Continuing Investigation of Alternative Strategies for Habitat Acquisition

Independent Economic Analysis Board

Task Number 117

October 30, 2007

Document IEAB 2007-5

Continuing Investigation of Alternative Strategies for Habitat Acquisition

Executive Summary

The IEAB examined the cost-effectiveness of different approaches used by BPA to acquire and protect habitat in Task 104 "Scoping Investigation of Approaches to Preserving Habitat" (IEAB 2006). In that report the IEAB offered several conclusions and included recommendations for future analysis.

This report builds on our earlier analysis by addressing the following questions: (1) Can the Fish and Wildlife Program (FWP) work with federal, state and non-profit conservation programs to acquire habitat, improve habitat quality or reduce costs? (2) Could the FWP participate, as a buyer or as a seller, in the emerging markets for environmental attributes associated with habitat units? (3) What problems and opportunities exist when habitat acquisition occurs in more developed regions such as the Willamette Valley? (4) How might land acquisitions respond to fluctuations and uncertainties in land values, and how should the program work with federal and state agencies and non-profits to manage risk? (5) What additional strengths and weaknesses of the strategies identified in the Task 104 report can be identified and described?

This report is focused on the acquisition of wildlife habitat although the principles apply equally to fish habitat. The IEAB concludes that:

1. The FWP has successfully worked with tribes, state and federal agencies and non-profits to acquire and improve wildlife habitat. The vast majority of habitat units -- more than 99% -- have been generated by projects implemented by tribes and state agencies. Expanding existing partnerships and seeking new partners is crucial for protecting and restoring habitat in areas with high land values and hence, costly habitat units, such as the Willamette Subbasin, Methow Valley and Deschutes Subbasin.

2. Opportunities exist for the FWP to participate in the emerging markets for environmental attributes, for example, carbon sequestration, biodiversity credits and water quality. These markets are in their infancy, but they hold promise for reducing the cost of meeting habitat unit obligations and could potentially generate a revenue stream from existing projects. Before pursuing this opportunity the Council should seek to clarify whether they, or project sponsors, have the right to sell environmental attributes generated by projects receiving Council support.

3. Areas with high land values such as the Willamette Subbasin, Methow Valley and Deschutes Subbasin present opportunities for partnerships since many state and local agencies and nonprofits are active in these areas. However, partnerships can be challenging to implement when partners have objectives that are inconsistent with the Council's program. In addition, the process of formulating a multi-party agreement for habitat conservation can involve extended negotiations and legal reviews.

4. Because land values vary widely and useful parcels for habitat preservation or enhancement become available infrequently, it is important that the program be flexible and able to act quickly when acquiring land and conservation easements. This is difficult for BPA due to its planning and budgeting processes. Some potential partners, however, do have the ability to act quickly. An example is the Columbia Basin Water Transactions Program, which operates a riparian conservation easement pilot program. The IEAB suggests that the Council consider expanding this type of program to increase the flexibility, and likely the effectiveness, of the Council's program. We believe these types of programs are consistent with the FWP's call for a land and water conservation fund.

5. Given the diversity of possible ways to acquire habitat, the IEAB has concluded that the evaluation template it proposed in Task 104 is unnecessarily cumbersome. Instead we propose a checklist (Table 5) of alternative acquisition methods and alternative evaluation criteria that should be reviewed for each potential acquisition. We present three hypothetical scenarios which illustrate how the alternative ways of acquiring a particular habitat parcel can be evaluated.

Additional recommendations include:

6. Given the issues and complexities involved with habitat unit accounting, the IEAB recommends that the next FWP include a section detailing a policy for habitat unit accounting. This policy should address the differences between the Council's 2:1 accounting directive and the 1:1 ratio used in practice by BPA. It should also address how wildlife HUs are credited for projects that are expensed versus those that are capitalized and how HUs are credited for projects that receive funds from partner entities.

Continuing Investigation of Alternative Strategies for Habitat Acquisition

1. Introduction

The Bonneville Power Administration (BPA) is required to mitigate the impacts on wildlife caused by the development of the Federal Columbia River Power System (FCRPS). Losses of Columbia Basin wildlife habitat as a result of the construction of the FCRPS have been quantified by the Region's fish and wildlife managers through the completion of "loss assessments" for each dam. These form the basis for the losses identified in the Northwest Power and Conservation Council's Columbia River Basin Fish and Wildlife Program. Loss assessments identify "habitat units" (HUs) lost due to construction for wildlife; no loss assessments or habitat units have been developed for anadromous and resident fish[1]. A habitat unit is an acre of habitat adjusted for suitability for use by target species that typically rely on a particular kind of habitat. The suitability is measured by wildlife experts and expressed as a "habitat suitability index" (HSI) which ranges from zero (zero carrying capacity for the species of interest) to 1 (highest quality habitat). Habitat units are then calculated as the acres of habitat multiplied times the suitability index. As BPA implements a mitigation activity, it takes credit for its effort in HUs. The habitat units are measured or estimated and then counted against the loss assessment for the particular dam project under consideration.

The IEAB report "A Scoping Investigation of Approaches to Preserving Habitat" (IEAB 2006), provided an overview of the approaches used by Bonneville Power Administration (BPA) to mitigate for lost habitat, analyzed the attributes of these approaches, and proposed areas for future research. The report, which focused primarily on fee simple acquisitions and conservation easements, concluded, "there is no one method of habitat acquisition that is best in all cases, so each proposal for habitat preservation needs to be examined in terms of the specifics of the proposal. The ecological and economic consequences are specific to the parcel and context" (IEAB 2006; 1). Recommendations for future work included analyzing other methods of habitat acquisition and protection and suggested "with partnering and coordination these methods could play a useful part in habitat protection in the region" (IEAB 2006; 2).

The Independent Economic Analysis Board (IEAB) was asked to extend the analysis presented in Task 104 by addressing the following questions: (1) Can the Fish and Wildlife Program (FWP) work with federal, state and non-profit conservation programs to acquire habitat, improve habitat quality or reduce costs? (2) Could the FWP participate, as a buyer or as a seller, in the emerging markets for environmental attributes associated with habitat units? (3) What problems and opportunities exist when habitat acquisition occurs in more developed regions such as the Willamette Valley? (4) How might land acquisitions respond to fluctuations and uncertainties in land values, and how should the Program work with federal and state agencies and non-profits to manage risk? (5) What additional strengths and weaknesses of the strategies identified in the Task 104 report can be identified and described?

[1] In this report the phrase "habitat units" refers to wildlife habitat units.

This report is organized as follows. Section 2 provides background information on habitat units and HU accounting, Section 3 describes several existing partnerships, identifies partnership opportunities and develops a case study that examines the feasibility of partnering with Metro's Open Space Acquisition Program; this section also addresses the multi-party management problems, opportunities, and risks that exist when habitat acquisition occurs in areas with high land values. Section 4 provides background on the market for environmental credits and evaluates the potential for the FWP to participate, as a buyer or seller, in these markets. Section 5 proposes a checklist of alternative acquisition methods and alternative evaluation criteria that should be reviewed for each potential acquisition, and then presents three hypothetical scenarios which illustrate how the alternative ways of acquiring a particular habitat parcel can be evaluated.

2. Habitat Units and HU Accounting

Estimated wildlife losses due to hydropower construction were included in the Council's 1994-1995 Fish and Wildlife Program (NPPC 2000, C4). These habitat losses are shown in Table 1.

Table 1: Habitat Units Lost, Acquired and Estimated, by Dam Group
(Using BPA 1:1 Accounting System)

Dam Group	Habitat Units Lost	Total Habitat Units Acquired & Estimated	Percent Completed
Lower Columbia	74,752	74,239	99.3%
Lower Snake	26,775	25,266	94.4%
Upper Columbia	149,276	85,375	57.2%
Upper Snake	59,362	19,017	32.0%
Willamette	94,402	2,652	2.8%
Total Habitat Units	404,567	206,549	51.1%

Source: NPCC (2006, Table 12B)

In order to assess the degree to which habitat acquisition has mitigated for the habitat losses from dam construction, it is necessary to look at the accounting systems that BPA and the Council use to measure mitigation. Each area of wildlife habitat that is purchased or included in a trust or easement for BPA's wildlife habitat mitigation effort is assessed by wildlife scientists. As noted above, habitat units are measured by multiplying the HSI, a ranking that runs from 0 to 1, times acres of habitat. According to the Council's FWP, all habitat units lost due to Federal dam construction are to be mitigated by enhancement of existing habitat or protection of habitat at risk of deterioration.

Program language states "Bonneville and the fish and wildlife managers should complete mitigation agreements for the remaining habitat units. These agreements should equal 200 percent of the habitat units (2:1 ratio) identified as unannualized losses of wildlife habitat from construction and inundation of the federal hydropower system" (NPCC 2000; 3). BPA, however, has a 1:1 crediting policy for wildlife acquisitions and enhancements and does not believe that "annualized, secondary, and cumulative impacts are a ratepayer obligation" (Wright 2002; 1).

Using BPA's 1:1 crediting policy, 51.1 percent of the wildlife habitat loss in the FCRPS area has been mitigated, as shown in Table 1 (NPCC 2006, 36). According to BPA, habitat unit goals are close to being met for some dam groups -- the Lower Columbia dams and Four Lower Snake River dams have achieved 99.3% and 94.4% of their goals, respectively. In contrast, only 2.8% of habitat units lost in the Willamette have been mitigated. The largest absolute number of habitat units remaining to be mitigated is in the Upper Columbia and Upper Snake (NPCC 2006, 36). However the implication that the Lower Snake and Lower Columbia have nearly completed their required mitigation is not in accord with the 2:1 crediting policy articulated in the Council's F&W Program. Under the Council's methodology mitigation has been achieved for only half of the loss.

Because population growth is associated with increases in land prices, and because a large proportion of wildlife habitat is on private land (ISAB 2007; 55), the primary mitigation tools that have been used in the Council's Fish and Wildlife Program – fee-simple acquisition and conservation easements – will be more expensive in these areas than in other parts of the Columbia Basin. As purchase of land (fee simple or conservation easements) for protecting wildlife habitat becomes increasingly expensive, it seems reasonable that the wildlife and fish habitat mitigation efforts would be more closely coordinated. This could involve a collaborative effort by fish and wildlife agencies and tribes to assess and rate various habitat mitigation opportunities. Consistent with current criteria for selection of wildlife projects which provides priority for wildlife projects that provide fish and wildlife benefits, those habitat acquisitions that protect both fish and wildlife habitat could potentially provide the "biggest bang for the buck." Further, by closer integration of fish and wildlife habitat projects, some additional opportunities would likely arise for combining the objectives of regional and national organizations, both wildlife- and fish-focused organizations, in mitigating for lost habitats. As noted below, partnering with various habitat enhancement entities may be the best route for BPA's mitigation program in sub-regions with high land prices. (It should be noted that there are a number of examples of these types of partnerships that have already been undertaken for wildlife projects with organizations such as The Trust for Public Land, The Nature Conservancy and regional land trusts.) Combining fish and wildlife habitat in the project selection process could help to increase total habitat units and to bring more partners to the negotiating table.

While combining fish and wildlife habitat in the project selection process and bringing in more partners may have benefits, they also raise habitat accounting issues. Projects funded through the Council's FWP are classified as anadromous fish projects, resident fish projects, or wildlife projects. As stated in the Council's Program (NPPC 2000; 47) "To prioritize the many needs to address fish and wildlife impacts throughout the basin, the Council will maintain the current funding allocation for anadromous fish (70 percent), resident fish (15 percent) and wildlife (15 percent), until a new budget allocation is adopted."

According to Peter Paquet, Manager, Wildlife and Resident Fish, BPA claims mitigation credit for habitat units resulting from both wildlife projects and fish projects, irrespective of which budget they are funded from. However, complications arise because only projects that are capitalized can generate habitat units. BPA's Fish and Wildlife Capitalization Policy (Maslen 2006; 9) requires that all of the following primary criteria be met:

1) BPA share of project costs must exceed $1M *(excluding all conceptual and preliminary costs for projects that go through the Council's 3-Step Review).*
2) The capital construction must have an estimated useful life of 15 years or longer.
3) Provides a measurable future benefit, defined as fulfilling a legal obligation of the FCRPS.

There appears to be considerable confusion and inconsistencies in how habitat accounting occurs. There are examples of projects that were expensed, but generated habitat units and projects, such as the two transactions in the Columbia Basin Water Transaction Program Riparian Easement Program, that appear to meet the criteria in BPA's Fish and Wildlife Capitalization Policy, but have been expensed and, therefore, have not generated HUs. A memo written by Steve Wright also highlights the issue, stating that BPA has protected more than "100,000 acres of wildlife habitat with fish measures" and that "these habitat units are not reflected in BPA's tally of completed mitigation" (Wright 2002; 17). At the very least, it appears that the policies that govern crediting of HUs are not well understood by all the stakeholders. The IEAB sees no problem with crediting HUs to projects that have been expensed, so long as the HUs will be protected in perpetuity and are of a type and in a location where they are useful. We recommend that the rules for crediting HUs for projects be clarified and made accessible to all stakeholders.

When BPA partners with other entities its policy is to credit HUs in proportion to BPA's portion of project funding. This approach may have worked well in the past but given present conditions may be unnecessarily restrictive, and may reduce the incentive for BPA to partner with other entities to secure funds for habitat preservation. As outlined later in this paper, there may be opportunities for BPA to partner with entities such as USDA, Metro, and others to help fund habitat acquisition and enhancement. Unless BPA can claim mitigation credit for these HUs, it has little incentive to pursue such partnerships.

Given the issues and complexities involved with habitat unit accounting, the IEAB recommends that the next Fish and Wildlife Program include a section detailing policies for habitat unit accounting. The section should address the differences between the Council's 2:1 accounting directive and the 1:1 ratio used in practice by BPA. It should also address how wildlife HUs are credited for projects that are expensed versus those that are capitalized. It is not clear that these accounting procedures are consistently applied or even consistently understood. It does appear that changes to present policies could increase the incentive for BPA to partner with other entities. Resolving the issue of whether, and under what conditions projects will generate HUs should make HUs a better measure of how much of the required mitigation has been completed. Including a clear statement of Council accounting policies in the next Fish and Wildlife Program should help.

3. Partnership Opportunities

The Council's Fish and Wildlife program has worked with project sponsors – federal and state agencies, tribes, and nonprofits – to undertake activities that generate habitat units. Tribes and the Washington Department of Fish and Wildlife have generated 90.4% of the total HUs with the

remainder coming from the Idaho Department of Fish and Game, the Oregon Department of Fish and Wildlife, U.S. Fish and Wildlife Service and The Nature Conservancy.

3.1 Existing project sponsors

Table 2 shows the quantity of HUs generated by sponsor (Welch 2007a). Sponsors typically propose a project for funding and then manage the site, although this is not always the case. For example, Green Island was purchased under the Oregon Department of Fish and Wildlife's Willamette Basin Wildlife Mitigation Project (1992-068-00), but the McKenzie River Trust holds title to the property (Welch 2007b, 2007c).

Table 2: Habitat Units by Sponsor
(Using BPA 1:1 Accounting System)

Sponsor	Habitat Units	Percentage of Total Habitat Units Generated
Burns-Paiute Tribe	4,266	1.93%
Coeur d'Alene Tribe	761	0.34%
Colville Confederated Tribes	31,434	14.22%
Confederated Tribes of Warm Springs	14,057	6.36%
Kalispel Tribe	2,493	1.13%
Kootenai Tribe	183	0.08%
Nez Perce Tribe	20,928	9.46%
Shoshone-Bannock Tribes	5,898	2.67%
Spokane Tribe	3,825	1.73%
Umatilla Confederated Tribes	11,626	5.26%
Yakama Confederated Tribes	36,611	16.56%
The Nature Conservancy	948	0.43%
Idaho Department of Fish and Game	16,442	7.44%
Oregon Department of Fish and Wildlife	2,819	1.27%
Washington Department of Fish and Wildlife	67,805	30.67%
US Fish and Wildlife Service	1,014	0.46%
Total Habitat Units	**221,110**	

Source: Welch 2007a
Note: Habitat Units are aggregated across species and were credited at different points in time

The percentage of HUs generated by project sponsors shows that tribes have generated 59.7% of the total. The Washington Department of Fish and Wildlife accounts for 30.7% with the remaining 9.6% coming from the Idaho Department of Fish and Game, Oregon Department of Fish and Wildlife, U.S. Fish and Wildlife Service and The Nature Conservancy.

3.2 Potential partnership opportunities

There are many reasons to form partnerships including the potential to leverage funds and the ability to use the expertise of staff in other organizations. Tight budgets and increasing land values mean that more government and non-governmental organizations are seeking to form partnerships – a recent workshop sponsored by Metro, a regional government of twenty-five cities in the Portland metropolitan area, brought together elected officials and experts from throughout the state to develop a vision for linking parks and natural areas throughout the region (*The Oregonian* 2007). Partnerships will also be important in rural areas with high recreational and scenic values since demand for land in these areas has increased the cost of acquisitions and conservation easements.

One option to make high-cost habitat mitigation less burdensome on BPA's budget is to seek out new opportunities to partner with federal, state and local governments, tribes and non-profits to acquire HUs. Partnership opportunities may be especially important for the Willamette Subbasin given the high cost of land and the need to acquire habitat units since, in total, only 2.8% of the habitat units lost for the Willamette dam group have been mitigated (Table 3).

Partnerships, especially if they rely on conservation easements, may not be a panacea. As described in an earlier report, conservation easements in urban areas are estimated to cost 90% of the fee-simple price (IEAB 2006). When this is the case, the costs of establishing an easement and monitoring the subsequent performance of the landowner may make the easement more expensive than a fee-simple purchase.

Table 3: Habitat Units Willamette Dam Group
(Using BPA 1:1 Accounting System)

Dam	HUs Lost	Total HUs Acquired & Estimated	Percent Completed
Big Cliff	413	32	7.7%
Cougar	11,124	307	2.8%
Detroit	11,298	58	0.5%
Dexter	6,648	150	2.3%
Foster	3,544	96	2.7%
Green Peter	16,432	0	0.0%
Hills Creek	19,489	1,496	7.7%
Lookout Point	25,454	513	2.0%
Total	**94,402**	**2,652**	**2.8%**

Source: NPCC (2006, Table 12B)

3.3 Government Programs

This section of the report provides an overview of potential partnership opportunities including a description of USDA programs and whether they are consistent with the Council's Fish and Wildlife Program. Several state programs, and an initiative being undertaken by a partnership that includes government agencies and nonprofits, are also described.

3.3.1 Federal Programs

USDA Programs

The United States Department of Agriculture has a number of programs that offer partnership possibilities. Details on these programs are available on the Farm Service Administration (FSA) web page at http://www.fsa.usda.gov. The 2007 Farm Bill is currently being written. Current indications are that the present conservation programs will be continued, and perhaps expanded, although possibly under different names. However this result is far from certain given high crop prices that reduce the urgency of farm subsidies, the uncertainty introduced by crops that can be used for biofuels, and budgetary constraints caused by the Iraq War.

Conservation Reserve Program (CRP) The CRP encourages farmers to convert highly erodible or sensitive lands to permanent cover. Since CRP contracts are usually for a period of 10 to 15 years, habitat protected in this way would not meet the permanent protection requirement to qualify for BPA habitat credit.

Despite this limit, CRP might still be a useful tool in partnership with some of the other tools described in this paper. For example, a landowner reluctant to relinquish control of his land today might be willing to enter into a CRP contract and also make an agreement with a land trust to have a conservation easement take effect at the end of the CRP period.

On the other hand, it should be noted that much of the marginal land under CRP is either not being renewed or is being withdrawn as its use for producing crops for biofuels has become viable.

Conservation Reserve Enhancement Program (CREP) The CREP is a sub-program under CRP, requiring a partnership between the USDA and the individual states. CREP addresses high-priority conservation issues of both local and national significance, such as impacts to water supplies, loss of critical habitat for threatened and endangered wildlife species, soil erosion, and reduced habitat for fish populations such as salmon. CREP is a community-based, results-oriented effort centered on local participation and leadership.

Participating states each have an agreement with the USDA for protecting and restoring degraded riparian areas on agricultural lands in targeted areas of concern. States must fund at least 20 percent of the program cost, while the CRP program provides the remainder. Protection practices include fencing to restrict cattle access, tree planting, and wetland restoration. There is an opportunity through CREP to encourage other creative and possibly ecologically significant practices. As is true of all CRP programs, the basic CREP contract is for 10 to 15 years, although the individual state agreements open the possibility of longer or even permanent contract periods.

A specific CREP project begins when a state, Indian tribe, local government, or local non-government entity identifies an agriculture-related environmental issue of state or national significance. These parties and FSA then develop a project proposal to address particular environmental issues and goals. Enrollment in a state is limited to specific geographic areas and practices. The Council has supported the enrollment of riparian agricultural lands in the CREP through projects that support USDA Natural Resource Conservation Service (NRCS) personnel to develop and implement contracts.

Oregon and Washington have had active CREP programs since 1998. The Oregon program includes all streams providing habitat for the endangered salmon and trout species that cross agricultural lands. Goals of the Oregon Enhancement Program include:

- Reducing water temperature to natural levels;
- Reducing by 50 percent the sediment and nutrient pollution from agricultural lands adjacent to streams;
- Stabilizing streambanks along critical salmon and trout streams;
- Restoring natural hydraulic and stream channel conditions on 2,000 miles of streams.

The Oregon Enhancement Program is authorized to enroll up to 95,000 acres of riparian buffers and filter strips, plus 5,000 acres of wetlands. For FY 2006, Oregon had a total of 24,084 acres under CREP contract.

The USDA and the State of Washington agreed to a voluntary CREP program to improve the water quality of streams providing habitat for salmon species listed under the Federal Endangered Species Act. The project area includes all streams in Washington crossing agricultural lands providing spawning habitat for endangered salmon species.

The Washington State Enhancement Program is authorized to enroll up to 100,000 acres to be devoted to riparian buffers planted to trees. CREP enrollment in Washington for FY 2006 totaled 10,481 acres.

Idaho's CREP program was initiated in 2006 in an attempt to reduce groundwater pumping in response to senior surface water users call to curtail pumping by junior well pumpers. The Idaho Eastern Snake Plain Aquifer CREP targets the enrollment of up to 100,000 acres of eligible irrigated cropland to reduce irrigation water use, increase water quality, reduce soil erosion and sedimentation and increase wildlife populations. In addition to CREP payments, Idaho State water authorities will enter into State Water Use Contracts with participants on CREP-enrolled land to help ensure that irrigation water is conserved during the 14- to 15-year CRP contract periods.

Enrolling up to 100,000 acres of eligible cropland will significantly reduce irrigation water consumption. The CREP will improve water quantity and quality in the Snake River and its tributaries by reducing agricultural chemicals and sediments. Establishing permanent vegetative cover will provide wildlife habitat for terrestrial and aquatic species. The goals of the Idaho Eastern Snake Plain Aquifer CREP, when fully enrolled, include:

- Reducing irrigation water use by up to 200,000 acre-feet annually by reducing or ceasing water application on up to 100,000 irrigated cropland acres;
- Improving the Snake River's water quality and flow by increasing the aquifer's groundwater levels and tributary spring water discharge by up to 180 cubic feet per second;
- Establishing permanent vegetative covers to increase wildlife habitat and reduce the amount of agricultural chemicals, non-point source contaminants and sediment entering the water;
- Improving habitat and populations of sage grouse, sharp-tailed grouse and other grassland-nesting birds by establishing up to 100,000 acres of native grassland habitat in the priority area;
- Enhancing habitat for fish species by increasing stream flow;

- Improving water quality by reducing soil erosion and non-point pollution adjacent to streams and rivers; and
- Reducing irrigation water pumping power consumption by 300-350 million kilowatt hours annually.

Signup was initially slow compared to the 100,000 acre goal, but as it became clear that some wells were likely to be shut off, signup has surged. As of early June 2007, some 18,900 acres have been approved and another 26,720 are pending.

While the existing Washington, Oregon and Idaho CREP programs do not directly meet BPA's need to generate habitat units, they do demonstrate the flexibility and potential of the CREP tool. BPA funding has allowed limited NRCS funds to be leveraged in ways that generate greater acreage of riparian habitat protection. The principal problem is the need to assure permanent habitat protection – which BPA could address by funding the extension of CREP contracts beyond the usual 10 to 15 years. BPA could also work with FSA and the states to design programs more targeted to BPA habitat protection needs. Finally, BPA could cost share or fund other conservation practices not now covered by CREP, to increase the incentive for landowner participation.

Wetlands Reserve Program (WRP) The WRP is a voluntary program to restore and protect wetlands on private property by retiring marginal agricultural land. Incentives are provided for landowner participation under the following options:

- 10-year cost-share agreement
- 30-year conservation easement
- Permanent easement

The fact that the WRP program includes language allowing for permanent protection makes this program a prime candidate for BPA to partner with UDSA and a land trust in its habitat protection program.

Farmland Protection Program (FPP) The FPP provides matching funds to organizations with existing farmland protection programs to purchase conservation easements. Eligible land must contain prime/unique soils or have historical/archeological value. Landowners retain the rights to use the property for agriculture. The program allows for 30-year or perpetual easements.

The FPP program also appears to offer a good opportunity for partnering between USDA, BPA, and a land trust.

Other USDA programs Several other USDA programs may offer partnering possibilities in particular situations. **The Environmental Quality Incentives Program (EQIP)** provides landowners with financial assistance for structural, vegetative, and management practices. Contract length is only 1 to 10 years. The **Conservation Security Program (CSP)** provides landowners with payments to address resource concerns including water quality and quantity; soil erosion, deposition, and quality; air quality; plant suitability condition, and management; animal habitat; and animal management. EQIP contract length is also 1 to 10 years.

Both of these programs would seem to hold promise as a way to fund restoration costs on protected parcels.

U.S. Department of the Interior Landowner Incentive Program

The primary objective of the Landowner Incentive Program (LIP) is to establish or supplement State landowner incentive programs that protect and restore habitats on private lands, to benefit species identified in the State's Comprehensive Wildlife Conservation Strategy (State Wildlife Action Plan) or classified as Special Concern by the State, or Federally listed, proposed, or candidate species or other species determined to be at-risk, and provide technical and financial assistance to private landowners for habitat protection and restoration.

LIP allocates a basic (tier 1) grant of $180,000 to all participating states. The states then develop tier 2 project funding proposals in cooperation with landowners. Idaho, Oregon and Washington have all participated in LIP in past years, with tier 2 award levels as shown in the following table. LIP funding for FY 2007 is at about the same level as in FY 2006

Table 4: Landowner Incentive Program Tier 2 Grants to Idaho, Oregon and Washington

	Idaho	Oregon	Washington	US Total
FY 2003	0	$1,533,900	$1,560,000	$27,947,910
FY 2004	0	1,120,000	760,000	19,362,000
FY 2005	0	525,000	0	11,686,751
FY 2006	765,760	765,760	765,760	765,760

The LIP appears to offer some possibilities for BPA/state/land trust partnerships.

3.3.2. State Programs

Federal Funds provided by the Pacific Coastal Salmon Recovery Fund (PCSRF) have been combined with significant amount of state funds to develop programs to "contribute to the restoration and conservation of Pacific salmon and steelhead and their habitats" (NOAA 2007). These funds are distributed through NOAA Fisheries Service which has developed a memorandum of understanding (MOU) "with the states of Washington, Oregon, California, Idaho and Alaska, and with three tribal commissions on behalf of 28 Indian tribes; Northwest Indian Fisheries Commission, Klamath River Inter-Tribal Fish & Water Commission, Columbia River Inter-Tribal Fish Commission. The MOUs establish criteria and processes for funding priority PCSRF projects" (NOAA 2007). Additional details are provided in 2006 Report to Congress "Chapter 4: State and Tribal Efforts."

In Washington the implementing agency is the Washington Salmon Recovery Funding Board, in Oregon, it is the Oregon Watershed Enhancement Board, and in Idaho the Idaho Office of Species Conservation. While the majority of the PCSRF funds have gone to habitat preservation and restoration funds, some of the funds have also been allocated to watershed/species assessment, sub-basin planning, research, monitoring, enhancement and education projects.

From 2000 to 2006 the PNW states and tribes committed the following funds to PCSRF projects:

	PCSRF Funds Committed	State Match
Washington	$155,000,000	$79,000,000

Oregon	75,000,000	126,000,000
Idaho	9,800,000	4,100,000
Columbia River Tribes	16,200,000	-
Pacific Coast Tribes	43,900,000	-

All of these PCSRF funded, state matched and administered programs would seem to offer opportunities for partnering with the BPA fish and wildlife program.

The Salmon Recovery Funding Board (SRFB) was created in 1999 by the Washington State legislature to administer state and federal funds to protect and restore salmon habitat. Since 2000, the SRFB has awarded more than $171 million in grants for 731 projects in 30 counties. Grant applicants are required to provide some matching funds. These additional funds have accounted for nearly $101 million for SRFB-funded projects.

Each grant funded by the SRFB must be developed and approved by a "lead entity." Lead entities are local, watershed-based organizations that solicit, develop, prioritize, and submit to the Salmon Recovery Funding Board (SRFB) habitat protection and restoration projects for funding consideration. Lead entities consist of:

- A coordinator (usually county, conservation district, or tribal staff)
- A committee of local, technical experts
- A committee of local citizens

The technical experts help develop salmon recovery strategies, and identify and prioritize projects. The citizen committee develops the final, prioritized project list and submits it to the SRFB for funding consideration.

The lead entities develop local salmon recovery strategies based on science and their recovery plans. They then recruit sponsors to propose projects to implement the strategies. Lead entities convene technical committees to review proposed projects and citizen committees to place projects on a prioritized list. The project lists are submitted for consideration to the SRFB and must implement the recovery plans adopted by the regional recovery boards and NOAA. Project sponsors include public or private groups or individuals. Typical sponsors are regional fisheries enhancement groups, cities, counties, tribes, state agencies and conservation districts.

Lead entities are typically organized to encompass Watershed Resource Inventory Areas (WRIAs), or counties. Regional recovery boards within Columbia River basin are organized on an Evolutionarily Significant Unit (ESU) scale and include: Lower Columbia Fish Recovery Board, Upper Columbia Salmon Recovery Board, Snake River Salmon Recovery Board, Klickitat county, and Yakima River Basin Salmon Recovery Board. All but Klickitat County are both "lead entities" and/or regional boards for the SRFB and sub-basin planning boards for BPA/NPCC. Hence, the projects proposed for SRFB funding are closely tied to the ESA recovery planning directed by NMFS, and sub-basin plans developed for NPCC.

The organizational context for salmon recovery planning in Washington differs substantially from that in Oregon. Oregon's efforts are largely driven by central State planning, whereas Washington relies on the geographically dispersed watershed councils. Despite the delegation of project planning in Washington, the proposed projects are reviewed for consistency with Federal

recovery plans and NPCC-sponsored sub-basin plans. Hence, there are ample opportunities for broad regional plans (under NPCC and BPA) to be coordinated with, if not partnered with, the locally supported projects approved and funded under the SRFB. We conclude that the connection between the NPCC-sponsored sub-basin planning groups and Washington States' "lead entities" facilitates the close coordination of F&W project planning (especially for salmon), including perhaps shared funding where the local project sponsor obtains BPA funding and SRFB funding. There may be technical and scheduling difficulties in making this a real option.

The Oregon Watershed Enhancement Board (OWEB) is launching a strategic investment partnership program. This program will "focus on complicated proposals or special partnerships for projects with substantial funding or long-term funding needs, that would not normally fit into OWEB's regular grant program, and that would benefit economic and community sustainability" (OWEB 2007).

3.3.3. Nonprofits

Ecotrust, a non-profit based in Portland, Oregon, will receive $300,000 of funding in October 2007 from NOAA's Community-Based Restoration Center for its "Whole Watershed Restoration Initiative." The primary goal of this project is to "complete whole watershed restoration by focusing resources through the Partnership Fund on basins with the highest conservation priority for salmon in Washington, Oregon, northern California, and Idaho, expediting recovery of important at-risk salmon stocks" (Davies 2007).

Although many of the priority watersheds are coastal watersheds, some are located in the Columbia River Basin including the Middle and North Fork of the John Day, the Lower Columbia River (Sandy River, Oregon and Lewis River, Washington) and the Upper Columbia (Methow/Twisp Rivers) (Pacific Coast Watershed Partnership 2007; Davies 2007).

The PNW Whole Watershed Restoration Partnership includes Oregon Trout, Wolftree Inc., Oregon Watershed Enhancement Board, USDA Forest Service, Bureau of Land Management, National Fish and Wildlife Foundation, and Ecotrust as the fiscal agent and program coordinator. In 2006, these partners created the Partnership Fund, which invested almost $900,000 in 22 projects in Oregon and Washington. The 2006 investment will result in restoration of 31 miles of stream habitat and more than two hundred acres of critical riparian, wetland, and forested habitat and the decommissioning of more than 20 miles of sediment-producing roads—all in high priority basins for salmon recovery. Plans for 2007 include expansion of their targeted watershed restoration strategy into Northern California (implementation in 2008) and Idaho (implementation in 2009) (Davies 2007).

3.5 Case Study: Partnering with Metro's Regional Parks and Greenspaces Program

Metro, the regional government that encompasses twenty-five cities within the Portland Metropolitan Area, raised 135.6 million dollars in a 1995 bond measure to purchase "natural areas, trails and greenways to be held for future use as parks, trails and fish and wildlife habitat" (Metro 2007a). More than 8,175 acres of land were acquired protecting "nearly 76 miles of stream and river frontage" (Metro 2007a). A second bond measure, which passed in November

2006, will raise 227.4 million dollars to protect areas with high ecological value including the "best remaining fish and wildlife habitat" (Metro 2007b).

Twenty-seven target areas were identified for protection in the 2006 bond measure (Metro 2007b) and many of these areas, including the mainstem and tributaries of the Clackamas and Tualatin Rivers, Johnson Creek, the Columbia Slough, and the mainstem of the Willamette, are included in the Willamette Subbasin Plan (Willamette Restoration Initiative 2004).

Partnering with Metro has many advantages:

1. Metro has expertise in identifying, negotiating, purchasing, and restoring properties;
2. Metro has the ability to finalize the sale of a property in a short period of time closing, in some cases, within thirty days;
3. Metro has successfully partnered with other organizations on restoration projects, for example, the recreation of a side channel in the Clackamas River with Portland General Electric and Oregon Department of Fish and Wildlife (Metro 2007c);
4. Metro must be listed on a property's title while BPA does not want to hold properties;
5. Metro's target areas for land acquisition and restoration overlap with areas identified in the Council's Fish and Wildlife Program;
6. Economies of scale and scope can be achieved by coordinating purchasing and restoration efforts. For example, BPA assisted the USFWS in establishing the Tualatin National Wildlife Refuge and Metro has identified Wapato Lake, an area that is adjacent to the refuge, as a target area for acquisitions and restoration (Metro 2007b);
7. Metro needs funding to restore properties and, under the Council's Fish and Wildlife Program, BPA receives full credit for habitat units generated through restoration;
8. Metro is willing to assign habitat units resulting from restoration projects to BPA.

A meeting between Peter Paquet, Manager, Wildlife and Resident Fish, Lynn Palensky, Subbasin Planning Project Manager, and Jim Desmond, Director of Metro's Regional Parks and Greenspaces Department identified only one major obstacle -- the Council's funding cycle -- to a successful partnership. Metro is in the process of acquiring lands using money generated by the 2006 bond measure, but funding recommendations for the Council's 2007-2009 Fish and Wildlife Program have already been decided.

The Council's current Program calls for a land and water acquisition fund intended to address the issues raised here. The IEAB believes that this would increase the flexibility, and likely the effectiveness, of the Council's program. The IEAB recommends that the Council consider implementing a program that builds on the experience of the Columbia Basin Water Transaction Program's Riparian Conservation Easement Program.

3.6 Some Potential Problems and Risks in Multi-party Habitat Conservation

While partnering with like-minded agencies and non-profit organizations brings the benefits of cost sharing, of collaboration across governmental boundaries, and of combining talents and expertise, there are possible drawbacks to managing fish and wildlife habitat through multi-party arrangements. Among these are the following:

1. Where the parties involved in the habitat conservation effort have inherently different incentives, objectives, and legal or policy limitations, it can become difficult to reconcile the parties specific needs. Multi-party contracting is inherently a difficult process under the best of circumstances among private parties; when governmental entities are involved it typically becomes even more difficult because of legal limitations on the authority of the various entities and mis-matched budgeting processes.

2. The process of formulating a multi-party agreement for habitat conservation can involve extended negotiations and legal reviews – incurring transaction costs. Transactions costs involve agency personnel time devoted to extended meetings, reviews of agreements, and negotiating sessions. In addition, agencies, private landowners and foundations may seek assurance, through detailed legal review of agreement and deeds that the intended land use patterns will emerge from the joint agreement. These legal expenses can add significantly to the overall costs of establishing a collaborative conservation easement.

3. A requirement of typical conservation easements involving numerous parties is a plan for monitoring and enforcement of the agreement. Clearly, these activities are less of a burden for a single-agent, fee-simple land purchase. On the other hand, a conservation easement generally involves at least two parties – one being the landowner, the other being the easement holder. To assure that the landowner (perhaps a farmer) is adhering to the letter of the easement (for example, not plowing or planting land near a stream), the easement holder needs to monitor the site regularly. This incurs an additional cost which might be avoided through fee simple purchase of a riparian corridor.

4. Land trusts have a perpetual obligation to steward conservation easements or manage lands they hold in fee for conservation purposes. This means that the land trust must have a source of funds available to meet these ongoing responsibilities. Before a land trust decides to accept land or an easement, it must consider the financial and management implications of stewardship. Enforcement, should violations arise, requires even greater resources. Joe Moll of the McKenzie River Trust has stated "The part…that is getting the most attention these days is the section covering legal defense costs…Now that land trusts have actually had to go to court over easement violations, it has been recognized that one lengthy court case could wipe out an organization's stewardship funds" (Moll 2007). The Minnesota Land Trust, for example, estimated that judicial action could cost between $20,000 and $60,000 per violation (Wright 2003). To meet these costs, a dedicated stewardship and defense fund should be established separately from the trust's general operating costs. The Land Trust Alliance has been exploring a collective insurance fund to draw upon in tough legal battles (Land Trust Alliance 2005).

4. Emerging Markets: Credits and Banking

The market for environmental credits may provide another opportunity to meet habitat unit obligations at a lower cost. These markets may also provide a revenue source if property acquired for the Council's Fish and Wildlife program can be shown to generate benefits such as sequestering carbon, improving water quality or increasing water flows.

Mitigation banking traces its origins to the Clean Water Act, which was approved in 1972. This Act prohibited the “discharge of fill or dredged material into wetlands without a permit from the Army Corps” (Bayon 2002, 32). If harm to a wetland was found to be “unavoidable” then the harm had to be mitigated, which lead to the creation of wetland mitigation credits.

Credits, and formal markets where buyers and sellers can exchange credits, exist for a variety of pollutants, for example, the Environmental Protection Agency's Acid Rain Program for sulfur dioxide, greenhouse gases in the Chicago Climate Exchange and European Emissions Scheme, and nitrogen oxides and sulfur oxides in the Regional Clean Air Incentives Market (RECLAIM) in the South Coast Air Quality Management District of California. Markets also exist for wetland mitigation credits and for mitigating the impacts of development on threatened or endangered species (Bayon 2002; Ecosystem Marketplace 2007; Stratus Consulting 2003).

The Willamette Partnership, a non-profit coalition of "conservation, city, business, farm and science leaders" received an EPA grant in 2006 to execute a water quality trade in the Willamette Basin and to propose "an institutional mechanism for a "multi-credit ecosystem marketplace" where trades for different types of ecosystem services could be centralized and financial incentives for voluntary restoration could be created" (LaRocco and Vickerman 2007, 3). A pilot program has been proposed to fund projects that would generate multiple credits, for example, credits for water quality, wetlands, habitat, and carbon sequestration. No statutes or regulations in Oregon prohibit the development of a credit market, although a multicredit ecosystem marketplace has no precedent (LaRocco and Vickerman 2007).

Conservation banks, which mitigate the impacts of development on threatened or endangered species, are starting to become active in the Pacific Northwest. There are currently thirty-five conservation banking agreements in the United States; California has thirty banks, while Arizona and Texas have two and Colorado has one (LaRocco and Vickerman 2007). Oregon's Department of Fish and Wildlife has proposed a statewide system of conservation banks as a way to meet statewide conservation goals (ODFW 2006) and Wildlands, Inc. has a site listed in Washington State as "Proposed/In Progress" (Wildlands 2007).

The Council’s Fish and Wildlife Program could participate in these emerging markets by buying habitat units and/or by selling environmental credits that cannot be counted as habitat units.

4.1 Buyer of habitat units

The proposed multi-credit ecosystem marketplace includes a bank and registry where credits would be deposited and then certified through an audit process. Once certified, credits would be available in the marketplace for purchase (Willamette Partnership nd-a). For-profit conservation banks, such as Wildlands Inc. (2007), may also become active in the Columbia Basin. This raises the possibility that habitat units could be purchased directly.

This approach may have many advantages including a lower cost than fee-simple purchases or conservation easements since only habitat units, and not the land or expensive development rights, are acquired. Organizations generating habitat units are able to achieve economies of

scale and scope since they frequently function on a large scale; they also assume the monitoring and enforcement costs associated with the property.

4.2 Seller of environmental services

Fee-simple acquisitions and conservation easements funded by the Council's Fish and Wildlife Program may generate environmental benefits that can be sold, for example, carbon sequestration and, in some parts of the basin, water quantity and water quality.

Examples of programs and organizations that compensate landowners for sequestering carbon include the Oregon Forest Resource Trust Program, Climate Trust and the Chicago Climate Exchange. Oregon Water Trust worked with a property owner in the Rogue Basin to enroll irrigated pastures in the Oregon Forest Resource Trust program. Oregon Water Trust also executed an option for a "29-year instream transfer of 25 acres of the ranch's water rights" (Oregon Water Trust 2007, 16; Oregon Department of Forestry 2007) demonstrating how multiple environmental benefits can generated from a single property. Climate Trust funded riparian reforestation in the Deschutes River Basin (Climate Trust 2007) and the Chicago Climate Exchange funds carbon sequestration resulting from agricultural and rangeland soil management and for "forestation and forest enrichment, urban tree planting, and, in specified regions, combined forestation and forest conservation project" (Chicago Climate Exchange 2007).

Leasing and purchasing of water rights occurs throughout the Columbia Basin. The Columbia Basin Water Transactions Program (CBWTP) works with eleven "Qualified Local Entities" to improve stream flows (CBWTP 2007).

Thirty-nine water quality trading programs existed in the United States in 2005, but many of these programs were not active due to a lack of demand (Willamette Partnership nd-b). Temperature credit trading currently occurs in the Tualatin Basin (Clean Water Services 2007) and the Willamette Partnership has identified a need to "authorize trading for other constituents like phosphorous, dissolved oxygen, and bacteria" (Willamette Partnership nd-b).

The question of who has the right to sell environmental services that have been generated as a result of restoration efforts funded by the Council's Fish and Wildlife Program is uncertain. Remarks by Bruce I. Knight, Chief, Natural Resource Conservation Service (2006) indicate that "USDA considers environmental credits from agriculture – whether for carbon sequestration, water quality, biodiversity or wetlands – to be the property of the farmer – the landowner – the one who's applied conservation practices on the land – regardless of federal cost-share dollars invested." The issue of property rights to these environmental services should be reviewed and clarified by the Council. Currently, BPA's position is that if funds are generated on properties purchased by BPA then those funds will be used to offset BPA O&M obligations.

5. Scenarios for Habitat Acquisition

In the IEAB report, **"**A Scoping Investigation of Approaches to Preserving Habitat", we proposed using a grid template to evaluate alternative habitat acquisition against a set of

evaluation criteria. We concluded that the grid template would have to be applied on a case-by-case basis, because each proposed acquisition is unique. For this report we agreed to try to apply the template to several hypothetical habitat acquisition scenarios. What we found was that filling in the grid was too formulistic, since many of the cells were obviously inapplicable to a particular scenario. We suggest instead that the two lists of alternative habitat acquisition methods and effectiveness evaluation criteria be retained as a checklist for evaluating specific projects (Table 5).

Table 5: A Checklist for Evaluating Habitat Acquisition Projects

Alternative Ways to Acquire Habitat	**Evaluation Criteria**
Fee simple acquisitions	Cost-effectiveness
Conservation easements	Certainty and durability of protection
Settlement agreements	Ability to finance under the Fish and Wildlife program or other programs
Habitat Conservation Plans	
Land leases	Economies of scale and scope
Options to purchase	Opportunities for partnerships and leveraged funding
PDR and TDR Programs	
Tradable environmental credits	Ability of BPA to take credit for habitat units
Federal farm programs	Incentives for landowner participation
Certification programs	Community acceptability of ownership

The section which follows will develop several hypothetical scenarios to illustrate some of the alternative ways in which habitat might be acquired, and how the issues in this checklist can be addressed.

Scenario 1: Large Ranch, Inter-generational Transfer Issues, Conservation Easement

The Jones family has owned a 3000 acre cattle ranch for three generations. The land includes five miles of riparian land along a meandering stream tributary to the Snake River. The land is 20 miles from a small town of 20,000, but two nearby ranches have recently been subdivided into 40 acre ranchettes. The land is currently owned by James Jones and his wife, who are 68 and 65, with some health problems, and thinking seriously about retirement. Of their three children, one is a doctor in Portland; another is a lawyer in Boise; and after completing college ten years ago the third son returned to help his parents run the ranch with his wife and three children. The family has been approached by a developer who has offered the Joneses $6 million for the ranch. The stream frontage would be especially valuable for ranchettes development. James and his wife are tempted, since it is time for them to move closer to medical care. The third son is conflicted. He certainly can't pay his parents $6 million for the ranch, and ranch profits have been lean, especially considering the property taxes. However, ranching is in his blood and who knows, maybe one of the grandchildren may want to be the fifth generation to run the ranch.

While BPA has in the past demonstrated a preference for fee simple purchase of land for habitat mitigation, that option appears unlikely in this case, because the Jones family is very conflicted

about outright selling the property. Moreover, the likely selling price of $6 million is probably prohibitive for the Fish and Wildlife Program. (Note that if a fee simple purchase were possible, the $6 million expenditure is large enough that it could be capitalized by BPA, so it wouldn't have to be covered under the BPA annual fish and wildlife budget.)

The obvious alternative to a fee simple purchase is a conservation easement. Working with a local land trust and BPA it may be possible for the Jones family to keep the ranch in the family and at the same time address some of the financial hurdles of intergenerational transfer. The conservation easement would be developed to preserve those elements of habitat that are of importance to the BPA Fish and Wildlife Program. Presumably this would involve restrictions on the use (including a prohibition against subdivision) for at least the riparian portions and perhaps the entire ranch. The value of this conservation easement would be the difference between the market value of the ranch with and without the easement. The without-easement land value appears to be at least $6 million based on offers already received by the family. The with-easement land value is more conjectural. Based on just the value of the ranching returns under the restrictions of the easement, the land value might be $1 million or less. This would make the apparent value of the easement about $5 million. However the value of rural land has a significant lifestyle component, especially for land that includes or is adjacent to protected habitat amenities. Research on the land value effects of conservation easements has in many cases failed to document a significant reduction in value as a result of an easement (Anderson and Weinhold 2005). Establishing an easement value for the Jones ranch would require the work of an experienced appraiser. For this scenario, where the easement is intended to prevent imminent subdivision, the value could be quite large. Assume for purposes of this example that the with-easement value of the ranch is estimated to be $3 million, leaving an easement value of $3 million.

There are a number of possibilities for financing this transaction. The land trust might pay the Jones family $3 million for the conservation easement. Presumably at least a major part of the purchase price would eventually be paid using BPA Fish and Wildlife Program funds. It is possible that some of the transaction costs and a part of the purchase price might be paid from other land trust sources. (The transaction costs of organizing and implementing such a complex transaction would be considerable – much larger than for a fee simple purchase.) The $3 million purchase price would help solve the intergenerational transfer problem facing the Jones family. That is, the parents could move to the local town and live on the proceeds of the sale, while the son could continue ranching, subject to the easement provisions.

The family may be willing to accept less than $3 million for the conservation easement. In fact, they may be willing to donate at least some portion of the easement value to the land trust. Their incentives include the following:

- They have strong emotional ties to the ranch and are reluctant to see it subdivided and its environmental amenities altered.
- Reaching a conservation easement deal may be the key to addressing family and financial goals.
- A conservation easement may reduce the assessed valuation and the real estate taxes paid by the ranch. There may be implications for estate taxes as well.

- The portion of the value that they donate may qualify as a tax deductible charitable donation. In the case of the Jones family this may not be a significant consideration, since the ranch probably has little taxable income to offset.
- The family has strong ties to the local community, and is reluctant to make the locally unpopular decision to sell the land for subdivision. They are even more reluctant to do a fee simple sale to BPA, which would remove the land from the local tax roles.

There will be ongoing management, monitoring and enforcement costs for the conservation easement. Since the easement will presumably be held in perpetuity by the land trust, they will also be responsible for these ongoing costs, and may pay some of these costs from their own funding sources. Since the funding available to a land trust from its own sources is typically limited, an endowment fund is sometimes set up. Such an endowment would need to be funded by BPA. For BPA, the endowment route would have the advantage of possibly being capitalized, rather than a part of the annual fish and wildlife as is the case of O&M costs of fee simple owned habitat land.

There are several other partnership possibilities that could further enrich this deal. For example, the USDA Wetlands Reserve Program or Conservation Reserve Enhancement Program could possibly be used to finance projects that enhance the habitat values of the easement lands. Similarly, the Department of Interior's Landowner Incentive Program could be a source of enhancement funds. Other long-shot alternatives bear thinking about, and may become more important options in the future. If the region has tradable development rights or tradable environmental credits programs, the Jones ranch might qualify as a seller.

In summary, the Jones ranch transaction could not have been done as a fee simple deal because of the family's reluctance to sell. The conservation easement option allows the Jones family to meet some important family and financial needs, and allows the BPA/land trust partnership to acquire and protect the ranch habitat that they value. At least in this hypothetical case the conservation easement alternative cost BPA less than the fee simple route, although the transaction cost of setting up the deal would be substantially more than a simple purchase. From a cost-effectiveness standpoint, the conservation easement approach proves to be superior in this case.

Whether under current practice BPA could actually claim habitat credits for this transaction is unclear – but given the critical role of BPA funding in such a transaction, it is the IEAB view that credit should be claimed.

Scenario 2: Urbanizing Parcel, Metro Partnership

Ten years ago Mr. Jackson bought a 40 acre undeveloped parcel on the fringes of the Portland metropolitan area. Mr. Jackson is a successful local businessman. So, while he had no intention of farming the land, he thought it looked like a good investment. Mr. Jackson has made significant improvements to the grounds and house. The land has remained undeveloped, and the cropland has been rented to an adjacent farmer. The parcel also contains 15 acres of forest and wetland with high habitat value. The urban growth boundary was recently expanded and now includes this property -- an adjacent parcel was subdivided for up-scale residential use last year.

Rumors of impending development on the Jackson parcel have reached the local neighborhood, where people value both the open space and the abundant wildlife habitat provided by the parcel.

This appears to be a prime candidate for acquisition by Metro. Mr. Jackson is not anxious to outright sell the parcel for development since he has invested considerable financial and emotional resources into the house and grounds, and because he highly values the surrounding open space. Metro would be able to move quickly to acquire full market value fee simple ownership of the 38 acres exclusive of the Jackson house and grounds. It might also be in Metro's interest to acquire a conservation easement on the 2-acre footprint of the Jackson home to prevent future subdivision of that parcel. BPA could partner in the financing of the deal, and thus acquire some habitat credits. Mr. Jackson may be willing to donate all or a portion of the value of the 2-acre conservation easement since he has capital gains income from the Metro sale and other business income to offset with the charitable donation, and there may be real estate tax benefits as well.

If Metro is not interested in this parcel, another possibility is a BPA/land trust deal. One way a land trust might structure the transaction is to buy the 38 acres, place a conservation easement on that parcel, and acquire a conservation easement on the 2 home site. The land trust might then sell a portion of the property for subdivision development subject to the conservation easement to help finance the deal. BPA might also help finance the deal in exchange for habitat credits.

The Metro deal could be accomplished quickly, with low transaction cost. The land trust acquisition would be quite complex, which would mean more time and more costs. From the BPA perspective, either option could be more cost effective than outright purchase of the habitat land by BPA.

Both the Metro and the land trust options could also involve tradable development rights or tradable environmental credits as the use of these tools become more commonplace.

It is important to note that there is strong opposition by the Tribes to the use of BPA funds for mitigation activities in urban areas since they believe these activities provide very little benefit to either wildlife species impacted by the hydro system or to the Tribes.

Scenario 3: Timber Parcel, Conservation Easement

The Baxter family purchased 100 acres in an Upper Willamette watershed in 1972 and built a residence there in 1980. The timber had been logged in 1950, reseeded naturally, and now contains about 2 million board feet of mixed species timber valued at $1 million. The current family owners, in their late 60s, would like to continue living on the property, but also desire to convey some funds to their adult children.

The land is surrounded by State and Federal forest lands and contains healthy, mature forests dominated by spruce, hemlock and cedar, which provide shading for aquatic species, refuge for terrestrial species, and woody material for the creek system. Running through the property is a small stream that contains important spawning habitat for fish species including steelhead, cutthroat trout, and Chinook salmon.

The alternatives facing the Baxter family are similar to Scenario 1, except that the monetary value of the parcel is in the trees and not the land itself. The Baxter family could sell the timber on their land for $1 million, or they could sell a conservation easement for $1 million. Property tax implications are minor under existing state laws. Given the way property tax on Oregon timber land is determined, the conservation easement may result in no more than $400 saving per year for the parcel.

A major alternative considered but rejected by the Baxters was to proceed with a Measure 37 claim which might allow future subdivision of the parcel. (Measure 37, passed by Oregon voters in November 2004, allows landowners to claim compensation if land use regulations reduce the value of their land, or else to proceed with development.) Legal costs and uncertainty of the Measure 37 process are at present a disincentive. Facing the reduced monetary returns of forgoing development versus the possibility of maintaining a chosen lifestyle, the family is willing to consider negotiating a conservation easement.

Since the property is within the BPA power supply area (the local PUD receives its power from BPA), and the property contains habitat essential to a variety of wildlife species considered important to the BPA region, wildlife habitat units may be generated by a conservation easement on the land. Private foundations have purchased land (fee simple) in the area; however the family is not interested in land sales. Partnerships between BPA, other state and federal agencies, and private foundations are a possibility, since the site is in a key watershed for numerous species. Overall, the family considers an easement sale a win/win situation. It allows continuation of a chosen lifestyle, with some economic returns from the land, while at the same time contributing to the support of rebuilding several species of fish and wildlife in the region.

Logging the parcel would destroy many of the attributes that the family values. Rather than logging the property, the owners are negotiating a conservation easement package that would pay the Baxters $500,000 for the timber cutting rights and allow them to keep the property with a "footprint" parcel of two acres for their residence. A regional land trust organization is considering including this easement and 500 additional easement acres in the watershed for a total of $2.5 million (with funding obtained from private foundations, state and federal sources). This land trust will establish an enforcement endowment trust fund of $250,000 in order to cover anticipated annual expenses of $12,500. Additional monitoring and enhancement and management programs are anticipated as funding becomes available.

6. Bibliography

Anderson, Kathryn and Diana Weinhold. 2005. Co Conservation Easements Reduce Land Prices? The Case of South Central Wisconsin. Staff Paper No. 484 University of Wisconsin-Madison Department of Agricultural & Applied Economics (June)

Bayon, Ricardo. 2002. A Bull Market in Woodpeckers? Making Money in Environmental Derivatives *The Milken Institute Review* (First Quarter) 30-39.

Chicago Climate Exchange. 2007. Forestry Carbon Emission Offsets (accessed June 8, 2007) http://www.chicagoclimatex.com/content.jsf?id=242

Clean Water Services. 2007. Temperature Management Plan (accessed June 8, 2007) http://www.cleanwaterservices.org/PlansAndProjects/Plans/TempManagementPlan.aspx

Columbia Basin Water Transactions Program. 2007. The Program (accessed June 8, 2007) http://www.cbwtp.org/jsp/cbwtp/program/partners.jsp>
Davies, Brent. 2007. E-mail communication with N. Netusil (June 15).
Ecosystem Marketplace http://www.ecosystemmarketplace.com
Independent Economic Analysis Board. 2006. A Scoping Investigation of Approaches to Preserving Habitat (June 5).
Independent Science Advisory Board. 2007. Human Population Impacts on Columbia River Basin Fish and Wildlife (June 8).
Knight, Bruce I. 2007. Paying Agriculture for Ecosystem Services at "Making the Priceless Valuable: Jumpstarting Environmental Markets" Portland, Oregon (June 8).
Land Trust Alliance: 2005 National Land Trust Census (www.lta.org/census)
LaRocco, Gina and Sara Vickerman. 2007. An Oregon Ecosystem Marketplace: Opportunities and Limitations *Defenders of Wildlife* (February).
Methow Conservancy. 2006. Methow Conservancy Works with Heath Family to Protect Wetlands, Forests and Floodplain for Wildlife and Fish (September 4).
Metro. 2007a. 1995 Open Spaces Bond Measure (accessed March 11). http://www.metro-region.org/article.cfm?articleid=144
Metro. 2007b. Regional Target Areas (accessed March 11). http://www.metro-region.org/article.cfm?ArticleID=18198
Metro. 2007c. Clackamas River Channel Brought Back to Life for Salmon Refuge (accessed March 11). http://www.metro-region.org/article.cfm?articleid=13283
Mid Willamette Valley Council of Governments. 2007. Willamette Ecosystem Marketplace Development (accessed March 13) http://www.mwvcog.org/WillamettePartnership/WillamEcoMarket.asp
Moll, Joe. 2007. McKenzie River Trust. E-mail to Hans Radtke (April 13).
Maslen, William C. 2006. Capital Expense Transmittal Letter to Rhonda Whiting (August 24).
National Fish and Wildlife Foundation. 2006. Proposal 200201301Water Entity (RPA 151) NWPPC (Revised Summer 2006)
Northwest Power and Conservation Council. 2003. Columbia River Basin Fish and Wildlife Program: Twenty Years of Progress (November).
Northwest Power and Conservation Council. 2006. Fifth Annual Report to the Northwest Governors on Expenditures of the Bonneville Power Administration to Implement the Columbia River Basin fish and Wildlife Program of the Northwest Power and Conservation Council: 1978-2005 (July).
Northwest Power and Conservation Council. 2007. Fish and Wildlife Success Stories (accessed June 1, 2007) http://www.nwcouncil.org/fw/stories/default.htm
Northwest Power Planning Council. 2000. Columbia River Basin Fish and Wildlife Program.
NOAA Fisheries Service Northwest Regional Office. 2007. Pacific Coastal Salmon Recovery
Fund (accessed October 28) http://www.nwr.noaa.gov/Salmon-Recovery-Planning/PCSRF/
NOAA Fisheries Service. 2006. 2006 Report to Congress Pacific Coastal Salmon Recovery Fund (FY 2001-2005).
Oregon Department of Fish and Wildlife. 2006. Conservation Strategy for Oregon (September). http://www.dfw.state.or.us/conservationstrategy/contents.asp
Oregon Department of Forestry. 2007. Forest Resource Trust Program (accessed March 13) http://www.oregon.gov/ODF/PRIVATE_FORESTS/frt.shtml
Oregon Water Trust. 2006. Annual Report.

Oregon Watershed Enhancement Board. 2007. OWEB Board Meeting (March 15).
O'Toole, Patty. 2007. E-mail communication with N. Netusil (July 6).
Pacific Coast Watershed Partnership. 2007. Pacific Northwest Priorities (accessed July 5) http://www.pacificwatersheds.net/priorities/
Stratus Consulting. 2003. A Nationwide Survey of Conservation Banks (December 19).
The Climate Trust. 2007. Deschutes Riparian Restoration (accessed March 13) http://www.climatetrust.org/offset_deschutes.php
The Oregonian. 2007. Putting Portland in its Place (July 2).
Welch, Dorothy W. 2007a. E-mail communication with N. Netusil (June 22).
Welch, Dorothy W. 2007b. E-mail communication with N. Netusil (June 25).
Welch, Dorothy W. 2007c. E-mail communication with N. Netusil (July 5).
Wildlands, Inc. 2007. Wildlands Environmental Solutions (accessed March 13) http://www.wildlandsinc.com/index.htm
Willamette Restoration Initiative. 2004. Draft Willamette Subbasin Plan (May 28).
Willamette Partnership. nd-a. A Centralized Exchange Platform for Trading in the Willamette Ecosystem Marketplace.
Willamette Partnership. nd-b. A Primer on Existing and Emerging Markets for Environmental Off-Set Credits in the Willamette River Basin.
Wright, Jean. 2003. Tallying Up the Costs of Easements *Exchange* Newsletter, Land Trust Alliance (Spring).
Wright, Stephen J. 2002. Letter to Larry Cassidy, Chairman, Northwest Power Planning Council (March 5)

Environmental Market Programs

Acid Rain Program http://www.epa.gov/airmarkets/progsregs/arp/index.html
Chicago Climate Exchange http://www.chicagoclimatex.com/
Ecosystem Marketplace http://www.ecosystemmarketplace.com/
European Commission Emission Trading Scheme (EU ETS) http://ec.europa.eu/environment/climat/emission.htm
REgional CLean Air Incentives Market (RECLAIM) http://www.aqmd.gov/reclaim/reclaim.html