Oregon Coast Coho Conservation Plan for the State of Oregon
Appendix 3

Description of Oregon and Federal Commitments to the Oregon Coast Coho Conservation Plan for the State of Oregon

Prepared by
Oregon Department of Fish and Wildlife
In Partnership with State and Federal Natural Resource Agencies

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Oregon and Federal Agency Commitments to the Oregon Coast Coho Conservation Plan for the State of Oregon

The Oregon Plan governance structure involves participation by all natural resource agencies and the Governor's Natural Resources Office (GNRO). Implementation of the Coho Conservation Plan will be folded into this existing structure. The governance structure is composed of a lead Core Team (chaired by the GNRO), and three subteams – Monitoring Team, Outreach Team, and Regional Management and Implementation Team. All teams have within their representation state natural resource agencies, as well as federal representation.

This appendix contains descriptions, submitted by each agency, of commitments to support the Conservation Plan for Oregon Coast Coho ESU and achieve the desired status goal for the ESU. The following Oregon and Federal agencies have described their commitments to support the Plan.

- State of Oregon – Oregon Plan Habitat Strategy
- State of Oregon – Data sharing and collaborative interagency analyses.
- Oregon Department of Fish and Wildlife
- Oregon Watershed Enhancement Board
- Oregon Department of Forestry
- Oregon Department of Agriculture
- Oregon Water Resources Department
- Oregon Department of Environmental Quality
- Oregon Department of State Lands
- Oregon Department of Land Conservation and Development
- Oregon Department of Geology and Mineral Industries
- Oregon Department of Transportation
- Oregon Parks and Recreation Department
- U. S. Environmental Protection Agency
- U. S. Bureau of Land Management
- U. S. Forest Service

Several state agencies have identified proposals that would add staff positions to existing programs, or create new programs, that could support implementation of the Conservation Plan. All of these proposals were developed prior to the development of the Conservation Plan and were intended to help agencies fulfill their statutory missions statewide. During Conservation Plan development, the agencies recognized that these proposed staff positions would have benefits in the Oregon Coast ESU, as well as other areas of the state.

To help implement the Oregon Plan Habitat Strategy in the Oregon Coast ESU, the Oregon Department of Agriculture has dedicated an existing position and the Oregon Watershed Enhancement Board has created a limited duration position. These temporary dedications of positions are the only commitment by state agencies to adjust staffing solely to implement the Conservation Plan.

State of Oregon
Multi-Agency Commitment

Oregon Plan Habitat Strategy

Summary: The habitat strategy for this Conservation Plan is to continue to implement the Oregon Plan for Salmon and Watersheds (Oregon Plan or OPSW) in a more focused manner. The Oregon Plan was established in 1997 to implement cooperative, non-regulatory, conservation actions on the part of landowners, local organizations, and government agencies designed to make substantial improvements to watersheds and salmon restoration. The OPSW resulted in the implementation of thousands of habitat improvement projects, engaging hundreds of landowners working in cooperation with Watershed Councils, SWCD's, and resource industries. This work was supported by both State and Federal Agencies through technical assistance and funding.

Continued Oregon Plan implementation will be enhanced by utilizing up-to-date technical analysis and by comprehensive scientific assessment monitoring information developed by the State's Coastal Coho ESU Assessment. The habitat strategy for the Conservation Plan will bring additional resources to address key habitat needs and to engage voluntary participation by more citizens. Implementing enhanced OPSW conservation actions will be focused on accelerating the pace and expanding the extent of stream habitat improvement in streams that are most capable of providing high quality habitat for juvenile coho salmon. Key elements of the strategy include:

- Commitment from the Oregon Forest Industries Council (OFIC) to continue support of habitat improvement work as part of the OPSW. Participation in non-regulatory habitat improvement work on private lands in the Coast coho ESU will be strengthened with support by Oregonian's for Food and Shelter (OFS) and the Oregon Farm Bureau (OFB). These organizations also continue to support the OPSW and, working through established OPSW cooperative partnerships, will lead efforts to encourage farmers and other landowners to conduct voluntary habitat improvement projects.
- Enhanced technical and administrative support to local conservation groups and private landowners (e.g., Soil and Water Conservation Districts, watershed councils, and industrial forestland and small woodland owners) for implementing habitat improvement projects. The success of community-based conservation efforts working as OPSW partners will be shared with all local communities.
- OPSW partnerships among forest and agricultural landowners represent a powerful means of increasing the level of investment in effective voluntary habitat-improvement work on private lands in areas where the greatest benefit to coho salmon is likely to be achieved.
- Confidence in Oregon's scientific status assessment of the Coastal coho ESU and the ability to make adaptive responses to new information and recommended actions.
- A common desire by representatives of forestland and agricultural landowners to assure effective efforts to support fish conservation and maintain oversight within Oregon rather than under the federal Endangered Species Act.

- The Oregon Plan Core Team will assure participation, coordination, and accountability among State and federal agencies to support the habitat strategy, while OWEB will take the lead in its implementation.

How does the habitat strategy enhance the existing OPSW programs that support local conservation entities and efforts?

The habitat strategy for this Conservation Plan fits entirely within the proven framework established by the OPSW to support voluntary conservation actions. What is new, however, is improved focus on coastal coho habitat needs, the ability to identify specific locations with the greatest potential for habitat improvement, and an intensified effort through outreach, education, and technical assistance to engage coastal landowners in conservation actions.

The Coastal Coho Assessment (2005) brought focus to the fact that over-winter habitat is a primary limiting factor for the vast majority of coho populations that comprise the Oregon Coast coho Evolutionarily Significant Unit (ESU). The Assessment and this habitat strategy highlight the contribution private lands can make to coho restoration. The OPSW Coastal Coho Conservation Plan includes specific actions and identifies agency responsibilities for delivering conservation actions to the most appropriate streams and increase the amount and availability of high quality coho habitat. Increasing the amount of high quality coho habitat is explicitly identified as Oregon's desired status goal for the Oregon Coast coho ESU.

Ongoing OSPW partnerships, as well as new cooperative relationships with rural landowners are essential to making this happen. A non-regulatory approach will be employed to provide the technical assistance, financial incentives, education, and other support needed to conduct habitat improvement projects in the most suitable locations using the most suitable methods. The implementation of these projects will address important factors that currently limit coho productivity, seeking both immediate and long term results.

This cooperative conservation action will utilize partnerships developed through OPSW participation to engage additional private landowners in cooperative work to achieve coho conservation and restoration. Agricultural and forestry interests, the Oregon Watershed Enhancement Board, the Oregon Department of Agriculture, the Oregon Department of Fish and Wildlife, the Department of State Lands, the Department of Forestry, and the Governor's Natural Resources Office are all working to increase landowner participation in habitat restoration projects. The willingness of all parties to engage creates an unprecedented opportunity to improve habitat in areas that have particular importance to salmon in the Oregon Coast coho ESU.

Background

The State of Oregon, in its Coastal Coho Assessment, concluded that the Oregon Coast coho ESU is viable, but that actions should be taken to sustain and increase the productivity of coho populations. The assessment also concluded that assertive restoration programs be focused on

the portions of watersheds most suited to the habitat requirements of overwintering juvenile coho. Further analysis has determined that ninety percent of the streams with the highest potential to produce coho are on private lands, mostly on private timber, agriculture, and small residential-agricultural properties. Non-forested lands and lands managed for agriculture may influence as much as half of the coho rearing habitat in the high potential category. Compared to all stream miles used by coho (about 6,500 total miles in the ESU), the amount of high intrinsic potential habitat on non-forested lands is only about 500 miles. Identifying those areas that would benefit from restoration and implementing new voluntary projects is an important, and reasonable, goal of the Conservation Plan.

Habitat assessments show that the lack of stream complexity, riparian trees, and floodplain connectivity limit salmon productivity. The amount and distribution of high intrinsic potential habitat varies by population (Figure 1), but opportunities to improve the productivity of these habitats occur in all populations. The maps of the Tillamook, Alsea, and Coquille coho populations also help illustrate that implementation of this cooperative conservation action will need to meet the different environmental, land use, and cultural condition that characterize each watershed. It will be a challenge to enroll significant participation in this program, but the potential for improvement is great.

We are not attempting to return to pristine or historic conditions. But, a review of what past conditions were like (Figure 2) helps put this effort into context. Complex channels with timbered banks and backwaters were part of the watersheds that supported thriving coho populations. We cannot reclaim or restore all areas. Nevertheless, there is a tremendous opportunity to make a difference, and a tremendous challenge ahead to make this difference in the current habitat conditions across the ESU watersheds.

The Coastal Coho Conservation Plan is a new document, but the restoration concepts and technical experience needed to implement the habitat strategy is well established. Since the mid-1990's, biologists have understood the critical importance of these habitats, and local organizations have worked to restore streams in partnership with multiple landowners. Past restoration projects provide important examples of what works and what does not: for the stream, for the fish, and for the landowner. Ongoing projects, such as Paradise Cr. in the Lower Umpqua (Figure 3), will become focal points for field trips designed to increase the awareness of agency management staff, industry groups, and landowner organizations of the importance and potential of restoration in these areas.

Overall, we make one simple conclusion: Prioritizing these streams for habitat restoration, and getting the work done, is the greatest potential opportunity for increasing the productivity of coho populations that comprise the Oregon coast ESU.

State Agency Actions for Implementing the Habitat Strategy

Oregon Watershed Enhancement Board (OWEB)

OWEB has statutory responsibility to implement the Oregon Plan. As such, OWEB will serve as the lead agency for the Oregon Plan habitat strategy. OWEB will work with other agencies and

through the Oregon Plan Core Team to provide special technical and grant support for this cooperative conservation action. Specific OWEB actions include:

1. Encouraging the use of the Oregon Conservation Reserve Enhancement Program (CREP) in coastal counties.
    - Increase funding for CREP participation in Coastal Basins
    - Develop incentives for CREP enrollment in high value agricultural lands.
    - Additional, extra payment for CREP enrollment in the most important habitats.
2. Develop special Technical Support and grant writing assistance.
    - OWEB has created a limited duration position to help implement the Oregon Plan habitat strategy.
    - Increase technical assistance grant funding for Watershed Councils and SWCDs to develop restoration projects in identified high priority areas.
    - Use fishing disaster funds to focus employment of displaced fishers to aid coho habitat conservation efforts.
    - In cooperation with other agency and landowner interests, develop a "Request for Proposals" to fund educational and technical support specifically for private landowners seeking to participate in this action.

Oregon Department of Fish and Wildlife (ODFW)

ODFW will provide the technical support needed to identify stream reaches with the potential to support high quality rearing habitats. ODFW will also take steps to ensure that field staff have knowledge of landowner needs and concerns. ODFW habitat biologists and District Staff will design and implement projects that support and sustain habitat forming processes (i.e. placement and recruitment of appropriately sized large wood, restore channel-floodplain connectivity in key areas, and conduct management that supports the creation and maintenance of beaver dams.) Specific actions include:

- Research and district staff will work internally and with other agencies to develop improved maps showing areas with high habitat potential appropriate for habitat projects. This work will include identification of areas with good potential for beaver dams to create high quality habitat.
- Provide additional training and support for staff in the Western Oregon Stream Restoration Program enabling them to work more successfully with private landowners.
- Increase efforts to focus voluntary restoration actions in the most important areas for coho habitat on private lands. Recognize that additional planning and different techniques may be needed to implement projects in these areas.
- Develop technical guidance and provide outreach to landowners explaining the need for habitat improvement on private lands with high intrinsic potential for winter coho habitat.
- Design and implement projects to increase stream complexity and stream channel – floodplain connectivity on lands managed by ODFW. (i.e. Jewell Meadows Wildlife Area)

Oregon Department of Agriculture (ODA)
In addition to ongoing efforts in the following programs: 1.) Agriculture Water Quality Management; 2.) Confined Animal Feeding Operations; 3.) Weeds and Invasive Species; and 4.) Pesticides, ODA will:

- Collaborate with OWEB to request policy option packages requesting an increase in funding for watershed councils and Soil and Water Districts for the 2007-2009 biennium.
- Work directly with agricultural landowners and with the Oregon Forest Industries Council (OFIC), Oregon Small Woodlands Association (OSWA), Oregonians for Food and Shelter (OFS), and the Oregon Farm Bureau (OFB) to support cooperative conservation and restoration work in appropriate areas.
- Commit an existing position to specialize in providing technical assistance to support conservation and restoration in non-regulatory settings on private lands best suited to provide over winter habitat for juvenile coho salmon. The person in this position will work closely with OWEB, ODF and ODFW staff to coordinate efforts.
- Conduct outreach and education supportive of this effort.
- Continue to promote CREP through the Soil and Water Conservation Districts.

Oregon Department of Forestry (ODF)
ODF will provide support for the Conservation Plan habitat strategy through ongoing administration of the Forest Practices Act, conducting monitoring and research, and working directly with landowners to identify opportunities to improve coho habitat. New actions include:

- Assist in identification and validation of high coho intrinsic potential and high aquatic potential (HAP).
- Work directly with forest landowners and with the Oregon Forest Industries Council (OFIC), Oregon Small Woodlands Association (OSWA), Oregonians for Food and Shelter (OFS), and the Oregon Farm Bureau (OFB) to support restoration work in appropriate areas.
- Design and implement projects to increase stream complexity and stream channel—floodplain connectivity on lands managed by ODF. (Tillamook, Clatsop, and Elliott State Forests)
- Provide leadership to the Interagency Mapping and Assessment Project (IMAP), an interagency cooperative which will be used to build mid-to broad-scale planning and assessment models with 'wall-to-wall' existing vegetation data and associated data. The IMAP project will produce consistent, landscape-wide vegetation mapping across Oregon and Washington. The project will also produce a series of land use and other needed maps, and land use, vegetation, wildlife, and socioeconomic models that can be used to assess current conditions and trends and implications of alternative policies and management actions.

Oregon Department of State Lands (DSL)
DSL will support the Conservation Plan

- Special assistance with permits and expedited project approval.
- Technical assistance with wetland restoration projects.

Oregon Plan Core Team

The Oregon Plan Core Team will assure participation, coordination, and accountability among State and federal agencies to support the Conservation Plan and habitat strategy. The Oregon Watershed Enhancement Board will be the lead agency on implementing the habitat strategy.

Habitat Strategy Research Monitoring & Evaluation

Documenting implementation and evaluating the effectiveness of this habitat strategy will be accomplished by existing programs at OWEB and as a new activity for the Oregon Plan for Salmon and Watersheds Monitoring Team. The Monitoring Team is comprised of representatives from each state natural resource agency as well as representatives from the Forest Service, BLM and NOAA Fisheries. Activities of the Monitoring Team with potential to support this action include:

- Consultation with the Department of Agriculture to help evaluate the effectiveness of AWQMP implementation.
- Support for establishment of a Lowlands Research Cooperative (modeled after the Headwaters Research Coop). This would be a coalition of landowners, agency and university scientists that would have the capacity to develop and test ideas about how lowland streams respond to land use practices and restoration projects.
- Adaptive review of project implementation and effectiveness for creating complex winter habitat.
- Conduct experimental tests of assumptions about lowland streams and assess efficacy of programs to determine which are most helpful for achieving desired conditions.
- Develop uniform, specialized monitoring protocols so that landowners, SWCD's, and Watershed Councils can share information and evaluate what works and what does not as applied to habitat restoration projects.

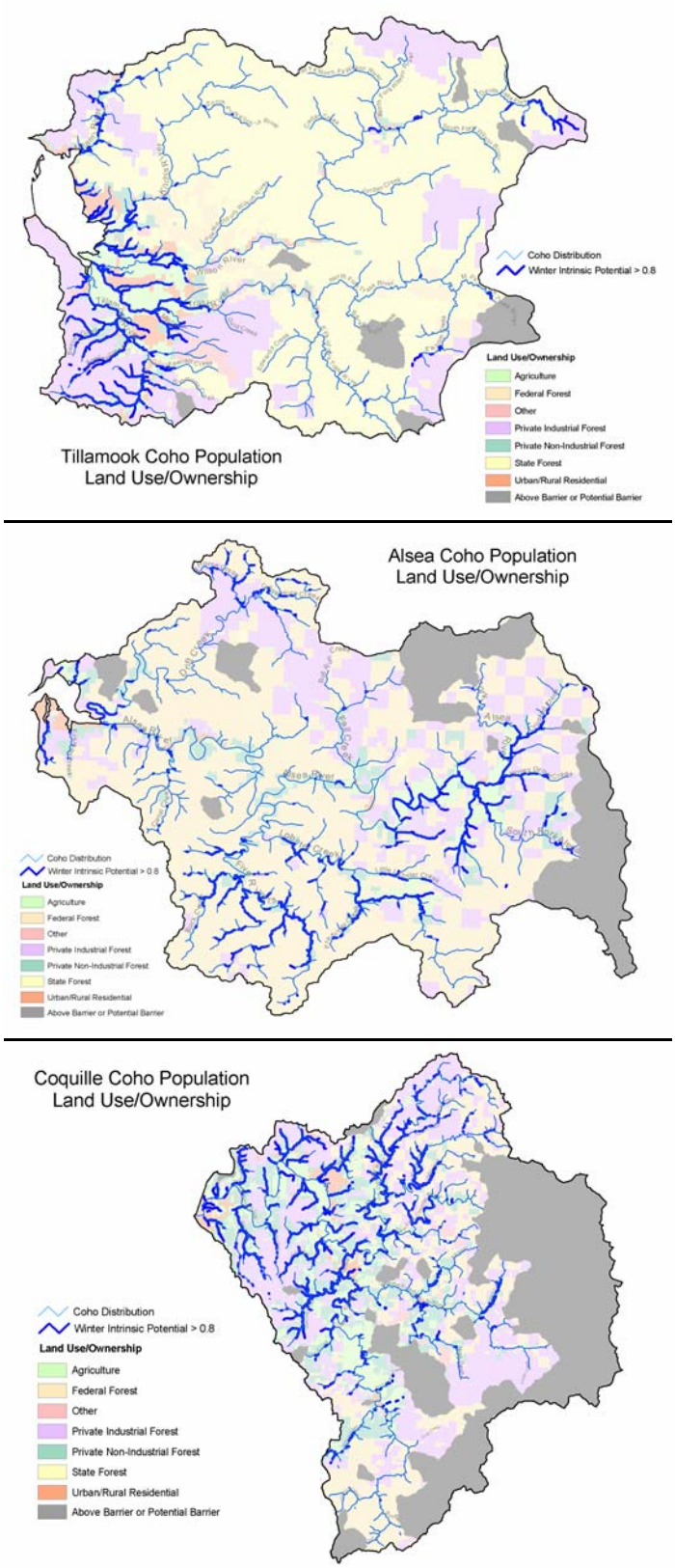


Figure 1. Contrasting distribution of high intrinsic potential habitats and land use in the Tillamook, Alsea and Coquille and Tillamook Coho Populations.

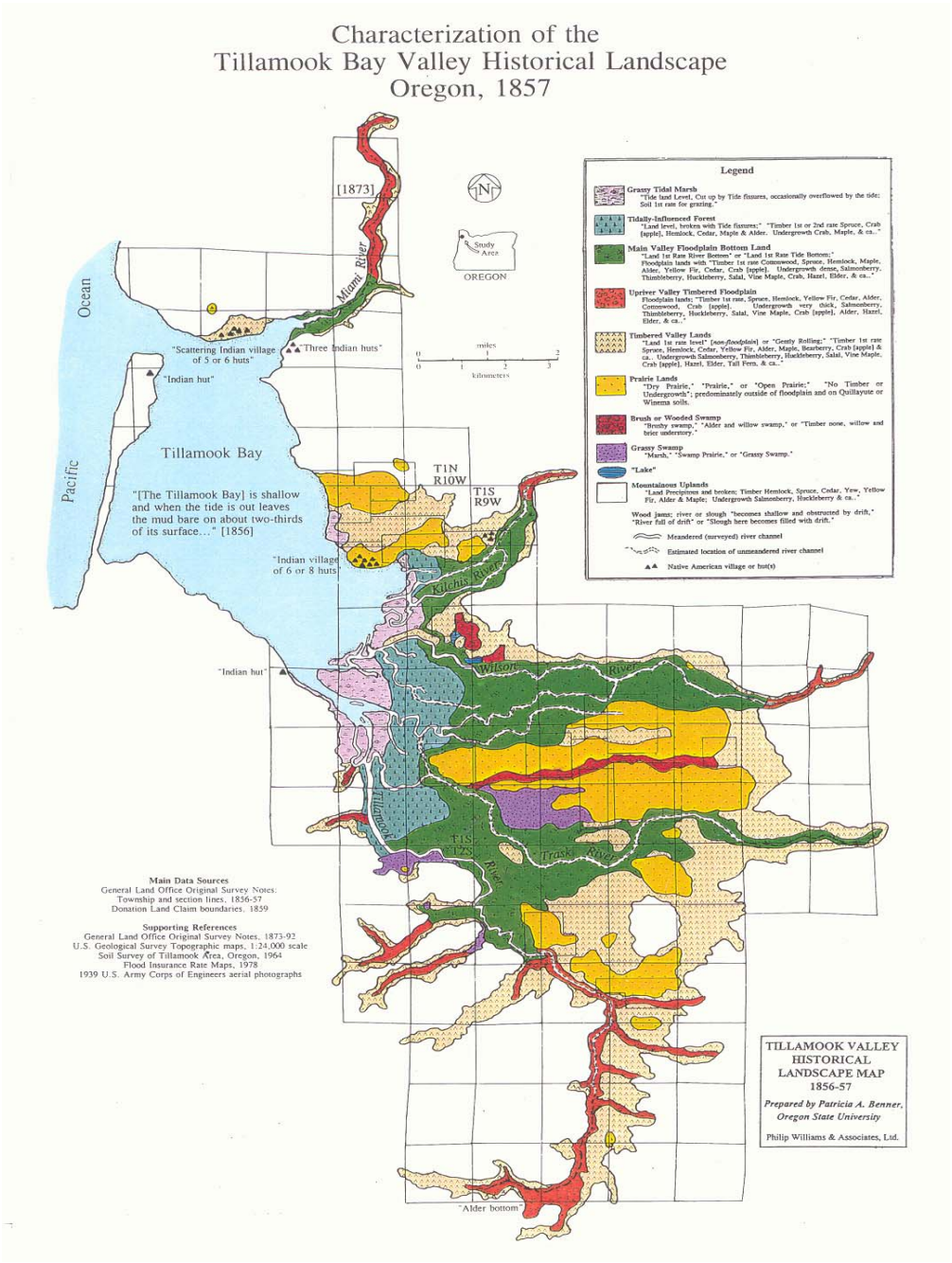


Figure 2. Tillamook Bay landscape ca. 1857. Note presence of "timbered floodplain" in lower reaches of most rivers. Similar in formation is available for the Coquille River.

From: Benner, P. A. 1996. Tillamook Valley Historical Landscape Mapping. Pp. 51-58 In: An Environmental History of the Tillamook Bay Estuary and Watershed. Tillamook Bay National Estuary Project Technical Report 09-06, Garibaldi, OR.

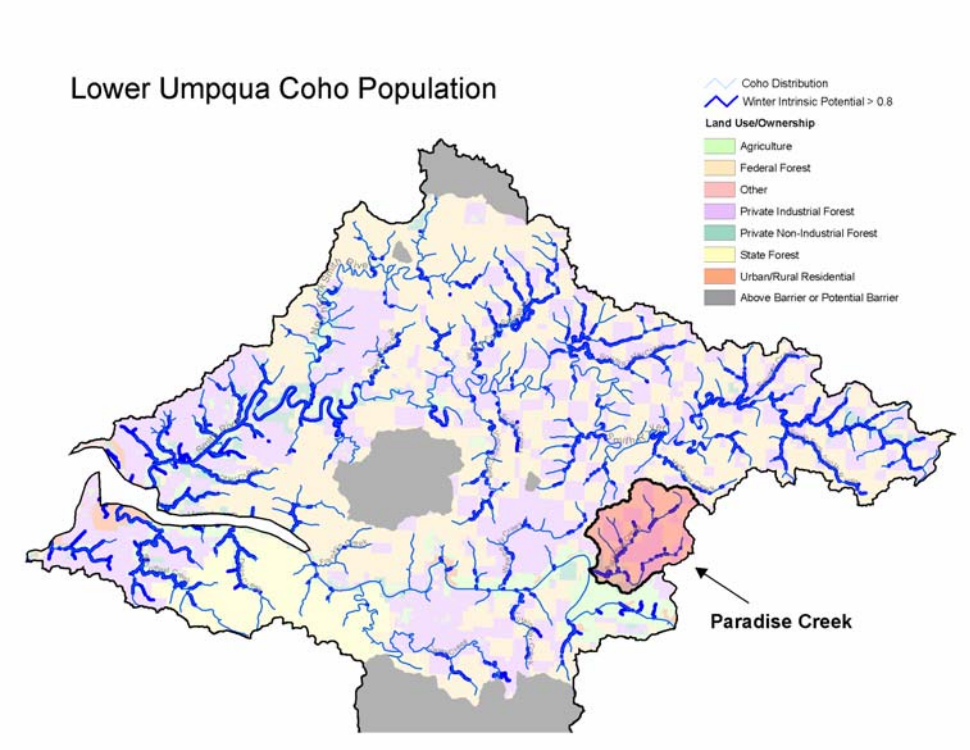


Figure 3. Paradise Creek in the Lower Umpqua Coho Population: an example of a stream with high potential for coho habitat improvement as a result of restoration projects. With restoration work underway in 2006, the Paradise Creek is a good example of the type of project that the Oregon Plan and the habitat strategy are designed to foster. Work is conducted in appropriate areas, addresses documented limiting factors, and involves the participation and cooperation of multiple landowners.

State of Oregon
Multi-Agency Commitment

State of Oregon – Data sharing and collaborative interagency analyses.
The State of Oregon commits to improve collaborative data analyses (between ODFW, ODF, OWEB, ODA, ODEQ, OWRD and/or ODSL) through the following actions:

Action: Ensure that all data collection on fish (abundance, distribution, densities) and habitat (stream, riparian, water quality and quantity) utilizes consistent and compatible protocols.
Lead Entity: OWEB: Oregon Plan Monitoring Team (OPMT).
When: Annual Review beginning in 2006.
How: The Oregon Plan Monitoring Team will convene a one day meeting each year to review state funded programs monitoring fish (abundance, distribution, densities) and habitat (stream, riparian, water quality and quantity) to insure that they utilize consistent and compatible protocols. The Monitoring Team will forward a written summary of their conclusions and recommendations to the Core Team and specific agencies involved.
Timeline: Review will be completed by December 31 of each calendar year. Except in 2006, when the meeting will occur by December and the materials will be provided to the Core Team by February 14, 2007.
Comments: Currently, some review has occurred at the regional level through the Pacific Northwest Aquatic Monitoring Partnership (PNAMP) and the Northwest Environmental Data Network (NED). Additional evaluation and action for Oregon specifically needs to occur. This is especially true for reconciling sampling conducted at the local level with that conducted by state agencies, in particular, and often at a larger spatial scale. This action will formalize the process.

Action: Establish guidelines, protocols, and implementation procedures for gathering and sharing data.
Lead Entity: Oregon Plan Monitoring Team.
When: Periodic review during each calendar year. The OPMT meets on a monthly basis. Certain meetings and agenda topics throughout the year will be dedicated to
How: The OPMT has established a new revolving subcommittee comprised of representatives from each of the OP natural resource agencies and relevant non-governmental organizations. This committee is designed to operate on a topic by topic basis with membership appropriate to each topic at hand. The committee will be co-chaired by the OWEB Oregon Plan Monitoring Coordinator and one other member of the OPMT selected based on the relevant data topic. The committee will work on very specific issues in a work session environment with clear deliverables and timelines informed by the OPMT.
Timeline: Review will be completed by December 31 of each calendar year.
Comments: Information, tools, and methods established in Oregon through the OPMT and the subcommittee will be presented to PNAMP and other regional bodies for inclusion and collaboration with other entities.

Action: Improve state and federal agency capability to store, retrieve, and share data collected by all parties – especially including private landowners, watershed councils, watershed associations, SWCD, and federal partners.
Lead Entity: Oregon Plan Monitoring Team.
When: Annual Review beginning in 2006.
How: Specifically, work will occur in the data management subcommittee of the OPMT and provided to OPMT members. The specific areas and methods, by which, information storage, sharing, and data retrieval can be improved upon will be presented to the Core Team for implementation by agencies.
Timeline: Review will be completed by December 31 of each calendar year.
Comments: Information, tools, and methods established in Oregon through the OPMT and the subcommittee will be presented to PNAMP and other regional bodies for inclusion and collaboration with other entities. The NED will be one important body to engage on this topic.

Interagency Mapping and Assessment Project (IMAP)
The Interagency Mapping and Assessment Project (IMAP) is another interagency cooperative which will be used to build mid-to broad-scale planning and assessment models with 'wall-to-wall' existing vegetation data and associated data.

- Lead Entity: ODF: Project collaborators include the Oregon Department of Forestry, Bureau of Land Management, and Pacific Northwest Research Station, and include a Policy Oversight Group and a Technical Team.
- The IMAP project will produce consistent, landscape-wide vegetation mapping across Oregon and Washington. This project improves upon previous efforts such as the Coastal Landscape Analysis and Modeling Study (CLAMS) discussed and used to help with land use analyses in the earlier Coho Assessments. The land use data, for the first time, will be collected in polygons as well as point samples. Overall, the results are the same, but using real polygons rather than computer generated Thiesen polygons (A polygon bounding the region closer to a point than to any adjacent point) has real advantages in being able to look at land use at a much finer scale.
- The project will also produce a series of land use and other needed maps, and land use, vegetation, wildlife, and socioeconomic models that can be used to assess current conditions and trends and implications of alternative policies and management actions.
- A Central Oregon Landscape Analysis (COLA) will be used as the research and development laboratory area for IMAP. COLA will be used to develop and test new science that fits directly into IMAP.

Oregon Department of Fish and Wildlife (ODFW)

ODFW Actions: Artificial Propagation (Hatchery Management)

A description of historical hatchery coho management in Oregon and the potential benefits and risks of hatchery coho programs to naturally produced coho are provided in the Oregon Coastal Coho Assessment (State of Oregon 2005; hereafter referred to as the 2005 OCCA). The Assessment also includes the identification of the hatchery coho programs in the Salmon and North Umpqua rivers as the primary limiting factor for these populations and outlines potential actions to address this limiting factor. The purpose of this section is to describe the actions related to hatchery coho management that will be taken to help achieve the desired status. These actions and the guidance provided here are based on the current knowledge related to hatchery and naturally produced fish interactions and propagation techniques currently used. These criteria may be modified in the future when scientific evidence identifies techniques that cause hatchery and naturally produced fish interactions to be insignificant. The scientific evidence may come from research conducted at the Oregon Hatchery Research Center or other studies conducted in the Pacific Northwest.

The actions and guidance described in this Conservation Plan apply only to coastal hatchery coho programs and do not provide guidance for other hatchery programs within or outside of the Oregon Coast coho ESU.

Changes to Current Hatchery Programs

This Conservation Plan reduces ESU-wide hatchery coho releases as compared to releases made in the recent past (Table ODFW-1) for the foreseeable future. The 2005 OCCA found that two independent coho populations did not pass viability criteria due to high levels of hatchery produced adults spawning in natural habitats. Spawning surveys and fish counts in the Salmon River and North Umpqua River showed that high numbers of hatchery coho were spawning in natural production areas. In order to achieve the first desired status element of having all independent populations passing all viability criteria, ODFW will be making changes to the hatchery coho programs in both the Salmon and North Umpqua rivers. The stocking of hatchery coho smolts into these two rivers will be discontinued and the rearing space used at each hatchery to produce these fish will be utilized for propagation of other stocks of fish.

Table ODFW-1. Changes associated with Oregon coastal hatcheries: 1) coastal smolt releases eliminated for reasons other than the Plan; 2) coastal smolt releases maintained or increased; 3) coastal smolt releases eliminated to address limiting factors; and 4) smolt releases shifted from coastal rivers to Youngs Bay on the Columbia River.

1) Coastal hatchery coho releases eliminated – program change not related to Conservation Plan			
Location-	**Recent**	**Proposed**	**Rationale**
Coquille	50,000 smolts	0	Last release in spring 2006. Program review by Watershed District and Fish Division noted poor fishery contribution, fish health issues, and other needs for hatchery space. Strong natural production expected to provide opportunity for freshwater harvest in near future.
Coos	120,000 smolts	0	Last release in spring 2006. Program review by Watershed District and Fish Division noted poor fishery contribution, fish health issues, and other needs for hatchery space. Strong natural production expected to provide opportunity for freshwater harvest in near future.
Calapooya (Umpqua)	20,000 smolts	0	Last release in spring 2006. This release was conducted for three years as part of a research project. Research design now specifies ceasing hatchery releases and tracking the genetic heritage of future returns.
Rock Cr. (Siletz)	50,000 smolts	0	Suspended in 2005. Program change initiated by Confederated Tribes of the Siletz Indians (CTSI). Hatchery smolt releases are suspended pending evaluation of natural rearing by coho fry in hatchery ponds. Program subject to future revision.
2) Coastal hatchery coho smolt releases maintained or increased			
Location-	**Recent**	**Proposed**	**Rationale**
Cow Creek S. Umpqua	15,000 smolts	60,000 smolts	This proposed program increase meets mitigation agreement for Galesville Reservoir.
Trask	100,000 smolts	100,000 smolts	No production or release change.
Nehalem	100,000 smolts	100,000 smolts	No production or release change.
3) Coastal hatchery coho smolt releases eliminated to address population limiting factors			
Location-	**Recent**	**Proposed**	**Rationale**
N. Umpqua	107,500 smolts	0	High number of stray hatchery coho in natural spawning areas was identified as the key limiting factor for the North Umpqua population. Eliminating this release is intended to improve the status of this population from non-viable to viable – a key element of the desired status goal. Some of this release would be shifted to Cow Creek on the South Umpqua, increasing the release there
Salmon River - Siletz stock	200,000 smolts	0	High number of stray hatchery coho in natural spawning areas was identified as the key limiting factor for the Salmon River population. Eliminating this release is a first-step required to improve status of population from non-viable to viable – a key element of the desired status goal. The entire 200,000 production will be shifted to Columbia River stock for release at Youngs Bay.
4) Columbia River hatchery coho smolt releases increased – production at Salmon River shifted for acclimation and release in Youngs Bay			
Location-	**Recent**	**Proposed**	**Rationale**
Youngs Bay – Columbia stock	1,225,000 smolts	1,425,000 smolts	Salmon River Hatchery will continue to rear 200,000 coho (Columbia River stock) and transfer these fish for acclimation and release in Youngs Bay, a well established terminal area fishery. Production of these fish at Salmon River will be in addition to the current releases into Youngs Bay. Hatchery fish released in Youngs Bay have consistently shown a higher contribution to fisheries than coastal hatchery coho. ODFW expects this change to provide the same, or increased, contribution to the recreational ocean coho fishery and an increase to commercial fisheries.

The net result of the smolt release changes proposed in this plan is a reduction from 520,000 hatchery coho smolts currently being released from coastal basins, to 260,000 smolts being released in the future. The hatchery smolt production currently released into Salmon River (200,000 smolts) will be switched to a Columbia River stock (Big Creek). The 200,000 coho will be reared at Salmon River and transferred to an acclimation site in the Youngs Bay drainage. The smolts will then be released in the spring into Youngs Bay.

The hatchery coho program in the North Umpqua River will be discontinued, while the hatchery coho smolt release in the South Umpqua River will be increased from 15,000 to

60,000. These changes result in a total reduction of hatchery coho smolt releases of 62,500 for the Umpqua Basin as a whole. This is also the overall reduction in coho smolt releases that are related to this Conservation Plan (Salmon River releases will occur in Youngs Bay and are not eliminated).

While the hatchery coho releases that have occurred from coastal basins will be reduced by 260,000, these changes will have a fairly insignificant impact on the number of hatchery coho that are available off the Oregon Coast in the popular ocean selective sport coho fishery. Hatchery coho caught in this fishery are overwhelmingly (more than 95 percent) from Columbia River releases. The 62,500 reduction in hatchery coho smolt releases proposed in this plan represent a reduction of less than one half of one percent of the total hatchery coho releases that contribute to the ocean fishery off the Oregon Coast. The impact to the ocean fishery from the proposed changes may even be less, and the number of adult hatchery coho available in fisheries could slightly increase. This may occur because hatchery coho releases from Youngs Bay, on average, have survived better and contributed more to fisheries than the releases from Salmon River.

Prior to development of this plan, changes were made to three other hatchery coho programs. Hatchery coho smolts and unfed fry are no longer being released into the Coos and Coquille rivers. The elimination of the smolt releases is in response to an ineffective program that did not contribute well to fisheries and the potential to replace current harvest opportunities on hatchery coho with comparable opportunities to harvest wild coho in these basins in the future. The unfed fry releases are no longer needed to seed vacant habitat. Both of these changes should benefit naturally produced coho in the Coos and Coquille.

Unfed fry releases in the South Umpqua River have also been discontinued. These releases are being replaced by the larger hatchery coho smolt release into Cow Creek.

Hatchery coho smolt releases were significantly reduced or eliminated in the Nehalem, Tillamook, Siletz and Alsea basins in the mid-to-late 1990's. These actions were taken, in part, to reduce negative ecological interactions between hatchery smolts and adults with naturally produced coho populations. The actions were also taken to make the current programs more cost-effective in their support of fisheries. Reductions in coho releases set up a type of real world experiment where the response of naturally produced coho could be evaluated. The natural populations affected by those reductions have shown improved viability in measures of abundance, productivity, and distribution. The Alsea population in particular, exhibited a strong response to improved ocean conditions from 2000-2003 and has continued to demonstrate improved viability over the last three years of less favorable ocean survival. This improvement in natural coho viability may not be the start of a trend and was not considered in either ODFW's or the NOAA TRT's viability assessments. However, ongoing population monitoring by ODFW will provide information for future assessments to verify the longer term effect of reduced hatchery releases on coho viability.

Future Hatchery Program Guidance

The future development of, or increase in, hatchery coho programs is not precluded by this Conservation Plan. Hatchery management in the Oregon Coast coho ESU will be conducted to support the goals of the Oregon Coast Coho Conservation Plan and to be consistent with Oregon's Native Fish Conservation and Hatchery Management policies. The intent of the Native Fish Conservation Policy is to provide a basis for managing hatcheries, fisheries, habitat, predators, competitors, and pathogens in balance with sustainable production of naturally produced native fish. Oregon's Fish Hatchery Management Policy (FHMP) describes the hatchery tool and its range of applications in Oregon, as well as additional guidance concerning the conservation and management of native hatchery produced fish. The goals of the FHMP are as follows:

1. Foster and sustain opportunities for sport, commercial and tribal fishers consistent with the conservation of naturally produced native fish.

2. Contribute toward the sustainability of naturally produced native fish populations through the responsible use of hatcheries and hatchery-produced fish.

3. Maintain genetic resources of native fish populations spawned or reared in captivity.

4. Minimize adverse ecological impacts to watersheds caused by hatchery facilities and operations.

General Program Categories

Hatchery programs are described here in four basic categories: Harvest, Research, Conservation, or Educational and guidance is provided for each category. The intent of this conservation plan is that any existing or proposed hatchery program for coho will be assigned to one of these four categories and managed principally under the guidance for the respective category.

Harvest Hatchery Programs

Harvest hatchery programs operate to enhance or maintain fisheries without impairing naturally reproducing populations. Operations shall integrate hatchery and natural production systems (e.g., locally-derived hatchery broodstocks, rearing containers simulating natural characteristics) if necessary for conservation, within funding and facility constraints and consistent with fishery management objectives. Harvest hatchery programs shall also separate (e.g., temporally, spatially, visually) hatchery produced and naturally produced native fish in fisheries and on spawning grounds as necessary for conservation. Hatchery program management plans may be designated as one of the following harvest hatchery program types:

(a) Harvest augmentation, which is used to increase fishing and harvest opportunities where there is no mitigation program in place;

(b) Mitigation, which is used pursuant to an agreement to provide fishing and harvest opportunities lost as a result of habitat deterioration, destruction or migration blockage.

Harvest hatchery coho programs in this ESU, other than in the Salmon and North Umpqua populations, are not limiting the productivity of naturally produced coho. Oregon has also determined that the societal, ecological and cultural benefits provided by coho in this ESU, consistent with this Conservation Plan's desired status, can be achieved through naturally produced coho and the harvest hatchery coho management programs proposed in this plan. As a result, the state has chosen to be risk averse in management of coho-harvest hatchery programs in this ESU. Therefore, a management decision has been made to keep these programs from impacting natural productivity. In addition to guidance provided in the FHMP, the following criteria for harvest hatchery coho programs in this ESU will be applied.

1. Maintain the level of hatchery coho adults spawning in natural spawning areas in each population at, or below, the levels recently observed and documented in Table 7 in ODFW's Hatchery Management Report included in the 2005 OCCA. For the Salmon and North Umpqua populations, where the hatchery coho programs were identified as primary limiting factors, releases of hatchery coho will be discontinued; levels of hatchery coho adults in natural spawning areas, as a result, are expected to be consistent with levels observed in other populations.
2. Other genetic and ecological interactions between hatchery and naturally produced coho will be minimized by:
    - using appropriate hatchery broodstocks,
    - releasing juvenile coho as smolts at places and times to minimize interactions with naturally produced smolts (releases as fry or fingerlings may be made in vacant habitat where there is little chance of interacting with wild coho juveniles),
    - and releasing numbers of hatchery fish that do not create significant negative ecological interactions.

Any proposal for a new harvest hatchery coho program, or modification of current release numbers of more than ten percent, will receive public review and comment, as well as review by the Conservation and Recovery Program and Fish Propagation Program within ODFW's Fish Division. Any new harvest hatchery program or modification of release numbers greater than ten percent will also need to be approved by ODFW's Fish Division Administrator before being implemented.

Salmon Trout Enhancement Program (STEP). The STEP program provides opportunities for volunteers to assist ODFW in activities to enhance fish and fisheries. Fish propagation projects are one of several types of enhancement projects implemented under STEP. STEP propagation programs will follow the harvest hatchery program guidance provided in this plan for any harvest hatchery coho programs implemented in the Oregon Coast coho ESU.

Research Hatchery Programs

The Oregon Hatchery Research Center was established to provide new science-based management and technologies intended to increase the compatibility of hatchery and naturally produced fish. These management or technological approaches, as they become

available, will be incorporated into existing and future hatchery coho programs. Coho hatchery programs intended for research will be reviewed and supported by the Oregon Hatchery Research Center Science Team. This team includes scientists from ODFW and Oregon State University. Any proposed research hatchery program will also be reviewed and supported by the ODFW Watershed District where the program is to occur. Research hatchery coho programs should be designed to be consistent with the NFCP.

Conservation Hatchery Programs

Conservation hatchery programs are intended to maintain or increase the number of naturally produced native fish without reducing the productivity (e.g., survival) of naturally produced fish populations. The role of hatcheries in supplementing naturally-produced fish populations is still poorly understood. The State of Oregon, through the Oregon Hatchery Research Center and other activities, is demonstrating its commitment to gaining a better understanding of the role of hatcheries in the conservation of native fish. As new information develops, ODFW will adjust its hatchery programs accordingly. Until that time, the Coast Coho Conservation Plan does not call for significant use of the hatchery tool to rebuild populations. Also, additional hatchery production is unlikely to address or compensate for the primary factors currently limiting coho numbers. These population "bottlenecks" generally occur during the over-winter stage of development prior to ocean entry of juveniles in the spring. Stocking adult or juvenile hatchery coho into coastal streams without addressing the quality and quantity of over-winter rearing habitat is unlikely to produce the sustained increase in natural production needed to achieve Oregon's Desired Status goal for the ESU. The use of the hatchery tool as a conservation "safety net" to avoid extinction is also inappropriate because the ESU is currently viable and not currently at risk of extinction.

Salmon River is the one exception to this generalization, and is the one location where use of a conservation hatchery approach may be appropriate to restore natural production in the basin. Oregon has identified research to evaluate restoration of a viable coho population at Salmon River as a high priority research topic; conservation hatchery technologies and the role of the Oregon Hatchery Research Center in such an evaluation will be explored. The State's current approach to recovering the Salmon River population is to focus efforts on the primary and secondary limiting factors that currently constrain natural production. This will be accomplished by re-programming the hatchery production to Youngs Bay and restoring stream complexity. If after 3-4 generations, natural production has not improved and the number of spawners or juveniles is limiting re-building, the use of a conservation hatchery program will be considered. Recent experience with lower Columbia coho and coastal coho has demonstrated that when limiting factors are eased, these populations are quite capable of rebounding to some degree on their own.

Any future conservation hatchery programs shall integrate hatchery and natural production systems to provide a survival advantage with minimal impact on genetic, behavioral and ecological characteristics of targeted populations. Implementation shall proceed with caution and include monitoring and evaluation to gauge success in meeting goals and controlling risks. Long-term conservation success shall be tied to remediation

of the issues that created the need for hatchery intervention. Once local populations are established and conservation goals are met, then the hatchery program will be discontinued. The Hatchery Management Policy identifies seven different conservation hatchery program types. A hatchery program management plan for a conservation hatchery program must identify the type of approach to be taken.

In addition to adhering to the guidelines provided in the Hatchery Management Policy, any conservation hatchery program implemented in the Oregon Coast coho ESU must meet the following criteria.

- Coho conservation hatchery programs associated with barrier removal will only be considered in situations where natural re-colonization is not expected to occur over a reasonable period of time.
- Releases of conservation hatchery program coho in the Oregon Coast coho ESU will only occur for one release per cohort or one generation (three years). Exceptions may be granted if monitoring and evaluation of the first releases indicate the cause of their failure has been corrected and natural re-colonization is still not expected to occur in a reasonable time.

Any proposal for a conservation hatchery coho program will receive public review and comment, as well as review by the Conservation and Recovery Program and Fish Propagation Program within ODFW's Fish Division. Any conservation hatchery program will also need to be approved by ODFW's Fish Division Administrator before being implemented.

Salmon Trout Enhancement Program (STEP). STEP propagation programs will follow the conservation hatchery program guidance provided in this plan for any conservation hatchery coho programs implemented in the Oregon Coast coho ESU.

Educational Hatchery Programs

Educational hatchery programs utilizing hatchery coho in the Oregon Coast coho ESU will be limited to small fish propagation programs. These programs are often too small to have much harvest benefit and are not intended to serve as conservation programs. These programs will be proposed, reviewed and approved within the STEP program. As with other hatchery programs, educational hatchery programs must be consistent with the NFCP.

ODFW Actions: Coho Harvest Management

A description of historical coho harvest management and the impacts that management had on naturally produced coho is presented in the 2005 OCCA. While the Assessment found that harvest is not currently a key limiting factor for coho, harvest rates in the 1970's and '80's was likely a major limiting factor. The purpose of this section is to describe how harvest will be managed under this conservation plan and how it will help achieve the desired status for naturally produced coho in the Oregon Coast coho ESU.

Current Harvest Management

Impact rates to naturally produced Oregon Coast Coho from fisheries will be managed through the Pacific Fisheries Management Council's (PFMC's) Salmon Fishery Management Plan and the use of the revised Amendment 13 (A-13) Harvest Management Matrix (Table ODFW-2) within the management plan. This revised matrix is currently used by the PFMC to determine allowable impact rates to Oregon Coast coho. The Council will soon make technical adjustments to A-13 to reflect the revised matrix. This matrix minimizes the annual impact fisheries will have on the sustainability of naturally produced coho during poor marine survival conditions and allows for significant spawner levels at more moderate marine survival conditions. This will allow for the ESU to rebuild and approach the desired status identified in this plan. In addition, the management of harvest impacts to federal ESA listed ESUs of coho (Southern Oregon/Northern California and Lower Columbia River) in ocean fisheries will likely prevent ocean fisheries impacts to Oregon Coast coho from reaching the impact levels allowed under the matrix for the foreseeable future.

Current fisheries are managed based on a projection of wild coho abundance in the upcoming year and the allowable impact rate called for in the revised A-13 matrix. Under A-13, the allowable impact rate each year is allocated to incidental impacts from commercial and recreational fisheries targeting chinook salmon and to impacts related to selective coho fisheries in the ocean and within basins that contain returning hatchery coho.

The coastal hatchery coho release reductions proposed in this Conservation Plan (*see* Hatchery Management section above) will have a fairly insignificant impact on the number of hatchery coho that are available off the Oregon Coast in the popular ocean selective sport coho fishery. Hatchery coho caught in this fishery are overwhelmingly (more than 95 percent) from Columbia River releases. The 62,500 reduction in hatchery coho smolt releases proposed in this plan represent a reduction of less than one half of one percent of the total hatchery coho releases that contribute to the ocean fishery off the Oregon Coast. With the reallocation of the 200,000 smolt release from Salmon River Hatchery to Youngs Bay, the impact to the ocean fishery from the proposed changes may even be less, and the number of adult hatchery coho available in fisheries could slightly increase. This may occur because hatchery coho releases from Youngs Bay, on average, have survived better and contributed more to fisheries than the releases from Salmon River.

The selective coho fishery in Salmon River will be impacted to some extent by the proposed discontinuation of hatchery coho releases into Salmon River. This change will result in a minimal loss of opportunity for anglers in the Salmon River to harvest hatchery coho as the fall fishery is almost entirely focused on chinook salmon. Coho are not generally targeted in the chinook fishery in Salmon River and the catch has mostly been incidental. The popular chinook fishery in Salmon River will not be affected by the change in the hatchery coho program.

The changes in hatchery coho releases in the Umpqua Basin will result in a reduced opportunity to harvest hatchery coho in the North and Lower Umpqua rivers, but will increase the opportunity in the South Umpqua River. The numbers of anglers who have targeted hatchery coho in the North Umpqua, along with the number of hatchery coho adults harvested, has been small. The popular chinook fishery in the Umpqua River will not be affected by the change in the hatchery coho program.

In 2004 through 2006, conservative fisheries on naturally produced coho occurred in Siltcoos and Tahkenitch lakes. These populations were analyzed (Zhou, 2000) and found to be near capacity for spawners. These populations, under the revised A-13 Harvest Management Matrix, could also have been subjected to a higher impact than was allowed in the ocean fisheries. As a result, ODFW provided a harvest opportunity in each of these populations that limited the combined impact of each fishery, along with the ocean fisheries, to what was allowable under the matrix. These fisheries will continue as long as impact rates remain comparable to what has been seen and the populations maintain their abundances near capacity.

Future Harvest Management

For the foreseeable future, harvest impacts to naturally produced Oregon coastal coho will likely occur as catch and release mortality in ocean, estuary and freshwater fisheries directed at chinook and hatchery coho. Targeted, conservative harvest on healthy naturally produced coho populations will be considered when total impacts of all fisheries is within the allowable impact rate defined by the revised Harvest Management Matrix in A-13. These fisheries will not impede the achievement of desired status for any population or the ESU. New information obtained from the adaptive management process on marine survival and appropriate spawner seeding levels will be used, if appropriate, to revise the PFMC A-13 Harvest Management Matrix.

Table ODFW-2. OCN work group revisions to the harvest management matrix in Plan Amendment 13 showing allowable fishery impacts and ranges of resulting recruitment for each combination of parental spawner abundance and marine survival.

Parent Spawner Status [1/]	Marine Survival Index (based on return of jacks per hatchery smolt)			
	Extremely Low (<0.0008)	**Low** (0.0008 to 0.0014)	**Medium** (>0.0014 to 0.0040)	**High** (>0.0040)
High Parent Spawners > 75% of full seeding	**E** ≤ 8%	**J** ≤ 15%	**O** ≤ 30%	**T** ≤ 45%
Medium Parent Spawners > 50% & ≤ 75% of full seeding	**D** ≤ 8%	**I** ≤ 15%	**N** ≤ 20%	**S** ≤ 38%
Low Parent Spawners > 19% & ≤ 50% of full seeding	**C** ≤ 8%	**H** ≤ 15%	**M** ≤ 15%	**R** ≤ 25%
Very Low Parent Spawners > 4 fish per mile & ≤ 19% of full seeding	**B** ≤ 8%	**G** ≤ 11%	**L** ≤ 11%	**Q** ≤ 11%
Critical [2/] Parental Spawners ≤ 4 fish per mile	**A** 0 - 8%	**F** 0 - 8%	**K** 0 - 8%	**P** 0 - 8%

Sub-aggregate and Basin Specific Spawner Criteria Data

Sub-aggregate	Miles of Available Spawning Habitat	100% of Full Seeding	"Critical"		Very Low, Low, Medium & High		
			4 Fish per Mile	12% of Full Seeding	19% of Full Seeding	50% of Full Seeding	75% of full Seeding
Northern	899	21,700	3,596	NA	4,123	10,850	16,275
North - Central	1,163	55,000	4,652	NA	10,450	27,500	41,250
South - Central	1,685	50,000	6,740	NA	9,500	25,000	37,500
Southern	450	5,400	NA	648	1,026	2,700	4,050
Coastwide Total	4,197	132,100	15,636		25,099	66,050	99,075

1/ Parental spawner abundance status for the OCN aggregate assumes the status of the weakest sub-aggregate.

2/ "Critical" parental spawner status is defined as 4 fish per mile for the Northern, North-Central, and South-Central sub-aggregates. Because the ratio of high quality spawning habitat to total spawning habitat in the Rogue River Basin differs significantly from the rest of the basins on the coast, the spawner density of 4 fish per mile does not represent "Critical" status for that basin. Instead. "Critical" status for the Rogue Basin (Southern Sub-aggregate) is estimated as 12% of full seeding of high quality habitat.

Expanded in-river fisheries (in bays, rivers or lakes) on healthy, naturally produced coastal coho populations are anticipated due to the continued recovery of these populations and constraints on ocean harvest. The process to open inside fisheries for naturally produced coho harvest will be similar to that followed by ODFW recently to open similar fisheries in Siltcoos and Tahkenitch lakes (ODFW 2003). The fisheries will be designed to be consistent with, or more conservative than, the conservation levels identified in Amendment 13.

Proposing and implementing terminal fisheries for populations of naturally produced coho will require knowledge of parental spawner abundance and a forecast for marine survival. As a result of uncertainties in predicting marine survival, fisheries on naturally produced coastal coho will be approached with caution. Any population considered for a fishery on naturally produced coho will need to have experienced spawner seeding levels close to, or above, the population's full-seeding level. Estimated marine survival conditions will also need to be above critical levels. Populations that fail the viability criteria defined in this plan will not be considered for direct harvest fisheries. A Fishery Management and Evaluation Plan (FMEP), or a similar documentation of the population's status and fishery components, will be required as a precursor to implementing any fisheries targeted at naturally produced coho. ODFW will seek public and peer review of each fishery management plan. Following this review, the proposal will be refined and, if supported, taken to the Oregon Fish and Wildlife Commission for approval.

In-river fisheries for wild coho salmon will be designed to provide a relatively broad, but low intensity salmon angling opportunity. Tidewater areas would be prioritized for these fisheries with open areas extending into free flowing rivers in some cases. The fishery would be designed to allow harvest on coho when they are in the best condition and where snagging and harassment are not likely to be problems.

Harvest impacts from these fisheries, even with general coastal salmon bag limits, are expected to not exceed about 10 % of the returning population. This is the average harvest level estimated for in-river coho fisheries that took place prior to the mid-1990's under the general coastal salmon bag limit. Future terminal harvest levels on each population when combined with ocean impacts would still be consistent with A-13. Initially, a creel survey and harvest quota will be set up for at least the first few years of each fishery to verify harvest levels are within expectations. After a few years, if harvest is within expected ranges and spawner abundance meets targets, the fisheries would continue with fixed seasons similar to current coastal fall chinook management.

Commercial ocean coho fisheries in the near future are unlikely because of impacts to listed coho from other areas (Southern Oregon/Northern California and Lower Columbia River); however incidental mortality of wild coho in commercial chinook fisheries is likely to continue. Recreational ocean fisheries targeting wild coho are also likely to be limited because of impacts to ESA listed coho from other areas. The exception to this is that late season terminal ocean fisheries (bubble fisheries) might be feasible around the

mouths of coastal river basins where strong returns are expected. The state will consider this option as coho status across the ESU continues to improve.

Tribal Harvest
The only tribal fishery for coho in the Oregon Coast coho ESU is a fishery on tributaries of the Siletz River for members of the Confederated Tribes of the Siletz Indians (CTSI). This fishery was established based on an agreement between the State of Oregon, the United States of America and the CTSI of Oregon (US Public Law 96-340, 1980). It allows CTSI members to capture up to 200 salmon (chinook or coho) per year from sites on three tributaries to the Siletz River. This agreement will likely remain in place in perpetuity.

Future Revisions to Harvest Management Matrix
Elements of the desired status criteria could be revised in the future as the adaptive management process is informed by research and monitoring outcomes. Since the abundance criterion for individual populations are the basis for the seeding levels used in the Harvest Management Matrix, any changes in seeding levels will require the matrix to be revised to reflect the new information. It is also possible that a more accurate measure of naturally produced coho marine survival could be discovered that would also require revisions to the matrix. Any revisions will need to be based on sound science and approved by the PFMC Technical Committee.

ODFW Actions: Western Oregon Stream Restoration Program

Strategic Direction

The Western Oregon Stream Restoration Program (WOSRP) will help achieve the desired status for coastal coho by developing and implementing stream restoration projects that create high quality coho rearing habitat. The goal of these projects will be to address the key limiting factors of stream complexity and channel-floodplain connectivity that were identified as a limiting factor for many coho populations. A high priority will be placed on projects in areas with willing landowners and the potential to support high quality coho rearing habitat. Specific restoration techniques will use site specific needs assessment and incorporate new information to improve the effectiveness of restoration projects to create high quality rearing habitat. New restoration techniques will be developed and refined for use in agricultural settings, creating a diverse riparian area that will support ecological processes that benefit coho.

Background

The WOSRP is an important component of the Oregon Plan for Salmon and Watersheds. It is a non-regulatory program that provides direct technical support to watershed councils, Soil and Water Conservation Districts and private landowners in western Oregon. The program implements Oregon Plan measures directing the restoration and enhancement of Oregon's salmonid habitats in the region. In addition, the program

practices adaptive management through a monitoring program that aims to evaluate the effectiveness of these actions to better inform restoration specialists and managers about the efficacy of their actions.

The program currently consists of a project leader, eight restoration biologists and a monitoring analyst. Six restoration biologists work in the Oregon Coast ESU out of offices in Tillamook, Newport, Charleston, and Roseburg. Throughout the ESU there is a greater demand for WOSRP participation in developing restoration projects, assisting with grants and permits than can be accommodated with the current staff. This demand shows the program has been successful in working with landowners, land managers, watershed councils, Soil and Water Conservation Districts and others.

Conservation Plan Actions

The WOSRP program will continue to restore habitat for all native fish species. Stream restoration projects that can benefit coho, especially those that address a key limiting factor will be considered a priority. WOSRP restoration biologists in the Oregon Coast ESU will utilize the management strategies outlined in the Coastal Coho Conservation Plan to better focus habitat restoration projects directed at coho. The restoration biologists will work with watershed councils, the Natural Resource Conservation Service, the Department of Forestry, and Soil and Water Conservation Districts to contact landowners with high intrinsic potential areas on their streams to explore the potential to create or enhance complex pools, side channels, winter refugia and a diverse riparian habitat. While projects that address limiting factors for coho will be a priority, projects that benefit other species and restore ecological processes will continue to be implemented.

The program will continue to develop better methods and techniques for creating high quality habitat. This includes incorporation of coarse wood into large wood structures to help improve and accelerate the development of dam pool habitats. This could allow the structures to begin backing up water and collecting other materials sooner than currently occurs with the placement of logs.

Recent removal of federal regulations on the placement of large wood done in conjunction with timber harvest will allow a landowner to take advantage of equipment near a stream to conduct habitat restoration. During logging activities or other forest operations, equipment needed for wood placement is often on site; this is an excellent opportunity to place wood in fish use streams with minimal adverse disturbance. The WOSRP will work with ODF, forest landowners and land managers to develop an updated guide for large wood placement in conjunction with harvest operations.

Riparian planting projects carried out by the WOSRP will utilize a diversity of native tree and shrub species to create a diverse riparian habitat. Early riparian restoration efforts focused on planting conifers for long-term large wood recruitment. Now, the focus has shifted to a combination of trees and shrub species. A diverse riparian habitat will provide nutrient input to the system in the form of plants and invertebrates and support

other wildlife, such as beavers. The intent is to provide a self sustaining habitat into the future.

Restoration biologists will work with landowners and land managers to upgrade culverts to the latest fish passage guidelines. Properly sized stream crossings will maintain fish passage, movement of bead load and large wood allowing for normal geomorphologic process and reduce the maintenance needed due to beaver activity. The program will also identify seasonal stream crossings that block access to winter refuge habitat and work with the landowner to solve the problems.

Restoration biologists will work with landowners and land managers to develop restoration projects that encourage the building and maintenance of beaver dams in appropriate locations. This could include; vegetative plantings in riparian areas to provide food and building materials for beaver, placement of larger culverts to minimize the likelihood of blockages by beaver or debris, or large wood placement to encourage dam building

Monitoring of restoration projects will continue to help refine effective techniques for the placement of large wood and riparian habitat restoration. As an example, the WOSRP will be applying various enhancement techniques to pasture land in the Necanicum River basin to develop a layered riparian tree canopy using trees of different size classes, cluster plantings of trees with shrub layers, and invasive species management. ODFW will be developing new techniques to meet the landowner's needs while developing a diverse functional habitat beneficial to fish and wildlife.

Salmon Trout Enhancement Program (STEP). The STEP program provides opportunities for volunteers to assist ODFW in activities to enhance fish and fisheries. STEP biologists often work with volunteers to implement habitat restoration projects. While these activities may not always have direct involvement of the local WOSRP biologist, the activities are planned to be consistent with the guidance of the WOSRP and the STEP biologists coordinate their restoration projects with the WOSRP. As a result, the refinements to the WOSRP that are proposed in this Conservation Plan will also be made to restoration projects conducted under STEP.

ODFW Actions: Habitat Protection

ODFW commits to implementing the following actions related to habitat protection:

- Continue to work collaboratively with state and federal permitting agencies to provide comments and alternatives on permitted habitat altering activities (fill and removals, water rights, forest operations) that minimize or eliminate the loss of high quality fish habitat.
- Continue to train Habitat Protection, Fish and Wildlife Biologists on new methods to minimize and avoid losses of habitat and updated or new permitting processes.

Habitat Protection – limiting factors and achievement of desired status

- Habitat protection does not address a key limiting factor by creating higher quality habitat, but seeks to ensure the protection of existing habitat. This prevents a limiting factor from becoming more severe, which will be essential to achieving the desired status.

ODFW Actions: Promote Beaver Dams and Associated Habitat

The 2005 OCCA identified that stream complexity was a key limiting factor in all independent coho populations in the Oregon Coast coho ESU. A description of the importance of beaver dams in addressing stream complexity and the creation of high quality coho rearing habitat is also provided in an appendix to the Assessment. The Beaver Report in the Assessment also attempts to determine the effectiveness of actions implemented under the Oregon Plan for Salmon and Watersheds to promote beavers. The purpose of this section is to explicitly identify non-regulatory actions that ODFW will undertake to promote beaver dams to help protect and create high quality coho rearing habitat in appropriate locations.

Current Actions

At the onset of the OPSW in 1997, the value of beaver dams to coho habitat was recognized and ODFW identified a measure in the Oregon Plan to promote beavers. In 1998, fish and wildlife biologists with ODFW embarked on a non-regulatory, cooperative effort to increase public awareness and educate landowners, land managers and trappers as to the benefits of beaver dams to coho habitat. This involved the following actions:

- ODFW coastal fish and wildlife biologists developed maps of stream reaches that are important to coho rearing and have, or may have, beaver dams. These "Beaver Maps" were distributed to those interested in this issue and used to initiate dialog between landowners, land managers, trappers and ODFW biologists. If a landowner experienced damage in one of these important areas, they were asked to contact an ODFW district biologist to discuss available non-lethal options.
- A Beaver Brochure was developed to help inform people about the positive benefits beaver dams can have on the environment. Additional information on beaver history, biology and non-lethal ways to reduce damage was included.
- A letter was sent to landowners and land managers alerting them to the issue and asking for their voluntary cooperation. Another letter was sent to all licensed trappers asking for their support and encouraging them to review the "Beaver Maps" and provide information on areas where beaver may or may not build dams in these important stream reaches.
- Trappers were invited to 11 different open houses in ODFW District and Regional offices to discuss the proposal, engage in a dialog with fish and wildlife biologists and to offer their insight on beaver dam locations relative to those areas identified

on the "Beaver Maps". All of those attending the open houses supported the program.
- Discussions were held with trappers during statewide fur sales encouraging them to participate in the program and provide input into the review and update of the "Beaver Maps".
- Telephone surveys of trappers harvesting beaver in coastal streams were conducted between 1999 and 2003 and again in 2006 to assess the number of beaver trapped in coho rearing habitat on public lands.

Since these actions were first taken, ODFW has and will continue to work with landowners, land managers and trappers to encourage methods that maintain or enhance beaver dams in coho rearing habitat.

Future Actions

ODFW is proposing to develop tools that will help better educate the public and increase the level of staff time promoting beaver dams in coho rearing habitat. The strategy of maintaining, enhancing and/or promoting beaver dams, if effective in increasing the number of beaver dams in the coho rearing sections of the ESU, has the potential to be a key contributor to achieving the desired status for coastal coho. As part of this Conservation Plan, management actions that promote ecological processes that create beaver dams must also provide mechanisms to control or mitigate property damage that can occur when beaver are present. Successful actions and policies designed to maximize the benefits beaver provide to aquatic systems, while minimizing harm to property and other resources, will require:

- *Commitment* to cooperate among agencies to promote beaver dams in coho rearing habitats that support the objectives of the Conservation Plan.
- *Support for Non-regulatory Efforts* to promote beaver dams in specific locations.
- *Information and Education* for landowners, land managers, regulated trappers, and citizen groups to explain the importance of allowing beaver dams to exist in areas identified as important coho rearing habitat.
- *Technical Assistance* to provide the tools and techniques needed to minimize property damage caused by beaver and to identify areas where beaver dams are absent from coho rearing areas, yet those areas have high potential of maintaining beaver dams.
- *Resources* to provide landowners with incentives to maintain beaver dams in coho rearing areas.
- *Assessment and Adaptive Management* to integrate monitoring and survey efforts that document the contribution beaver dams make to coho conservation, to evaluate the effectiveness of conservation actions, and to make adjustments and recommendations for future management action.

Non-regulatory Efforts. The strategy relies on landowners and land managers to voluntarily allow beaver dams to be built or maintained on their properties. ODFW will pursue educational and funding programs that will facilitate participation in voluntary efforts. The effectiveness of this strategy will depend both on the level of landowner and

land manager support, and on the number of areas that can maintain beaver dams in areas important to coho rearing. Sites in important coho rearing areas that have no beaver present, but have potential for beaver dams will be evaluated for adequate beaver habitat and the potential for beaver to colonize the site. Reintroduction will not occur in areas where beaver could move onto adjacent areas and potentially create problems. Landowner support will be paramount to the success of reintroduction efforts.

Information and Education. ODFW will update the "Beaver Maps" to better identify where beaver dams are or could potentially be built. These maps were first created for the Oregon Plan in 1998 by incorporating the most up-to-date information and techniques and in a format most usable by agency biologists, landowners, watershed councils and private citizens. Practical on-the-ground experience of federal, state and local experts will also be used to help develop the necessary metrics to create the inventory parameters. Studies will be designed to evaluate the accuracy of the metrics to identify sites that support beaver and beaver dams. For each site identified, the landowner or land manager should be contacted to determine their willingness to allow beaver dams to be maintained on the site.

Technical Assistance. ODFW biologists and survey teams will receive additional training to better assist landowners in identifying conditions that favor beneficial beaver activity and to better understand landowner needs for managing beaver. At sites with willing landowners and with the potential to support beaver dams, biologists will conduct evaluations to determine why beaver dams are not present and to assess the potential for either attracting or introducing beaver to the site. Sites with habitat potential, but no beaver, will be surveyed to determine whether beaver are, or have been present, and to determine why the area was abandoned. Sites that have beaver present may need some form of enhancement to create the conditions that would encourage the building of beaver dams, while other sites may not be suitable for dam construction. Biologists will assist landowners to develop management tools and to aid in acquiring materials or equipment needed to help minimize potential damage from beaver.

Resources. Voluntary management options to promote beaver dams need to be supported with sufficient resources to be effective. Potentially, funds could be obtained for a variety of sources: to purchase easements in particularly valuable habitat areas, to purchase beaver exclusion devices to protect trees or culverts, or to combine with other funding sources to replace culverts with bridges.

Funding sources may include the Oregon Watershed Enhancement Board (OWEB) Lottery Capital Fund, the National Fish and Wildlife Foundation, the Oregon Wildlife Heritage Foundation, the ODFW Restoration and Enhancement Program, USFWS fund for the Oregon Conservation Strategy, and others.

ODFW will work with the Governor's Office and representatives from funding entities to create new opportunities for grants and cost-share programs that help landowners and land managers create conditions that promote beaver dams and to pursue alternatives that minimize damage caused by beavers.

Assessment and Adaptive Management. Future monitoring and analysis should be designed to compare the occurrence of beaver ponds to the geomorphic potential of each stream reach to contain beaver ponds. This work should compliment the development and validation of the assumptions and processes used to create the "Beaver Maps".

ODFW Actions: Research, Monitoring and Evaluation Program

ODFW will be conducting, or collaborating with other entities on, research, monitoring and evaluation (RME) related to this Conservation Plan. ODFW's RME Program is described in an earlier section of this plan. Please see the RM&E Section for more detail.

ODFW Actions: Oregon Plan Outreach Program

The Oregon Plan Outreach program within ODFW is comprised of one full-time and two half-time communications/outreach positions whose primary responsibilities are to share information about Oregon Plan activities with the general public. All three positions have some involvement with Oregon Plan activities in the Oregon Coast Coho ESU. The full-time Oregon Plan Communications Coordinator position is located in ODFW Headquarters and is involved in Oregon Plan outreach statewide. The position also serves on the State of Oregon's Oregon Plan Outreach Team. The Outreach Team includes outreach staff from all state natural resource agencies and was instituted to better coordinate the dissemination of information on the state's efforts under the Oregon Plan. The two Outreach Coordinator positions are located in the Northwest and Southwest regions of ODFW and oversee outreach for all of the watershed districts in the Oregon Coast Coho ESU.

The Oregon Plan Outreach Program in ODFW will seek to facilitate the implementation of this Conservation Plan in two ways. First, all communications/outreach coordinators will work with various media and media outlets to make the public aware that the conservation plan has been completed and what it's goals are, as well as the actions that have been identified to achieve the goals.

Second, the communications/outreach coordinators will develop outreach tools that will help to inform the public of the voluntary actions underway and to solicit involvement from landowners and land managers to help achieve the goals of the conservation plan. These tools may include efforts to showcase landowners and the activities they have undertaken that were identified in the conservation plan, or demonstration tours to show area landowners examples of projects that have been completed on private property.

The Oregon Plan Communications Coordinator will work with members of the Oregon Plan Outreach Team to ensure that all natural resource agencies are promoting the

conservation plan and the actions their constituents are contributing towards achieving the goals of the plan.

Oregon Watershed Enhancement Board (OWEB)

OWEB Responses to address limiting factors for Coastal Coho Recovery

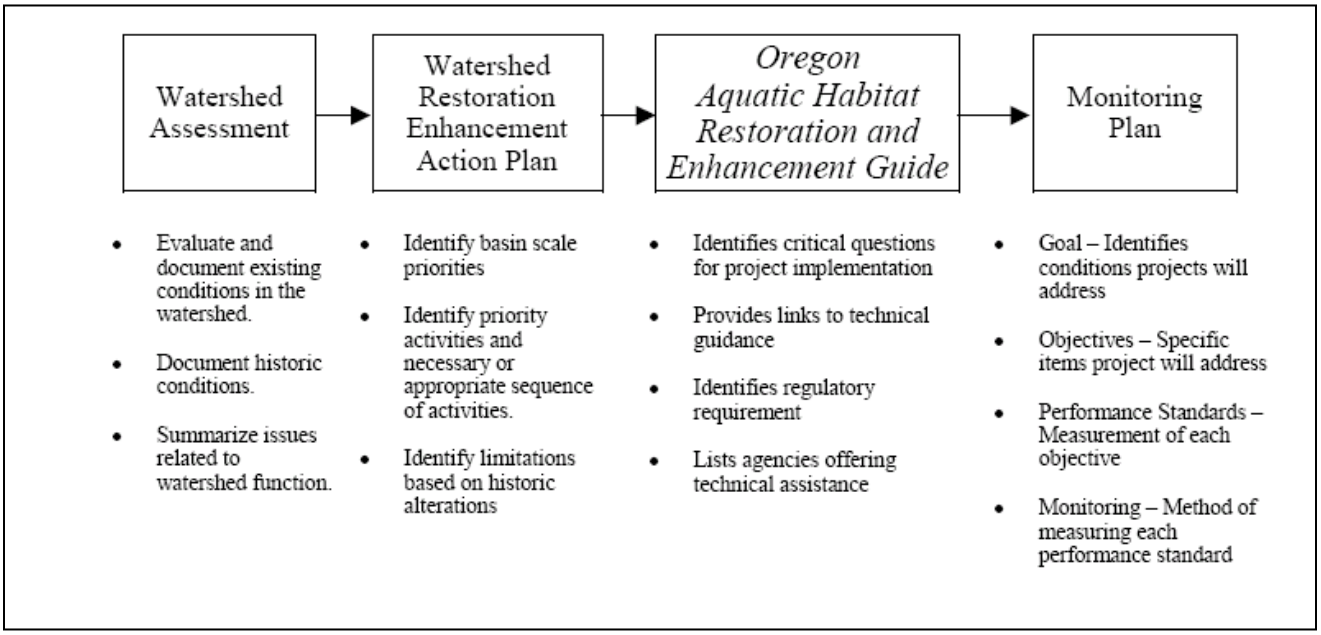
Ongoing:

OWEB is primarily a granting agency that administers Measure 66 funds for fish and wildlife habitat protection and restoration. The primary mechanisms to address limiting factors for Coastal Coho Recovery are through the funding opportunities of the OWEB Board grant programs. There are three relevant granting options available for landowners to address limiting factors on private lands; the regular competitive grant program that solicits protection and restoration grants every six months, the "small grant program" that provides funds to address local priorities that are developed and administered by a local grant group, and the Conservation Reserve Enhancement (CREP) program that OWEB pays for a portion of the costs for riparian restoration on non-forested private lands. These programs are available to qualified applicants throughout the range of coastal coho.

Beyond the direct grants to provide for protection and/or restoration of coastal coho habitat, OWEB provides funding for watershed council operations and soil and water conservation district operations (through Oregon Department of Agriculture). These funds provide the local capacity to identify available landowners and opportunities for restoration on private lands.

OWEB has two regional staff that administer grants and assist local groups in the identification of priorities and recovery opportunities.

OWEB has been working with local groups to conduct watershed assessments throughout the coastal region. These assessments have led most watershed groups to the identification of priority actions. OWEB has funded monitoring of fish distribution in the dependent population areas and funded census collection of fish distribution in a significant number of drainages in the range of coastal coho. This information adds to the random sampling information acquired by ODFW using Measure 66 funds.
The approach uses the conceptual framework in the Oregon Aquatic Habitat Restoration and Enhancement Guide.



The grant program provides opportunities rather than directs actions. As limiting factors have become better articulated OWEB is proposing ways to target efforts in a new way.

New Initiatives:
OWEB has created a limited duration position that will work with ODA and ODFW to implement the Oregon Plan habitat strategy in the Oregon Coast ESU.

OWEB has dedicated $1,500,000 to address the regional fishing emergency and linking the work funded to addressing high priority limiting factors for coastal coho salmon. These are new funds for the 2005-2007 biennium, are targeted to coastal basins and high intrinsic potential habitat or other limiting factors. Funds are identified to hire fishers to conduct restoration work, develop projects and conduct field data gathering to provide for better targeting of future restoration. The funding was approved by the Legislative Emergency Board on June 23, 2006.

OWEB seeks to support research that addresses objectives relevant to the Oregon Plan, particularly those concerning watershed function and process issues that are relevant to local protection and restoration issues. In 2006, OWEB solicited research pre-proposals that addressed priorities identified by the OWEB Board. Chief among the OWEB research priorities were those contained in the draft Coho Conservation Plan. OWEB recently solicited full proposals from a limited number of the pre-proposals. The agency received proposals totaling approximately $9.5 million for projects that address effectiveness monitoring, interactions between hatchery fish and wild fish, life history evaluations, water quality, fisheries genetics, population modeling, and habitat mapping.

Potential Future Efforts:

1. Dedication to work with ODFW, Dept. of Agriculture and others to develop a coastal lowlands initiative that directly addresses high intrinsic potential habitats on non-forested lands. The effort could include an addition to the incentives provided for the Conservation Reserve Enhancement Program (CREP) or other initiatives to be developed and implemented late in this biennium and next biennium.
2. There is an increasing amount of Measure 66 Lottery funds available for restoration by the increase use and expansion of the state lottery games. The projected lottery revenues will likely increase next biennium providing an increased proportionate share of funds available to the coastal coho ESU.
3. OWEB and ODA are collaborating to request policy option packages requesting an increase in funding for watershed councils and soil and water conservation districts for the 2007-2009 biennium. The request will be for a significant increase in funding for capacity statewide. This will provide additional resources to both councils and districts in the coastal coho ESU. These groups are critical for developing relationships in local communities that will allow projects to be implemented on private lands.

Oregon Department of Forestry (ODF)

ODF's mission is to serve the people of Oregon by protecting, managing, and promoting stewardship of Oregon's forests to enhance environmental, economic, and community sustainability. The Oregon Department of Forestry was established in 1911. It is under the direction of the state forester who is appointed by the State Board of Forestry. The statutes direct the state forester to act on all matters pertaining to forestry, including collecting and sharing information about the conditions of Oregon's forests, protecting forestlands and conserving forest resources.

Four major program activities of the Oregon Department of Forestry include:

Protection from Fire
The goal of the Department's largest program, Protection from Fire, is to devise and use environmentally sound and economically efficient strategies which minimize the total cost to protect Oregon's timber and other forest values from loss caused by wildland fire.

Private Forests
Through technical assistance, financial incentives, education, regulation and other tools, this program helps forest landowners manage their lands to meet their objectives. Program responsibilities include implementation of the Oregon Forest Practices Act, which provides for timber harvest using techniques that are consistent with conservation and environmental protection.

State Forests Management
The State Forest Program manages 786,000 acres of state-owned forest land in Oregon. The forests are managed in a stewardship manner to producing a broad range of benefits. These include timber harvest, revenue to local governments and schools, protection of wildlife habitat and other environmental values, and opportunities for recreation and learning.

Resources Planning
This program provides information, research, analysis and planning services to assist the Board of Forestry and the department. These services support the implementation, monitoring and revision of the Forestry Program for Oregon, and help to coordinate forest policy across the department's various programs.

Urban and Community Forestry
This program helps Oregon communities plant, care for and manage urban forests, and works to foster public awareness of the contribution of urban forest ecosystems to quality of life, environmental and economic well-being in Oregon cities. This awareness in turn can help strengthen urban Oregonians' connections to Oregon's broader forest resources and issues.

Forests in the Coast Coho ESU

Private forest landowners manage approximately 2.9 million acres within the ESU. Federal ownership includes about 2.6 million acres of forestland within the ESU. Federal lands include lands administered by both the USDA Forest Service and USDI Bureau of Land Management. The Department of Forestry (ODF) manages approximately 567,000 acres of forestland in the Coastal Coho ESU. A majority of the ODF forestland is owned by the State, referred to as Board of Forestry Lands, with a significantly smaller amount owned by the State Land Board, referred to as Common School Forest Lands (CSFL). In addition, county governments, Oregon tribes, conservancy groups, and other state agencies (Department of Transportation, Oregon Parks and Recreation Department and the Department of State Lands) own forestland. Oregon's forests are diverse, and so are the objectives of forest landowners. Forest management objectives can be grouped into four broad categories of primary emphasis: Wood production; Multiple-resource; Reserve; and Residential emphasis.

The Forestry Program for Oregon

Oregon’s forests are among the most productive in the world, and are among Oregon’s most valuable resources. The 2.9 million acres of private forests in the Coast ESU are no exception. These forests touch the lives of rural and urban Oregonians in many ways, and are essential to our state’s well-being. Forests throughout the state are managed for a range of objectives. With sound, balanced management, they can produce a sustainable array of environmental, economic and social benefits. These benefits are not in conflict with one another. Different landowners may emphasize different sets of objectives. This diversity of approaches across the landscape is essential in achieving a sustainable flow of varied benefits.

Forests change constantly as a result of human and natural processes. Continual learning is essential to success in areas such as addressing problems arising from past practices, refining current practices, and understanding natural processes and their relationship with human activities. Although some changes, such as those resulting from fire, are immediate and dramatic, many unfold over years or lifetimes. We work toward healthy, sustainable forests through the Oregon Board of Forestry’s overarching policy document, the *Forestry Program for Oregon,* and through laws that provide for environmentally sound forest practices. These are based on broad public and stakeholder input, scientific research, collaboration, and the willing participation of landowners.

To promote salmon conservation, the program focuses on sustaining our forestland base, and then takes advantage of different management strategies recognized in the “Forestry Program for Oregon” (FPFO) for different forest types, ownerships, and locations. The FPFO sets forth the Board of Forestry’s mission and vision for Oregon's forests and the values and strategies that will guide the board's decisions over the next eight years. The Board of Forestry's strategic vision for Oregon's forests is based on three principles:

1. Widely recognized international criteria and indicators serve as a useful framework for discovering, discussing, and assessing the sustainability of Oregon's forests.

2. Sustainability requires maintaining a diversity of forestland ownerships and management objectives across the landscape and through time.

3. Cooperative, non-regulatory methods are preferred in achieving public benefits on private lands.

To fulfill the first principle, the board is using an internationally recognized framework for assessing sustainability of forests. This framework was crafted by 12 nations. These nations recognized the need to keep forests sustainable in all three sectors-economic, environmental, and social. They developed a system that establishes criteria for organizing discussions about sustainability, and indicators for measuring progress. The international framework does not establish targets or goals. It is simply a "language for discussion and measurement" in which citizens and experts alike may have an ongoing conversation, come to a common understanding of forest sustainability, and work together to determine their goals. The Board of Forestry has adapted this system to Oregon's particular circumstances.

The Board of Forestry believes using this framework will help make sustainable forest management demonstrable and measurable, and it will enable Oregon's citizens to discuss forest management and policy. By choosing the international criteria and adapting them to Oregon's needs, the board has made Oregon the first state in the nation to embrace this "language for discussion and measurement" of forest sustainability. Within this framework, the board hopes to encourage all forest landowners, forest managers, and citizens to work together to achieve sustainability of our forests in all three sectors.

To fulfill the second principle, this Forestry Program for Oregon supports the diversity of ownership categories in Oregon's forestlands. Oregon's forests are held by a wide variety of owners-federal, tribal, state and local governments, as well as private industrial owners and family forest landowners. The board believes that the optimum mix of economic, environmental, and social benefits can be achieved only through a diversity of owners managing for a variety of objectives and values. These varied benefits are the product of different actions in different places at different times. The ownerships complement one another precisely because not every acre of forest is managed in the same way for the same thing. The board believes that, like ecosystem diversity, ownership diversity enhances forest sustainability. It gives Oregon a strong foundation for assessing whether our forests are managed sustainably, in total, rather than on an acre by acre basis.

All of Oregon’s private forest landowners are regulated under the Oregon Forest Practices Act. These lands already provide many public benefits, such as sustaining

watershed health, keeping the land in forest cover, and contributing to the vibrancy of rural communities. To fulfill the third principle, the Forestry Program for Oregon supports cooperation and incentives as the preferred tools for promoting increased desired public benefits on private lands.

Within this broader context, the Forestry Program for Oregon has a number of specific actions for implementing salmon conservation within the Coastal coho ESU. These include:

- support and contribute to continuing statewide efforts under the Oregon Plan for Salmon and Watersheds to protect and enhance Oregon's native fish populations and water quality, while sustaining a healthy economy.

- continue to use the Forest Practices Act as the primary means to protect soil productivity and water quality and also promote ongoing voluntary resource restoration and enhancement efforts by forest landowners through the Oregon Plan.

- promote understanding, acceptance, and support across all land uses for relevant indicators of water quality conditions based on beneficial uses, and the use of these indicators to develop stream protection policies that result in consistent application of state water quality standards across land uses.

- ensure that forest landowners comply with state non-point source water quality standards as their contribution to providing Oregonians with high quality drinking water.

- promote renewed, long-term watershed research to study the effectiveness of the most current forestry best management practices in providing protection for soil and water resources.

- promote continued research and monitoring on the condition of forest roads and the effectiveness of forestry best management practices for roads.

- promote the maintenance of forestland in forest uses and promote the establishment of new forests as key elements in promoting high quality water and protection of soil productivity.

- support adequate funding for appropriate regulation and incentive programs that serve to encourage the establishment and retention of forestland.

The Oregon Plan by statute specifically includes a number of forestry programs administered by the Oregon Department of Forestry including ORS chapter 477 (Protection from Fire Program); ORS 527.310 to 527.370 (Integrated Pest Management), 527.610 to 527.770, 527.990 (1) and 527.992 (Oregon Forest Practices Act); ORS chapter 530 (Acquisition, Management And Development of State

Forests); and the commitments in the form of measures. Partners that cooperate with ODF on delivering Oregon Coastal Coho conservation Plan measures include: Oregon Forest Industries Council members, Oregon Small Woodlands Association members & other private forest landowners; Associated Oregon Loggers, Oregon Forest Resources Institute, OSU Extension Service, and sister agencies (ODFW, DEQ, & OWEB). Of particular importance in implementing private forestland actions are the ODFW habitat biologists and ODF's Private Forests Program stewardship foresters.

ODF - Private Forests Program

This program provides education, technical, and financial assistance to forest landowners to enhance and protect critical natural resource values such as fish and wildlife habitat, soils, air, water, recreation and aesthetics on private forest lands; and develops and administers best management practices to promote forest health on non-federal forestland. The program uses the regulatory Forest Practices Act as well as education and technical assistance to protect soil productivity and water quality. Incentive programs, such as the Forest Stewardship Program, the Forest Resource Trust, and Forest Land Enhancement Program, promote a range of stewardship actions (including establishment of new forests as key elements in promoting high quality water and protection of soil productivity) and promotes ongoing non-regulatory resource restoration and enhancement efforts by forest landowners through the Oregon Plan.

Education & Assistance

The Private Forests Program's philosophy for implementing the program is based upon first preventing resource damage and promoting sound forest practices—through the education of forest landowners and operators in the purposes and practices of forest resource protection to encourage voluntary compliance and proactive forest stewardship. The most significant educational opportunity is provided through one to one communication between the landowner and the ODF stewardship forester during onsite inspections. ODFW habitat biologists provide information to individual landowners onsite to conduct fish habitat improvement projects. Education and technical assistance is also accomplished in cooperation with the Oregon Forest Resources Institute (OFRI), Oregon State University Extension Service, and Associated Oregon Loggers (AOL) to communicate and coordinate their efforts with other key groups, and compile and use materials from these groups in work with landowners, operators, and the public. The development of a forest roads workshop and manual is one example of this collaborative approach.

Cooperators seek to provide forest landowners and operators with sufficient understanding of the purposes and practices so they are able to, on their own initiative, successfully protect forest resources while managing those resources for their full range of benefits to Oregonians. These cooperators are an active and diverse resource for private forest landowners and Oregonians, which provide various assistance and educational efforts. Depending on the program, leadership and other types of

participation shift among the different groups. Collaboration provides greater results than if each organization worked alone and increases efficiency in delivery.

Cost Share Opportunities

Financial assistance opportunities exist for private forestlands. These include ODF administered Forest Resource Trust, Afforestation Tax Credit, Forest Land Enhancement Program (FLEP), USDA-Natural Resource Conservation Service administered Environment Quality Incentive Program (EQIP) and Wildlife Habitat Incentive Program (WHIP), and OWEB's administered grant and small grant programs. Federal funds to assist family forest landowners are primarily available through the ODF administered Forest Land Enhancement Program (FLEP), and USDA-Natural Resource Conservation Services Environment Quality Incentive Program (EQIP). State financial assistance funds available to family forestland owners primarily come through the Oregon Watershed Enhancement Board's (OWEB's) grant programs. Many of these programs are under funded or in need of modification to make them more effective on private forestlands.

A 2007 legislative concept is proposed to restructure the Forest Resource Trust program. It includes a proposal to modify the existing stand establishment program to make it more attractive to forestland owners; it would become a loan program for forestation of under-producing forestland. Also included, is a proposal to add a cost share program for stand establishment and improved management of forestlands. Finally, a new environmental services program is proposed for financial and other incentive assistance to nonfederal forestland owners where landowner practices exceed portions of the Forest Practices Act. Incentives are provided for the development and maintenance of environmental services through improved management of forestland. The program seeks to accomplish regulatory objectives through incentives rather increasing rule standards. Priority would be given to nonindustrial private forestland owners.

Forest Practices Act

The Oregon Forest Practices Act (FPA) was passed by the Legislature in 1971 as the first of its kind in the nation. The FPA was actually preceded by reforestation requirements dating back to approximately 1941. It provides the Board of Forestry authority to develop comprehensive administrative rules regulating forest operations for the state's economic well-being and environmental protection. The FPA regulates timber harvesting, road construction and maintenance, treatment of slashing following harvest, use of forest chemicals, and reforestation on 11 million acres of non-federal forestlands. The program works to assure the continuous growing and harvesting of forest tree species and maintenance of forestland for this purpose consistent with sound management of soil, air, water, fish and wildlife resources. The program also addresses public safety issues relative to rapidly moving landslides and has limited authority to protect scenic values along specified highways.

Management of riparian areas on private forestland is regulated by the Forest Practices Act and Rules (FPA). The act acknowledges that the leading use on private forestland is the growing and harvesting of trees (OAR 629-635-0100). However, the act also acknowledges that the unique concentration of public resource values in and near waters of the state shifts the focus from production to protection measures in riparian areas. The purpose of the riparian vegetation retention rules along fish use streams within the Forest Practices Act is to maintain and promote desired future riparian stand conditions that will provide ample shade, an abundance of large wood to the channel, bank stability, snags, nutrient input and nutrient uptake. The goals for streamside areas that do not have fish is to have sufficient streamside vegetation to support the functions and processes that are important to downstream fish use waters and domestic water use.

Under the current stream rules, riparian stands can be managed to the extent that these goals can be met. The water protection rules require the establishment of riparian management areas (RMAs) on most streams that are within or adjacent to a harvest unit. The RMA width requirements vary depending on the stream classification (OAR 629-635-300) (Table 4). ODF classifies streams by "beneficial use" and by stream size. The "beneficial use" designations include Type F for fish-bearing streams, Type N for non-fish-bearing streams and Type D for domestic water sources without fish presence. Stream sizes are based on average annual stream flow in cubic feet per second (cfs). The stream size classifications are small (< 2 cfs), medium ($\geq$2cfs and <10 cfs), or large ($\geq$10cfs).

Forest, riparian, and stream management strategies have changed considerably over the last 60 years. Some examples include increased riparian area tree retention requirements, improved road construction and maintenance standards, and discontinuation of stream cleaning practices complimented with instream restoration practices. While some of these strategies have been in place for nearly 30 years, others are more recent and all continue to evolve with new information through the adaptive management process. Given this adaptive management, combined with the relatively long time frame over which forest structure develops and then contributes to aquatic and riparian conditions, it is anticipated that recent improvements in forest management may take several more years to decades to manifest as improved riparian and aquatic conditions.

Adaptive Management –Assessment, Research and Monitoring

Over the years, the FPA has adapted in response to improved knowledge about interactions between forest management and resource protection. Research and monitoring is carried out by several groups including the Private Forests Program's Forest Practices Monitoring Program (FPMP), the Oregon Headwaters Research Cooperative, the National Council for Air and Stream Improvement, and Watersheds Research Cooperative. A brief description of the assessment, research and monitoring carried out by these groups follows:

Private Forests Program Research and Monitoring

The Private Forests Program's Forest Practices Monitoring Program (FPMP) conducts research and monitoring to evaluate implementation and effectiveness of the Forest Practices Act. Areas of study have included topics such as monitoring fish presence, shade conditions above streams, riparian function regarding contributions of large wood, compliance with best management practices, and compliance and effectiveness of forest practice rules.

The program is guided by a Monitoring Strategy that is updated biennially. The strategy outlines an approach to the different types of monitoring and a list of key questions and priority levels. Monitoring riparian rules is a requirement, by forest practice rule, and the monitoring program manager reports findings annually to the Board of Forestry as required under OAR 629-635-0110. The Board of Forestry considers the findings and recommendations and takes appropriate action with regard to rule revision. The program also reports findings to stakeholder groups, ODF staff, and staff from other agencies and advisory committees.

The goals of the FPMP are to:

- Evaluate the effectiveness, implementation and assumptions of the forest practices act
- Coordinate with other monitoring and research efforts
- Investigate the cumulative effects of forest practices on forest resources.
- Support efforts to establish benchmarks/criterion used to define the range of desired conditions/regional goals.
- Monitor the implementation and effectiveness of the Oregon Plan.
- Monitor temporal and spatial trends in forest and stream conditions.

Adaptive management is a system of making, implementing and evaluating decisions. It recognizes that there is uncertainty about the outcome of management activities and that ecosystems and social values are always changing. It can be defined as a scientifically based, systematically structured approach that tests and monitors management plans, assumptions, predictions, actions, and then uses the resulting information to improve management plans, policies, or practices.

The success of the adaptive management process depends on:

- Commitment to a long-term process
- Deliberate monitoring designs that test policies and practices
- Careful implementation of policies and plans
- Scientifically sound monitoring designs that track indicators at multiple scales
- Analysis of outcomes that consider objectives and predictions
- Incorporating results into future decisions, policies, and practices.

While adaptive management must be flexible to accommodate change, monitoring data and efforts are of the greatest value if there is a structured approach to managing such change.

The FPMP Strategy discusses four types of monitoring (implementation, trend, effectiveness and validation) and sampling approaches that are scientifically based and

designed to link with Oregon Plan and other ODF monitoring efforts. The goals of the sampling methods are to:

- capture the range of upland and riparian conditions across the landscape
- address multiple types of monitoring questions at multiple scales
- reflect management under current forest practice rules
- capture the representative range of practices that occur under the current rules
- test effectiveness across a range of stream classifications (Small, Medium, or Large and Fish-bearing, Non-fish bearing and Domestic Water Source)
- represent various landowner types (state, industrial, non-industrial)
- complement other monitoring efforts that are being carried out within the department, by other agencies and states, watershed councils, private landowners, and research communities.

To meet these goals, sampling methods are proposed at multiple spatial and temporal scales:

1. Landscape Trend Sampling: Sampling at the landscape scale is needed to answer integrated questions regarding trends in upland and riparian forest conditions. These studies can be implemented over a long time period and through out the entire state. This level of monitoring facilitates coordination with other Oregon Plan activities.

2. Current Forest Practices and the Oregon Plan: This scale of sampling is designed to answer questions about implementation and effectiveness of *current* forest practices at a state or georegion-level on a shorter-term scale (3-10 years). The Independent Multidisciplinary Science Team (IMST) is currently evaluating methods and procedures, including questions about the appropriate scale of analysis, for effectiveness monitoring of Oregon Plan voluntary actions funded through the Oregon Watershed Enhancement Board. The IMST's work, expected to be completed by the end of 2006, will include observations on how existing state agency monitoring programs can contribute to Oregon Plan effectiveness monitoring study. Multiple sample designs will be applied.

3. Watershed Effects: This scale of monitoring is designed to answer watershed/sub-basin scale questions for a wide range of time scales (3-30 years). Examples include the Oregon State University, Watershed Research Cooperative, and Hinkle Creek Paired Watershed Study in Douglas County and the proposed Trask River Intensively Monitored Watershed Study in Tillamook County. These types of studies -coordinated and funded with other agencies and groups – are designed to address how forest practices and other conservation strategies applied on state-owned lands affect watershed processes and cumulative effects. There will be opportunities to set up pre-harvest and post-harvest studies within these watersheds, as well as evaluate Oregon Plan projects, with the appropriate linkages to interpret results at a larger, watershed scale.

4. Processes/Testing Hypotheses: Distinctions between research and monitoring can be difficult to identify. An important distinction is that research tests hypothesis to define cause and effect relationships, while monitoring tests those known relationships through time and space. In both cases, a scientifically sound process is needed. Research issues and questions will be addressed through contractual and cooperative agreements with university systems. To meet the needs of the Private Forests Program, monitoring is conducted by means of the scientific process.

A series of monitoring questions, priorities, and protocols are described. The monitoring strategy also describes a peer review process and communication and reporting plan.

ODF's Stewardship foresters also play a role in compliance monitoring, a role that is often overlooked. They review notifications of forest operations for the presence of protected resources and often assist forest landowners and operators in planning and ensuring their operation complies with the FPA. Stewardship foresters review written plans, which are required for activities in or near virtually all fish-bearing streams, for compliance and make recommendations when planned protection measures do not appear to be adequate. They may also inspect operations for compliance and will take some form of enforcement action when they find unsatisfactory conditions or resource damage. Non-compliance with the FPA is documented and violations are tracked by ODF's civil penalty staff.

Oregon Headwaters Research Cooperative

The Oregon Headwaters Research Cooperative has also funded research and monitoring studies applicable to the Oregon coast region including an evaluation of morphological, sediment and stream temperature characteristics on small headwater streams at the fish – non-fish use interface and a study on stream macroinvertebrate community response to a variety of forest management practices in forested Oregon headwater streams. Future research funded by the cooperative will involve classifying headwater streams and evaluating the cumulative and long term effects of forest management around small headwater streams. In 2005, the cooperative held a research symposium synthesizing the science and management of headwater streams in the Pacific Northwest. The symposium addressed the following topics:

- Hydrologic and Water Quality of Headwater Streams
- Sediment and Wood Dynamics of Headwater Streams
- Riparian and Biological Characteristics of Headwater Streams
- Influence of Headwater Streams to Downstream Reaches
- Synthesis of Headwater Research
- Management and Policy Options for Headwater Streams

National Council for Air and Stream Improvement

The National Council for Air and Stream Improvement's (NCASI) Watershed Research program funds forest watershed and wetlands research including topics such as the design of forestry best management practices for water quality and developing streamside

management guidelines. Completed projects with some applicability to Oregon's Coast Range include a study on sediment production from forest roads in the upper Oak Creek watershed and a study look at the interaction of riparian tree fall patterns and wood depletion in forested streams of the Pacific Northwest. Some broader, topical studies include regional studies looking at headwater stream fauna, solar radiation and stream temperature, riparian vegetation buffer effectiveness, and the effects of timber harvest and various silvicultural prescriptions on the characteristics of riparian vegetation.

Watersheds Research Cooperative

The mission of the Watersheds Research Cooperative (WRC) is to design and conduct field-based research, education, and outreach activities on the cumulative impacts from contemporary forest practices on water quality, fish and other aquatic biota. The resulting information will promote efficiency in designing, implementing, and regulating forest practices into the future. Efficiency means that desired outcomes for water and fish are achieved at the lowest regulatory cost. Contemporary forest practices include the current and future practices used to meet the range of management objectives on private, state and federal lands. Most of the currently available research provides information at a stream reach scale. Furthermore, information currently available at a watershed scale typically addresses historic practices and thus does not provide compelling evidence on which to base management decisions. State and Federal agencies are increasingly pressed to evaluate cumulative effects of policies and practices and to make direct links to fish. Such questions can only be addressed at a watershed scale and the Watershed Research Cooperative is working towards answering these questions.

The purpose of the WRC is to conduct research and develop and disseminate new knowledge on forest management and water-related resources to address questions framed by policy makers and forest practitioners. Forest management in this context is the full suite of contemporary and expected forest practices used to grow and harvest trees on commercial forestland (also known as timberland) in ways that are socially, economically, and environmentally sustainable. Water-related forest resources are those associated with fisheries and aquatic habitat and include, but are not limited to water quality, fisheries, amphibians, aquatic invertebrates, and nutrients. WRC research will focus on forest harvesting and silvicultural practices along streams and their local and downstream cumulative effects on fish and aquatic habitat.

The Watershed Research Cooperative as currently chartered by Oregon State University has an initial goal to establish three major paired watershed installations, along with additional smaller scale projects. Research under the WRC focuses on determining cause and effect relationships of harvesting and silvicultural activities on water quality and aquatic resources, and on evaluating cumulative effects at a watershed scale. The approach is typically a paired watershed design, but other designs that address cause-and-effect relationships may be included. Existing paired watershed studies under the WRC umbrella include the Hinkle Creek Study, the Trask Study, and an Alsea Study (in the planning stages). All three are in the Coastal Coho ESU.

Evaluation of "passive" vs. "active" approach to future large wood recruitment
The Board of Forestry, at their March 2006 meeting, directed the Department to investigate alternative concepts that would be most effective in getting large wood into streams, both for short and long-term objectives. The objective of the framework is to target both large wood placement and increased riparian basal area retention levels along those types of small and medium western Oregon streams that are identified as having a high habitat value important to be maintained or enhanced for sensitive salmonid species. The goal is to prioritize protection to areas more productive for fish - resulting in more efficient and effective water protection rules strategy. Measures are potentially available to identify and protect the most productive coho habitat that currently exists.

The alternative concept would designate a sub-set of small and medium fish use streams as "high aquatic potential" (HAP) streams, where a different approach to protection would be applied. These streams would be defined by specific valley width and stream gradient characteristics that have high habitat value for sensitive salmonid species. If a landowner wished to manage within the current riparian management area widths, an in-stream large wood survey would be required to determine if adequate levels of large wood currently occur in the stream. Different levels of protection would be required depending on whether or not the landowner was willing and able to manually place large wood in the stream. (See figure 1).

Under this proposal, medium and small "HAP" fish use streams would generally have an added increment of riparian and large wood recruitment functions over those levels of functions provided for "other" medium and small fish use streams. This additional increment of function would occur in the form of a combination of additional basal area retention and the in-stream placement of key pieces of large wood. The intent of the proposal is to create adequate incentives so that forest landowners choose to place large wood in-stream as part of a harvest operation where deficient large wood levels are identified. Where the choice is made not to place large wood, a higher level of riparian retention would be required.

Validation monitoring is occurring during the summer of 2006 to determine the feasibility of implementing this potential approach. Research on the assumptions and uncertainties associated with this specific program as well as a broader evaluation the relative benefit of passive or active approaches to large wood recruitment is needed.

Oregon Plan Measures for Private Forestlands

Specific non-regulatory actions – called "measures" are actions which private forest land managers implement to contribute to the Oregon Plan for Salmon and Watersheds. The measures include a suite of discretionary actions to improve roads built prior to the FPA, provide for fish passage, restore aquatic and riparian function, and manage upland processes designed to improve watersheds that salmonids depend upon. FPA best management practices are relied upon to meet water quality standards, while non-regulatory measures provide alternate means of achieving a particular rule's objective or to accelerate reaching a desired watershed condition.

Several forestry organizations have been instrumental in developing and implementing the non-regulatory Oregon Plan measures for private forests. These groups include Associated Oregon Loggers, Oregon Forest Industries Council, and the Oregon Small Woodlands Association. A number of landowner committees also help guide the process such as the Forest Practices Regional Committees, Committee for Family Forestlands and many individual landowners.

At the direction of the Board of Forestry, ODF and forest landowners are considering new measures. While still in an early stage of development, the new ideas are intended to provide a menu of opportunities to increase stream complexity and overwinter habitat and to improve riparian and upslope function. While the Forest Practices Act is relied upon to provide the foundational means to achieve desired outcomes; the new non-regulatory ideas under consideration will provide additional or alternate means to achieve outcomes tailored to the landowners' objectives and site specific conditions. The coho assessment and this conservation plan will help landowners and those assisting them to identify what actions are most needed in local watersheds. Ideas that the coho stakeholder team have provided, such as directly falling trees into streams not associated with a harvest operation, and placing and mechanically moving wood and gravel above culverts to below culverts, are included for consideration.

Existing private forests Oregon Plan non-regulatory measures can be grouped into four broad categories: Aquatic Habitat Restoration, Riparian Management, Roads & Fish Passage, and upland management. Following is a brief description of the current measures and the limiting factors the measures are intended to address.

Aquatic Habitat Improvement

The aquatic habitat improvement measure is intended to aggressively enhance over winter habitat, identified as a limiting factor for coho, through the active placement of large wood. Stream surveys consistently show streams on forestland are generally in good shape but lack complexity. Placement of large wood increases complexity. Aquatic habitat restoration actions also include the placement of boulders or the creation of side channels and alcoves to provide immediate benefits for fish habitat. These actions often take place during a forest management activity and thus provide an economically efficient means to deliver immediate habitat benefits. It is anticipated that over time a renewed emphasis on large wood placement (and other habitat improvement projects) will lead to increased levels of large wood and other stream structure that will better protect and sustain fish populations.

The implementation of the aquatic habitat enhancement measures have been hampered in the past by permit disincentives. The Environmental Protection Agency (EPA) recently determined that large wood placed during silvicultural activities regulated by the FPA are exempt from the U.S. Army Corps of Engineers Section 404 Clean Water Act permit. The EPA's determination has helped to streamline the placement of large wood and will hopefully lead to an increase in the numbers of projects implemented.

Riparian Management

Riparian management actions are implemented to achieve or enhance a range of aquatic functions on a site specific basis. These actions include both active and passive strategies: thinning dense streamside stands, creating openings, providing large wood, planting additional trees, managing for a mix of hardwoods and conifer or electing to not harvest within all or portions of an RMA. Over time these management actions increase the potential for large wood recruitment from the riparian areas, from upslope sources through natural disturbance events, or from opportunities for deliberate placement. Non-regulatory riparian management measures can be applied along streams with or without fish presence and along all stream sizes. Improvements are relative to the site conditions. For instance, some streamside stands are overly dense. Thinning in these stands will increase diameter growth and tree health and vigor. Managing these stands will provide opportunities for large wood contributions sooner than if the stands were not thinned. Non-regulatory riparian management measures build upon the foundation provided by the FPA and provide a menu of site specific options to address limiting factors such as overwinter habitat, increase large wood available for recruitment. Well managed riparian stands may also address limiting factors such as water quality, as they provide shade over the channel, channel-influencing root masses along the edge of the high water level, snags, and regular inputs of nutrients through litter fall or intermittent openings to allow sunlight. Again, these measures are intended to complement, not replace the need for a regulatory foundation.

As an example to date, private forestland managers retained additional trees in 3,181 acres of riparian areas beyond the requirements of the FPA. About 20% of the leave tree acres were on small and medium non-fish bearing streams (597 acres). The remainder was evenly distributed along fish bearing streams. These results suggest that the benefits of these measures are distributed across all stream types and sizes and have the potential to improve large wood recruitment and shade throughout the watershed. However, it should be noted that many streamside stands need to be managed to attain the desired aquatic and riparian functions. Retention of RMA trees is never intended to be used when management was what was needed.

Roads & Fish Passage

Many forest roads built prior to the FPA, or prior to the current best management practices, continued to pose increased risk to fish habitat. This measure is currently implemented to identify risks from roads and to address fish passage and water quality limiting factors:

- Implement a systematic process to identify road-related risks to salmon and steelhead recovery.
- Establish priorities for problem solution.
- Implement actions to reduce road-related risks.

To date, Oregon Plan reports show private forest landowners have surveyed 16,391 miles of road, improved 2810 miles, vacated 185 miles, closed 319 miles, relocated 7 miles, installed 6700 fish passage structures, and made 15,203 road drainage improvements. Some landowners have chosen not to report, so this number is an underestimate of the amount of work accomplished. Surveys and other work completed has decreased in recent years, however , anecdotal evidence indicates that many landowners now incorporate legacy road work into their routine maintenance schedule and are no longer reporting the non-regulatory contributions to the OWEB Watershed Restoration Inventory.

Upland Management

Management of uplands can be as important as managing streamside areas to achieve healthy watersheds for coho and other salmonids. Upland management actions include addressing invasive species, insects and disease, fire risks, and taking opportunities to use bio-fuels for alternative energy sources. These measures help to address water quality limiting factors as well as ensure a potential supply of large wood exists from upslope areas situated along debris torrent prone channels.

Stewardship Agreements

Legislation passed in 2003 moved Stewardship Agreements from the Forest Practices Act statutes to a new Stewardship Agreement Statute, ORS 541.423. The new statute directed the Board of Forestry and Department of Agriculture to jointly develop rules that address both forest and agricultural lands. The new stewardship agreements are intended to apply to all rural lands and to focus on rewarding landowners who enter into land management plans which provide for conservation benefits above what is required by law. Draft rules were developed by a Rules Advisory Committee supported by a smaller steering committee. Rules were published for public comment during the spring of 2006 with formal adoption planned prior to the end of the year. The new stewardship agreement program did not define any specific new incentives but conceptually will provide the foundation for offering benefits and incentives as they are identified or created in the future. Landowner recognition, focused technical support, and limited relief from forest practices processes are among the modest incentives currently available. Additional and more specific incentives are being developed for potential consideration by the legislature in 2007. These could include access to cost share or grant funding for specific projects, additional regulatory process relief, and regulatory certainty.

Potential Actions for Private Forests

ODF and private forest landowners, in collaboration with DEQ, ODFW, and OWEB are working on a number of initiatives relevant to watershed health. The following possible initiatives apply broadly to improving watershed function and aquatic habitat:

- Participation in the Oregon Plan habitat strategy
- Complete mapping exercise to validate high aquatic habitat potential; and subsequent work to determine how best to apply the knowledge gained to increase stream complexity
- Develop implementation guidance for new rule to leave trees along debris torrent prone streams
- Develop implementation guidance for new rule to treat riparian areas above artificial fish passage barriers as if fish were already present
- Develop implementation guidance and communications to implement new rule that provides opportunity for forest landowners to place large wood during forest operations without additional permitting
- Board of Forestry work to evaluate remaining riparian rule concepts
- Forest landowner work to evaluate new and existing Oregon Plan non-regulatory measures
- Forest Resource Trust pending improvements and development of an environmental services program that will provide incentives and financial support
- Stewardship Agreements under consideration will provide additional incentives and opportunities for landowners to demonstrate stewardship

Agency and Private Forest Stakeholder Recommendations

Current practices (both regulatory and non-regulatory) on private forestlands have helped federal decision makers to not list coho as threatened and endangered. It is also believed these practices will ultimately contribute towards reaching Oregon's conservation goals for coho as well. Private forest land managers have committed to continue doing what has worked to reach a 'viable status' and to place an emphasis on improving stream complexity.

Successful implementation of private forests conservation plans must consider a number of key needs. ODF and private forest managers recommend that steps be taken to:

- Ensure stewardship foresters and ODFW habitat biologists staffing levels are sufficient to provide the level of technical assistance landowner's need to reach Oregon's conservation goals for coho. Many landowners rely upon these experts to help identify, design, implement, monitor and report Oregon Plan projects. A need to conduct more instream work to provide overwinter habitat means more technical expertise should also be provided.

- Provide regulatory certainty and at the same time assure the third principle of the Board of Forestry's strategic vision.

- Continue to improve the process for the active placement of large wood on private forestlands by streamlining the process for reporting these projects.

- Streamline forest practices processes or permits for landowners voluntarily entering into stewardship agreements.

- Provide training and outreach materials so that landowners understand what is needed, how to do it, and how and why to report and to monitor success.

- Ensure that measures selected are meaningful and likely to be implemented on private forestlands.

- Keep working forests working. Replace a paradigm of requesting private forests 'donate wood to downstream high 'intrinsic potential reaches' with a market based incentive for private forests by 'purchasing wood for other ownerships.'

- Encourage other land uses to become more engaged, or to report what they may already be doing.

- Provide equitable funding opportunities and technical assistance for non-industrial forest landowners. Currently, funding cannot be provided for actions required by the FPA. However, the same projects are funded on other lands which do not have regulatory requirements. Can we put in an example?

- Provide sufficient resources to conduct monitoring and research.

ODF - State Forests Program

The Board of Forestry (BOF) oversees the state forester's management of an estimated 567,193 acres of forestland in the Coastal Coho ESU. Of this ESU-associated forestland, the majority is owned by the Board of Forestry, referred to as Board of Forestry Lands, with a significantly smaller amount by the State Land Board, referred to as Common School Forest Lands (CSFL). These state forestlands are managed today in accordance with direction found in the Oregon Constitution, statutory and administrative rules, and State Land Board and Board of Forestry policy.

The Board of Forestry lands (BOFL) were acquired largely through counties deeding over tax-delinquent forestlands to be managed by the Board of Forestry, who would then return most of the net revenues from those lands to the counties. Oregon Revised Statute (ORS) 530.050 directs these lands to be managed "so as to secure the greatest permanent value of such lands to the state." To this end, the statute authorizes the State Forester to produce timber and other commodities as well as to conserve, protect, and use a variety of natural resources. Additional management direction is provided for BOFL by Oregon Administrative Rule (OAR) 629-35-0000 to 629-35-0110, "Management of State Forest Lands."

The BOFL are generally concentrated within the Tillamook and Clatsop State Forests, approximately 25 miles northeast of the city of Portland. These two forests represent significant land holdings within the northern portion of the Coast Coho ESU, specifically in the Nehalem (approximately 206,616 acres), Tillamook (approximately 213,668), and Nestucca (approximately 9,599 acres) Coho population watersheds. Smaller tracts of

state forestlands are scattered throughout the ESU, with the largest amount found within the Siletz (approximately 8,340 acres), Yaquina (approximately 18,203 acres), and Siuslaw (approximately 22,992 acres) Coho population watersheds. The scattered forestlands are largely BOFL, but also include a small amount of CSFL.

Common School lands were granted to the state by the federal government at the time of statehood to support Oregon's public schools. The Constitution (Article VIII, Section 5) authorizes the State Land Board to manage and protect these lands "with the object of obtaining the greatest benefit for the people of the state, consistent with the conservation of this resource under sound techniques of land management." An opinion of Oregon's Attorney General (Crookham 1992) establishes that the "greatest benefit for the people" standard requires the Land Board to use the lands for schools and the production of income for the Common School Fund.

The Oregon Revised Statutes (ORS 530.470) describe a process by which these common school lands may be designated for the primary purpose of "growing timber and other forest products." The Department of Forestry looks to statute (ORS 530.490 and 530.500) and administrative rules for management of CSFL in the Elliott State Forest, along with the Common School Forest Land Agreement (Land Board, ODF, DSL 1993).

The CSFL are generally concentrated in the contiguous tract of lands called the Elliott State Forest located near Coos Bay, Oregon. State owned forestlands within the Coastal Coho ESU are concentrated in the Lower Umpqua (an estimated 28,367 acres), Tenmile (an estimated 21,573), and Coos (an estimated 43,908 acres) coho population watersheds. Additionally, scattered tracts of CSFL are located throughout the Coastal Coho ESU.

Management of ODF land

Northwest Oregon Area (including Tillamook and Clatso Forests
The conservation effort for the BOFL within the Coastal Coho ESU is described in the Northwest Oregon Forest Management Plan (FMP), with only a minimal number of acres within scattered tracts being managed under The Southwest Oregon Management Plan. Subsequent references to the FMP in this section refer to the Northwest Oregon Area FMP. The Southwest Oregon Forest FMP uses similar strategies, except it does not employ the Salmon Anchor Habitat (SAH) Strategy.

The FMP uses a "blended approach" to achieving desired future conditions for riparian and aquatic habitats. This approach combines commonly accepted principles of landscape ecology with site-specific strategies for riparian management and restoration. The landscape approaches include plans for managing roads to minimize impacts on streams and riparian areas, as well as managing slopes within and around landslide hazard areas. Site specific strategies include standards that combine riparian buffer widths with basal area targets for achieving mature forest conditions.

The biological and ecological objectives of the FMP are to maintain and or restore the ecological functions of aquatic and riparian areas as well as upland areas that directly

influence aquatic and riparian areas (ODF 2001). The intention is to manage for properly functioning aquatic systems by providing diverse aquatic and riparian conditions over time and space. This approach is intended to more closely emulate the historical conditions maintained by the natural disturbance regimes under which native species evolved. Desired conditions are explicitly described for (a) fish-bearing and large and medium non-fish bearing streams and (b) small-non-fish bearing streams. Desired future conditions for non-fish bearing streams are differentiated for those that are perennial streams, seasonally high-energy streams, and potential debris flow track reaches.

The FMP describes a number of strategies for managing at the site-specific level to achieve desired riparian and aquatic conditions. They can be described in two groups: Management standards for aquatic and riparian management areas and aquatic habitat restoration.

The site-specific strategies are achieved with a set of aquatic and riparian management strategies which include (1) applying management standards (2) applying alternative vegetation treatment to achieve desired conditions, or (3) applying strategies to other aquatic habitats: wetlands, lakes, ponds, estuaries, bogs, seeps, and springs (FMP-Appendix J). Riparian areas will be managed through two basic approaches. One is to achieve conditions associated with mature forests. Once a riparian area has met the desired condition, it will have limited or no management activity. For riparian areas that do not meet the desired conditions, management strategies will be designed to move the stand toward these conditions in a timely manner.

The riparian and aquatic strategies describe a combination of buffer widths and management strategies that can be used to meet these goals and objectives. In general, riparian management areas on fish bearing streams are 170 feet wide with inner and outer zones that vary in their management restrictions. There is also a 25 foot no harvest zone. The inner zone (25 – 100 feet) is to be managed for mature forest conditions (basal area = 220 ft^2/acre). The outer zone is managed to further insure the basal area target is met. Additional requirements include maintaining 10–43 conifer trees per acre, all snags, dead and down wood, and minimize ground disturbance. The management strategies include alternative prescriptions, basal area requirements, and habitat restoration.

The blended landscape and riparian and aquatic strategies in the FMP are likely to be effective at reducing the threat to coho recovery for the following reasons:

- The FMP establishes a goal to attain mature forest condition in riparian areas along fish-bearing streams and large and medium non-fish-bearing streams. This goal is likely to meet coho needs by creating and maintaining large diameter trees in riparian areas that will be available for recruitment to streams.
- The FMP has explicitly described basal area targets for achieving mature forest condition (80 – 100 years) and relates that to a typical number of large trees per acre (40-45 32-inch conifer trees).
- Once mature forest condition has been achieved in riparian areas, the FMP makes a commitment to maintain this condition “with limited or no management activity”.

- Fish-bearing streams, and large and medium non-fish bearing streams, are managed with wide riparian buffers. Riparian Management Areas are 170 feet wide with varying management options to meet the mature forest condition within the 170 feet. Given the commitment to achieve and maintain mature riparian forest condition, these wide buffers are likely to capture the majority of potential large wood recruitment from streamside sources (Murphy and Koski 1989, Van Sickle and Gregory 1990, McDade et al. 1990, Bilby and Bisson 1998) (Figure 13).
- Along fish-bearing streams and large and medium non-fish-bearing streams, the wide buffers and standard management targets designed to mimic mature forest conditions are highly likely to maintain shade and thus stream temperature.
- The FMP describes alternative approaches for managing riparian areas that don't meet mature forest condition in ways that will achieve that condition in a more timely manner.
- The FMP describes goals and options for aquatic habitat restoration.
- Upland strategies designed to minimize impacts of roads on aquatic and riparian ecosystems recognize the connectivity between aquatic habitat and upslope management practices.
- The FMP incorporates upland strategies that attempt to manage the risk of landslides so as to maintain and restore these areas to mimic historic process of upland large wood recruitment and routing to streams.

Watershed Assessments (w/ ODFW)

Watershed analysis is described as a critical process for refining and planning management activities related to implementation of the forest management plan. State Forests has developed a watershed analysis manual (ODF 2004) that describes the goals for watershed analysis, a process for implementing the analysis, and a process for incorporating watershed analysis findings into implementation plans. The goal for each watershed analysis is to identify if proper functioning conditions exist along streams. If the aquatic system is not in proper functioning condition, the analysis will evaluate if existing ODF strategies are likely to remedy the limiting factors and if not, if there are other measures that ODF can take to address the limiting factors. In this way, watershed analysis provides a tool for adapting FMP strategies at a watershed scale to create the desired future conditions for riparian and aquatic ecosystems.

Structure-Based Management

The body of integrated strategies defined in a FMP will apply across the landscape, providing both a coarse-filter or landscape level management focus and the necessary fine-filter emphasis for certain resource values. These integrated strategies will provide diverse forest habitats that are likely to accommodate most native wildlife species associated with forested habitats in the Oregon Coast Range. This benefit will likely extend to aquatic species, because areas of complex structure will develop large trees adjacent to Riparian Management Areas.

Over time, active management targets will achieve a diversity of stand structures across the landscape, or the desired future condition, as shown below:

Regeneration	5-15%
Closed Single Canopy	10-20%
Understory	15-35%
Layered	20-30%
Older Forest Structure	20-30%

These stand structure percentages are the over-arching, long-term objective for the landscape managed under the Northwest (Northwest FMP, pp 4-48) and Southwest plans (Southwest FMP, pp 4-46). Due to the limited amounts of older, more complex stand types present on the state forest landscape, it is anticipated 5 to 10 decades will be required to achieve the targets on all western Oregon state forest lands.

These structures, and resulting ecological values, are intended to be achieved while ODF actively manages the landscape for economic and social benefit. While the rate of timber harvest has increased over the last decade, the percentage of the land base affected each year is relatively low. The rate of clearcut harvest on State Forests has been approximately one percent for the last five years. Partial cutting on State Forest land has increased from virtually zero in the 1980s to about one and one-half percent of the land base today. The reasons for the increase in partial cutting include development of complex forest structure, improvement of forest health and vigor, and production of timber.

Anchor Habitats

The FMP identifies the Salmon Anchor Habitat approach as a strategy for managing species of concern. This approach establishes seventeen watersheds in the Tillamook and Clatsop State Forests *(See Table ODF-1)* that were identified as the core of salmon recovery efforts on state managed forestland. These watersheds were selected because they are considered to currently support the best existing habitat and high salmonid production. These watersheds are managed in accordance with a strategy that prioritizes salmonid recovery while balancing multiple purposes of state forests. The strategy is accomplished by lowering short-term risk to salmonids in salmon anchor habitats through additional management restriction within riparian areas, around small non-fish bearing streams, and goals to extend no-harvest buffers for debris flow recruitment. These management restrictions include:

- No harvest on all fish-bearing streams and medium type F streams.
- Limitations on harvest along perennial, seasonal, and debris-flow prone non-fish bearing streams.
- No harvest within 50 feet of perennial and debris-flow prone, small, type N streams,
- No harvest within 25 feet of seasonal small type N streams.
- Additional leave tree requirements (15-25 conifer trees and snags per acre) within 100 feet.
- No ground based equipment operation is allowed within 50 feet of the aquatic zone on all small type N streams.
- There are specific limitations on timber harvest activities associated with specific basins. Examples include caps on the percent of watersheds that can be clearcut harvested (ranging from 10 – 25%)

These strategies accomplish the following with regard to reducing the threat to coho habitat:

- They virtually eliminate the possibility that that there will be reductions in shade on fish-bearing streams associated with timber harvest.
- They lower the risk that harvesting will reduce shade on non-fish bearing streams.
- No harvest within 100 feet of the stream is highly likely to capture 70 to 99% of the large wood recruitment potential (Murphy and Koski 1989, Van Sickle and Gregory 1990, McDade et al. 1990, Bilby and Bisson 1998).
- Increased retention of trees along non-fish bearing streams provides large wood recruitment to fish bearing streams that is associated with debris torrents.

System	**SAH watershed**
Nehalem River	
	Foley Creek
	Cook Creek
	S. F. Salmonberry R.
	Upper N.F. Nehalem R.
	Buster Creek
	Fishhawk Lake Creek
	Lousignont Creek
	Coal Creek
	Upper Rock Creek
Kilchis River	
	Middle Kilchis R.
Wilson River	
	Little N.F. Wilson R.
	Cedar/Ben Smith Creek
	Devils Lake Fk. Wilson R.
Trask River	
	E.F. S.F. Trask R.
	Elkhorn Creek
Miami River	
	All

Table ODF-1. Salmon anchor habitats

Elliott State Forest

The conservation for the majority of Common School Forest Lands is described explicitly in the Elliott State Forests Management Plan and the Elliott State Forest Habitat Conservation Plan. The conservation effort for scattered tracts of CSFL is described by the BOF Forest Management Plans (FMP) in place for the planning area within which those lands are located.

The Elliott FMP contains strategies and actions similar to those of the Northwest Oregon Area FMP. Exceptions include the following:

- A 160, rather than 170, foot RMA.
- Different structural classes, as described in this table (Elliott FMP 5-11):

Early structure	5-15%
Intermediate structure	35-45%
Advanced structure	40-60%

The Elliott State Forest Habitat Conservation Plan is currently being revised, with an anticipated public review draft in 2006. The new plan proposes conservation management strategies for multiple terrestrial, aquatic and amphibian species, including coho and seven other fish species. Currently, coho and other native fish and aquatic species are being protected using NWOA FMP aquatic and riparian strategies. Where the 1995 Elliott State Forest FMP strategies are more protective, they are used (2007 Coos Draft AOP, page 5).

Scenarios that Support Watershed Processes

The FMPs describe a number of strategies for managing at the landscape level to help support watershed processes. These include: Watershed Analysis, Salmon Anchor Habitat Strategies, Slope Stability and Road Management Strategies. Watershed Analysis and Salmon Anchor Habitat Strategies are discussed in separate sections.

Slope stability affects riparian and aquatic habitat through geologic processes that result in landslide delivery to streams. The general goals of the slope stability strategies are to minimize road-related landslides and chronic erosion, and to manage uplands to ensure that large wood is available in the track of potential debris slides and torrents. This will be achieved through management at three levels. (1) Through the watershed analysis the state will complete a broad-level assessment of landslide hazards. (2) At the district level, implementation planning and annual operations planning the department will utilize geotechnical expertise in evaluating alternatives that can minimize for or avoid risk in high and moderate hazard areas. (3) During project planning and design level, utilize geotechnical expertise in evaluating alternatives that can minimize for or avoid risk in high and moderate hazard areas. The analyses will result in three possible risk ratings and associated management alternatives to promote desired functions such as delivery of large wood to downstream reaches.

Road Management is one of the most critical forest management activities with the potential to impact riparian and aquatic conditions because of their permanent nature and their potential connectivity to stream systems. Road systems will be managed to keep as much forest land in a natural productive condition as possible, prevent water quality problems and associated impacts on aquatic and riparian resources, minimize disruption of natural drainage patterns, provide adequate fish passage and minimize exacerbation of natural mass-wasting processes. Four primary areas of road system management in the FMP are described in detail in ODF's Forest Road Manual (ODF 2000). The four areas

include: transportation planning, road design construction and improvement, road maintenance, and road closure.

ODF has completed a road information management system pilot study to evaluate current condition and watershed risk factors. This system has been applied to the road systems in the Miami, Upper Nehalem and Wilson River watersheds. Analyses of these data indicates roads have been significantly disconnected from streams, and stream crossings have been upgraded to provide fish passage. Less than 20 percent of the road system is connected to streams, and between 90 and 100 percent of fish bearing stream crossings do not impeded passage of fish. A transportation planning pilot study for the Wilson river watershed is also underway.

ODF - Urban and Community Forestry Program

In addition to work on Private Forests and State Forests, the Oregon Department of Forestry has a small Urban and Community Forestry Program that can play a role in salmon habitat conservation. The Oregon Department of Forestry's Urban and Community Forestry Assistance Program (authorized by ORS 526.500 through 526.515) provides technical, financial, and educational assistance to cities, civic organizations, non-profit groups and other governmental agencies. Supported primarily with federal funds provided through the USDA Forest Service, the program assists about one-third of all Oregon communities annually, and provides a matching grant program with a small staff of three professional urban foresters to cover the entire state.

Traditionally, the Oregon Plan has focused on rural, agricultural and forestland areas where the large majority of watershed councils exist and where state natural resource agency programs are more intensively focused. However, it Oregon is to truly embrace an ecosystem management approach, we can not view the Urban Growth Boundaries as a barrier between two ecosystems, but rather as a line of demarcation where management practices may be different, but management goals remain intrinsically tied to the rural setting. Most salmon bearing streams pass through urban areas en-route to larger rivers or the Pacific Ocean. All of the regulatory regimes, management incentives, and landowner education initiatives focused on rural forestlands and agricultural lands upstream can be negated by poor management practices downstream in Oregon's cities and urbanized areas.

ODF Actions: Urban Forests

The Oregon Department of Forestry provides assistance to Oregon's 241 incorporated cities, and works primarily with government entities, community groups, educational providers and civic organizations. ODF helps cities and communities to develop a vision, a defined mandate, and a strategic plan specific goals and for integrating trees into the fabric of daily life and emphasizing trees as a vital component of a their city's infrastructure and as an essential part of the successful implementation of the Oregon Plan for Salmon and Watersheds, Clean Water Act, Forest Practices Act and the Endangered Species Act. This increases the community's commitment to and

understanding of the relationship between trees and the quality of drinking water, fish habitat, and how their actions and efforts are part of the Oregon Plan for Salmon and Watershed's solution for recovery of our important and endangered species.

ODF plays and advisory role to cities in the state that helps them make sound urban natural resource decisions. ODF will encourage the following actions as potential contributors to improve salmon habitat:

- Policies and projects that result in riparian area protection, including land acquisition, easements, and tree planting projects,

- Tree planting and maintenance of public trees in their communities, which provides a host of environmental benefits including slowing stormwater runoff and cooling urban temperatures,

- Specific tree planting for stormwater management control by providing green buffers along streets bordering and draining into waterways to lessen the quantity of runoff and improve the quality of the water running off into urban streams.

New Actions

The ODF urban forestry staff can work with local governments to mitigate the effects of development on urban streams and riparian areas. This may include helping cities develop best management practices and planning guidelines for lands undergoing conversion to urbanized uses. As cities gain more tools (and potentially incentives) to maintain a "green infrastructure" as they develop the traditional "gray" infrastructure of their cities (sidewalks, roads, sewers, etc), salmon habit will be enhanced and protected.

Oregon Department of Agriculture (ODA)

Introduction

The Oregon Department of Agriculture (ODA) has specific legal authorities and is responsible for addressing water pollution associated with agricultural lands and activities through the following programs.

1. Agricultural Water Quality Management (SB 1010)
2. Confined Animal Feeding Operation (CAFO)

These programs collectively work with the agricultural and general public to develop and implement economically viable, basin-specific strategies that protect the waters of Oregon from agricultural impacts while allowing for a viable agricultural industry.

Addressing water pollution from agricultural activities addresses the following potential threats to Oregon Coast coho:

- Riparian condition
- Water Quality

The following sections briefly describe the legal and institutional framework of each of these programs and how they address factors for decline of coho within the Oregon Coast Coho ESU.

Description of Regulatory and Programmatic Measures

Threats to the viability of Oregon Coast coho associated with agricultural lands are addressed by the programs of a number of federal, state, and local entities. Agencies in addition to the ODA that are typically identified as working directly with agricultural landowners to address water quality issues are: the USDA Natural Resources Conservation Service; USDA Farm Services Agency; local Soil and Water Conservation Districts; and, the Oregon State University Cooperative Extension Service. The ODA, in partnership with these agencies, helps landowners address water quality issues associated with agriculture, and thus issues associated with endangered species, through a diversity of resources and tools. The tools include outreach and education, technical assistance, financial assistance and regulatory backstops when necessary.

Following is a description of the two of the programs for which the Oregon Department of Agriculture is directly responsible.

ODA Actions: Agricultural Water Quality Management

In 1993, the Oregon Legislature passed an Agricultural Water Quality Management Act (SB 1010), Oregon Revised Statute (ORS) 568.900 to 933. This statute directed ODA to address water pollution from agricultural activities and rural lands. SB 1010 authorized ODA to develop and carry out an Agricultural Water Quality Management Area Plan (Area Plan) and to enforce associated Area Rules for agricultural or rural lands when a water quality management plan is required by state or federal law.

In 1995, the Oregon Legislature passed SB 502 (ORS561.191), which generally requires that ODA take the lead to develop and implement programs or rules that directly regulate agricultural activities for the purpose of protecting water quality.

Area Plan and Rules Development

Water quality management plans were developed for an area because of the federal Clean Water Act, Coastal Zone Management Act, Groundwater Management Act, Safe Drinking Water Act, or other state or federal law. The most common trigger is the Clean Water Act and associated Total Maximum Daily Loads. ODA established a Local Advisory Committee and a Local Management Agency to assist with development of the Area Plans and Rules. The following elements were included in each plan:

- Description of geographical and physical setting
- Identification of water quality concerns in the area and beneficial uses of water that are adversely impacted
- Water quality goals and objectives.
- Measures necessary to achieve goals and objectives.
- Implementation schedule for necessary measures.
- Guidelines for public participation process, including state and local government roles and responsibilities.
- Guidelines for evaluation, review and update of the plan.

Associated with each plan are Oregon Administrative Rules (OAR) (OAR 603-095) that provide an enforceable backstop for addressing water pollution from agricultural activities and rural lands. Once these rules were finalized and filed with the Secretary of State, individual farmers, ranchers and other rural landowners became responsible for managing their lands to meet the Area Rules.

Landowners may choose to proactively address the Area Plan and Rules by developing an individual Voluntary Water Quality Farm Plan (Voluntary Plan). Voluntary Plans address the farmers' economic and natural resource goals, as well as natural resource concerns on their lands. Many funding programs, including the Environmental Quality Incentives Program and Conservation Reserve Enhancement Program, may be available to landowners who need financial assistance to carry out management changes.

Landowners who choose not to address the requirements of Area Rules will be notified if violations occur, corrective actions will be scheduled, and assistance will be offered. If violations persist because of inattention on the part of the landowner, the landowner will be issued a Notice of Noncompliance. ODA may enter into a compliance agreement with the landowner and may seek additional enforcement remedies. Landowners with chronic or egregious violations of Area Rules will be subject to civil penalty assessments.

Review and Update of Area Plan and Rules

On a biennial basis, the LAC and ODA review the implementation progress of the Area Plan and Rules and determine whether the plan is sufficient to meet and address water quality standards. If timeframes and benchmarks are being met, no modifications will be

required. If deficiencies are noted, the Area Plan and/or Rules will be revised. If there are any changes to the Area Rules, there will be a public comment period.

Implementation of Agricultural Water Quality Management Plans
Since adoption of these plans and rules, ODA continues to work with the Local Management Agency (LMA) to help the local agricultural community address agricultural water quality issues in a proactive, non-regulatory manner. ODA and LMA implementation activities include education programs on successful agricultural conservation practices, assisting landowners with addressing water quality concerns, helping landowners access programs to share the cost of water quality improvements, and monitoring the effectiveness of the Area Plan and Rules. ODA's goal is to have 100% compliance by landowners with the Agricultural Water Quality Management program rules. While this expectation is high, the reality is that compliance with water quality laws is good conservation and good for the resource. Since land ownership is in a constant flux, there will always be a need for an outreach and education and periodic compliance action.

Biennial reviews
On a biennial basis, the LAC and ODA have been and continue to review the implementation progress of the Area Plan and Rules to determine whether the plan is sufficient to meet and address water quality standards. Biennial reviews include review of compliance actions, outreach activities, on-the- ground projects that have been reported to the Local Management Agency (typically an SWCD), and any monitoring results that are available to evaluate the effect of the program. To date, biennial reviews for the Coho ESU planning areas have documented a large amount of relevant activity and indicated that no changes are needed to address rule or implementation deficiencies.

Compliance
The ODA has been conducting investigations of alleged occurrences of agricultural pollution when it receives a notice through a written complaint, observation, notification by another agency, or by other means. These inspections may be coordinated with the local management agency if possible, or with other agencies when needed. If the department determined that a violation of ORS 568.900 to 568.933 or any rules adopted there under has occurred, the landowner is subject to enforcement procedures outlined in the department's administrative rules. The number of complaints, thus inspections, has been increasing statewide since 1998, not because there has been an increase in problems, but because the number of adopted basin rules in place and the public's awareness of this regulatory program have increased.

Since ODA's water quality program is not practice based but condition based, landowners are not required to fence riparian areas. However, rules require landowners to provide conditions that result in streambank stability and shade, which is good for water quality and provides habitat for salmonids. Many landowners are voluntarily doing so as part of their management strategy or through programs such as the USDA Conservation Reserve Enhancement Program. If in pursuing a complaint observed by the department or received by any other means, the department documents a violation of existing riparian

rules, then as part of the notice of non compliance riparian fencing may be identified as the solution.

ODA Actions: Monitoring

Where necessary and when resources are available the department augments monitoring conducted by other entities. TMDLs and SB 1010 plans and rules completed in the Oregon Coast coho ESU have only recently been finished and implementation is just getting started. As a result there has not been enough time to assess effectiveness.

Riparian condition monitoring along agricultural lands is a critical tool the department has been pursuing to fill a void in monitoring efforts. The department has implemented a program using digital, aerial photographs that are ortho-rectfied and taken at a fine enough scale to provide a statistically acceptable tool for determining state-wide riparian trends based on a planned 4-5 year schedule to renew photos and analyze data.

Use of remotely-sensed imagery allows the department to assess the condition of large areas without requiring as much labor as with a ground-based effort. In addition, using GIS-compatible imagery allows for direct comparison of the same locations to identify long-term trends. The goal of the department is analyze riparian condition along approximately 20% of the stream miles along streams in each basin. Photos of the North Coast, Mid-Coast, and Coos & Coquille basins were taken and analyzed in 2003. The next year for retaking the photos is scheduled for 2008. Establishing this process was funded through an EPA 319 grant and that report is available upon request.

While remotely sensed imagery can be used to assess long-term trends in riparian condition, it has limited function by itself to identify the status of riparian vegetation in relation to site capability. Because site capability is variable across the state, the status expected for each stream reach will vary depending on soils, location in the state and other biophysical parameters. Thus, until site capability can be described on a landscape basis and captured in a GIS framework, the existing imagery can only be used for trend analysis. While a GIS site capability data layer based on biophysical determinants is presently not available, it is a task the water quality program is actively pursuing. We hope to have the ability to establish a GIS – based site capability data layer within the next three to five years.

ODA Actions: Confined Animal Feeding Operation Program

The ODA Confined Animal Feeding Operation (CAFO) program (Oregon Revised Statute 468B.050 and 468B.215 was expanded by the state legislature in 2001 to bring the program into compliance with EPA's CAFO regulations. This has expanded the types of CAFOs that must have a permit to be consistent with EPA's definition. The new definition removes the exclusion of larger CAFOs that have facilities where animals are

confined for four months or less duration and facilities without a prepared surface and without wastewater treatment works.

The state's policy is to protect the quality of the waters of the state by preventing animal wastes from discharging into these waters. In further defining the state's CAFO program, process wastewater includes any water that comes into contact with any raw materials, products, or by products including manure, litter, feed, milk, eggs, or bedding (OAR 603-074-0010(17)). Wastewater treatment works and/or disposal systems are defined in OAR 603-074-0010(24) as all or any part of a system or systems used in connection with a CAFO or holding operation for the collecting, conveying, storing, treating, or stabilizing of manure, litter, process waste water or contaminated storm water runoff.

In 1999, ODA shifted its emphasis from a complaint response system of inspections to a Performance Based Inspection (PBI) inspection program for permitted CAFOs. Since June 1999, ODA has committed to perform one annual routine inspection for each permitted CAFOs at least once annually.

The permit for CAFOs prohibits discharges from properly designed and operated facilities except during unusually high rainfall events. An unusually high rainfall event is defined as a 25- year, 24- hour storm, which is defined by EPA as a mean precipitation event with a probably recurrence interval of once in 25 years as defined by the National Weather Service in Technical Paper No. 40, "Rainfall Frequency Atlas of the United States," May 1961, or equivalent regional or state rainfall probability information developed from this source [40 CFR 412.2(i))]. Land application of wastes must be at agronomic rates and as specified in an approved waste management plan. The permit requires the plan to be consistent with OAR 340-051, the NRCS Nutrient Management practice standard guidance 590, and cites minimum performance criteria for waste management.

Implementation of CAFO Program

From 1999 through 2005, routine inspections in the coastal basins have focused attention on how each operation performed and whether each CAFO operated is in compliance with its permit and federal and state water quality laws.

In August 2003, the department and DEQ (EQC) jointly issued the Oregon CAFO General Pemit. This Permit is a National Pollutant Discharge Elimination System (NPDES) permit fully compliant with all clean water act federal regulations. In 2003 and early 2004, a significant amount of time was spent by each inspector reviewing and recording applications to register (ATR). The ATR is a new requirement to meet the new federal and state requirements for permitting concentrated animal feeding operations. All facilities that submitted an ATR and met the new permit requirements were registered to the Oregon General CAFO Permit. A continued goal of the CAFO program is to inspect each permitted CAFO once every year. The department also provides technical assistance to permittees and conducts complaint and follow-up inspections as necessary.

Animal Waste Management Plans (AWMPs) are a permit condition and all facilities must prepare and operate according to an approved plan. ODA also reviews AWMP's for approval or rejection and specifications for animal waste control facilities to verify they have been prepared in accordance with OAR 340-051 design criteria, and USDA-NRCS conservation practice standard guidance 590 for Oregon dated May 2001 entitled Nutrient Management The attached tables illustrate the coastal area, inspection and AWMP activity since 1999.

As a result of this increased effort, we have seen an overall improvement in compliance found on permitted operations in the coastal area and expect this to continue.

In the coastal basins the Notices of Non-Compliance (NONs) decreased approximately 50% for 2005. We believe the decrease reflects an improved operator understanding of the new CAFO regulations and AWMP guidance that went into effect in October 2003.

Oregon Water Resources Department (OWRD)

The Oregon Water Resources Department is the primary agency responsible for determining the availability of water for beneficial uses, monitoring, distributing and regulating water use, and promoting responsible water management. The Department's mission is to serve the public by practicing and promoting responsible water management through two key goals: To directly address Oregon's water supply needs, and to restore and protect streamflows and watersheds in order to ensure the long-term sustainability of Oregon's ecosystems, economy, and quality of life.

Existing Legal Framework

Oregon water law determines which water rights are legally entitled to water based on the doctrine of prior appropriation. This doctrine operates on the “first in time, first in right” principle meaning that, in water-short times, the appropriator with the oldest, or most “senior” water right, can demand the water specified under the right regardless of the needs of other users. If there is water in excess of the needs of this senior right holder, the person with the next oldest priority date can take as much as necessary to satisfy needs under that right, and so on down the line until all needs are met, or until no water is available. Junior water right holders are protected by laws that prohibit senior users from making changes in use through water right transfers that injure junior users.

Water management in Oregon has historically emphasized consumptive water uses. The growing concern for and recognition of the need to protect instream values such as fish and wildlife and their associated aquatic habitat has required new approaches that consider the public interest and instream needs and values. New statutory authorities were created to reflect these changing values. These include authority for state agencies (Environmental Quality, Parks and Recreation, and Fish and Wildlife) to apply for instream water rights, the ability to move existing consumptive rights instream via leases, transfers and allocations of conserved water, and public interest evaluations of new water use applications.

Conservation Plan Framework

With respect to watersheds and salmon recovery, OWRD has focused its limited staff capability in areas that have the greatest opportunities to benefit fish. In 2002 OWRD and ODFW jointly identified priority areas for streamflow restoration throughout the state. These priority areas represent watersheds in which there is a combination of need and opportunity for flow restoration to support fish recovery efforts. Within the Oregon Coastal Coho ESU, 153 high priority flow restoration watersheds have been identified. Of these, 49 are in the North Coast population monitoring unit, 41 in the Mid-Coast, 34 in the Mid-South Coast, and 29 in the Umpqua monitoring unit.

The assessment of factors limiting Coastal Coho populations included an analysis of the consumptive use of water as a percent of August natural flow. While generally not a cause for concern across the ESU, low flow conditions in the Umpqua Monitoring Unit were identified as a primary limiting factor. The need for streamflow restoration was also identified in the Mid-South Coast monitoring unit, although flow was not a primary

limiting factor. Consistent with this assessment, since 1997 streamflow restoration efforts in the Coastal Coho ESU have been focused in the Umpqua and Mid-South Coast monitoring units, the areas with the greatest flow restoration needs for coho.

Restoration efforts in these priority areas have been guided by strategies with specific actions designed to address a variety of human influences that may contribute to low flow conditions. OWRD has identified a number of new statewide concepts that may also contribute to coho recovery. Both existing agency actions and new concepts are described here in detail.

Existing Agency Actions

OWRD has a number of ongoing actions targeted in priority flow restoration watersheds and streams that incrementally aid in improving salmonid habitat. Within the existing legal framework, the actions are intended to support recovery efforts by encouraging voluntary efforts by water users to preserve and enhance streamflows and by ensuring that the use of water is consistent with state water law and the terms and conditions of water rights. Programs and specific actions are described below.

Water Distribution and Regulation

Water distribution and regulation includes OWRD regulatory authority to prevent illegal use and to distribute water according the water rights of record. The relationship between this regulatory authority and instream benefits are described in the following actions.

<u>Perform distribution to provide water rights, including Instream Water Rights, with the water to which they are entitled</u>

One of OWRD's primary functions is the distribution and regulation of water use based on the system of prior appropriation and rights of record. Watermasters are responsible for the protection of senior water rights, including instream water rights. Watermasters and their assistants work with water users to protect existing instream water rights from junior and illegal uses in streams of the Oregon Coastal Coho ESU. The authority to regulate water use is set forth in Oregon statute (ORS 540.045) and rules (OAR Chapter 690, Division 250) and is the primary mechanism for providing certainty of implementation and effectiveness of streamflow protection and restoration efforts.

When streamflow measurements indicate the quantity of water in a stream is less than the instream water rights, the Department requires junior water right holders to stop or curtail their use. Depending on the priority date of the instream water right, flows may be stabilized or may improve. In many instances, the instream water right is junior relative to other rights on the stream. Under Oregon law, an instream water right cannot affect a use of water with a senior priority date. Therefore, instream water rights do not guarantee minimum streamflows in stream reaches. In the Umpqua monitoring area, low streamflow has been identified as a limiting factor in some areas. Protection of existing instream water rights and increasing flow through voluntary flow restoration will be key to addressing this limiting factor.

OWRD has established performance measures and targets related to regulating water use on behalf of instream water rights. One performance measure is the ratio of streams regulated to protect instream water rights to all streams regulated. The Department's goal is for 35% of all streams regulated to be regulated on behalf of instream water rights. The Department does not currently track this performance measure at the Coastal Coho ESU scale. However, within the four Watermaster districts that include the Coastal Coho ESU, 54% of all streams regulated in 2004 were regulated on behalf of instream water rights.

Maintaining Streamflows through Compliance and Enforcement

It is a priority for OWRD to reduce or eliminate illegal water use. Illegal water use may be any one of the following:

a) Use of water without a water right or other legal water use authorization;
b) Use of water is in excess of or contrary to the terms and conditions of a water right;
c) Continued use of water after use has been denied by OWRD.

Reducing and eliminating illegal water use increases streamflows and allows other users, including instream users, to benefit from the flows. Since many instream water rights are junior in priority to older out-of-stream uses, elimination of illegal water use increases the likelihood that an instream water right will be met.

OWRD has a strong regulatory role in the coastal basins. The primary responsibility for enforcing water law resides with OWRD Watermasters and their county assistants. There are currently four Watermaster districts within the Oregon Coastal coho ESU, including a coastal office opened in 1996. Enforcement or compliance monitoring of water rights is initiated either by Watermaster investigation or by investigation of a complaint. Voluntary compliance within the four Watermaster districts of the Coastal Coho ESU averaged 95% in 2004.

Water Use Measurement

As part of their regulatory function, Watermasters monitor streamflows and instream water right usage. These efforts create the base information necessary to determine the flows that are present, and to shepherd water past junior users to the senior users, both instream and out-of-stream.

Watermasters and their assistants regularly monitor streams within their districts, particularly those with instream water rights or minimum streamflows. Under the Oregon Plan, Watermasters have also trained volunteers to perform streamflow measurements on coastal streams. Volunteer flow measurements aid Watermasters in distributing water as necessary to protect instream water rights.

There have been up to 35 continuous recording streamflow gages operated by OWRD or the US Geological Survey that measure streamflows at instream water right locations within the Oregon Coastal coho ESU. Of this total, up to 18 gages have been operational within the Umpqua population monitoring unit. Due to budgetary constraints, not all gages within the Coastal Coho ESU remain operational.

ORS 537.099 requires that government entities holding water rights report water use on an annual basis. This requirement applies to OWRD as the holder in trust of instream water rights. OWRD monitors and reports "water use" by instream water rights to the Water Resources Commission on an approximately annual basis. However, the water use measurement and reporting position which was responsible for analyzing and synthesizing instream measurements collected by Watermasters was eliminated in the 2005-2007 legislatively adopted budget. OWRD has requested restoration of this position with its 2007-2009 Agency Requested Budget.

Inventory of Significant Diversions

As part of the Water Resources Commission strategy for increasing water measurement statewide, OWRD has been completing an inventory and field inspection of significant diversions in high priority flow restoration watersheds. Significant diversions are defined as all diversions of permitted and certificated water rights with conditions requiring measurement and reporting and diversions greater than 5 cfs or greater than 10% of the lowest monthly 50% exceedance flow on a stream. The inventory of significant diversions within high priority watersheds in the Coastal Coho ESU is mostly complete.

With the inventory complete, Watermasters and their assistants will complete the field inspection phase of this effort. During this phase, assessments of headgates and measuring devices are conducted to assure compliance with permit conditions, including conditions requiring screening and fish passage.

Fish and Fish Habitat Protection

Actions associated with fish and fish habitat protection are designed to maintain and restore streamflow and improve fish passage and habitat.

Instream Water Rights

Instream water rights (ISWRs) were established by Oregon statute in 1987. The Instream Water Right law allows ODFW, DEQ, and OPRD to apply for ISWRs for the purpose of fish protection, minimizing the effects of pollution, or maintaining recreational uses (ORS 537.332). The law gives ISWRs the same status as other water rights. Once issued, ISWRs are held by OWRD as trustee for the people of the State of Oregon.

Within the Oregon Coastal coho ESU, over 3,700 miles of stream are protected by an ISWR, including 888 miles in the Umpqua monitoring unit and 909 in the Mid-South Coast. ISWRs establish flow levels to stay in a stream on a monthly or half-month basis and are usually set for a certain stream reach. ISWRs can be issued for up to the estimated average natural flow of the stream even if this flow is not currently present – or at even higher flows if there is a documented reason such as addressing a fish passage barrier. Since ISWRs are based on natural streamflow rather than existing or actual flows, they may appropriate all of the remaining water in a stream and result in limited opportunity for additional out-of-stream uses of water. Depending on the priority date of the instream water right, flows are either stabilized or may improve where ISWRs are in place. In many instances, the ISWR is junior relative to other rights on the stream. Under

Oregon law, an ISWR cannot affect a use of water with a senior priority date. Therefore, ISWRs do not guarantee minimum streamflows in stream reaches.

Since ISWRs are treated like other water rights, they are protected from injury. Water right holders must obtain approval from OWRD to change the type of water use, place of use, or point of diversion on a stream. Water rights statutes do not allow a water right change, or "transfer," if the proposed change results in injury to another existing water right, including ISWRs.

Evaluation and Issuance of New Water Rights

New appropriations of surface water or hydraulically connected ground water are evaluated using the Water Resources Commission's Water Allocation Policy under OAR Chapter 690, Division 410. The Water Allocation Policy sets standards for evaluating whether water is available for new appropriations from Oregon streams. Direct appropriations from streams are evaluated on an 80% exceedance basis. This means that before a new water right may be issued OWRD must conclude that water is available for appropriation 80% of the time. The amount of available water is calculated by subtracting consumptive uses, scenic waterway flows, and ISWRs from natural flow. Use of the 80% exceedance standard helps ensure that new appropriations will not further diminish water available to satisfy instream water rights and scenic waterway flows. As part of its Oregon Plan efforts, the Department updated its water availability model in 1997 to ensure that instream water right flows were included in the model.

Issuance of new surface water rights in the Oregon Coast coho ESU is further constrained by additional public interest standards to protect the habitat of sensitive, threatened, and endangered species (OAR Chapter 690, Division 033). These rules were adopted in 1996 and require that all new water right applications in the coastal basins must undergo a review by an interagency team for adverse impacts to fish habitat. The purpose of this review is to only grant applications that can be conditioned to protect the habitat of sensitive, threatened, or endangered fish species. As a result, all new permits in coastal areas require barrier-free fish passage where there are fish present, to the specifications requested by ODFW. All new permits in coastal areas also require fish screening where fish are present, to the specifications requested by ODFW.

Enclosed Livestock Water Delivery

Livestock owners with legal access to use of surface waters are exempt from the requirement to obtain a permit or certificate if the water is diverted to a trough or tank through an enclosed water delivery system and the delivery system is equipped with an automatic shutoff or flow mechanism or includes a means for returning water to the surface water source. Watermasters and their assistants provide technical support to livestock owners to facilitate implementation of enclosed livestock water delivery systems. When coupled with riparian fencing programs, this program is particularly effective in the restoration and protection of habitat.

Flow Restoration Programs

These agency actions promote flow restoration and conservation through a variety of voluntary programs.

In 1987, Oregon passed legislation (ORS 537.348) allowing any person to purchase, lease, or receive as a gift any existing water right or portion thereof for conversion to an instream water right. Water rights may be transferred to instream uses, either permanently by an instream transfer or an allocation of conserved water or temporarily by a lease agreement or temporary transfer. These transferred rights become ISWRs with the priority date of the original right. Instream transfers and leases provide a method for the State to incrementally increase streamflows. Transfers and leases also provide the opportunity to strategically address flow problems on specific stream reaches. Existing water rights can be acquired and converted to ISWRs on stream reaches that are in need of additional flows for salmon restoration. Watermasters and OWRD technical staff regularly provide assistance to those completing the application process for voluntary flow restoration programs.

OWRD works in partnership with interested landowners and other entities to facilitate protection and enhancement of instream flows by transferring and leasing senior, out-of-stream rights. One group working to restore flows is the Oregon Water Trust, a private nonprofit organization formed in 1993. The Trust takes a free-market approach to restoring and protecting critical stream habitat for fish and wildlife, and works with water right holders who are willing to sell, lease, or gift all or a portion of their water right for instream flows. OWRD Watermasters and staff provide significant technical assistance to these types of conservation groups and to landowners working on lease, transfer, and conserved water applications.

Since the onset of the Oregon Plan in 1997, 66 voluntary streamflow restoration projects have occurred in the Oregon Coastal Coho ESU through 2004. These projects have occurred in the Mid-South Coast and Umpqua management units and have totaled 25 cubic feet per second (CFS) of water instream, with 16 CFS returned to instream uses in the Umpqua monitoring unit. Additional research monitoring and evaluation will be necessary to determine specific improvements to coho populations brought by incremental flow restoration. Regardless of this uncertainty, OWRD continues to work with landowners and other partners to seek these incremental flow improvements in areas where they are most needed for fish. Participation in voluntary flow restoration programs continues to increase statewide.

<u>Voluntary Instream Leases</u>

Oregon's Instream Leasing program provides a voluntary means to aid the restoration and protection of streamflows. This arrangement provides benefits to both water right holders and to instream values by providing water users with options that protect their water rights while leasing water for instream benefits. Water users who are at risk of forfeiture of their water rights due to non-use may find instream leases to be a good management option.

OWRD has streamlined the instream leasing process, so that most coastal leases are processed in one month. The length of term of an instream use lease cannot exceed five years or, in the case of irrigation rights, five irrigation seasons. However, leases may be renewed an unlimited number of times. Additionally, the Oregon Watershed Enhancement Board has funded instream leases on the coast during drought years. These leases of older consumptive use rights for instream use provide greater certainty that water will be instream to meet fish needs.

Voluntary Water Right Transfers

Water rights are appurtenant to the land and generally are conveyed with the land when it is sold from one landowner to another. A water right may only be used for the purposes authorized under the right at the location identified in the right unless a change in the use is authorized by OWRD through a water right transfer. A transfer may approve changes in the place of use, point of diversion, or character of use of a water right. In reviewing applications to transfer water rights, OWRD is responsible for ensuring that other water right holders will not be injured by the change. There is growing interest in the state in the use of the water right transfer process as a tool to secure water to support streamflow restoration.

Allocations of Conserved Water

The Allocation of Conserved Water program is a voluntary activity that provides benefits to both water right holders and instream values. The law allows a water user who conserves water to use a portion of the conserved water on additional lands, lease or sell the water, or dedicate the water to instream use. The primary intent of the law is to promote the efficient use of water to satisfy current and future needs--both out-of-stream and instream. The law provides a certainty that after mitigating the effects on any other water rights, a minimum of 25% of the conserved water is allocated to the state for an instream water right. The applicant receives 75 % of the conserved water, unless the applicant proposes a higher allocation to the state or more than 25% of the project costs come from federal or state non-reimbursable sources. In many cases, 100 % of the conserved water is permanently protected instream. The conserved water has either the same priority date as the originating water right, or is one-minute junior to the originating right.

Conservation Reserve Enhancement Program

Water rights are generally subject to forfeiture after five years of non-use. However, by statute, water rights appurtenant to lands enrolled in the Conservation Reserve Enhancement Program (CREP) are not subject to forfeiture due to non-use during the time these lands are enrolled in the program. While water rights appurtenant to lands enrolled in CREP are not subject to forfeiture during the enrollment period, landowners are encouraged to lease or temporarily transfer their water rights for instream use during CREP enrollment. A water right that is leased or temporarily transferred instream is considered to be beneficially used during the term of the lease. OWRD will continue to work cooperatively with other agencies to promote this program.

Agricultural Water Management and Conservation Planning Program

This largely voluntary program helps irrigation districts and other agricultural water suppliers examine their supply, demand, future needs, and water conservation tools. Analysis and application of appropriate conservation tools may lead to an increase in available water supplies. Conservation options include promotion of energy audits, conversion to a metered pressurized system, piping or lining of canals, increased flexibility of deliveries and modifications of distribution facilities. The goal of this program includes promoting effective and responsible water management and conservation within irrigation districts. OWRD is committed to reviewing each Water Management and Conservation Plan within 90 days of receipt.

Municipal Water Management and Conservation Planning Program

Within the Coastal Coho ESU, water development was identified through the stakeholder process as important to ESU recovery efforts. The Municipal Water Management and Conservation Planning program provides a process for municipal water suppliers to develop plans to meet future water needs. Many municipal water suppliers are required to prepare plans under water right permit conditions. In addition, with the revision of the permit extension rules in fall 2002, communities seeking long-term permit extensions are required to prepare plans. These plans quantify the communities' needs for increased diversions of water under the permits as their demands grow. The plan also provides a description of the water system, identifies the sources of water used by the community, and explains how the water supplier will manage and conserve supplies to meet future needs. Preparation of a plan is intended to represent a pro-active evaluation of the management and conservation measures that suppliers can undertake. The planning program requires municipal water suppliers to consider water that can be saved through conservation practices as a source of supply to meet growing demands if the saved water is less expensive that developing new supplies. As such, a plan represents an integrated resource management approach to securing a community's long-term water supply.

Public Outreach and Education

Watermasters and field services staff provide ongoing public outreach and education to water users and conservation interests. In addition, Watermasters provide technical support and information to watershed councils and others involved in streamflow and habitat restoration. OWRD is committed to continuing this effort within the Coastal Coho ESU.

OWRD recently partnered with the League of Oregon Cities and other groups to complete a guidebook to assist municipalities with the preparation of Municipal Water Management Plans. Release of the guidebook has resulted in improvements in the quality of submitted plans and a decrease in time required for their review and approval.

OWRD is also committed to maintaining and providing accurate streamflow data to researchers and interested parties, and to make data supportive of watershed and fish restoration activities readily accessible via the OWRD website within its existing capabilities.

A significant amount of data is now available through the OWRD website. Annual reports of regulatory activity by stream reach and Watermaster are available following the close of each

water year (October 1 through September 30). Key performance measures are also available, including high priority flow restoration transactions and ratio of streams regulated for instream uses compared to all streams regulated. Additional data includes the Water Availability Reporting System (WARS). This database provides water available for new out-of-stream consumptive uses from a given point. The Oregon Water Resources Web Mapping Program allows interactive mapping and querying of data associated with the OWRD water rights information system (WRIS), water availability basins (WABs), points of diversion and use, and ground water limited areas, for example.

Improvement of Resource Understanding

OWRD continues to work to improve our understanding of the State's surface and ground water resources. In addition to surface water measurements and analysis, ground water investigations are key to assessing stream-aquifer interactions, aquifer hydraulic properties and aquifer recharge and discharge relationships. General funding for these investigations has been reduced over the last several biennia and was eliminated in 2005-2007. However, OWRD continues to look for ways and partnerships to complete these important investigations.

New Concepts

OWRD has identified a number of new statewide concepts which may also support the Coho Conservation Plan. The majority of these concepts are dependent on securing additional funding through grants or policy option packages (POP) proposed in the 2007-2009 Agency Request Budget. These concepts are described below as they relate to existing agency programs and actions.

Water Distribution and Regulation

OWRD is proposing a 2007-2009 Policy Option Package (POP 401, 1 FTE) to restore the Water Measurement and Reporting Specialist, eliminated in the 2005-2007 biennium. Restoration of this position will improve statewide instream water rights "water use" reporting. In turn, this will help inform Coastal Coho research monitoring and evaluation. The Department is also proposing a 2007-2009 Budget Concept (POP 304) for $100,000 in statewide funding for flow monitoring and restoration equipment. In addition to this POP, the Department is continuing to seek alternate funding sources for monitoring instream flows and to install and maintain continuous monitoring gages. OWRD is also interested in further partnerships with OWEB to secure funding for watershed groups to provide volunteer streamflow monitoring within population management units for which flow is a limiting factor. OWRD is also proposing a 2007-2009 POP (303) to add one FTE in each of its five regions statewide. These Field Service Technicians will help to counter declining funding for Assistant Watermasters at the county level.

Flow Restoration Programs

OWRD and OWEB are developing a Memorandum of Understanding (MOU) to provide funding to cover the application fees for enrolled CREP participants who wish to temporarily lease or transfer their water rights to instream uses.

Public Outreach and Education
OWRD continues to investigate potential enhancements to our reporting capabilities and accessibility of data to assist in outreach, education, monitoring, and adaptive management efforts under the Conservation Plan. In particular, OWRD is going to assess opportunities to report regulation activities and other relevant data at the ESU or other scale in support of adaptive management.

New in June 2006, our on-line Interactive Mapper was updated to include Instream Water Rights mapping capability similar to mapping of other water rights. OWRD is also seeking funding from the National Fish and Wildlife Foundation's Columbia Transactions Program to assist in the migration of instream leasing, transfer and allocations of conserved water data to our on-line water right information system (Funding Awarded September 2006). Migrating this data to the OWRD website would provide information critical to the evaluation of current conservation measures and adaptive management.

OWRD is currently developing a guidebook to assist irrigation districts and other agricultural water suppliers to prepare Water Management and Conservation Plans that meet Oregon and Federal requirements. This guidebook will help agricultural water suppliers describe their water systems and needs, identify their sources of water, and identify ways to manage and conserve those supplies to meet present and future needs. A series of workshops will be conducted to introduce the guidebook and describe how it can aid them in meeting water supply and regulatory demands (Bureau of Reclamation Funding Awarded July 2006).

Improvement of Resource Understanding
OWRD is proposing a number of 2007-2009 budget concepts that would advance our understanding of our water resources and the demands on them. One such concept (POP 403) would fund the Oregon Water Supply and Conservation Initiative, a comprehensive overview of future supply needs. This POP would assess existing and future water needs, including instream water needs; inventory potential storage sites; and analyze potential conservation opportunities. The initiative also proposes match funding for community-based and regional water supply planning.

Research Monitoring & Evaluation
The Water Resources Department will continue to incorporate adaptive management principles through the development of annual action plans for high priority watersheds.
To facilitate research monitoring and evaluation of coastal coho recovery efforts, OWRD will assess opportunities to report regulation activities and other relevant data at the ESU or other scale in support of adaptive management under the Conservation Plan.

Oregon Department of Environmental Quality (DEQ)

DEQ Actions

The DEQ's role under the Oregon Plan for Salmon and Watersheds involves both protection and restoration of water quality. To do this DEQ:

- Coordinates with other agencies to monitor water quality throughout the state and conduct intensive monitoring studies.
- Establishes water quality standards that are protective of salmonids.
- Regulates point source discharges from industries and sewage treatment plants, and storm water runoff from urban areas and construction sites, by establishing pollutant limits in wastewater permits or requiring stormwater management plans to ensure water quality standards are met. This includes permitting, monitoring, compliance assistance, technical assistance, and enforcement when necessary.
- Coordinates comprehensive nonpoint source pollution prevention programs under federal Clean Water Act.
- Develops Total Maximum Daily Loads (TMDLs) to bring water bodies into compliance with state standards. Oversee and monitor TMDL implementation activities to ensure water quality improvements are achieved.
- Provides technical and financial assistance to watershed councils, municipalities, industries, government agencies and others in support of water quality improvement efforts.

DEQ's strong commitment to this conservation effort is demonstrated through its "Strategic Directions" – a strategic plan DEQ established in 2002 to sharpen the agency's focus on the priority actions needed to protect public health and the environment. Strategic Directions identify the four top priorities for the agency, and "Protect Oregon's Water" is one of those priorities. The description of this priority includes the following statement:

> *DEQ integrates water quality data, pollution limits, permitting and groundwater protection by focusing its efforts geographically in river basins as part of the Oregon Plan for Salmon and Watersheds*.

Strategic Directions includes Key Actions and Performance Measures to track progress. On a regular basis, DEQ assesses the following measures to determine whether Oregon's water quality is improving:

a. Percent of monitored streams with increasing and decreasing trends in water quality
b. Percent of monitored stream sites with water quality in good to excellent condition
c. Percent of wastewater permits issued within the target time period or less

TMDL's

Waterbodies that are identified through the 303(d) process described above as being impaired are addressed through the development and implementation of a Total Maximum Daily Load (TMDL). A TMDL is a determination of the total amount of a pollutant the waterbody can

assimilate and still meet water quality standards. The TMDL allocates the pollutant load among point sources, nonpoint sources, background levels, reserve capacity and a margin of safety. This information is used to guide TMDL implementation efforts.

DEQ maintains a schedule for completing TMDLs throughout the state and for reissuing NPDES permits to incorporate updated permit conditions. In most instances, DEQ will reissue NPDES permits for an entire basin at one time. Here is the schedule for completing TMDLs and reissuing permits for basins within the ESU.

Basin or Subbasin	**TMDL**	**Reissue Permits**
N. Coast (inc. Nehalem & Necanicum subbasins)	Done	2006
Nestucca	Done	2006
Tillamook	Done	2006
Umpqua	2005	2005
Alsea	2008	2005
Siletz-Yaquina	2008	2005
Siuslaw	2008	2005
Sixes	2006	2007
Coos	2006	2006
Coquille	2006	2006

TMDLs include a Water Quality Management Plan (WQMP) that identifies the management strategies necessary to achieve pollution reduction goals. WQMPs also identify the sector and source-specific TMDL Implementation Plans required and those responsible for developing and revising those plans. Pollution controls on state, private and some federal lands forestlands are addressed under the Oregon Forest Practices Act or alternatively through voluntary approaches, especially when dealing with legacy issues. Pollution controls related to agricultural activities are addressed by the Oregon Department of Agriculture under the Senate Bill 1010 program. Federal land managers (BLM and USFS) develop and implement Water Quality Restoration Plans to address the TMDL as described in a Memorandum of Agreement or Memorandum of Understanding between the agency and DEQ.

To date, four TMDLs have been developed within the Coastal Coho ESU. These are the Nestucca, Tillamook, Nehalem, and North Coast Basins. The major water quality problems identified were stream temperature, bacteria, and sediment.

Each TMDL includes a Water Quality Management Plan (WQMP) that identifies specific actions needed to abate the aforementioned water quality problems and those responsible for implementing them. Highlights of TMDL implementation efforts in this area include:

- DEQ works in partnership with the Oregon Department of Agriculture (ODA), local Soil & Water Conservation Districts (SWCDs), watershed councils, Tillamook Estuaries Partnership (TEP), Tillamook County Creamery Association (TCCA), the Oregon Watershed Enhancement Board (OWEB) and others on an aggressive riparian restoration program that includes livestock exclusion, off-channel watering facilities, riparian planting, and barb placement to narrow and deepen river channels. As of November 2004, the effort has resulted in approximately 200 miles of riparian fencing, 250 miles of riparian plantings, and 6 channel barbs to narrow river channels.

- DEQ works in partnership with watershed councils, TEP, Tillamook County SWCD and others to restore riparian areas on non-agricultural rural residential lands. As of November 2004, approximately 50 miles of streams and rivers have had riparian planting treatments.

- DEQ works with watershed councils, the Oregon Department of Forestry (ODF), US Forest Service (USFS), Bureau of Land Management (BLM), private timber companies, and small woodlot owners to develop, implement and/or monitor water quality protection projects on forest lands.

- DEQ has worked together with SWCDs, watershed councils and private landowners to replace 20 culverts and 10 tidegates. Through the TEP, the partnership also successfully negotiated and purchased 350 acres of wetlands in the lower Wilson/Kilchis Rivers area. The wetland will, when restored, filter bacteria, sediment, and nutrients now entering Tillamook Bay from agriculture and urban areas.

- DEQ has joined with ODA, TEP, TCCA, Oregon State University Extension Service and others to establish a two year buffer strip effectiveness study to determine the most effective buffer width and type needed to abate runoff from agriculture lands.

- DEQ coordinated efforts by the TEP and Tillamook County to inform and educate private landowners about on-site septic system maintenance and replacement. Efforts to date have included an information mailing to all on-site septic users and a voluntary program to inspect systems that may be failing. To date, approximately 8% of the systems have been inspected.

- North Coast TMDLs have identified urban stormwater runoff as a major area of concern. DEQ worked in conjunction with the Oregon Economic and Community Development Department (OECDD) to inform local jurisdictions about stormwater concerns and form partnerships to address the problems. As of November 2004 the cities of Bay City and Tillamook have completed Stormwater Master Plans and the City of Wheeler has begun a study. It is anticipated that all cities and municipalities in the North Coast and Lower Columbia basins will have completed these plans within five years.

- DEQ worked with and provided grant funds to the Port of Garibaldi to contain all of their surface runoff from the main port area, including a small hardwood processing plant. DEQ is

currently working with local governments, the OSU Coastal Rainstorming Project and other local partners to fund and implement BMPs necessary to abate the problems identified.

Implementation and effectiveness monitoring will also occur at a much finer level through TMDL Implementation efforts. In the TMDL Implementation Guidelines currently under development, DEQ is proposing to require Designated Management Agencies in basins where TMDLs have been completed to report annually on TMDL implementation efforts, and to require certain DMAs to do effectiveness monitoring as well. In certain basins, groups of stakeholders are working together to design and implement a more comprehensive effectiveness monitoring strategy. DEQ is just beginning to implement these requirements and addressing issues related to oversight and data management.

Monitoring

DEQ revised its statewide water quality monitoring strategy in 2005. There were several drivers prompting the need to undertake this revision, including (1) the budget cuts and resulting inability to continue to implement the statewide monitoring plan in the same manner as before, (2) EPA's expectations for states to have a comprehensive plan addressing specific requirements, (3) DEQ's shift to a watershed approach and a need to align its monitoring strategy to support that approach, and (4) the Oregon Plan Monitoring Team's effort to expand monitoring beyond the Coastal Coho, SONCC and Willamette ESUs to cover the whole state. The goal of the revision is to best use the limited monitoring resources to collect the information necessary to answer the key questions about water quality and watershed health throughout the state. All of these activities, i.e., the coho assessment, the development of the statewide monitoring plan, and the development and application of the analytical tools, directly support the Oregon Plan's adaptive management effort in the ESU as well as throughout the state. While DEQ has made positive strides in assessing water quality conditions within the Coastal Coho ESU and has developed assessment tools to improve our understanding of limiting factors, the funding for monitoring within the Coastal Coho ESU has been reduced to meet agency budget reduction targets. Therefore, current monitoring resources are being targeted on a smaller range of questions (e.g. urban stream conditions), and data to assess overall ESU water quality conditions will be limited.

Part of DEQ's approach of targeting our monitoring efforts on more limited questions to deal with decreased monitoring resources has been to selectively expand existing monitoring efforts in the Coastal Coho ESU while discontinuing other DEQ monitoring efforts in the ESU. Three additional monitoring efforts provide more data while minimizing monitoring costs to acquire the data. This monitoring work is funded through short-term OWEB grants. It is important to realize that useful information will not be produced from these new monitoring partnerships unless funding for this work is continued for at least 5 to 10 years. This is longer than the time period of the existing grants. Highlights of the expansion of existing monitoring effort include:

- DEQ has added three new ambient water quality monitoring stations in the Coastal Coho ESU. DEQ has 31 existing long-term water quality trending stations in the Oregon Coast

Coho ESU that are part of a state-wide network of approximately 150 stations. These stations are monitored six times per year for basic water quality parameters. Data from this network is analyzed in 10 year averages for water quality status and trending. The existing network did not have stations in all 21 coho populations in the Coastal Coho ESU. The three additional stations will provide better water quality trending for coho populations.

- DEQ has partnered with ODFW to collect benthic macroinvertebrate samples at approximately 160 sites surveyed by ODFW field crews for juvenile coho salmon. Samples are collected by ODFW field crews. DEQ supplies field crew training, sampling equipment, sample processing, data analysis, and data management. DEQ will use this data to estimate water temperature (seasonal maximum seven-day moving average), fine sediment, and overall stream water quality and ecological integrity. It will take at least 5 years of monitoring to produce useful information at the coho population scale.

- DEQ has partnered with ODFW to deploy and retrieve continuous temperature data loggers at approximately 20 randomly selected sites surveyed by ODFW for habitat and juvenile coho salmon. The temperature loggers are deployed, retrieved and audited by ODFW field crews conducting habitat and juvenile coho salmon surveys. DEQ provides field crew training, temperature loggers and related auditing equipment, pre- and post-deployment accuracy checks, data downloading, data storage and summary statistics.

Volunteer organizations working within approved quality assurance project plans and collecting water quality data using equipment and supplies purchased by the DEQ's volunteer monitoring program have agreed to submit to DEQ the data they generate. If the data is of the appropriate quality, DEQ is able to use this data for developing the 303(d) list (a biennial list of waterbodies that do not meet water quality standards) and other purposes. In the Coastal ESU, DEQ has helped 13 of the 18 volunteer groups develop a monitoring plan. Twelve of these groups have submitted data to DEQ and of these, 10 groups have data of appropriate quality to be included in DEQ's long term database (LASAR).

Technical Support

Since 1997, DEQ has employed a Volunteer Monitoring Specialist to provide technical assistance and equipment to watershed councils and other volunteer groups to support their water quality monitoring efforts. DEQ's Volunteer Monitoring Specialist assists these organizations in developing effective monitoring strategies, provides training in monitoring procedures and is responsible for collecting and reviewing data generated by volunteers with state purchased equipment. This position continues to perform these functions and has developed very good relationships with watershed councils around the state.

Oregon Department of State Lands (DSL)

The mission of the Department of State Lands (DSL) is to ensure a legacy for Oregonians and their public schools through sound stewardship of lands, wetlands, waterways, unclaimed property, estates and the Common School Fund. In accordance with this mission, DSL's Wetlands and Waterways Conservation Division administers the Removal-Fill and Wetland Conservation Programs. DSL also provides financial and administrative support for the South Slough Research Reserve (SSNERR).

Removal-Fill Program

DSL protects and conserves waterways and wetlands through administration of Oregon's Removal-Fill Law, which was enacted in 1967, and the Scenic Waterways Law enacted in 1970. The Removal-Fill Law requires most activities that involve removal or filling of greater than 50 cubic yards of material in waters of the state to have a permit from DSL. Waters of the state include rivers, intermittent and perennial streams, lakes, ponds, wetlands, estuaries and tidal bays (to the elevation of the highest measured tide) and the Pacific Ocean (from the line of extreme low tide seaward to the limits of the territorial sea). The volume threshold of 50 cubic yards does not apply in designated Essential Indigenous Anadromous Salmonid Habitat Areas (ESH) or in State Scenic Waterways.

The Removal-Fill Program purpose is to:

- Protect, conserve and make best use of water resources
- Protect public navigation, fishery and recreational uses
- Ensure that activities of one landowner don't adversely affect another landowner
- Minimize flooding, improve water quality and provide fish and wildlife habitat

The permit application review process involves coordination with the applicant, adjacent landowners, natural resource agencies, and local governments. All removal-fill permits issued by DSL include general and project-specific conditions that are intended to ensure the protection of the state's water resources and prevent harm to fisheries. Permit conditions include water quality standards established by DEQ and in-water timing restrictions established by ODFW.

For certain types of activities, DSL issues a streamlined type of permit called a General Authorization (GA). GAs are issued for activities that are substantially similar in nature and would cause only minimal individual and cumulative environmental affects, and would not result in long-term harm to waters of the state.

Currently, the following ten GAs are in effect:

1. Fish Habitat Enhancement
2. Wetland Restoration and Enhancement
3. Streambank Stabilization
4. Certain Transportation-Related Structures
5. Removing and Disposing of Sediment Behind Tidegates for Channel Maintenance

6. Piling Placement or Removal Within Waters of the State
7. Minor Impacts to Freshwater Wetlands located within Urban Growth Boundaries or Urban Unincorporated Communities
8. Minimal Disturbance Activities (<2 cubic yards) within Essential Indigenous Anadromous Salmonid Habitat
9. Recreational and Small Scale Placer Mining within Essential Indigenous Anadromous Salmonid Habitat (Essential Salmon Habitat)
10. Oregon Department of Transportation Bridge Replacement and Repair Projects

Compensatory Wetland Mitigation and Compensatory Mitigation for Non-Wetland Impacts

DSL requires compensatory wetland mitigation (CWM) for impacts to freshwater and estuarine wetlands. The objective of CWM is to replace lost functions. Applicants applying to DSL to construct projects in wetlands must submit an assessment of wetland functional attributes for both the project site and the mitigation site. CWM generally includes on-site and off-site wetland restoration, creation, and/or enhancement. In some cases, DSL may also approve the use of wetland mitigation banks, payment-to-provide (PTP) and/or conservation in lieu. DSL may also require compensatory mitigation for impacts to non-wetland waters of the state.

Compliance Monitoring and Enforcement Programs

DSL administers compliance monitoring and enforcement programs to monitor permitted activities and to ensure that all regulated activities conducted in jurisdictional waters have been authorized by DSL. DSL's compliance monitoring efforts are designed to measure whether permitted projects are carried out in compliance with permit conditions. DSL seeks to enjoin unauthorized projects from proceeding. DSL may require remediation of any damage to jurisdictional resources and/or may impose civil penalties against violators. DSL, with U.S. Environmental Protection Agency (EPA) and OWEB grant assistance, has recently added a full-time position dedicated to compliance monitoring and salmon recovery planning. In the summer of 2007, DSL intends to implement an intensive compliance monitoring project in order to assemble a statistically valid data set that can be used to evaluate the effectiveness of the removal-fill permit program and the permit conditions.

Wetland Conservation Program

DSL's Wetland Conservation Program promotes the protection and management of Oregon's wetland resources. The wetland conservation program was created in 1989 and includes the following components:

- The Statewide Wetlands Inventory (SWI) is based upon the National Wetlands Inventory (NWI) developed by the U.S. Fish and Wildlife Service and is augmented in urban areas

by Local Wetlands Inventories (LWI) that provide much more detailed and complete inventory information suitable for both planning and regulatory purposes.

- Through the Wetland Land Use Notification Program, all counties and cities are required by law to notify DSL regarding certain development activities proposed in areas mapped as wetland on either the NWI or, if completed, the LWI.

- The Wetlands Public Information Program provides information to various groups on wetland identification, wetland functions, wetland regulations, and wetland planning through publications, workshops, and presentations. As part of this program, DSL has overseen the development of the Tidal Hydrogeomorphic (HGM) Guidebook. This technical resource should help in the objective functional assessment of tidal marshes along the coast, which will be useful for restoration and mitigation planning work within the ESU.

- Wetlands Program staff assists with Removal-Fill Program Development, including wetland determinations.

- DSL's Mitigation Bank Program assists with the establishment of mitigation banks. A mitigation banks is a large wetland project constructed by a public or private party to compensate for future wetland impacts.

- Under the Wetlands Mitigation Bank Revolving Fund Account Program, DSL collects and disperses funds for smaller wetland restoration, enhancement, or creation projects.

- A new Voluntary Restoration Initiative (staffed by two new EPA grant-funded positions) designed to implement the following objectives:
    a) Accurately track and report the quality and quantity of voluntary wetland restoration projects currently being implemented throughout the state;
    b) Provide technical assistance on restoration site assessment, permitting and monitoring;
    c) Facilitate the restoration of historic wetland types with an emphasis on rare and at-risk habitats; and
    d) Complete a new Oregon Rapid Wetland Assessment Protocol to support consistent assessment of wetland functions throughout the state.

Statewide Wetland Goals

Oregon has a no net loss of wetland goal in statute (ORS 196.672 (4) & (5)) that requires the state to "maintain a stable resource base of wetlands" and to "encourage wetland restoration and creation…". A second statutory requirement is found in the Oregon Benchmarks: BM 77 sets a no net loss goal for freshwater wetlands and a net gain goal (250 acres/year) for tidal wetlands.

Wetland Trends in the ESU

From July 1, 2000 to June 30, 2004, DSL authorized 105 acres of wetland fill within Clatsop, Coos, Douglas, Lane, Lincoln and Tillamook Counties. During this same time period, DSL required approximately 161 acres of various types of on-site and off-site CWM to offset these permitted wetland losses. However, a recently completed analysis of DSL's estuarine mitigation efforts (Buckley 2006) revealed a permitted net loss of 3.34 acres of estuarine habitat during the period between 1989 and 2005. The highest permitted losses appear to have been in estuarine intertidal aquatic beds, which are recognized as essential salmon habitat. DSL is in the process of working with a consultant on a change analysis of wetland trends on the coast based on interpretation of historic and recent aerial photographs. Results are not yet available, but it is possible that the analysis will reveal net losses for some wetland types important to coho.

Conservation organizations (watershed councils, land trusts, SWCDs, etc.) and government agencies have been actively working to protect and restore both salt and freshwater marshes within the ESU area. This effort represents a significant investment of time and money, but an accurate assessment of the number of acres and the functional values being restored is not available at the present time. To address this problem, DSL has hired two staff members who are currently working to improve the tracking and reporting of voluntary restoration gains.

It should be noted that much wetland conservation work on the Oregon Coast has focused on acquiring and protecting high quality wetlands, with a slightly smaller emphasis on restoration. According to the Oregon Plan for Watersheds 2003-2005 Biennial Report, only 1.2 million dollars was spent on wetland restoration within the ESU during the period between 1997 and 2003. These numbers may reflect incomplete reporting and are therefore likely to be conservative.

There are currently no mitigation banks offering credits in the ESU. In FY 2002-2003, DSL funded one project in the ESU with PTP funds from the Wetland Mitigation Bank Revolving Fund. DSL disbursed $45,500 to the North Coast Watershed Association for a Coho habitat enhancement in Johnson Slough, a tributary to the Lewis and Clark River. The project will remove and replace a tidegate; opening up approximately 7 miles of spawning habitat and 1.5 miles of estuarine rearing habitat.

South Slough Estuarine Research Reserve

DSL provides financial and administrative support for the South Slough Research Reserve (SSNERR), located in Charleston, Oregon. As the founding member of the existing network of 26 National Estuarine Research Reserves, SSNERR draws its principal financial support from a long-term partnership between the state of Oregon and the federal government's National Oceanic and Atmospheric Administration. Through this partnership agreement, SSNERR receives an annual operations award (interagency co-operative agreement) that is a mixture of 70% federal and 30% state dollars. SSNERR's mission is to improve the understanding and

stewardship of Pacific Northwest estuaries and coastal watersheds. In many ways, the reserve serves as the coastal restoration research and monitoring arm of DSL.

The reserve has had a very strong research emphasis on how coho utilize restored estuarine marshes and large woody debris complexes. This work has provided some groundbreaking insights into the importance of estuarine habitat for coastal coho, including evidence that coho that spend more time rearing in the estuary can have higher growth rates than those fish rearing further up in the watershed. The reserve is continuing studies of coho, and is currently documenting how large woody debris affects coho behavior, prey availability, and marsh channel morphology.

In addition to research directly focusing on coho, SSNERR implements a diverse array of other research, stewardship, and education activities aimed at improving coastal management within the Northwest Coast ecoregion, the following are examples of SSNERR activities of particular relevance to the conservation of the Oregon Coast Coho:

- Experimental restoration of 70 acres of historic salt marsh habitat;
- Long term water quality monitoring of the South Slough estuary (temperature, pH, salinity, turbidity, etc.) including near real-time data posting to the internet;
- Hosting educational forums on coastal stream gravel extraction, tidegates, and estuarine ecology; and
- Monitoring and mapping of eelgrass habitat within South Slough and the Coos Bay estuary.

DSL Actions Addressing Limiting Factors or Threats to Oregon Coast Coho

The 50 cubic yard exemption to the Removal-Fill Law does not apply in ESH-designated streams. Oregon Coast Coho streams have been designated ESH. Unless exempt, projects that involve work in waters of the state in the ESU will require an authorization from DSL. As part of the permit review process, natural resource agencies including ODFW have an opportunity to review and comment on the project design and/or to request that certain project-specific conditions be included in the authorization. These project-specific conditions, as well as the standard conditions, are designed to protect and conserve water resources. All permits issued by DSL include water quality permit conditions that require that sediment and erosion control measures are implemented and that turbidity monitoring is conducted in order to meet turbidity standards. These water quality conditions effectively address the key limiting factor of water quality, which has been identified as a primary limiting factor for many coho populations.

DSL conducts compliance monitoring and enforcement to ensure compliance with DSL permit conditions. In recognition of the importance of compliance monitoring, DSL has recently added a full-time position dedicated to compliance monitoring and salmon recovery planning. As part of a pilot program, this staff person will cross reference the Coho Winter High Intrinsic Potential

Habitat maps with DSL's removal-fill permit data for those areas. Depending on the results of the pilot program, DSL may consider program changes to more effectively protect those areas. All authorized permanent impacts to wetlands, and most impacts to waterways, are required to be offset with compensatory mitigation. In most cases, the result of compensatory mitigation is a net benefit to water resources.

In the past few years, DSL has undertaken many efforts to streamline the Removal-Fill Permit Process. A current management priority at DSL is to further streamline the process, specifically for fish habitat enhancement and wetland restoration projects. A streamlined permit process for restoration projects will help to address the key limiting factor of stream complexity, which has been identified as a primary limiting factor for many coho populations.

DSL's Wetland Conservation Program seeks to maintain a stable base of wetlands and to encourage wetland restoration and creation, through programs including the wetland land-use notification program and public outreach. DSL has added two new positions for a new Voluntary Restoration Initiative to provide technical assistance for wetland restoration projects. As part of this Voluntary Restoration Initiative, DSL staff will participate in and provide technical support for the Oregon Plan habitat strategy. DSL staff will also be available to provide education and public outreach on wetland restoration. In addition, DSL may be able to provide funding for wetland restoration projects in the ESU through the Wetland Mitigation Bank Revolving Fund Account Program.

The research being conducted at SSNERR on how coho utilize restored estuarine marshes and large woody debris complexes is a valuable asset in increasing our understanding of the ecology of the species, and how restoration can aid in recovery by addressing the key limiting factor of stream complexity. SSNERR staff is also conducting long-term water quality monitoring of the South Slough estuary. This water quality monitoring will be a key metric for determining whether the key limiting factor of water quality is being addressed effectively.

Oregon Department of Land Conservation and Development (DLCD)

DLCD Actions

The Department of Land Conservation and Development will take several actions to address limiting factors or threats to Oregon coast coho. These include work with coastal local governments to review and update comprehensive land use plans and ordinances to incorporate policies and standards aimed at reducing impacts to salmon habitat from the effects of development. The Department will work with local governments and other entities such as Oregon Sea Grant to promote salmon-friendly development practices by extending current work with local governments to adopt or improve stormwater management standards, identify and protect wetlands and riparian areas, and promote education of local staff, appointed and elected officials as to voluntary techniques or practices.

The Department, through the Coastal Management Program, will provide financial and technical assistance to local governments for a variety of improvements that result in improvements in protecting salmon habitat. These improvements include developing or improving GIS capacity to support local land use decisions, to conduct wetland and other inventories and assessments, and to carry out special planning projects. The Coastal Management Program will also make available detailed aerial photo images of coastal estuaries via the Oregon Coastal Atlas http://www.coastalatlas.net/learn/settings/estuary/index.asp.

The Department, through the Coastal Management Program, will review and approve federal permits and actions that can affect coastal salmon habitat. The Department also provides a key coordination role to ensure that state and federal agency permits and approvals comply with the enforceable policies of the state's Coastal Management Plan, including protection of estuarine habitats.

Oregon Department of Geology and Mineral Industries (DOGAMI)

DOGAMI Contribution to Coho Recovery Plan

Important Contributions

DOGAMI's main contribution to the CRP is to maintain the current strength of the regulatory compliance to avoid off-site impacts during reclamation and insure reclamation of mine sites meets the secondary beneficial use established for the site.

Address Limiting Factors

None of the limiting factors identified with the regulation of mining or energy minerals in Oregon. Sediment is the main potential impact associated with the regulation of mining and energy minerals. Sediment was not identified as a primary limiting factor for any population. DOAMI has and will continue to explore floodplain mining activity for opportunities for habitat enhancement benefiting the at-risk populations.

Oregon Department of Transportation (ODOT)

ODOT Actions

The Oregon Department of Transportation (ODOT) is responsible for providing and maintaining the safe and efficient state and federal transportation system in Oregon. In addition, ODOT is committed to the protection and conservation of all native migratory fish species in the state; and the recovery of those listed as threatened or endangered under state and federal statutes.

The role of ODOT in the conservation of natural resources, including salmonid fish species, is addressed in the ODOT Mission and Values Statement: *To provide a safe, efficient transportation system that supports economic opportunity and livable communities for Oregonians; and we provide services and facilities in ways that protect and enhance the environment.*

This conservation concern is also defined in the Oregon Highway Plan: *It is the policy of the State of Oregon that the design, construction, operation and maintenance of the state highway system should maintain or improve the natural and built environment including… fish passage and habitat… sensitive habitats (e.g. wetlands, designated critical habitat) vegetation, and water resources where affected by ODOT facilities.*

ODOT's Highway Division Project Delivery Leadership Team Environmental Guidance Operational Notice (PD-04) further defines ODOT's Environmental Guidance Statement:

ODOT conducts its mission consistent with sound environmental stewardship and best management practices. We strive to meet the spirit and intent of environmental laws. We comply with regulations, and we will enhance the environment, balancing such enhancement with the scope and purpose of our ODOT mission.

ODOT is a participant in Oregon Coast Coho recovery domain planning efforts. The following items summarize actions that ODOT implements to conserve and enhance environmental limiting factors for coastal coho salmon as well as other species.

1. ODOT implementation of the "Routine Roadside Maintenance Manual, Water Quality and Habitat Guide" (ESA 4(d) Limit 10(i); *revised 2004 with NMFS & ODFW*).

Routine road maintenance is a valuable conservation measure for protected salmon, steelhead and other fish. Ensuring that the transportation system is stable and operating efficiently through routine and regular maintenance minimizes and avoids the potential for mass failure and subsequent impact to receiving waterbodies. The ODOT Routine Road Maintenance Program depicted in the ODOT Routine Road Maintenance Water Quality and Habitat Guide, July 1999

and revised in 2004 (Guide) recognized by the National Oceanic and Atmospheric Administration, Fisheries Division (NOAA Fisheries) in its federal 4(d) rules provides direction, best management practices (BMPs) and technical guidance for routine road maintenance activities.

This statewide program specifically addresses limiting factors for OC coho through BMP's for the range of routine roadside maintenance activities (e.g. culvert cleaning, emergency responses, stormwater management, vegetation management, winter maintenance, bridge and culvert repairs, fish habitat and passage improvements).

2. Statewide Fish Passage Program, $4.2 million/year to restore/improve fish passage.

ODOT administers these annual funds to address the recovery of threatened and endangered fish species by removing fish passage barriers, where appropriate, to adult and juvenile fish caused by transportation authorities, activities, and structures that have been identified as a priority for replacement by ODFW. This program has replaced or retrofitted approximately 100 structures and provided improved fish passage to over 330 miles of stream habitat. This program has been and will continue to be beneficial to OC coho.

3. Comprehensive Mitigation/Conservation Strategy (establishes Ecoprovince-level ecological priorities for the ODOT Bridge Delivery Program).

The purpose of the Comprehensive Mitigation/Conservation Strategy (CMCS) program is to provide ODOT with an efficient, ecologically beneficial resource management tool that allows ODOT to:

- Streamline its environmental compliance and stewardship efforts, in support of ODOT's mission as a transportation agency;
- Address the natural resource management needs of the Oregon Transportation Improvement Act (OTIA III) Statewide Bridge Program in addition to future projects;
- Improve upon the current state of available resource characterization, impact avoidance and impact minimization tools;
- Foster continued positive relationships with the regulatory and resource agency community; and
- Create ecologically sustainable mitigation, conservation and stewardship projects.

This program, although still being developed, will bring new tools and strategies to ODOT for addressing environmental limiting factors to OC coho and other fish as transportation projects are designed and constructed.

4. Project specific coordination and consultation with state and federal regulatory agencies (implementation of section 7, Endangered Species Act (ESA) and Magnuson-Stevens Fishery

Conservation and Management Act compliance) to ensure natural resource avoidance, minimization, and mitigation.

ODOT depends on regulatory and resource agency partnering and collaboration during project development and construction projects. Most ODOT projects receive federal funds and therefore require section 7 ESA consultation. Through the consultation process with NMFS and/or USFWS and the terms and conditions of the appropriate regulatory permits, ODOT demonstrates avoidance, minimization, mitigation, and compliance. This process should ensure that projects address liming factors to coho, when appropriate.

5. Project/program specific permit monitoring and reporting to regulatory agencies.

ODOT submits project specific monitoring reports as required by state and federal permits to appropriate regulatory agencies. These "post construction" reports identify and report effectiveness and compliance with permit/project specific terms and conditions.

6. ODOT Regulatory Agency Liaison Program – partnering with state and federal agencies for ODOT Environmental, Construction, Bridge, and Highway Maintenance Programs to partner and work collaboratively on ODOT projects and programs. ODOT funds 13 FTE liaisons with regulatory agencies ODFW, NMFS, USFWS, DSL, USCOE, DEQ, and APHIS Wildlife Services.

ODOT has developed intergovernmental agreements (IGAs) with state and federal regulatory agencies. These agreements and 13 FTE positions contribute to collaboration and partnering among the regulatory authorities and ODOT. These staff assist ODOT with project development, permit acquisition, and help ODOT ensure that projects are developed and constructed to avoid, minimize and mitigate natural resource impacts.

7. Use of state and federal regulatory programmatic permits that emphasize natural resource avoidance, minimization and mitigation procedures.

ODOT promotes the use and implementation of state and federal programmatic permits. These permits streamline permitting procedures and ensure that BMP's specific to OC coho are integrated into transportation projects

8. ODOT USDA-Wildlife Services Liaison (adaptive management of beaver and road conflicts).

ODOT has developed an intergovernmental agreement (IGA) and has one FTE liaison position with the USDA-Wildlife Services Liaison. This liaison assists ODOT with numerous wildlife and road conflicts. Beaver and hydraulic facility (culvert) maintenance continues to be an issue for ODOT. Proactive management among ODOT, APHIS, and ODFW will continue to promote

"non-lethal" beaver and road conflict alternatives, when appropriate, and should promote stream complexity, water quality, and improved spawning gravel for OC coho.

9. Finalization of revisions to the ODOT Statewide Hydraulics Manual (that provides hydraulic design guidance and recommendations for hydraulic facilities (culverts and bridges) to promote natural stream processes (bed load and large woody material transport and fish passage).

The ODOT Hydraulics Manual is currently being revised. This revision, which includes a chapter on fish passage, will provide guidance to engineers responsible for designing hydraulic facilities (bridges and culverts). This manual, which will be reviewed by NMFS and ODFW, will provide new design criterion consistent with fish passage state statutes as well as promote standardization of hydraulic designs. These improvements will translate into more effective designs for projects that fall within the OC coho recovery domain. When finalized, this manual will be available for use by state, county and local transportation officials as well as other interested parties. This product will provide guidance to hydraulic engineers and others that are involved in fish passage design and implementation.

Oregon Parks and Recreation Department (OPRD

Oregon Parks and Recreation Department
The mission of the Oregon Parks and Recreation Department (OPRD) is to provide and protect outstanding natural, scenic, cultural, historic and recreational sites for the enjoyment and education of present and future generations. In addition to operating a statewide network of parks and natural areas, the department is also responsible for managing Oregon's's Recreation Trails, the Ocean Shores Recreation Area, Scenic Waterways and the Willamette River Greenway.

OPRD is a participating agency in the Oregon Plan for Salmon and Watersheds. The following items highlight some of the actions we will be taking to address the limiting factors for Oregon coastal coho salmon as well as other native salmon species in coastal watersheds.

OPRD Actions

- Fund fish habitat improvement projects in state parks within the range of Oregon coastal coho salmon using revenue from the sale of salmon license plates.
- As part of OPRD's *Investment* Strategy, seek opportunities, utilizing Measure 66 funding, to acquire land and conservation easements that will assist in the recovery of coastal coho salmon.
- Research locations at coastal parks where interpretive signing could be used to make citizens more aware of the value of preserving habitat for naturally spawning wild salmon.

U.S. Environmental Protection Agency (EPA)

U.S. Environmental Protection Agency (EPA) Support for Salmon Recovery in the Coastal Coho ESU

Limiting Factor – Water Quality

Water Quality Standards
EPA works with Oregon Department of Environmental Quality (DEQ) in developing and revising water quality standards. Water quality standards are established to provide numeric and narrative criteria for protecting the defined beneficial uses of the State's waters, and for preventing degradation of waters currently meeting the established criteria.

In 2004, EPA approved Oregon's revised temperature standards, new standards for inter-dissolved oxygen and revised methods for anti-degradation. The standards set a new benchmark for how water quality can help protect salmon, and serve as a national model for identification of critical information on salmon and steelhead life stages and temperature needs in those life stages.

Total Maximum Daily Loads (TMDLs)
EPA provides DEQ technical and financial support in developing TMDLs, and reviews and approves or disapproves final TMDL documents. TMDLs are established for waters not meeting water quality standards. A TMDL determines the amount of a pollutant that a waterbody can assimilate and still meet water quality standards and support its defined beneficial uses.

TMDLs have been completed for many of the northern coastal waters, have been drafted for Tenmile Lake and the Umpqua Basin, and are planned for the remaining impaired coastal waters.

Non-point Sources Program
EPA supports DEQ's efforts in protecting Oregon's waters from non-point sources of pollution through technical and financial assistance. EPA provides Clean Water Act Section 319 funding for projects in the Coastal Coho ESU which are consistent with the objectives and goals of the State's non-point source program plan.

Interaction with Federal and State Land Management Agencies
EPA, through its Forest and Rangeland Team, works closely with the federal land management agencies to improve the recovery and protection of aquatic habitat through the NW Forest Plan processes. EPA representatives serve on regional and province level committees and on special workgroups for key projects such as the Bureau of Land Management's Western Oregon Plan Revision Process.

EPA also works with State land management agencies to protect and improve aquatic habitat on state and private lands. Over the years EPA has provided comments to and testified before the Oregon Board of Forestry in general support for key rule making concepts while highlighting areas in the rules where additional improvements are needed if water quality standards are to be met and beneficial uses fully protected. Examples of this interaction include EPA's March 6, 2006, correspondence to the Oregon Board of Forestry on draft rule making and EPA's October 21, 2004 and November 22, 2005 testimony before the Oregon Board of Forestry.

Technical and Program Support

EPA provides technical and program support for a number of state and local agencies on projects and policies affecting the Coastal Coho ESU. For example, EPA representatives serve on the Oregon Watershed Enhancement Board and DEQ's Western Regional Watershed Basin Coordinators Workgroup, and work with a number of Watershed Councils addressing both point and non-point sources of pollution in the ESU. EPA provides funding through Wetlands grants, the Targeted Watershed Initiative Grant process, the Regional Geographic Initiative Grant process and other funding mechanisms for pollution prevention, water quality protection and habitat restoration.

Water Quality Monitoring

EPA provides technical and financial support for a variety of monitoring programs which include waters in the Coastal Coho ESU. Additionally, EPA is working with the State of Oregon and other Region 10 states to develop a regional data exchange network. Described below are key examples of monitoring programs and efforts on the data exchange network.

Pacific Northwest Aquatic Monitoring Partnership:

EPA is a charter member of the Pacific Northwest Aquatic Monitoring Partnership (PNAMP) and provides financial assistance to support tribal involvement in the PNAMP workgroups. EPA is also a member of the PNAMP steering committee and EPA staff participates in various associated workgroups. EPA's Corvallis Lab (Office of Research and Development) has provided key technical support and program design for PNAMP partner efforts.

Environmental Monitoring and Assessment Program (EMAP):

EPA's Environmental Monitoring and Assessment Program (EMAP) was developed to assess the condition of the nation's ecological resources. The Western EMAP project covers the western states of Idaho, Oregon, Washington, California, Montana, South Dakota, North Dakota, Nevada, Utah, Colorado, Wyoming, and Arizona. Western EMAP has three main components: coastal, rivers and streams and landscape. The objective of Western EMAP is to assess the ecological condition of coastal waters and rivers and streams across the western United States. EMAP is designed to monitor indicators of pollution and habitat condition and seek links between human-caused stressors and ecological condition. The coastal component of Western EMAP applies EMAP's monitoring and assessment tools to create an integrated and comprehensive coastal monitoring program along the west coast. Water column measurements are combined with information about sediment characteristics and chemistry, benthic organisms,

and data from fish trawls to describe the current estuarine condition.

Aquatic and Riparian Effectiveness Monitoring Plan (AREMP):
EPA provides technical and financial support for the US Forest Service's AREMP Program. Data from the AREMP Program are used to characterize the ecological condition of watersheds and aquatic ecosystems. The monitoring effort defines the present watershed condition based on upslope, riparian, and in-channel attributes, tracks trends in watershed condition over time, and reports on the Forest Plan's effectiveness across the region. AREMP also provides information that is useful in determining causal relationships to help explain those trends.

Northwest Water Quality Exchange Network:
Since 2002, EPA's Office for Environmental Information has supported the development of environmental information management and exchange through its National Environmental Information Exchange Network grant program. In the Pacific Northwest, the states of Oregon, Washington, Idaho and Alaska have collaborated through their Exchange Network grants as a Water Quality Exchange. EPA "Challenge" grant funds of $999,767.00, and additional Exchange Network grants of $6,747,691, have provided the support needed to advance the environmental data transfer to an automated, computer-to-computer network system using upgraded computer systems, databases and Extensible Markup Language (XML) technology.

In a collateral effort, the Water Quality Exchange Network of the four Region 10 states has worked with NOAA-Fisheries, Bonneville Power Administration, the Northwest Power Conservation Council, EPA and the Columbia River Intertribal Fish Commission to improve the quality, standardization and availability of data and to advance data exchange pertaining to fish, wildlife and habitat. When completed, the Northwest Water Quality Exchange Network will provide an incredibly powerful tool for EPA and its federal, state and tribal partners to use in exchanging data related to the progress towards improving, protecting and managing fish, wildlife, habitat and water quality in the Coastal Coho ESU.

National Pollution Discharge Elimination System Program (NPDES)
The work of the NPDES Program is to regulate industrial and municipal discharges of pollutants to surface waters in the Pacific Northwest. The purpose of NPDES permitting is to ensure that our lakes, rivers, streams and coastal estuaries and seas are clean enough for children to swim in and healthy enough for fish and other aquatic life to thrive in. In the State of Oregon, the implementation of the NPDES Program has been delegated to DEQ. EPA provides oversight of DEQ's program. However, on Tribal Lands in Oregon, EPA has complete direct implementation responsibilities.

Coastal Zone Management Program
EPA encourages the development of the State's Coastal Zone Management Program to build a comprehensive program for addressing coastal non-point source pollution.

National Environmental Policy Act (NEPA)

The National Environmental Policy Act (NEPA) requires federal agencies to consider potential environmental impacts before taking major actions, such as issuing permits or making decisions that affect federal lands. If significant impacts are likely, the agency must prepare an environmental impact statement. Through its NEPA review responsibilities, EPA reviews and provides comments on federal actions with environmental impacts. Within the Coastal Coho ESU, EPA will 1) review NEPA documents on proposed federal agency actions (mostly Environmental Impact Statements) and prepare written comments; 2) work with other federal, tribal, state, and local agencies on NEPA-related matters; and 3) respond to questions from the public about NEPA.

Wetland Program

EPA's Wetland Program works to protect and save existing wetlands and estuaries and to restore and mitigate previously impaired wetlands and the adjacent habitat in the Coastal Coho ESU. EPA, along with the U.S. Army Corps of Engineers, establishes environmental standards for reviewing permits for discharges that affect wetlands such as residential development, roads, and levees. In addition to providing regulatory support, EPA works in partnership with states, tribes, and local governments, the private sector, and citizen organizations to monitor, protect and restore wetlands. Additionally, through its Wetland Development Grant Program EPA provides financial assistance for wetland protection and enhancement to state, tribal and local governments. Grants may be used to develop or enhance programs for the protection, management, or restoration of wetlands.

Financial Assistance

EPA provides a variety of financial assistance programs to the State and communities for water quality and watershed restoration and environmental education for projects in the Coastal Coho ESU. These include direct grant programs such as the Source Water Protection Program and the Regional Geographic Implementation Grant Program, and low interest loan programs such as the Clean Water State Revolving Funding Program and the Safe Drinking Water State Revolving Funding Program. EPA also supports the Boise Environmental Finance Center which assists watershed groups locate and obtain applicable funding from other agencies and private foundations.

Emergency Response

EPA's Emergency Response Program responds to oil and hazardous material spills, and supports Oregon's Emergency Response Programs in the Coastal Coho ESU. Spills often occur along transportation corridors which are frequently adjacent to or in riparian areas of Coho streams and rivers.

EPA Pesticides Program

EPA's Pesticides Program and the Oregon Department of Agriculture (ODA) have established a Cooperative Agreement, which in part, addresses pesticides and water quality. In a three tiered approach, ODA will be 1) identifying those pesticides of interest and concern, 2) establishing

mitigation measures/programs to address the pesticides of concern; and 3) using monitoring programs to measure the effectiveness of those mitigation measures. EPA supports ODA in this effort through funding and technical support.

In the future, EPA will propose labeling changes where the application of pesticides intersects with ESA listed species. Labeling instructions will direct applicators to an EPA website or a toll free number to obtain specific instructions regarding mitigation measures necessary to protect the listed species.

Key Projects Supporting Salmon Recovery in the Coastal Coho ESU

EPA supports or directly implements a wide variety of water quality protection and habitat restoration projects within the Coastal Coho ESA. Two examples are summarized below.

Siuslaw River, Oregon. The Siuslaw watershed is a 773 square mile basin located on the mid-Oregon coast. It is threatened by draining, diking and numerous tide gates in the estuary; aggressive forestry practices on the steep slopes; lead levels and temperature. Using Targeted Watershed funds, the Siuslaw Basin Partnership led by Ecotrust hope to implement a whole-basin restoration initiative that improves the health and vitality of water resources by: 1) restoring natural landscape process by repairing roads and culverts, 2) creating market incentives for forest managers to reduce the risk of sediment delivery to streams, 3) restoring 30 miles of riparian habitat and processes, 4) protecting and restoring an estuary corridor by removing tide gates and dikes, and 5) instituting water quality monitoring and evaluation program.

Tillamook Bay, Oregon. In 1992, Tillamook Bay was nominated to the National Estuary Program to address critical natural resource issues confronting the Tillamook Bay and its watershed. Issues identified included bacterial contamination, excessive sedimentation, declining salmonid populations, and flooding. Following the designation of Tillamook Bay as an estuary of national significance, over four years were spent developing a scientifically-defensible, community-supported resource management plan. The implementation of this plan is now being led by the Tillamook Estuaries Partnership (TEP). Using CWA 320 funds, TEP is working to enhance water quality to meet state and federal standards; restore native salmonid populations; reduce the frequency and impacts of catastrophic flooding; and encourage stewardship among residents and visitors to Tillamook County.

EPA supports and/or funds the development of technical tools used in the Section 404 Clean Water Act regulatory program to assist in the protection of water quality and habitat related to Coastal Coho ESA. Examples include:

Development of an interagency technical paper related to Sediment Removal from Active Stream Channels in Oregon. This paper is intended for use by Federal agency staff, in conjunction with site specific data, for the evaluation of project proposals that fall within the US Army Corps of Engineers jurisdiction under Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act, as well as Fish and Wildlife Coordination Act, Endangered Species Act, or Magnuson-Stevens Fishery Conservation and Management Act.

This document identifies the potential effects of sediment removal on freshwater habitats, and it provides recommendations for the evaluation, design, and monitoring of sediment removal activities in streams. The purpose of the document is to present a thorough discussion of scientific information that may be useful in the evaluation of proposed actions that include sediment removal from streams. The recommendations contained herein are intended to provide

constructive direction and assistance to Federal agency personnel involved in project review and assessment of gravel removal projects in Oregon.

Development of Functional Assessment Guidebook for the Oregon Coastal Tidal Fringe Wetlands to assess and monitor development and restoration projects in estuarine areas. A "functional assessment" tool was developed by the Oregon Department of State Lands through an EPA wetland development grant utilizing the Hydrogeomorphic (HGM) approach. The tool will be used by state and federal agencies and conservation organizations to improve the effectiveness of wetland protection, wetland monitoring, wetland restoration, and compensatory mitigation along the west coast. This tool helps to support regulatory needs for making scientifically defensible decisions about the use of coastal aquatic resources, as well as prioritizing activities that support salmon and watershed restoration in coastal Oregon.

Oregon Coastal Lowlands Wetlands Change Study. The study was completed by the Oregon Department of State Lands through an EPA wetland development grant. Objectives of the study include mapping and inventorying Oregon's coastal wetlands from the 1980 to 2001, and monitoring the causes contributing to the loss or change of wetland areas along the Oregon coast. The study also attempts to identify restoration or mitigation needs for declining wetland types including estuarine areas.

A Description of Bureau of Land Management and Forest Service Land Management Within the Oregon Coast Coho Salmon Evolutionarily Significant Unit and Conservation Measures for the Oregon Coast Coho Conservation Plan

Introduction

Five USDI Bureau of Land Management (BLM) Districts (Coos Bay, Eugene, Medford, Roseburg, and Salem) and two USDA Forest Service (FS) National Forests (Siuslaw and Umpqua) manage land within the Oregon Coast Coho Salmon Evolutionarily Significant Unit (OC coho salmon ESU). These lands encompass about 20 percent (1,342) of the stream miles occupied by OC coho salmon. In addition, 131 stream miles on BLM and FS-administered lands are identified as having High Intrinsic Potential (HIP) as coho habitat, about 10 percent of the HIP streams in the ESU. Streams with HIP for coho are characterized by low gradient channels in unconstrained valleys, conditions which are preferred by juvenile coho salmon for over-wintering habitat. These characteristics are often found in the lower reaches of watersheds.

The apparent discrepancy between the 20 percent of total occupied stream miles and the 10 percent HIP stream miles can be explained by the fact that the majority of the BLM and FS land is in headwater areas, where gradients are relatively steep and channels are confined. The geographic distribution and quantity of BLM and FS lands play a large role in water quality and habitat conditions for HIP streams within the OC coho salmon ESU. For example, many of the 21,312 miles of non-coho-bearing streams originating on or flowing through BLM and FS-administered lands can be major contributors of cool, high quality water and large wood to coho-bearing streams on both federal and non-federal lands.

Land management plans, laws, regulations, manuals, other internal guidance, and Memorandums of Understanding shape the design and implementation of BLM and FS activities. This paper provides information on the land management planning framework utilized by the two agencies within the ESU, a summary of recent on-the-ground conservation actions and expenditures, and brief descriptions of BLM and FS measures to conserve OC coho habitat.

BLM/FS Land Management

The *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl* (USDA and USDI, 1994) created a planning and management framework for both agencies that includes lands administered within the OC coho salmon ESU. This planning and management framework is commonly known as the Northwest Forest Plan (NWFP). A primary component of the NWFP is the Aquatic Conservation Strategy (ACS). The ACS was developed to restore and maintain the ecological health of watersheds and the aquatic ecosystems contained within them on public

lands. The 1994 Record of Decision states that the ACS is designed to protect salmon and steelhead habitat on federal lands managed by the BLM and FS within the range of Pacific Ocean anadromy.

The BLM and FS-administered lands within the range of the northern spotted owl are being managed to achieve nine ACS objectives:

1. Maintain and restore the distribution, diversity, and complexity of watershed and landscape-scale features to ensure protection of the aquatic systems to which species, populations, and communities are uniquely adapted.
2. Maintain and restore spatial and temporal connectivity within and between watersheds. Lateral, longitudinal, and drainage network connections include floodplains, wetlands, upslope areas, headwater tributaries, and intact refugia. These network connections must provide chemically and physically unobstructed routes to areas critical for fulfilling the life history requirements of aquatic and riparian-dependent species.
3. Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.
4. Maintain and restore the water quality necessary to support healthy riparian, aquatic, and wetland ecosystems. Water quality must remain within the range that maintains the biological, physical, and chemical integrity of the system and benefits survival, growth, reproduction, and migration of individuals composing aquatic and riparian communities.
5. Maintain and restore the sediment regime under which aquatic ecosystems evolved. Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage, and transport.
6. Maintain and restore in-stream flows sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing. The timing, magnitude, duration, and spatial distribution of peak, high, and low flows must be protected.
7. Maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands.
8. Maintain and restore the species composition and structural diversity of plant communities in riparian areas and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to support the amounts and distributions of coarse woody debris sufficient to sustain physical complexity and stability.
9. Maintain and restore habitat to support well-distributed populations of native plant, invertebrate, and vertebrate riparian-dependent species.

The nine objectives address watershed processes and habitat characteristics important to the conservation of OC coho salmon.

There are four components of the ACS: (1) Riparian Reserves; (2) Key Watersheds; (3) Watershed Restoration; and (4) Watershed Analyses. The ACS also includes extensive

standards and guidelines for project design and implementation within Riparian Reserves and Key Watersheds. All four of the ACS components are designed to operate together to maintain and restore the productivity and resiliency of watersheds and their riparian and aquatic ecosystems. These four components are summarized below. Each description also includes an explanation of the relevance of the ACS component to the conservation of OC coho salmon.

Riparian Reserves. All water bodies on federal lands in the OC coho salmon ESU have Riparian Reserves. Streams used by fish have a minimum 300-foot Riparian Reserve width on each side of the stream channel. Since activities within the Riparian Reserves are regulated by standards and guidelines, the Riparian Reserve network clearly protects water quality and habitat conditions for OC coho salmon.

- Riparian Reserves are special management areas designated for all permanently flowing streams, lakes, reservoirs, ponds, wetlands, and intermittent streams.
- Riparian Reserves include the body of water, inner gorges, all riparian vegetation, 100-year floodplain, landslides, and landslide prone areas.
- Riparian Reserves involve portions of the landscape where riparian-dependent and aquatic resources receive primary emphasis and special standards and guidelines direct land use.
- Standards and guidelines prohibit programmed timber harvest.
- Trees may be cut to promote riparian restoration.
- Standards and guidelines specifically address the management of roads, grazing, mining, and recreation to achieve objectives of the ACS.
- Reserve widths are based on some multiple of a site-potential tree or a prescribed slope distance, whichever is greater. Reserve widths may be adjusted based on watershed analysis.

Key Watersheds. Key Watersheds provide high quality fish habitat and serve as a refuge network for salmon and other fish species. Thirty-four Key Watersheds are distributed across public lands within the ESU, totaling 1,358,105 acres. Many of these Key Watersheds currently provide the best remaining fish habitat. The remainder is expected to provide high quality habitat in the future as ecological processes are restored and will serve as refugia for OC coho salmon.

- Key Watersheds are a system of large refugia that are crucial to at-risk fish species and stocks and provide high quality water.
- Tier 1 Key Watersheds were selected to contribute to conservation of anadromous salmonids and bull trout.
- Tier 2 Key Watersheds were selected as sources of high quality water and may or may not contain at-risk fish stocks.
- No new roads will be built in roadless areas in Key Watersheds.

- In Key Watersheds the objectives were set to reduce existing system and non-system road mileage outside roadless areas. If funding is insufficient to implement reductions, there will be no net increase in the amount of roads in Key Watersheds.
- Key Watersheds are the highest priority for watershed restoration.
- Watershed analysis is required prior to management activities, except minor activities such as that Categorically Excluded under the National Environmental Policy Act (and not including timber harvest).
- Timber harvest cannot occur in Key Watersheds prior to completing a watershed analysis.

Watershed Restoration. From 1998 to 2005, the BLM and FS spent over $31.6 million for watershed restoration projects in the ESU. During this time period, over 300 miles of stream channel were enhanced, primarily by placement of large wood. Culvert replacements removed passage barriers, opening 261 miles of habitat. Native trees and shrubs were planted along 556 miles of riparian areas. Sedimentation into stream channels was reduced by decommissioning 313 miles of roads and improving 1,252 miles of roads. These restoration activities improve habitat directly or indirectly for OC coho salmon.

- Actions have focused on restoring watershed health and aquatic ecosystems, including the habitats supporting fish and other aquatic and riparian-dependent organisms.
- Partnerships and watershed council/community participation are key to effective restoration planning and implementation.
- Watershed restoration has focused on the removal or upgrading of roads.
- Silvicultural treatments have been used to promote in-growth of large conifers in Riparian Reserves.
- Watershed restoration should restore channel complexity. In-stream structures should only be used in the short term and not as a mitigation for poor land management practices.

Watershed Analyses. By the end of 2005, 116 watershed analyses had been completed for lands administered by the BLM and/or FS throughout the ESU. The watershed analyses provide the context for all land management activities, including fish habitat protection and watershed restoration.

- Watershed analysis is a systematic procedure to evaluate the status of geomorphic and ecological processes that characterize watersheds.
- The products of watershed analysis are used to guide the development of management prescriptions and monitoring programs, set and refine Riparian Reserve boundaries, and develop restoration priorities.
- It is required in Key Watersheds prior to resource management.
- It is required in all roadless areas prior to resource management.
- It is recommended in all other watersheds.

- It is required prior to conducting restoration activities and to change Riparian Reserve widths in all watersheds.
- Earthflows qualify as unstable and potentially unstable areas and would be analyzed for inclusion within Riparian Reserves.
- Watershed analysis is important in developing monitoring strategies.

BLM Land Use Plan Revision. The BLM is currently revising its land use plans in western Oregon. The selected alternative for the Western Oregon Plan Revisions (WOPR) will guide all BLM land management activities within the OC coho salmon ESU. An Environmental Impact Statement is in process, and a decision is anticipated in 2008. While the ACS may change, the new plans will retain an emphasis on water quality and fish habitat. The Oregon Department of Fish and Wildlife, Oregon Department of Environmental Quality, USDI Fish and Wildlife Service, and USDC National Oceanic and Atmospheric Administration National Marine Fisheries Service are cooperating agencies in the WOPR effort.

BLM/FS Measures in Support of the OC Coho Conservation Plan

The BLM and FS will continue to implement the following measures. A variety of policies, complementary but independent from the NWFP and its ACS, support these measures.

Watershed/Habitat Restoration. The BLM and FS will continue implementation of comprehensive watershed conservation and restoration programs in the OC coho salmon ESU. This includes direct fish habitat improvement, riparian silviculture, roads and campground construction and reconstruction, and other management programs. Both BLM and the FS will continue to explore ways of more thoroughly integrating these programs with a wide variety of other ongoing restoration and protection efforts. A coordinated approach is necessary to ensure that actions on both private and public lands are consistent with one another and, in conjunction with protection efforts, result in a net increase of coho production capability. The Wyden Amendment gives the BLM/FS the authority to expend federal funds on private lands when the funded activity will benefit resources on the federal lands. An example would be to help fund a culvert replacement that would allow fish passage upstream onto federal land.

Research. The BLM and FS will work with local watershed councils, the Oregon Department of Fish and Wildlife, universities, the U.S. Geological Survey Biological Resources Division, and the Pacific Northwest Experimental Station to improve coordination, integration, and information sharing on key research topics. This includes cooperative long-term studies for coastal watersheds, the development of localized habitat capability models, and validation of priority restoration treatments.

Monitoring and Evaluation. The BLM and FS will continue to monitor the accomplishment of objectives under their management plans relating to aquatic and riparian health. They will also explore expanded coordination with the state and watershed councils on plan implementation and effectiveness monitoring.

Inventories. Both BLM and the FS collect riparian and aquatic habitat and resource data compatible with state efforts. This combined data has been used to describe aquatic and hydrologic conditions across whole watersheds, regardless of landownership. The BLM and FS will continue to work with the state to fill critical information gaps to ascertain the health of aquatic systems. They will also continue to collaborate with the state to improve consistency and accomplish inventories on priority watersheds and critical lands. Information will be shared and used as a basis for watershed analysis and other assessments.

Planning and Assessment. The BLM and FS will continue to plan for the restoration and maintenance of riparian and aquatic health in all of the federal planning processes. In addition, they will seek to expand opportunities for state and watershed council involvement in watershed analyses and will continue to share the results of these analyses with all interested and involved parties. The agencies will also work with state and other federal agencies, tribal governments, and watershed councils to establish the priorities for management and restoration treatments.

Technical Training. The BLM and FS will continue to coordinate technical training of resource management personnel to ensure a high level of competency is available in defining restoration and recovery treatments. This training includes modules in: stream inventory techniques, data interpretation, channel classification and fluvial dynamics, watershed restoration, monitoring and evaluation, and Proper Functioning Condition assessment for riparian areas.

Cooperative Funding. The BLM and FS will continue to seek opportunities to cost-share resource assessments, restoration prescriptions, and treatments across whole watersheds, regardless of ownership, with the state and watershed councils. Funds will be used for coordination, cooperative planning, and project development, implementation, and monitoring.

Education/Interpretation/Outreach. The BLM and FS will work with the state and watershed councils to expand ongoing cooperative outreach and environmental education programs. Some of these cooperative programs include Salmon Watch, the TSALILA Festival in Reedsport, the Alder Creek Children's Forest Partnership in southern Douglas County, and National Fishing Week. The agencies will seek the development of new cooperative efforts and/or outreach programs to reach and engage all publics, especially school groups.

Natural Disaster Coordination. The BLM and FS will continue to work cooperatively with the state and watershed councils to assess and prioritize actions involving natural disturbances and disasters. This includes improved coordination and information sharing in the assessment and implementation of flood damage repair and watershed restoration, the effects of wildland fire suppression and rehabilitation prescriptions, and other types of emergency actions.

Interagency and Tribal Coordination. The BLM and FS will continue to work with other federal, state, and county agencies and tribal governments to ensure coordination and sharing of information between the involved entities. Provincial meetings with the executives will help to ensure mutual priorities are accomplished.

Watershed Council Support and Coordination. The BLM and FS will work with watershed councils to ensure a high degree of coordination for actions occurring on both public and private lands. They will continue to support the councils to ensure implementation of the highest priority watershed and basin work. The agencies will also continue to share technical expertise to help the councils effectively plan and implement priority watershed restoration projects.

Key Aquatic Habitat Acquisition. The BLM and FS will continue to work within existing policies with willing sellers to acquire key aquatic habitat. In particular, the FS will continue to use the Pacific Northwest Streams Project of the Land and Water Conservation Fund to acquire these lands.

Hydropower Licensing and Relicensing Coordination. The BLM and FS have authority under Section 4(e) of the Federal Power Act to prescribe mandatory terms and conditions for Federal Energy Regulatory Commission- licensed projects. The Federal Power Act states:

> ...shall be subject to and contain such conditions as the Secretary of the Department whose supervision such reservations falls shall deem necessary for the adequate protection and utilization of such reservation...

The terms and conditions can range from establishing minimum flows to other protective measures such as channel maintenance flows, habitat maintenance, and restoration. The FS National Hydropower Initiative is intended to ensure the continued operation of relicensed projects consistent with natural resource management goals and objectives on public lands. A key objective of the initiative is to improve fish habitat. In recent years the agencies have improved coordination on these projects to ensure that conditions proposed by the agencies are consistent and supportive of related land management objectives.

An example of a recently concluded relicensing effort is the operation of PacifiCorp facilities in the Umpqua Basin. PacifiCorp received a new 30-year license in 2005. Mitigation funds are now available to begin fisheries enhancement projects within the North Umpqua River Basin. Several projects have been completed or are ongoing, including a long-term spawning gravel augmentation program.

Clean Water Act Section 303 Compliance. The BLM and FS implemented a strategy for compliance with section 303(d) of the Clean Water Act in 2003. The 303(d) protocol requires the BLM and FS to develop Water Quality Restoration Plans (WQRPs) for streams placed on a 303(d) list for failure to meet state water quality standards. The strategy also builds upon the Oregon Department of Environmental Quality's (DEQ) guidance and complements the Total Maximum Daily Load (TMDL) developed by DEQ. Water Quality Management Plans, written by DEQ to implement TMDLs, incorporate BLM and FS WQRPs. The federal agency WQRP becomes the TMDL implementation strategy for federal lands.

Conclusion

Federal land management policies protective of water quality, riparian areas, and aquatic habitat will continue to be a cornerstone for the recovery of the OC coho salmon ESU. The partnerships forged among the BLM/FS and state agencies, watershed councils, Soil and Water Conservation Districts, and others continue to result in focused assessment and restoration efforts, and increased opportunities to recover and sustain the OC coho salmon ESU.

References

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