plant competition for moisture, light, and nutrient.
2. Animal Depredation  
Mice and beaver can cause extensive damage to young seedlings, particularly hardwoods. Polyethylene mesh tubes will be placed over the more vulnerable seedlings to deter depredation. Vegetation, particularly grasses, will be suppressed by scalping a 2-ft. radius around each tree, with a pre-emergent herbicide applied.
3. Drought  
Because of the location of the seedlings (i.e. riparian and floodplain), soil moisture should not be a problem. However, emergency watering is possible with either a water truck or direct irrigation from adjacent water sources from which water rights exist.

**Task B. Topography and Hydrology**

**Topography** of the bottomlands along the Multnomah Channel are essentially flat, with little relief other than the natural levees along the channel. Existing topographic information for the area is limited to 40-foot contours, which is ineffective in characterizing the subtle relief of the floodplain. However, a two-foot difference in elevation between areas has a significant impact on the hydrology, soil moisture, vegetation, and habitat type. With the ability to map topography at the 2-foot contour level, detailed planning could be accurately performed for managing local hydrology and vegetation.

The areal extent of inundation throughout the bottomlands changes quickly with the elevation of the water surface in the adjacent Multnomah Channel. The ability to hold back seasonal flood waters after the drop of river levels can be a very valuable management tool. An adjustable weir constructed in the tidal creeks can allow prolonged flooding of the marshlands at targeted elevations in years where the river levels may be lower than usual. With most of the tidal creeks on the bottomlands also receiving stream flow from the adjacent Tualatin Mountains, more options exist for controlling the inundation periods and areal extent. Refinement of topographic information will allow planning and management of targeted vegetation and habitat types.

Topographic data (hypsography) will be interpreted photogrammetrically from 1996 aerial photographs which are available for this 1017-acre area. Two-foot contour lines will be generated for plotting and calculation purposes. A digital terrain model will be overlaid with GIS coverages currently in Metro's Regional Land Information System (RLIS) database, such as water features, National Wetlands Inventory, soils, and property boundaries.

**Hydrology** of the bottomlands is dominated by river hydrology, both in terms of seasonal flooding and year-round control of tidal creeks. During the summer and fall when river surface elevations drop, local streams entering the properties from the adjacent Tualatin Mountains become of importance to the site's hydrologic regime. Although the water quality in the Multnomah Channel is essentially that of the Willamette River, the water surface elevation is controlled by a combination of dam releases on the Columbia River, the Willamette River, and the tidal prism originating from the mouth of the Columbia River. It is the observation of the project manager that water surface elevations along the upper (southern) Multnomah Channel is closely correlated with observations at the Vancouver, WA gauge on the Columbia River. This U.S. Army Corps gauging station provides hourly water level data dating back to prior the construction of the last major dam on the Columbia river system in 1972. The assumption correlated water levels is based on observations of the analogous basin configuration and location of Smith and Bybee Lakes Wildlife Area (Morgan, 1996).

The actual difference in daily mean high and low water surface elevations between the Vancouver gauge and the mouth of the central, largest tidal creek on Metro's property on the channel will be calculated. Using a simple gauge for water-level maxima and minima (Richter, 1997), daily observations at the tidal creek mouth will be recorded and correlated with Vancouver gauge data over a range of water surface elevations. The

observation period will include the seasonal highs of May/June and lows of September/October. A regression analysis will be conducted on the data for developed of an equation that can be used for predicting the site water surface elevations based on Vancouver gauge data.

Characterization of local stream hydrology will be limited to one staff gauge on the largest stream entering the central portion of the property. This staff gage will be rated based on instantaneous stream flow measurements conducted by U.S. Geological Survey. Staff gage observations will be recorded at each site visit or at a minimum of once a week. Flow volume during the dry season will be important to determine the feasibility of prolonged inundation for enhancement and pest control purposes.

### **Task C. Assessment of Biotic Communities**

#### Plants

Prior to disturbance to a plant community, such as manipulation of the hydrology, a thorough plant and animal assessment is necessary to guide enhancement and restoration activities and to gauge the efficacy of management efforts.

Plant community assessment will include:

1. Interpretation to 1997 aerial photographs to outline and estimate area of distinct plant assemblages. This will be digitized and entered into Metro's GIS database for mapping purposes.
2. Field verification of assemblage mapping with identification of plants present in each assemblage.
3. Establishment of permanent plant transects in representative plant assemblages and habitat types to detect long-term trends. Control sites will be selected where both little disturbance has occurred and disturbance is pronounced.

#### Herpetiles

The herpetiles of the project area are of considerable interest given its proximity to two populations of Western painted turtles and red-legged frogs, both listed as "Sensitive" by State of Oregon. To date, there have been no recorded survey of amphibians or reptiles on the subject properties although recent surveys conducted at Burlington Bottoms are applicable to Metro's properties. Prior to any change in managing the site's hydrology, identifying location, species, and estimate of populations of the area's herpetiles are necessary. This will be conducted by a combination of ODFW personnel, consultants and trained, experienced volunteers. A winter survey during the breeding season will be conducted for amphibians. A survey for reptiles will be occur in spring and summer, primarily by trapping and observations of basking.

#### Birds

Point count stations will be selected for gathering census observations on neo-tropical migratory birds and another bird use during the breeding period. Due to the mosaic patterns of forest, shrub-scrub, prairie, and open water communities on these properties,

sightings from these stations of migratory waterfowl, shorebirds, and raptors will be sufficient for recording their use of the area. Census at an estimated 10 stations will be taken during eight period between the breeding season of each year, with efforts being concentrated during June 1 through July 15. Species richness and relative abundance will be calculated. These measures are expected to be high given recent observations at Burlington Bottoms (Beilke, 1996). Bird sightings will also be recorded during all plant and herpetile field surveys by personnel with adequate training.

#### Fish

An electro-fishing survey will be conducted in the non-tidal reaches of the streams emanating from the Tualatin Mountains onto Multnomah Channel bottomlands. Description and mapping of reaches with potential for salmonid spawning will be included.

### **Task D. Hydrologic Control Feasibility Study**

The costs and benefits of hydrologic control options will be examined. With the sites hydrology driven by seasonal flooding from the rivers, daily tidal fluxes, and stream flow from the adjacent mountains, numerous options exist for controlling areal extent and timing of inundation. Control of inundation is desirable for enhancement of targeted vegetation communities and suppression of pest plants (i.e. reed canarygrass, purple loosestrife). Using information acquired from tasks listed above, location and designs of control structures will be examined. Selected options will require permits and review by resource management agencies prior to implementation.

One potential impact of water retention on site for which special attention will be warranted include the possible trapping of salmonid smolts migrating downriver which may use these backwaters as refugia. Factors such as timing and water temperature will be considered in the feasibility study.

### **Task E. Watershed Protection and Enhancement Plan**

The major perennial stream entering the bottomlands from adjacent Tualatin Mountains is Golf Creek. Land use in its watershed is primarily timber production, a golf course, and rural residential. With two landowners controlling most significant land uses in the watershed, Longview Fiber and the golf course owner, coordinating a watershed protection strategy is simplified. Metro had a favorable working relationship with Longview Fiber and is currently in negotiation with the golf course owner regarding his land management practices, particularly in riparian areas where the stream's main stem courses. An agreement where he is granted an easement for conveyance of Multnomah Channel water for irrigation, to which he holds water rights, across Metro property is looked upon more favorably than exercising his water rights in the stream by withdrawing during the critical summer flow period. The goal is to gain consensus for watershed protection measures that stakeholders will support. A plan document will be produced that outlines goals and objectives for watershed enhancement, with maps and an implementation schedule.

**f. Facilities and equipment.**

No new equipment will be purchased for any vegetation management, assessment work, site analysis, or plan development. Other than plant material, most equipment and materials will be provided by sub-contractors. This includes tools and equipment supplied by planting labor, field biological survey equipment used by contractors with supplemental equipment for volunteers provided by Metro, and photogrammetric equipment and computers used by sub-contractors. Metro personnel will use fleet vehicles at Metro's expense. Mapping, geographic analysis, and site planning will be performed by Metro, utilizing its extensive GIS database and capabilities. Plant material will be delivered on-site from contracted nurseries by Metro.

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## **Section 8. Relationships to other projects**

Willamette Basin Acquisition 9206800, is an ongoing project which is actively pursuing easements, cooperative management plans, enhancement actions, and acquisitions throughout the basin. Currently there is an acquisition of 70 acres in progress adjacent to this proposed acquisition.

The Oregon Trust Agreement Planning Project 92-84, Assessing Oregon Trust Agreement Using GAP Analysis 95-65, and Securing Wildlife Mitigation Sites-Oregon 9705900 are the pre-planning and planning projects upon which the identification and selection of mitigation projects in the Willamette basin and other Columbia tributary basins are based. Currently there are two project sites in the FY 99 proposal for Securing Wildlife Mitigation Sites-Oregon which will be coordinated through this proposal. This is one of those.

Burlington Bottoms 9107800 is a project managed by ODFW in the Willamette basin. It was the first site specific project implemented in the state of Oregon. This project is currently in the implementation phase. The enhancement work being undertaken on the site provides for an experimental lab, of sorts, on which multiple techniques are used to further the understanding of Willamette and lower Columbia wetland systems. The

methods found to be most effective will be used on similar sites in the focus areas throughout the basin.

## Section 9. Key personnel

Project Manager: James H. Morgan  
Biologist, Metro Regional Parks and Greenspaces

Educational Background: M.S. in Water Resources Planning. 1987.  
University of Vermont.

B.S. in Biological Sciences. 1975.  
University of Vermont.

### Brief Employment History:

Biologist/Planner 1989 -Present  
Metro Regional Parks and Greenspaces Portland, Oregon

- \_ Principal Biologist for natural area acquisition program, which has a goal and the funds to purchase 6,000 acres in the Portland metropolitan region. Responsibilities include evaluating biological component of prospective properties, developing short-term management plans, and implementation of those plans.
- \_ Biologist/Manager of Smith and Bybee Lakes Wildlife Area, where management and recreation plans were developed, diagnostic and feasibility studies were conducted, a restoration of aquatic and terrestrial ecosystems was initiated.
- \_ Principal Water Resources Planner for the regional government agency.

Project Manager 1987-1989  
The Johnson Company, Inc. Montpelier, Vermont

- \_ Project leader for investigating water quantity and quality issues involving municipal water supplies, land developments, and agricultural practices.

### Expertise

Biology of aquatic ecosystems, water quality analysis and modeling, limnology.

### Relevant Projects and Publications

#### Publication authored by Project Manager:

- \_ Diagnostic and Feasibility Study of Smith and Bybee Lakes, Portland, Oregon
- \_ Transport Mechanisms and Modeling in Burlington Bay, Lake Champlain, Vermont
- \_ Diagnostic and Feasibility Study of Morey Lake, Vermont

#### Relevant Projects Completed by Project Manager:

- \_ Reforestation of 270 acres
- \_ Enhancement of 30 acres of emergent wetland

\_ Restoration of 20 acres of oak savannah habitat

## **Section 10. Information/technology transfer**

All reports generated will become public documents, therefore available in Metro's library.

All spatial data (i.e. topography, habitat delineations) will be in digital form and integrated into Metro's GIS; namely, the Regional Land Information System (RLIS), which is available to cooperating jurisdictions and agencies and to the public through Metro Data Center storefront.