XI. EXHIBIT A: Prioritization and Compensation Planning Framework

DSL will use a watershed approach for establishing mitigation projects in the state. This approach considers watershed needs, and how locations and types of mitigation projects address those needs. A landscape perspective is used to identify the types and locations of mitigation projects that will benefit the watershed and offset losses of aquatic resource functions and services caused by activities authorized by DA and DSL permits. This compensatory planning framework considers landscape scale, historic and potential aquatic resource conditions, past and projected aquatic resource impacts in the watershed, and terrestrial connections between aquatic resources and key habitats.

A. Statewide Priorities

Over time, DSL hopes to have mitigation projects around Oregon that will provide appropriate compensatory mitigation for impacts to waters of the U.S. and waters of the state. Priority watersheds of the state are determined by the following:

- Past mitigation needs in the watershed based on historical permitted impacts;
- Future need for mitigation in the watershed based on projected growth and development trends;
- Lack of private mitigation banks to meet the demand for credits in the service area; and
- Availability of funds in the third-field hydrologic unit watersheds of the state.

Evaluation areas are fourth-field sub-basins (HUC4) west of the Cascade Mountains and as third-field basins (HUC3) east of the Cascades. Fund availability was evaluated by HUC3 because the Wetland Mitigation Bank Revolving Fund (WMBRF) is documented at this scale.

Based on an evaluation of current information, DSL has established initial priority watersheds in the state (Table 1, Figure 1). Additional watersheds may be added as information changes or becomes available. Service areas may or may not follow HUC3 or HUC4 boundaries. The service area for each mitigation project will be described in its mitigation plan and will be based on criteria outlined therein.

Table 1. Priority watersheds in the state by HUC3 and HUC4.

Basin 1 – North Coast
- Lower Columbia
- Necanicum
- Wilson-Trask-Nestucca

Basin 2B—Mid-Willamette
- Molalla-Pudding

Basin 2C—Lower Willamette
- Clackamas
- Lower Willamette
- Tualatin

Basin 5--Deschutes

Basin 15—Rogue
- Middle Rogue

Basin 16—Umpqua
- South Umpqua

Basin 17—South Coast
- Coos

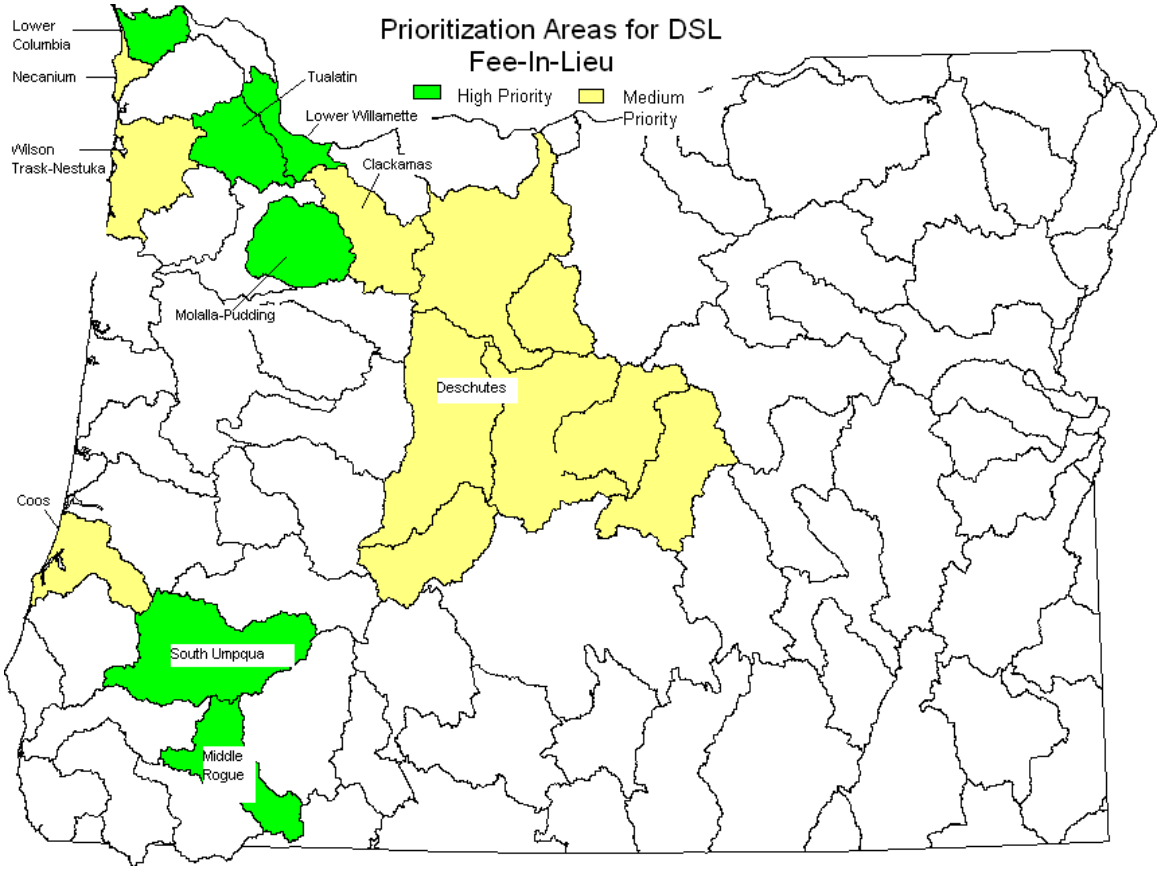


Figure 1. Priority watersheds for the establishment of mitigation projects.

B. Criteria for Selection of Mitigation Projects

Each potential mitigation project will be evaluated for its ability to provide appropriate compensatory mitigation for impacts to the waters of the U.S. based on the following criteria:

- **Likelihood of success:** Funded projects must demonstrate a high likelihood of success through a sound wetland restoration, creation and/or enhancement concept. The water source for the site should be reliable. Threats from invasive species or vandalism should be low or manageable. The project will be evaluated for its ability to result in successful and sustainable net gain of wetland acreage and/or function, with limited maintenance. Restoration projects will receive priority due to the higher lift in function that can be achieved, and the higher success rate of these types of projects.

- **Multiple objectives:** The project will be evaluated for its ability to address multiple functions and services such as improvement of fish and wildlife habitat, support for rare species, flood attenuation, water quality improvement, and recreation or education values. The project should target native plant community diversity and natural processes. Greater functional gains will be given more preference.

- **Supports regional conservation initiatives and is compatible with the surrounding landscape:** Projects should be located where they pose minimal conflicts with adjacent land uses and where they meet regional conservation priorities, address limiting factors identified in watershed assessments, provide habitat corridors, and/or add to the effectiveness of nearby protected natural areas.

- **Capacity of the applicant and the project team:** The applicant must demonstrate that they have sufficient capacity and expertise to manage the project. The project team must have the necessary expertise and capacity to carry out pre-implementation planning, restoration construction, follow-up monitoring and remediation of project problems.

- **Fund leveraging and project costs:** Collaborative funding from multiple sources is encouraged, but not necessary. The project budget should identify all sources of funding and in-kind services, and itemized list of components to be funded including planning, implementation, monitoring and accounting. Projects with a high wetland functional gain per dollar will be given preference.

- **Long-term management:** Suitable projects must have a plan for long-term management and stewardship. Long-term stewardship could be provided by a non-profit conservation organization, local government or other interested constituency.

C. Priority Watershed Profiles

The capacity of a project to address appropriate functions and services will be evaluated based on the historic, existing and future aquatic resource conditions for each priority watershed. This information was compiled at the basin scale from the Oregon Watershed Enhancement Board's Acquisition Priorities, Oregon Department of Fish and Wildlife summer water flow restoration priority maps, and ODFW's Oregon Conservation Strategy. Within selected basins, watershed information was compiled from watershed assessments and action plans, restoration prioritization summaries prepared for OWEB, DSL's internal database, and other sources as documented. Maps are credited to the USDA-NRCS 8-digit Hydrologic Unit Profiles.

North Coast Basin

(Oregon Watershed Enhancement Board, North Coast Basin Priorities, 2004)

Rocky coastal headlands; tidal rivers, estuaries and floodplains; relatively flat stretches of coastal plains and the steep-sloped ridges and hills of the Coast Range characterize the North Coast Basin. The vegetation in this heavily forested region is dominated by Sitka spruce, western hemlock, and Douglas fir, with stands of alder in disturbed areas. The major land use is commercial timber production, with agriculture confined largely to coastal lowlands and river valleys. Roughly half of the basin is in public ownership.

Eight unobstructed tributaries to the Pacific Ocean drain the North Coast Basin, including some of the most diverse and healthiest aquatic systems in the state. The basin is a stronghold for coho, chum, and chinook salmon, cutthroat trout, and steelhead.

Major wetland conservation issues in the North Coast Basin include conversion and fragmentation of tidal and floodplain wetlands, and loss and degradation of sand dune systems and riparian areas.

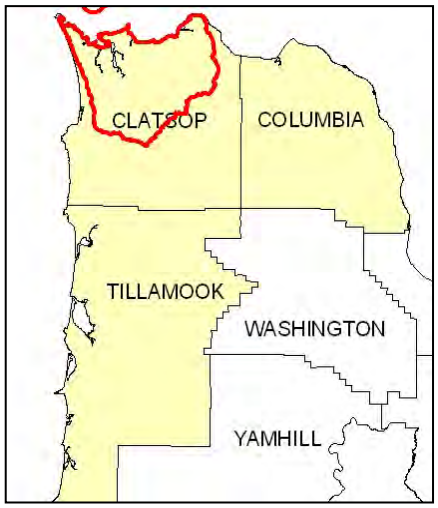
ILF Priority Watersheds within the North Coast Basin are the Lower Columbia, Necanicum, and Wilson Trask-Nestuka watersheds.

Priority Wetland Ecological Systems

Eelgrass beds
Floodplain/outwash lowland riparian, linear, wetlands
Freshwater marsh and aquatic beds
Intertidal mudflats
Intertidal salt marsh
Lowland depressional shrub wetlands and wet prairies
Lowland non-linear forested wetlands

Lowland riparian woodland and shrubland
Mesic herbaceous wetlands
Montane non-linear forested depressional wetlands
Mudflats
Tidally influenced freshwater wetlands
Western Oregon upland prairie and oak savanna

Lower Columbia (ILF High Priority Watershed)
(Oregon Watershed Enhancement Board, Lower Columbia Basin Priorities, 2004; North Coast Watershed Association)



The Lower Columbia (HUC 17080006) is a relatively small basin (207,000 acres) draining the westernmost floodplains and tidal reaches of the Columbia River. The tidal wetlands serve as the gateway between the entire Columbia system and the Pacific and are extremely important for anadromous fish, especially young out-migrating salmon seeking food and cover prior to entering the ocean. Land use is 75% public forestland, and 3% pastureland used for beef and dairy operations.

The Oregon Conservation Strategy identifies the Columbia-Clatskanie area (CR-02) as a conservation opportunity area. The area encompasses the Julia B. Hanson Refuge for the Columbian white-tailed deer, and migrating and wintering waterfowl heavily use the area. A recommended conservation action is to restore floodplain wetlands, tidal wetlands, and bottomland forests. The Oregon Biodiversity Project identified Columbia River bottomlands as a conservation opportunity area, noting that since there is already significant public ownership in these areas, it is possible to restore and manage critical wetlands on a larger scale than in other parts of the state. The Lower Columbia River Estuary Management Plan seeks to restore 3,000 acres of tidal wetlands along the lower 46 miles of the river in order to return tidal wetlands to 50% of their 1948 level.

Nearly two-thirds of the shallow marshes and side channels along the lower Columbia have been converted to other uses, primarily farm and pastureland but also, more recently, hybrid cottonwood plantations. Restoring tidal wetlands is considered critical to ecosystem health on the lower Columbia.

The major classifications of permitted wetland impacts (DSL) are:

HGM Class	Percent of Acres	Cowardin Class	Percent of Acres
DEP	40%	PEM	51%
Unknown	22%	PFO	21%
Slope/Flat	20%	PSS	11%
Riverine Flow Through	11%		

Priority Wetland Ecological Systems

Depressional wetland shrublands
Freshwater aquatic beds
Freshwater emergent marsh
Freshwater mudflats
Intertidal freshwater wetlands
Intertidal mudflat
Subalpine or montane wet meadow
Tidal salt marsh
Western Oregon wet prairie

Skipanon
(E&S Environmental Chemistry, Inc. and Skipanon Watershed Council. 2000)

The Skipanon Creek watershed is 28 square miles and enters the Columbia River at river mile 10.7. The watershed is a mix of rural residential, pasture/agriculture and forestlands. Protected areas include the Fort Stevens State Park and a portion of the Lewis and Clark National Historic Park. The Skipanon River is generally groundwater-driven and is within the Clatsop Plains groundwater management area.

While wetland and grassland features dominate current land cover in the urban growth boundary, historic and continued development on the floodplain and filling/modification of wetlands are of concern. Of particular interest are loss of fish and wildlife habitat, water quality, hydrologic effects (decreased flood water storage and groundwater recharge), and aesthetic quality functions. Many wetlands are diked and disconnected from the stream.

Current limiting factors are flow modifications, temperature, nutrients and aquatic weeds (lakes). Low summer flows are a concern that is growing as the area becomes more populated. The City of Warrenton's water system master plan suggests alternatives to using all of its water right out of the Lewis and Clark River in the Young's Bay Watershed, including adding more water storage in the watershed.

Mitigation projects in this watershed should focus on restoration of historic estuarine wetlands, as well as protection and restoration of streamside wetlands in order to maintain water storage and delay, nitrogen and phosphorus removal, thermoregulation, and anadromous fish habitat support.

Young's Bay
(E&S Environmental Chemistry, Inc. and Young's Bay Watershed Council, 2000)

The Young's Bay watershed is located near the mouth of the Columbia River. The dominant land use in the watershed is commercial forestry. The three dominant stream systems are the Lewis and Clark River, Young's River and the Wallooskee River. The lower reaches of the Lewis and Clark River and Young's River are part of the nationally significant Columbia River Estuary. Past research shows that the Young's Bay Estuary is one of the Lower Columbia's most biodiverse areas. Another key area is the Fort Clatsop National Memorial.

Wetlands represent about 1% of the watershed and are dominated by palustrine wetlands. These mostly occur in the floodplains of the three major rivers, but higher elevation forested and emergent wetlands also exist, and palustrine scrub-shrub wetlands are scattered throughout the watershed. Wetlands have been diked and disconnected from streams in the lower elevations, and many tidal estuarine wetlands have lost their tidal connection. Almost the entire west bank of the Young's River arm of Young's Bay has been diked, as well as much of the tidal portions of the Lewis and Clark River and Wallooskee River. Development is concentrated in the 4 square mile urban growth boundaries of the cities of Astoria and Warrenton. This area is in the lower watershed and has 15% of the area occupied by wetlands (based on National Wetland Inventory maps).

Current water quality limitations include nutrients and bacteria in the major streams, and possibly temperature in the lower reaches of the streams near the mouth. Current and future draws from the river are of concern to the local watershed council. The City of Warrenton in the Skipanon watershed is one of the fastest growing communities in Oregon and has its municipal water rights out of the Lewis and Clark River. Future dewatering on the Young's River above the Klaskanine River due to an undeveloped water right owned by the City of Astoria, and on Lewis and Clark River above Heckard Creek due to the water withdrawal by the City of Warrenton, are future concerns.

Mitigation projects in this watershed should focus on restoration of estuarine wetlands for anadromous fish habitat; and streamside wetlands to provide water storage and delay, thermoregulation, and anadromous fish habitat support functions.

Nicolai-Wickiup Watershed
(E&S Environmental and the Nicloai-Wickiup Watershed Council, 2000)

The Nicolai-Wickiup watershed is 114 square miles and includes Bear Creek, Big Creek, and Gnat Creek, as well as smaller creeks, which all flow into the Columbia River Estuary. The watershed with the upper watershed is primarily managed as private industrial forests, and the lowlands are mostly devoted to raising cattle. The City of Astoria owns the majority of the Bear Creek subwatershed and Bear Creek is the primary source of municipal water.

Wetlands cover approximately 2% of the watershed and are predominantly palustrine, with emergent wetlands in the lower elevations and some forested and emergent wetlands in higher elevations. Draining and diking, including extensive diking near the mouths of the Blind Slough, Warren Slough and Fertile Valley Creek subwatersheds, have disconnected the floodplain and palustrine wetlands and removed tidal influence.

Modified hydrology has contributed to stream bank erosion, particularly in the Blind Slough subwatershed. Limited data suggests relatively good water quality in the watershed.

Mitigation projects in this watershed should focus on restoration of estuarine wetlands and streamside wetlands for anadromous fish habitat; and water storage and delay.

Necanicum (ILF Medium Priority Watershed)
(E&S Environmental and the Necanicum Watershed Council, 2000)

The Necanicum watershed is 87,000-acres and includes the Neawanna, Neacoxie, and Necanicum Rivers, which join together to form the Necanicum Estuary shortly before reaching the ocean in the Seaside-Gearhart area. Ninety four percent of the land use is forestry, of which 88% is privately owned. The 451-acre estuary is designated as an Important Bird Area by the National Audubon Society, and as a Conservation estuary under the Oregon Estuary Classification system. It is also part of the Clatsop Plains-Necanicum River portfolio site in The Nature Conservancy's Pacific Northwest Ecoregional Assessment. Key species identified in the Oregon Conservation

Strategy for the estuary are shorebirds, waterfowl, chum salmon, coho salmon, and winter steelhead.

The Oregon Conservation Strategy identifies the following conservation opportunity areas:

- Clatsop Plains (CR-01) contains Gearhart Fen, the largest contiguous wetland of its kind remaining on the Oregon coast, and the Clatsop beaches that provide a concentration point for shorebirds (mostly sanderlings) and gulls. Key habitats are coastal dunes and freshwater wetlands.
- Necanicum Estuary (CR-04) is designated as a Conservation estuary. The City of Seaside and the North Coast Land Conservancy have acquired a network of tidal wetlands along Neawanna Creek estuary that are designated as a natural history park. In 2004 the NCLC purchased the 365-acre Circle Creek Preserve along the Necanicum River that includes one of the largest blocks of spruce swamp on the Oregon coast. Key habitats are estuary and riparian areas.
- Tillamook Head (CR-O5) contains Ecola State Park. Coastal dunes and late successional conifer forests are key habitats.

Wetlands, marshes and braided channels have been straightened, channelized, drained and deforested for croplands and urban areas. The lower estuary is one of the most urban of Oregon's estuaries with many stormpipes entering it. However, water quality ranges from good to excellent at the DEQ ambient site at Seaside. Monitoring data collected elsewhere in the watershed suggest that temperature, nitrogen, total phosphorus and bacteria may be moderately impaired.

The major classifications of permitted wetland impacts (DSL) are:

HGM Class	**Percent of Acres**	**Cowardin Class**	**Percent of Acres**
Lacustrine Fringe	31%	L1OW	44%
Slope/Flat	28%	PFO	25%
Depressional	13%	PSS	13%
Riverine Flow Through	11%	PEM	11%
Slope	10%		

Coastal coho, a threatened species, use nearly the entire Necanicum River watershed as habitat. Pertinent factors implicated in Coho population decline in the watershed are rearing and spawning habitat degradation, reduction in summer streamflow, loss of complex instream structure, loss of winter side channels and sloughs, and loss of riparian vegetation and shade. Timber harvest has contributed to winter habitat loss and lack of large wood, siltation from roads, road-failures, loss of ground cover, and reduction of water filtering and shade due to removal of riparian vegetation. In the lowlands, agriculture and

urbanization have degraded coho rearing habitat through diversion of water, channelizing streams, channelizing off-channel and estuary areas, and releasing effluents that elevate temperatures and reduce water quality.

Threats to the watershed include continued growth and demands on water supply, increased nutrient inputs, and potential harvest of forests coming to harvestable age after the Tillamook Fires in 1930s and 1940s and subsequent reforestation efforts in the 1950s and 1960s.

Mitigation projects should focus on reconnecting and restoring floodplain habitats; controlling water, sediment and nutrient runoff; and possibly enhancing off channel habitats and side channel meanders. Wetland functions that should be targeted are water storage and delay, sediment stabilization and phosphorus retention, nitrogen removal, resident and anadromous fish habitat support, breeding water bird support, and wintering and migrating water bird support.

Wilson Trask-Nestucca (ILF Medium Priority Watershed)

The Wilson-Trask-Nestuka watershed is approximately 605,000 acres located primarily in Tillamook County. Extensive upland forests dominate the basin's land area, with 65% of the land in public forestland. Rich, fertile alluvial soils in the lowlands are used for pasture, grass, and hay that supports commercial dairy and beef production, as well as small farms and ranchettes (USDA, 2005). This land use is particularly concentrated to the southeast of Tillamook Bay in the Sitka Spruce Belt—Coastal Lowlands along the Trask and Tillamook River valleys. Several small communities in the watershed support a fishing industry. The Tillamook Estuary was designated an estuary of national significance in 1994, and the Tillamook Estuaries Partnership, local watershed councils, and other partners work to develop and manage projects that restore and monitor watershed health.

The Oregon Conservation Strategy (ODFW, 2005) identifies the following conservation opportunity areas:

- Tillamook Bay and tributaries (CR-08) area is an important migration stopover for shorebirds and waterfowl and has heavy use by wintering waterfowl, including brant. Tillamook Bay supports an important mineral site for band-tailed pigeons. Tillamook County has acquired about 400 acres of diked former tidelands in the river delta area at south of the of the bay through collaborative effort with Tillamook Estuary Partnership,

USFWS, Oregon Watershed Enhancement Board, Trust for Public Land, and Oregon Department of Fish and Wildlife. The Tillamook Pioneer Museum acquired key 150-acre property at Kilchis Point with extensive tidal marshes, forested wetlands, and undeveloped shoreline. Opportunity exists to link lowland conservation efforts with upland forest management. Recommended conservation actions include improving water quality; maintaining or enhancing in-channel watershed function, connection to riparian habitat, flow and hydrology; maintaining or restoring riparian habitat and ecological function; reconnecting cutoff sloughs in lowlands around the bay; and restoring tidal wetlands in the river delta at the south end of Tillamook Bay.

- Netarts Bay (CR-10) is a wintering site for significant populations of brant and is a designated Conservation estuary. Cape Lookout State Park protects the undeveloped south spit.
- Sand Lake area (CR-11) is designated a Natural Estuary. It is marine-dominated and one of Oregon's least developed estuaries. The area contains some of the most extensive dunes on the northern coast. State Parks purchased Whalen Island, a large, undeveloped island with extensive high quality tidal marshes, in 2000. Recommended conservation activities are restoring and maintaining tidal marshes and freshwater wetlands on the southern spit (Beltz Marsh).
- Nestucca Bay (CR-12) is designated a Conservation Estuary. It contains the Nestucca Bay National Wildlife Refuge that protects a major wintering area for the bulk of the Semidi Island population of the Aleutian and Dusky Canada Goose. The Neskowin Marsh Unit of the refuge protects a large freshwater coastal wetland that includes bogs and other rare plant communities. There are ongoing projects by USFWS and Ducks Unlimited to acquire land on the Little Nestucca River to increase goose and tidal marsh habitat. Recommended conservation actions include improving water quality, maintaining short-grass pastures to benefit wintering goose populations, and restoring tidal wetlands.
- Nestucca River Watershed (CR-13) was identified by the Oregon Plan and the American Fisheries Society as an extremely important area for native salmonids. Much of the area is designated by the Siuslaw National Forest as an Adaptive Management Area, focusing on conservation values. Recommended conservation actions are to improve water quality; maintain or enhance in-channel watershed function, connection to riparian habitat, flow and hydrology; and maintain or restore riparian habitat and ecological function.

Limiting factors in the basin include decline of key habitats, water quality, erosion and sedimentation, and flooding. Key habitats include instream and riparian areas, tidal marshes and lowland sloughs. Water quality concerns listed in decreasing number of stream miles affected are temperature, fecal coliform, dissolved oxygen, sedimentation and iron.

High bacteria levels in Tillamook Bay restrict its use for shellfish harvest and recreational contact in many areas and at certain periods of time. Bacteria sources include rural and urban residential development, urban stormwater runoff, livestock management and other agricultural activities, and several wastewater treatment plants that discharge either to the rivers or the Bay (DEQ, 2001).

The watershed has 16 water availability basins that are state flow restoration priorities for summer months. The watershed is designated a groundwater management area due to shallow alluvial sediments that are vulnerable to pollution. Frequent flooding occurs along lowland streams and the concern is increased by bedload deposition. Flooding is addressed through the Tillamook County Flood Hazard Mitigation Plan, which takes a comprehensive approach to floodplain management and innovative ways to enhance floodplain function and restore habitats (Tillamook County Performance Partnership, 1999).

The Tillamook Bay Comprehensive Conservation and Management Plan (1999) developed an action plan for each of the limiting factors in the Tillamook Bay watersheds. Actions pertinent to the ILF Program are:

- Protect and enhance upland riparian areas
- Protect and restore floodplain/lowland riparian vegetation
- Protect and restore freshwater wetland habitat
- Protect and restore tidal wetlands
- Protect and restore eelgrass habitat
- Reconnect sloughs and rivers to improve water flow
- Ensure adequate non-point urban runoff treatment and retention
- Implement agricultural pollution prevention and control measures

The major classifications of permitted wetland impacts (DSL) are:

HGM Class	**Percent of Acres**	**Cowardin Class**	**Percent of Acres**
Flat	32%	PFO	29%
Slope	19%	PEM	21%
Riverine Impounding	16%	E2	18%
Slope/Flat	14%	Slope	16%
Unknown	13%		

Information for assessed subwatersheds is below:

Miami River

The Miami River watershed drains 36.7 square miles near the town of Garibaldi. Historic prairies, swamps, marshes and tidally influenced forests in the lowlands have been cleared and drained for pasture. Construction of dikes and levees has not been common. Predominant wetland types remaining are palustrine with a few tidal salt marshes. Riparian areas in the lowlands all lack sufficient density of conifers; the tidal mainstem is in poor condition with blackberries and non-

native grasses dominant; and summer mainstem temperatures often exceed state standards.

Kilchis River

The Kilchis River watershed drains 65 square miles and is just north of Tillamook. The Kilchis is a high gradient system with a fairly short section of the mainstem in lowlands. The watershed has low permeability and stores only a small volume of the annual precipitation. Streamflow is abundant in the wet season and very low in the late summer. Ninety-two percent of the watershed is utilized for forest use.

Wilson River

The Wilson River watershed is 194 square miles and the largest of the Tillamook Bay drainage. The watershed has steep forested uplands and flat alluvial lowlands. The lower Wilson River runs adjacent to the City of Tillamook. Eighty-one percent of the watershed's total area is state and federal forest lands, and lowlands have seen quite a bit of development. Water quality is impaired for temperature, nitrogen and bacteria. Other limiting factors pertinent to wetland restoration activities are lack of off channel habitat for winter refuge and rearing of coho salmon and cutthroat trout, sedimentation, and modified hydrologic function and reduced fish habitat due to diking of estuarine wetlands.

Trask River

The Trask River watershed is 175 square miles and contains the City of Tillamook. Eighty-five percent of the watershed characterized by moderate- to steep-gradient streams and narrow valley floors. The western portion of the watershed is characterized by very low gradient, meandering streams often under tidal influence and bordered by mostly flat floodplains dominated by dairy farming and urban development. Land use is primarily forest related (97%). Historic prairies, swamps, marshes and tidally-influenced forest in the lowlands has been converted to pastures. Riparian conditions in the tidal mainstem are poor, and are variable elsewhere. Limiting factors include channelization of lowland reaches, disconnect of the river with floodplains and wetlands and sedimentation. Water quality issues are temperature throughout the watershed, and fecal coliform bacteria and dissolved oxygen in the lowlands. The Trask River contributes proportionally more water pollution loading (bacteria, sediment, and nitrogen) to Tillamook Bay than any other river.

Tillamook River

The Tillamook River watershed is 61 square miles and flows out of the coastal hills southwest of Tillamook. The watershed is primarily privately owned and land use is split between private forest and agriculture. Low gradient channels make up over 30% of the stream network with extensive lowland floodplains that have been primarily converted to pasture. The lower river is confined by a set of low levees that overtop during high flow events and result in lowland flooding. Limiting factors include channelization of lowland stream reaches and resulting

disconnection of the river from floodplains and wetlands, lack of off-channel habitat, erosion, pollution, soil compaction, and degraded riparian and floodplain habitat. Water quality limitations include temperature and low summer flows. The river routinely has the highest bacteria concentrations of the five tributaries making up the Tillamook Bay watershed.

Nestucca and Neskowin Rivers

The Nestucca River and Neskowin River watersheds consist of forested headwaters and midslope areas, with lowlands utilized for agricultural, small woodlot and industrial activities. Residential development occurs along the streams and in the estuaries. Limiting factors throughout the watersheds are sedimentation and inadequate riparian vegetation. Lowland areas are also limited by fecal coliform in some stream segments, lack of fish rearing habitat, and decreased amounts of estuary and wetland habitats.

Willamette Basin

(Oregon Watershed Enhancement Board, Willamette Basin Priorities, 2004)

The Willamette Basin is the state's largest drainage basin with an area of 12,000 square miles, and is one of the most urbanized with over two-thirds of Oregon's population living in the Willamette Valley. Historically, the Willamette was the key feature in a broad floodplain of sloughs, wetlands, and bottomland forests surrounded by an open valley dominated by prairie and savanna vegetation. Since European settlement, the valley has undergone extensive urban, suburban and agricultural development, and today its ecosystem is highly altered and fragmented.

The Willamette River and its tributaries support threatened native populations of Chinook salmon, steelhead trout and bull trout, as well as rainbow and cutthroat trout. Large dams on many of the Willamette's tributaries have significantly altered stream flow regimes. Conservation issues include a simplified channel (including the disconnection of the river from its floodplain); declining habitat complexity; and declines in water quality. The Oregon Biodiversity Project has identified oak savannas and woodlands, wetlands, and bottomland hardwood forests as broad-scale conservation priorities based on an assessment of historical changes and current management status.

Priority Wetland Ecological Systems

Autumnal freshwater mudflats
Coniferous forested wetlands
Depressional wetland broadleaf forests
Depressional wetland shrublands
Freshwater aquatic beds
Freshwater emergent marsh

Riparian forests and shrublands
Sphagnum bogs and fens
Vernal pools
Western Oregon wet prairie
Western Oregon upland prairie and oak savanna
The Willamette is divided into three drainage areas: the Lower, Middle, and Upper Willamette. ILF Priority Watersheds within the Lower Willamette Basin are the Lower Willamette, Tualatin, and Clackamas watersheds. The ILF Priority Watershed within the Middle Willamette is the Molalla-Pudding watershed.

Lower Willamette (ILF High Priority Watershed)
(Willamette Basin Watershed Councils, Biosystems Consulting, and Watershed Initiatives. 2005.)

The Lower Willamette watershed is comprised of 260,900 acres. It includes the Scappoose Creek and Johnson Creek 5th field watersheds, and the city of Portland is situated along the lower 17 miles of the river. Over 90% of the subbasin is privately owned, and approximately one-third of that is developed. More than one-half of the private land is forestland, with the remaining used for pasture and hay, row crops, shrubs, nurseries, Christmas trees, and grain crops. The west side of the Lower Willamette watershed is characterized by the Tualatin Mountains rising from a narrow terrace along the Willamette River. This area contains Forest Park. At 5,000 acres, it the largest urban forest reserve in the U.S. and the area provides an important wildlife corridor between the Coast Range and Willamette Valley ecoregions. Adjacent to this is the 143-acre wildlife sanctuary managed by the Audubon Society of Portland. The eastside is relatively flat and has been almost completely urbanized with streams, with the exception of Johnson Creek, diverted into sewers.

The Oregon Conservation Strategy identifies the following conservation opportunity areas that include wetland habitat conservation:

- Columbia River Bottomlands (WV-01) includes the 12,000-acre Sauvie Island Wildlife Area managed by the Oregon Department of Fish and Wildlife, and almost 1,000 acres along Multnomah Channel owned by Metro and Bonneville Power Administration. The area is one of the most important habitat complexes in the Pacific Flyway for migrating and wintering waterfowl, and the area is used by significant numbers of waterfowl and shorebirds. There are ongoing projects by ODFW, Ducks

Unlimited, Natural Resource Conservation Service, USFWS, and Oregon Duck Hunters Association to restore and enhance wetlands in this area. Recommended conservation actions include improving the water delivery system on the Sauvie Island Wildlife Area to enhance the effectiveness of wetlands management; maintain or restore riparian habitat and ecological function; and restore or enhance seasonal wetlands.

- Smith-Bybee Lakes (WV-04) is located north of Portland, adjacent to the confluence of the Willamette and Columbia Rivers. The area provides a wintering site for significant numbers of waterfowl. The Oregon Natural Heritage Program lists the Columbia sedge meadows here as "critically imperiled" in Oregon. Seasonally dry lakes provide emergent wetland and mudflat habitats. Recommended conservation actions are to actively manage wetlands to optimize habitat values for diversity of species, and restore floodplain forest habitats.

Limiting factors are primarily the result of urbanization. The population increased 9.2% and 7.5% for Multnomah and Columbia counties, respectively, between 2000 to 2007 (Population Research Center, 2008). Effects of urbanization include altered river and floodplain interaction, groundwater recharge and discharge, small-scale patters of flow and velocity, and tributary inflows and interaction with the mainstem. The Oregon Plan identifies summer (July – September) water flow restoration priorities for the recovery of salmonids as "highest" for the Milton Creek and South Scappoose Creek areas. Water quality limitations include summer temperature, copper, lead, and bacteria. Biological integrity has been greatly reduced due to development. Continued growth in the area and demand for riverside industrial and residential land will exacerbate these trends.

The major classifications of permitted wetland impacts (DSL) are:

HGM Class	Percent of Acres	Cowardin Class	Percent of Acres
Unknown	80%	Unknown	73%
		PEM	19%

Restoration activities identified pertinent to the ILF program are to improve stormwater management to restore water quality and reduce quantities of stormwater runoff entering rivers, and to improve the Willamette River's connection to it current and historic floodplain. Portland Metro has identified the Industrial and Ross Island sections of the watershed as having the best potential to provide increased watershed health benefits if restored. Currently, over 7,360 acres of land in Portland's Willamette Watershed are within environmental overlay zones and Metro has deemed that more than 10,000 acres of land within this watershed provide regionally significant riparian resources and/or wildlife habitat.

Tualatin (ILF High Priority Watershed)
(Willamette Basin Watershed Councils, Biosystems Consulting, and Watershed Initiatives. 2005.)

The Tualatin River watershed drains 712 square miles. Fifteen percent of its area contains the urban areas of southwest Portland, Hillsboro, Tigard and Beaverton; 35% is in agricultural use near the center of the watershed; and 50% is forestland concentrated along its borders with Oregon's Coast Range, Tualatin Mountains and Chehalem Mountains. The population in Washington County has increased 14.8% in the last seven years (Population Research Center, 2008).

The Oregon Conservation Strategy identifies the Tualatin River (WV-05) area, which includes the Tualatin River and its floodplain from the Tualatin National Wildlife Refuge to Wapato Lake, east of Gaston. The area is a significant breeding area for migratory songbirds, an overwinter site for waterfowl, and a great blue heron nesting site. The Tualatin River National Wildlife Refuge has an authorized boundary encompassing 3,084 acres along 10 miles of the river. Currently, the refuge includes almost 1,100 acres. Wapato Lake was historically one of the most important waterfowl sites in the Willamette Valley, and has high potential for wetland restoration. The USFWS currently manages 150 acres of land in this historic lakebed. Recommended conservation actions include maintenance or restoration of riparian habitat and ecological function, and restoration of floodplain wetlands and riparian forests. Another opportunity area identified by ODFW is Banks Swamp (WV-02), a willow/ash wetland located along Highway 6 west of Banks, Oregon. Key species are riparian birds, willow flycatcher and winter steelhead.

Wetlands have been significantly reduced in number. A priority action is to address habitat fragmentation including preservation, restoration and enhancement of wetlands and floodplains; including emergent wetlands, scrub-shrub, wet prairies and riparian forests. Focal species include Northwestern pond turtles, red-legged frogs, Pacific salamander, bald eagle, peregrine falcon, water howellia, winter steelhead, and *Euonymus occidentalis* (burning bush).

The major classifications of permitted wetland impacts (DSL) are:

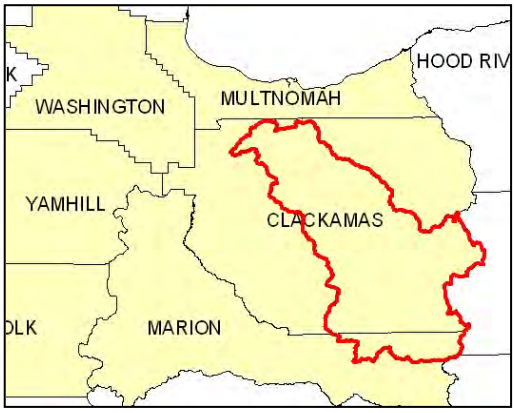
HGM Class	Percent of Acres	Cowardin Class	Percent of Acres
Flat	41%	PEM	53%
Unknown	20%	Unknown	22%
Slope/Flat	11%		
Riverine Flow Through	10%		

Limiting conditions include low summertime flows, increased peak flows and storm water management in urbanized areas, channelization of streams and disconnected floodplains, reduced riparian vegetation composition and extent, fragmented habitat, and water quality. The Tualatin Basin is water quality limited and has a TMDL for phosphorus, temperature, bacteria, dissolved oxygen, chlorophyll a, ammonia and pH. Limitations also exist for flow and habitat modifications, and biological criteria.

Mitigation projects should include as many of the functions as possible within priority wetland types and riparian areas, concentrating on expanding and connecting core habitat areas.

Clackamas (ILF Medium Priority Watershed)
(Willamette Basin Watershed Councils, Biosystems Consulting, and Watershed Initiatives. 2005; Clackamas River Basin Council, 2005.)

The Clackamas River watershed is 1,000 square miles and flows from Ollalie Butte near Mt. Hood into the Willamette River near Oregon City. Clackamas county has seen a 10% increase in population in the last 7 years (Population Research Center, 2008).



The Oregon Conservation Strategy identifies the Clackamas River area (WV-07) as an opportunity area with ongoing restoration and planning efforts by the Clackamas River Basin Council. The area contains aquatic and riparian habitats needed for coho, fall Chinook, pacific lamprey and winter steelhead. Recommended conservation actions are to maintain or enhance in-channel watershed function, connection to riparian habitat, flow and hydrology; and to maintain or restore riparian habitat and ecological function.

Wetland prairies, seasonal marshes and other wetlands are found in the lower basin near the valley floor or at the base of the foothills within the Prairie

Terraces and Valley Foothills Ecoregions. Seasonal marshes also occur in the forested upper portions of the basin within the Cascade Mountains.

The major classifications of permitted wetland impacts (DSL) are:

HGM Class	Percent of Acres	Cowardin Class	Percent of Acres
Unknown	42%	PEM	74%
Flat	25%	Unknown	47%

Limiting conditions include the channelization of streams, disconnected floodplains, reduced floodplain and riparian vegetation composition and extent, altered hydrologic processes from development and loss of wetlands, storm water inputs, and reduced water quality. Water quality concerns include stream flow, temperature, and bacteria.

Restoration priorities important to the ILF program include improving aquatic and riparian functions. Key habitats are historic backwater areas for wildlife, degraded riparian/floodplain corridors, and stream-associated wetlands. Side channels and alcoves are critical habitat for salmon and steelhead, and placements of roads, dikes and riprap have reduced these areas. Restoration actions should focus on restoring these areas and combining these actions with restoration of other floodplain functions such as establishing native vegetation and creating wetlands. Floodplain forests provide water quality improvements, flood control, and wildlife habitat, as well as social and recreational amenities near urban areas. Protection of existing high quality areas, and restoration of stream segments with water quality issues and reaches between high quality riparian habitats for connectivity are priorities. Wetland protection, restoration and creation can assist in retention, infiltration, and water filtration. The Clackamas River Basin Council has compiled specific locations for restoration actions.

Flow restoration is also a restoration need in the basin. The Lower Basin, which includes all major tributary drainages downstream of River Mill Dam, has the greatest need for flow restoration in the Clackamas Watershed. Lower Clackamas River flow regime is influenced primarily by the PGE Clackamas River Hydroelectric Projects, but also by water withdrawals, lack of riparian canopy, and recreational activities. The highest needs are in Cow, Sieben, Foster, and Goose Creeks, Rock and Richardson Creeks, and Deep Creek and its tributaries. In addition, there is a high need for flow restoration in Middle and Upper Clear Creek, and Eagle Creek and its tributaries.

Mitigation projects should focus on stream-associated wetlands that provide water storage and delay, thermoregulation, and anadromous fish habitat support.

Molalla-Pudding (ILF Medium Priority Watershed)
(Willamette Basin Watershed Councils, Biosystems Consulting, and Watershed Initiatives. 2005.)

Molalla-Pudding watershed is 877 square miles and consists of two 5th fields, the Molalla River watershed and the Pudding River watershed. The Molalla River drains the Western Cascades of southwestern Clackamas County. The river quickly descends for half its length until it enters Dickey Prairie, where the river begins to meander through agricultural lands until it reaches its mouth at the Willamette River at rivermile 36 near Canby. The Pudding River Watershed is northeast of Salem, beginning in the low-lying Waldo Hills. For nearly all of its length, the Pudding River slowly meanders through prairies used for agricultural operations. The Pudding River meets the Molalla about one-and-a-half miles above its confluence with the Willamette River near Canby. Fifty-one percent of the land is forested, and thirty-one percent is grass, hay, and pasture, which include commercial dairy and beef operations. Over 92% of the Pudding River Watershed is privately owned, with agriculture and forestry the dominant land uses. Clackamas and Marion counties have had population increases of 10.0% and 9.2%, respectively between 2000 and 2007 (Population Research Center, 2008).

The Oregon Conservation Strategy identifies Lower Little Pudding River (WV-10) as a conservation opportunity area. The area extends from Mt. Angel to the confluence with the Willamette River and is the focus of ongoing conservation actions by the Pudding River Watershed Council. The area was once an important breeding area for wood ducks, and the restoration of forested wetlands, seasonal wetlands and riparian areas along the Pudding River would once again create habitat for waterfowl and improve water quality in the river. Cutthroat trout, spring Chinook salmon, and winter steelhead are key species.

Riparian function is reduced throughout the Molalla watershed, especially in the lower watershed with reduced width and connectivity to floodplains. Priority areas for riparian function improvements are Milk, Cedar, and Canyon Creeks. Summer temperatures in lower tributaries and the Molalla River, particularly the Milk Creek subwatershed, are over the state standard for salmon productivity. High bacteria levels in the lower Molalla River are also a concern.

The major classifications of permitted wetland impacts (DSL) are:

HGM Class	Percent of Acres	Cowardin Class	Percent of Acres
Unknown	51%	Unknown	47%
Flat	25%	PEM	30%
		PFO	11%

Priority habitats for restoration include upland prairie, wetlands and wet prairies, and riparian and bottomland forests in the lower watershed. Restoration priorities in the Molalla watershed pertinent to the ILF program include watershed process and function, water quality and connectivity. Ensuring adequate flow, with priorities in the Molalla River and Milk Creek, for spring Chinook, winter steelhead and cutthroat trout is important.

In Pudding River, elevated temperature and low stream flows are limiting, especially in late summer. Priority areas are in the lower basin, and low portions of tributaries draining the western Cascades (e.g., Rock, Butte, Abiqua, Silver, and Drift Creek). These areas are also priorities for decreasing chemical runoff and sediment delivery to streams. Pudding River, Zollner Creek and Silver Creek are water quality limited for high fecal coliform concentrations. Zollner Creek is water quality limited for nitrate and nitrite. Important wetland habitats for restoration include the historically extensive wetland areas, bottomland forests along the river, and wet prairies in the lowlands. Butte, Abiqua, and Silver Creeks are the most important anadromous fish streams in the Pudding River Watershed.

Umpqua Basin

(Oregon Watershed Enhancement Board, Umpqua Basin Priorities, 2004; Umpqua Basin Action Plan, Partnership for the Umpqua Rivers, 2007)

The Umpqua Basin contains the drainages of the South Umpqua, North Umpqua, mainstem Umpqua and the Smith River. The basin lies primarily within three ecoregions (Coast Range, Cascades and Klamath Mountains) and contains a wide variety of vegetation, from Sitka spruce-dominated forests on the coast, to Oregon white oak and Pacific madrone woodlands in interior valleys, to Douglas fir and mixed conifer forests in the Cascades. Anadromous fish in the basin include Chinook, chum salmon, steelhead and cutthroat. Roughly 55% of the basin is publicly owned.

Priority Wetland Ecological Systems

Autumnal freshwater mudflats
Coniferous forested wetlands
Depressional wetland broadleaf forests
Depressional wetland shrublands

Emergent marsh
Freshwater aquatic beds
Lowland riparian woodland and shrubland
Sphagnum bogs and fens
Vernal pools
Western Oregon wet prairie

South Umpqua (ILF High Priority Watershed)

The South Umpqua watershed is comprised of 1,152,000 acres, about half of which is privately owned. Eighty-six percent of the subbasin is forestland, and the remainder is primarily small acreage, privately owned grassland, hayland and pastureland.

The Oregon Conservation Strategy identifies the Umpqua River area (KM-01) as an opportunity area, which includes part of the South Umpqua watershed at its confluence with the North Fork Umpqua. Special features of the area include several important river confluences, a relative abundance of northwestern pond turtles with populations in all the rivers, a large percentage of the Klamath Mountains ecoregions' purple martin habitat, and 14% of the ecoregion's grassland and oak savanna habitat. Key habitats include aquatic, grasslands and oak savanna, pine-oak woodlands and riparian. Maintenance and enhancement riparian habitat and connections with channels, and river flow and hydrology are recommended for conservation. The Umpqua Headwaters (WC-09) is also an opportunity area and includes the headwaters of the North and South Umpqua Rivers. The area encompasses some of the West Cascade ecoregion's most important salmonid habitat, including 11 American Fisheries Society aquatic diversity areas. Northwestern pond turtle is found in low elevation lakes and streams, particularly in the South Umpqua area. Maintenance or enhancement of in channel watershed function, connection to riparian habitat, flow and hydrology is a recommended conservation action. Impacts from recreation activities such as motorized watercraft, shoreline activities and road usage on water quality and watershed function should be considered.

The major classifications of permitted wetland impacts (DSL) are:

HGM Class	Percent of Acres	Cowardin Class	Percent of Acres
Unknown	59%	Unknown	32%
Slope/Flat	15%	PEM	32%
		R4SB	14%

The Partnership for the Umpqua River (2007) has assessed limiting factors from its watershed assessments in the South Umpqua subbasin. Assessed areas and their known and suspected limiting factors pertinent to the ILF program are highlighted below:

Cow Creek

Cow Creek was divided into Lower, Middle, Upper, and West Fork Cow Creek for assessment purposes. Wetland functions were limited in the Lower Cow Creek and Middle Cow Creek watersheds due to development and agricultural land use affects on wetlands, primarily related to loss of connectivity with river flows. Known limiting factors pertinent to the ILF program include insufficient riparian buffers in Lower Cow Creek; low streamflows; and state water quality limitations for temperature and toxics (heavy metals from Formosa Mine in Lower Cow Creek, and high mercury levels in fish in Upper Cow Creek), and pH in Middle and Upper Cow Creek. Recommended practices include restoring wetlands, especially where evidence suggests historical wetlands may have been located, or enhancing agricultural or pasture wetlands. Methods would include filling and blocking ditches, removing or blocking drains, and removing fill to restore the microtopography on any of the large areas of farmed wet pasture along Cow Creek and its tributaries. Priority areas for wetlands are Copper Creek, lower reaches on Cow Creek from Beatty Creek downstream (especially between Russell and Catching Creeks), Mitchell Creek, and Rail Gulch (below the smelter site).

Deer Creek

Deer Creek is composed of two HUC6 watersheds comprising a total of 43,090 acres. Development of agriculture (grazing/hay) and the city of Roseburg have altered or eliminated wetlands that were historically present in the watershed. Temperature, dissolved oxygen, and bacteria exceed state standards. Deer Creek is also water quality limited for flow modification, and low streamflows are limiting. There is not enough natural stream flow in South Fork Deer Creek to meet consumptive use demands in August. The first action recommended to restore wetland function is to reconnect Deer Creek to its historic floodplain. The second action is to restore farmed wet pasture to wet prairie by filling ditches, removing or blocking drains, and removing fill to restore microtopography. Priority areas are Ramp Creek/Canyon; farmed wet pastures along Deer Creek, North Fork Deer Creek (upstream of Livingston Creek) and South Fork Deer Creek; the Dixonville millpond; DaMotta Branch; and a tributary to Middle Fork of South Fork Deer Creek. A third strategy is enhancement of created wetlands in Shick Creek. Conservation strategies include purchasing greenway easements along Deer Creek within the Roseburg Urban Growth Boundary.

Myrtle Creek

The Myrtle Creek HUC5 is 76,332 acres of primarily forested lands, and contains the city of Myrtle Creek. Development has affected once-abundant wetlands in lowland valleys, especially within the urban growth boundary. Stream

temperature and bacteria levels exceed state standards, and Myrtle Creek is water quality limited for flow modification. Recommended practices include restoring key wetland areas to provide improved wildlife habitat, hydrologic control, and water quality. South Myrtle Creek near the golf course is listed as a potential wetland restoration site.

Olalla-Lookingglass

The Olalla-Lookingglass HUC5 is 103,000 acres and contains the city of Winston at its juncture with the South Umpqua River. Development has affected once-abundant wetlands in lowland valleys. Stream temperature (Bear, Lookingglass, Olalla, and Thompson Creeks) and toxics (iron on Olalla Creek) exceed state water quality standards. Water quality is also limited for flow modification, and low stream flows are of concern in Lookingglass, Olalla, Morgan, and Tenmile Creeks. Specific sites for wetland restoration are Little Muley, Lookingglass, Olalla, Tenmile, and Willingham Creeks.

South Umpqua

The South Umpqua River is divided into the Lower South, Middle South, and South Umpqua River watersheds, which together comprise 268,345 acres. The Lower South Umpqua contains part of the cities of Roseburg, Green, and Winston. Development and agriculture have altered wetlands that were historically present in the watershed. The South Umpqua exceeds state standards for temperature, pH, bacteria (Middle and South), dissolved oxygen, phosphorus (Lower South), toxics (Lower South—arsenic and cadmium), and flow modification. Low stream flow is also a limiting factor. Recommended practices for wetlands include enhancing riverine and palustrine wetlands through high-density planting and seeding, expanding forested wetlands, and converting cleared lands to wetland prairie by plugging drain ditches and eliminating livestock access. Priority areas in Lower South Umpqua are Happy Valley, Newton Creek, South Umpqua River near Shady Drive at Melrose, and along the Winston Section Road in Winston. Priority areas in Middle South Umpqua are riparian zones and floodplains of South Umpqua River near Lane Creek, near Dillard at the end of Brockway Road, and along the Missouri Bottom near Myrtle Creek Airport; and associated with Rice Creek near Barrett Creek.

Tiller Region

The Tiller Region HUC5 in the eastern portion of the South Umpqua Watershed consists primarily of forested lands. While some historical wetlands have been altered by human activities, this alteration is not considered a limiting factor in the watershed. State water quality limitations exist for temperature, pH, sediment, and flow modification.

South Coast

(Oregon Watershed Enhancement Board, Rogue Basin Priorities, 2004)

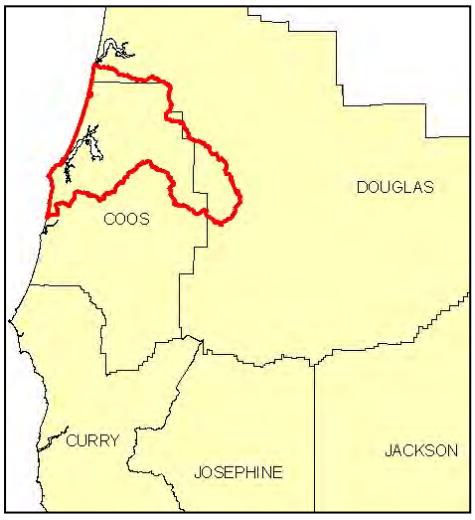
Two types of drainages characterize the South Coast Basin. To the north, the Coos and Coquille rivers flow from headwaters in the Coast Range across the Coos Bay dunes and marine terraces to the ocean. In the south, several smaller streams flow from the steeper headwaters in the Klamath Mountains.

Habitats in the South Coast Basin are particularly diverse. It includes grasslands and shrublands typical of the central and northern California coast, as well as habitats more similar to those in the Willamette and Umpqua Valleys.

The basin contains several areas identified as "core areas" for the recovery of coastal salmon and as important genetic refuges for aquatic species (American Fisheries Society). The Oregon Biodiversity Project identified native sand dune systems, estuaries and headlands and old-growth conifer forests as priority habitats in this basin, and identified the Cape Blanco area as a good place to address biodiversity conservation because of its at-risk species and unique coastal habitats. Coho salmon in this basin are listed as threatened under the Endangered Species Act.

Priority Wetland Ecological Systems
Deciduous swamp
Freshwater emergent marsh
Intertidal freshwater wetland
Intertidal mudflat
Lowland riparian woodland and shrubland
Montane riparian woodland and shrubland
Tidal salt marsh
Western Oregon upland prairie and oak savanna
Western Oregon wet prairie

Coos (ILF Medium Priority Watershed)



The Coos watershed is comprised of 718 square miles and lies primarily within Coos County. The subbasin is 89 percent private and public forest land, and 11 percent hay and pasture use. The cities of Coos Bay and North Bend make up the largest urban area on the Oregon Coast. The Coos River has the largest estuary on the coast besides the Columbia River, and is a major shipping and manufacturing center. Federally threatened species pertinent to the ILF program are

Western lily (*Delphinium leucophaeum*), Gentner's fritillaria (*Fritillaria gentneri*), and Coho salmon (*Oncorhnchus kisutch*).

The Oregon Conservation Strategy (Oregon Parks and Recreation Department, 2006) identifies the following conservation opportunity areas that target the conservation and restoration of wetland habitats:

- North Bend Dunes (CR-31) includes BLM's Coos Bay Shorelands Area of Critical Environmental Concern; key habitat for western snowy plover. Key habitats include coastal dunes and freshwater wetlands. Recommended conservation actions are to maintain deflation plan wetlands in early seral conditions, manage recreational use to limit disturbance to sensitive habitats, and remove European beach grass in targeted areas to enhance habitat for western snowy plover.
- Elliot State Forest (CR-32) contains late successional conifer forests and is an Oregon Plan Core Salmon Area for coho salmon and winter steelhead.
- Coos Bay Area (CR-34) includes the South Slough National Estuarine Research Reserve and Shore Acres State Park. The area contains rare plant species, including Western Lily, and is an important area for wintering and migrating waterfowl, and shorebirds. Key habitats are coastal bluffs and montane grasslands, estuary, and freshwater wetlands. Recommended conservation actions include the restoration of freshwater wetlands and tidal wetlands, and the reconnection of tidal sloughs where feasible and appropriate.

The Coos Watershed Association has assessed conditions in the watershed and identified limiting factors within regions. Wetlands historically have been concentrated in the Head of Tide (Coos Watershed Association 2005), Slough System, and Direct Bay Tributaries regions.

The Head of Tide region consists of forested uplands and agricultural lowlands. Streams and rivers here are within the mixing zone of fresh and brackish waters, and provide critical habitat for coho, Chinook, chum, and steelhead, searun and resident cutthroat trout. The tributaries provide spawning habitat in their headwaters, and rearing habitat in pools, connected wetlands, and tidal channels. During the summer, these streams also provide thermal refugia; and during winter they provide refugia from high velocity flows. Many of the streams, including the Millicoma and South Fork Coos Rivers, have been diked, dredged and straightened, degraded by splash damming and simplified by large wood removal. This has led to restricted fish access, reduced salmonid spawning beds, and limited the quantity and quality of both freshwater and estuarine fish nursery habitats. Channel widening and removal of riparian vegetation in lowland tributary streams have contributed to increased summer water temperatures.

The Slough System contains forested uplands and urban/rural residential uses. This area faces development pressure, and contains coho rearing areas. The primary limiting factor here is connectivity of habitats.

Tributaries entering Coos Bay have forestry, agriculture and rural residential land uses. The tributaries are highly productive for coho salmon, but have tide-gated stream mouths. The primary limiting factors are floodplain connectivity and temperature. Summer habitat structure, temperature, and winter habitat off-channel areas are limiting for coho use.

In addition to temperature limitations, water quality in the watershed has widespread limitations for fecal coliform, particularly in slough areas. Aquatic weeds and algae in Tenmile Lake are also limiting, with blue-green algae levels periodically causing warnings of a potential health hazard.

The major classifications of permitted wetland impacts (DSL) are:

HGM Class	Percent of Acres	Cowardin Class	Percent of Acres
Unknown	27%	Estuarine	46%
Flat	25%	PEM	43%
Estuarine	20%	PFO	6%
Depressional	18%	PSS	2%
Slope	5%	blank	1%
Riverine Flow-Through	4%	PEM, PSS	1%
Riverine Impounded	<1%	PEM, PFO	<1%
Lacustrine Fringe	<1%	L1UB	<1%

Mitigation projects should restore watershed connectivity by improving passage at culverts and tide gates, between streams and floodplains, and help to restore natural streamflows. The creation of natural channels and banks, water storage and delay, processing of sediment, and thermoregulation can help restore symptoms of disturbance in the watershed.

Rogue Basin

(Oregon Watershed Enhancement Board, Rogue Basin Priorities, 2004)

The Rogue River flows for 200 miles from its headwaters near Crater Lake to join the Pacific Ocean at Gold Beach. Its large drainage basin covers an area characterized by steep, forested, dissected mountains to gentle foothills and valley bottoms. Land use patterns in the basin range from the cities and towns of the Rogue Valley with their surrounding suburbs, orchards and farms, to commercial forestlands, to extensive public forestlands and wilderness areas.

The basin lies largely within the Klamath Mountains ecoregion, an area widely recognized for its complex geologic structure, vegetation patterns and overall biological diversity. Of note are the serpentine, limestone and granitic habitats, which are found only in this part of western Oregon and adjacent California. This unusual geology, and the fact that the mountains are the oldest in Oregon, has resulted in the evolution of many endemic plant species, a number of which are considered at-risk.

Major rivers include the Rogue, Applegate and Illinois. The lower 88 mile section of the Rogue is a state and federal wild and scenic river, and the lower 46 miles of the Illinois has been designated a state scenic waterway. While the basin's chinook salmon and steelhead fisheries are world-renowned, native stocks of almost all its anadromous fish are declining. Coho salmon are listed as threatened under the Endangered Species Act. Douglas fir forests, oak woodlands and ponderosa pine woodlands once dominated most of the landscape in the Rogue Basin. All have declined significantly over the past 150 years due to fire suppression, rural residential development and timber harvesting.

Important conservation issues in the basin include dealing with the long-term impacts of fire suppression, loss of wetlands, riparian habitat and floodplain connectivity along portions of the Rogue and its tributaries, restoration of coastal salmon populations, and conservation of at risk plant species, especially endemics, in developing areas.

Priority Wetland Ecological Systems

California – Southern Oregon coastal bluffs and headlands
Coastal sand dune
Deciduous swamp
Intertidal freshwater wetland
Intertidal mudflat
Lowland riparian woodland and shrubland
Montane riparian woodland and shrubland
Subalpine or Montane wet meadow
Tidal salt marsh
Western Oregon upland prairie and oak savanna
Western Oregon wet prairie

Middle Rogue (ILF High Priority Watershed)
(Rogue Basin Coordinating Council, 2006)

The Middle Rogue watershed is 564,000 acres and includes the Middle Rogue, Bear Creek, and Seven Basins areas. Sixty-six percent of the watershed is forestland and twenty-three is used for pasture, hay and grass. Jackson county, which contains the metropolitan area of Medford, has had an increase in population of 11.6% from 2000 to 2007 (Population Research Center, 2008).

The Middle Rogue watershed lies within the Klamath Mountains Ecoregion, and intersects with the Cascade region in its southeastern area. Due to the unique geology of the Klamath Ecoregion, the area boasts a high amount of species diversity. The Bear Creek Watershed includes the Agate Desert vernal pool ecosystem, as does Sams Valley and Table Rocks areas in the Seven Basins area.

The Oregon Conservation Strategy identifies the North Medford Area (KM-08) as an opportunity area for low elevation habitat containing many endemic, rare plants and as an important site for migrating and nesting waterfowl. Key habitats include aquatic, riparian and wetland habitats. The Antelope Creek area (KM-09) in the foothills east of Medford is also an opportunity area due to the diversity of habitats for both terrestrial and aquatic species.

Residential development lines both sides of the Rogue River, and the cities and surrounding areas of Grants Pass, Medford and Ashland are growing rapidly. Many wetlands have been lost from development for agriculture, transportation and urban growth, and the Rogue Valley is prioritized for wetland restoration and acquisition (Oregon Parks and Recreation Department, 2003). Stream flows are regulated by releases from Lost Creek and Applegate Dams. Savage Rapids Dam at river mile 106 is considered a major fish passage problem and is scheduled for removal in 2009.

Low summer rainfall, high temperatures and extensive irrigation withdrawals limit stream water flows in the summer months and result in limiting water temperatures for salmonids. Additional limiting factors in the Middle Rogue watershed include 303d listings for fecal coliform, dissolved oxygen, phosphorus, ammonia, aquatic weeds, chlorophyll a, and pH.

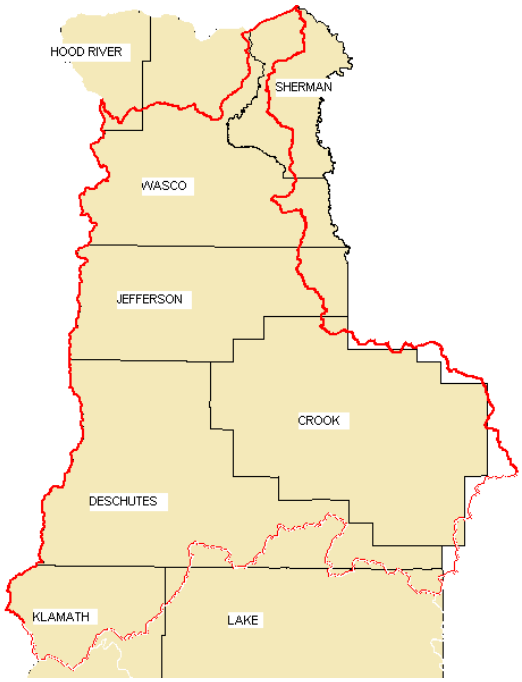
The major classifications of permitted wetland impacts (DSL) are:

HGM Class	Percent of Acres	Cowardin Class	Percent of Acres
Unknown	67%	Unknown	69%
Depressional	12%	PEM	30%
Slope/Flat	11%		

Mitigation projects should focus on replacement of wetlands that address multiple functions. Priorities are wetlands that provide riparian habitat and floodplain connectivity, restoration of coastal salmon populations, and conservation of at risk plant species, especially endemics, in developing areas.

Deschutes Basin

(Oregon Watershed Enhancement Board, 2004)



The Deschutes River drains over 10,000 square miles, making its basin one of the largest in Oregon. The terrain of the basin varies markedly, from the east slope of the Cascades and the western edge of the Ochoco Mountains to the Deschutes Valley and the high plateau between the Deschutes and John Day rivers. The climate of the basin is slightly influenced by the Pacific Ocean, making it a little warmer, and a little moister, than most other east side drainages.

The Deschutes Basin straddles parts of three different ecoregions – the Columbia Basin, East Cascades and the Blue Mountains. Its vegetation is as varied as its climate and elevation, and many ecological systems are represented here. On the west side of the basin, coming down from the crest of the Cascades, conifer forests cover the slopes. To the east, in the Blue Mountains ecoregion, Western juniper is dominant.

Prior to European settlement, basin big sagebrush, native grasslands and riparian woodlands were widespread in this watershed. Today, irrigated agriculture occupies most of the valley bottoms and plains, while juniper has spread into many former shrub-steppe vegetation types. About half the basin is in public ownership.

The Deschutes River itself, fed by snowfields in the Cascades, flows through high elevation wet meadows and lava plains before dropping through scenic canyons and shrub steppe to join the Columbia. The Deschutes supports one of the few remaining wild spring chinook populations in the Columbia Basin, as well as fall chinook and summer steelhead. Bull trout and steelhead are listed under the federal Endangered Species Act.

Conservation issues in the Deschutes Basin include habitat loss and fragmentation due to rapid population growth and urban development around Bend, Redmond and Madras, and to recreational development in both these and outlying areas. Deschutes, Crook, and Jefferson counties have seen the highest population increase in the state between 2000 and 2007 at 39.4%, 35%, and 15.9%, respectively (Population Research Center, 2008). Loss and degradation of wetland and riparian habitats is a concern throughout the basin.

Projects that address important systems and species and also provide for flow improvements in the Upper Deschutes and Crooked River systems would have particularly high ecological benefit in this basin. Similar to other east side basins, peak flows in the Deschutes occur in the spring and lowest flows (and highest demand) in late summer. The upper Deschutes has been fully appropriated since 1913. A volume representing about one-third of the consumptive water rights issued in the basin is diverted from the Deschutes near Bend. The most even flows in the basin are found in the Metolius drainage, and the greatest variability is found in Crooked River flows (another third of the volume of consumptive water rights issued in the basin is diverted from the Crooked River). The lower Deschutes, fed by springs originating as snowmelt in the upper basin, is characterized by more uniform flows.

Priority Wetland Ecological Systems

Alkaline wetlands (Conservation)
Aspen forest and wetland
Deciduous swamp
Foothill and lower montane riparian woodland
Freshwater emergent marsh
Lowland riparian woodland and shrubland
Montane riparian forest and shrubland
Subalpine or montane wet meadow

The Oregon Conservation Strategy (Oregon Parks and Recreation Department, 2006) identifies many conservation opportunity areas that target the conservation and restoration of wetland habitats:

- Warm Springs River (EC-03) for naturally spawning spring Chinook.
- Big Marsh Creek/Crescent Creek (EC-06) includes Big Marsh, a large high-quality wetland in the headwaters of the Crescent Creek drainage, where the Forest Service has ongoing enhancement efforts. Big Marsh

supports one of the largest remaining populations of Oregon spotted frog as well as breeding yellow rails.

- Little Deschutes River Basin (EC-07) has an extensive wet meadow system and some high-quality shrub habitats. Restoration of wetlands and wet meadows is a recommended conservation action.
- Ochoco Mountains area (BM-04) includes part of the section of the North Fork Crooked River designated as a Wild and Scenic River; Scenic River Big Summit Prairie is one of the largest montane wetlands in eastern Oregon, streams throughout this area provide habitat for inland Columbia Basin redband trout, and there is a high potential for increase in breeding sandhill cranes.
- Lower Deschutes River (CP-03) encompasses the Lower Deschutes Wild and Scenic River corridor and includes excellent steelhead and trout fisheries.

Limiting factors were evaluated by HUC6 through the Deschutes Basin Restoration Priorities (OWEB 2004) for aquatic/channel habitats, upland precipitation and storage, terrestrial/upland habitats, riparian/floodplain habitats, and wetland habitats. Where documentation existed, a rating of No, Low, Moderate, or High Impact was assigned for each parameter within habitat types. The most common factors having a "high impact" across the basin in aquatic/channel habitats are altered thermal regimes, altered disturbance regimes, and instream flows. The most common "high impact" parameters for riparian/floodplain habitats were loss of shade/cover and habitat fragmentation/connectivity.

Wetland impacts were based on wetland function assessments determined by aerial reconnaissance. Areas with high impact included the Upper North Fork Crooked River. This area includes the Ochoco Mountains where montane meadows have been drastically altered by diking, draining and heavy grazing. Riparian areas here have low levels of stability. The area also has a moderate impact of habitat loss, altered species composition, and altered soil condition/compaction/fill.
Other areas with high impacts were the Chimney Rock, Lower Ochoco Creek, Lower Crooked Valley areas. Wetlands in these HUC6 areas showed high impacts of habitat fragmentation/connectivity due to low levels of riparian stability; altered species composition based on low levels of wetland and riparian biodiversity; and altered soil condition/compaction/fill due to low levels of sediment stabilization in the watershed. These watersheds also showed moderate impacts due to intense grazing pressure and moderate levels of water storage and delay.

The major classifications of permitted wetland impacts (DSL) are:

HGM Class	**Percent of Acres**	**Cowardin Class**	**Percent of Acres**
Slope	48%	PEM	99%
Unknown	42%		

Mitigation projects should target restoration of diked and drained wetlands that will provide water storage and delay in combination with other functions. The Deschutes Basin Restoration Priorities identifies several watersheds with moderate impacts to water storage and delay that may contribute to low instream flows. These are: Whychus Creek, Willow Creek, Middle Deschutes River, White River, Mud Springs Creek, and Lower Trout Creek.

D. References

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Partnership for the Umpqua Rivers. 2007. Umpqua Basin Action Plan.
Rogue Basin Coordinating Council. 2006. Rogue Basin Regional Restoration Priorities. http://www.oregon.gov/OWEB/restoration_priorities.shtml#Rogue_Basin. Prepared for the Oregon Watershed Enhancement Board, Salem, Oregon.

XII. Exhibit B: Instrument Modifications

As mitigation projects are identified, DSL will submit a written request to the Corps to modify the Instrument according to the process outlined in this Exhibit (33 CFR 332.8). Other forms of Instrument modifications, including expansion of the ILF program to include compensatory mitigation for non-wetland waters and expansion of approved mitigation projects, will also follow the process outlined herein.

Requests for Instrument modifications will be accompanied by the appropriate supporting documentation as determined by the District Engineer. DSL expects that requests for addition of a mitigation project will include the following information:

- The river basin and watershed (hydrologic unit code) of the site
- The goals and objectives of the site related to the watershed compensation planning framework
- Proposed service area
- Current zoning and zoning for adjacent properties
- Site conditions and location
- Proposed preliminary concept plan and/or feasibility study (if complete/available)
- How the project meets the project selection criteria outlined in Exhibit A.
- Estimate of proposed acreage/linear footage and type of mitigation
- Proposed protection and long-term management strategy
- Other information as needed

DSL may elect to ask for a preliminary review and consultation of a modification request. In this case, the District Engineer will provide copies of the draft request to the IRT and will provide comments back to DSL within 30 days.

Within 30 days of receipt of DSL's formal request for an Instrument modification, the District Engineer will notify DSL whether the Instrument modification request is complete. Within 30 days of receipt of a complete modification request, the District Engineer will provide public notice of the request that summarizes the project documentation provided by DSL, and makes this information available to the public upon request. The comment period will be 30 days, unless otherwise determined and justified by the District Engineer. The District Engineer and IRT members may also provide comments to the sponsor at this time. The Corps will provide copies of all comments to IRT members and DSL within 15 days of the close of the public comment period.

DSL will prepare a draft amendment and submit it to the District Engineer for a completeness review. The draft amendment will include the following information as the mitigation plan (as required by 33 CFR Part 332.4 (c)):

- Information included in the initial modification request.
- Mitigation plan with a legend and scale
- Estimate of proposed acreage/linear footage and type of mitigation
- Description of existing functions and services and how they will be improved or enhanced through specific mitigation measures
- Project budget
- Determination of credits and the credit release plan
- Maintenance plan
- Performance standards
- Monitoring requirements
- Long-term management plan
- Adaptive management plan
- Other information as needed

The Corps will notify DSL within 30 days of receipt of the amendment whether it is complete, or will request additional information. Once any additional information is received and the amendment is complete, the Corps will notify DSL. DSL will provide copies of the amendment for the Corps to distribute to the IRT for a 30-day comment period. This comment period begins 5 days after the copies of the amendment are distributed. Following the comment period, the District Engineer will discuss any comments with the appropriate agencies and DSL to seek to resolve any issues using a consensus based approach, to the extent practicable. Within 90 days of receipt of the complete amendment, the District Engineer must indicate to DSL whether the amendment is generally acceptable and what changes, if any, are needed.

DSL will submit a final amendment to the District Engineer for approval, with supporting documentation that explains how the final amendment addresses the comments provided by the IRT. DSL will also provide copies directly to IRT members. Within 30 days of receipt of the final amendment, the District Engineer will notify the IRT members whether or not he intends to approve the amendment. If no IRT members object by initiating the dispute resolution process within 45 days of receipt of the final amendment (Army Corps of Engineers, 2008), the District Engineer will notify DSL of his final decision, and if approved, arrange for signing by the appropriate parties.

Streamlined Review Process

The District Engineer may use a streamlined modification review process for changes reflecting adaptive management of the ILF program, credit releases, changes in credit releases and credit release schedules, and changes that the District Engineer determines are not significant. In this event, the District

Engineer will notify the IRT members and DSL of this determination and provide them with copies of the proposed modification. IRT members and DSL have 30 days to notify the District Engineer if they have concerns with the proposed modification. If IRT members or DSL notify the District Engineer of such concerns, the District Engineer will attempt to resolve those concerns. The District Engineer will notify the IRT members and DSL of his intent regarding the proposed modification within 60 days of providing the notice to the IRT members. If no IRT member objects, by initiating the dispute resolution process (33 CFR 332.8) within 15 days of receipt of the notification, the District Engineer will notify the sponsor of his final decision and, if approved, arrange for it to be signed by the appropriate parties.

XIII. Exhibit C: Financial Accounting Structure

The Oregon Removal Fill Mitigation Fund (ORFMF) will be used to manage the federally approved deposits and expenditures from the ILF Program. The following excerpts from statute outline collection and use of funds from the ORFMF:

> ***ORS.196.643 Payments to comply with permit condition, authorization or resolution of violation.*** *A person who provides off-site compensatory wetland mitigation in order to comply with a condition imposed on a permit in accordance with ORS 196.825 (4), an authorization issued in accordance with ORS 196.800 to 196.905 or a resolution of a violation of ORS 196.800 to 196.905 may make a payment for credits to an approved mitigation bank with available credits, or to the Oregon Removal-Fill Mitigation Fund, if credits from a mitigation bank are not available. If the person is making a payment to the Oregon Removal-Fill Mitigation Fund, the payment shall be equal to the average cost of credits available from all active mitigation banks in the state. [2003 c.738 §22; 2007 c.849 §11; 2009 c.343 §10]*

ORS.196.645 Sources of fund. *The following moneys shall be paid into the Oregon Removal-Fill Mitigation Fund:*

(1) Any moneys appropriated for that purpose by the Legislative Assembly;

(2) Moneys received from conditions imposed on a permit, authorizations or resolutions of violations, except civil penalties, involving compensatory mitigation in which the Department of State Lands is the party responsible for the compensatory mitigation;

(3) Moneys awarded for such purposes as specifically stipulated under grants through the federal Emergency Wetlands Resources Act of 1986, P.L. 99-645, or the federal Coastal Zone Management Act of 1972, 16 U.S.C. 1451 et seq., as amended;

(4) Moneys obtained by gift, bequest, donation or grant from any other public or private source for the purposes of ORS 196.600 to 196.655 or 196.800 to 196.905;

(5) Repayment of moneys from the fund, including interest on such moneys; and

(6) Moneys obtained from interest or other earnings from investments of moneys in the fund. [Formerly 541.580; 1999 c.59 §50; 2003 c.738 §11; 2009 c.343 §11]

> ***196.650 Use of fund.*** *The Department of State Lands may use the moneys in the Oregon Wetlands Mitigation Bank Revolving Fund Account for*

the following purposes:

(1) For the voluntary acquisition of land suitable for use in mitigation banks.

(2) To pay for specific projects to create, restore or enhance wetland areas for purposes of carrying out the provisions of ORS 196.600 to 196.905. Moneys deposited in the account for wetland impacts may be used only for wetland creation, restoration and enhancement.

(3) For the implementation of long-term protection measures related to projects that create, restore, enhance or preserve water resources of this state.

(3) For purchase of credits from approved mitigation banks.

(4) For payment of administrative, research or scientific monitoring expenses of the department in carrying out the provisions of ORS 196.600 to 196.655.

(5) For the disbursal of funds received under the Federal Coastal Zone Management Act of 1972, as amended (16 U.S.C. 1451 et seq.), for such purposes as specifically stipulated in a grant award.

(6) For the disbursal of funds received under the Federal Emergency Wetlands Resources Act of 1986, P.L. 99-645, for the voluntary acquisition of wetlands and interests therein as identified in the wetlands provisions of the Statewide Comprehensive Outdoor Recreation Plan. [Formerly 541.585; 1993 c.18 §37; 2003 c.738 §12; 2009 c.343 §12]

XIV. Exhibit D: Mitigation Plans

XV. Exhibit E: Advance Credits

A. Determination of Advance Credits

Advance credits will be available in the 6 service areas outlined in the table below. Each of these service areas are outlined as high or medium priority watersheds in the Prioritization and Compensation Planning Framework (Exhibit A). The number of advance credits for each service area is based on total acres of impact between 2005-2011, the average annual acres of impact over this same time period, and an assumption that a minimum of 5 credits are necessary for initial costs to implement a project on the ground.

Service Area Name*	HUC	Total Acres of Wetland Impacts 2005-2010	Average Annual Acres of Wetland Impacts 2005-2010	Advanced Credits
Coos	17100304	21	4	8
Lower Columbia	17080006	29	5	10
Lower Willamette	17090012	20	3	8
Necanicum	17100201	3	1	5
Umpqua Interior Foothills	Portions of 17100301, 17100302, 17100303	97	16	15
Wilson-Trask Nestucca	17100203	7	1	5

B. Service Areas

Service areas follow the 8-digit hydrologic unit boundaries (4th field HUC) with the exception of the Umpqua Interior Foothills (see individual service area maps). An alternate service area was selected here for the following reasons:

1) Over 80% of wetland impacts permitted in the Umpqua basin from 2005-2010 occurred along the I-5 corridor between Sutherlin and Canyonville. This area is at the confluence of the Umpqua, South Umpqua, and North Umpqua hydrologic units.
2) The service area selected is the Umpqua Interior Foothills Level IV Ecoregion (78c). This area includes the I-5 corridor and is the northern portion of the Klamath Mountain Ecoregion. It is ecologically similar, containing a complex of foothills and narrow valleys with fluvial terraces

and floodplains. Elevations range from 400 to 2,800 feet. The summers are hot and dry and soils have a xeric moisture regime. The area was historically dominated by grassland in contrast to more mountainous terrain directly south. The area contains two conservation opportunity areas: the Umpqua River area around Roseburg (KM-01), and the Tenmile area (KM-02) west of Winston along Highway 42 (ODFW 2005).

C. References

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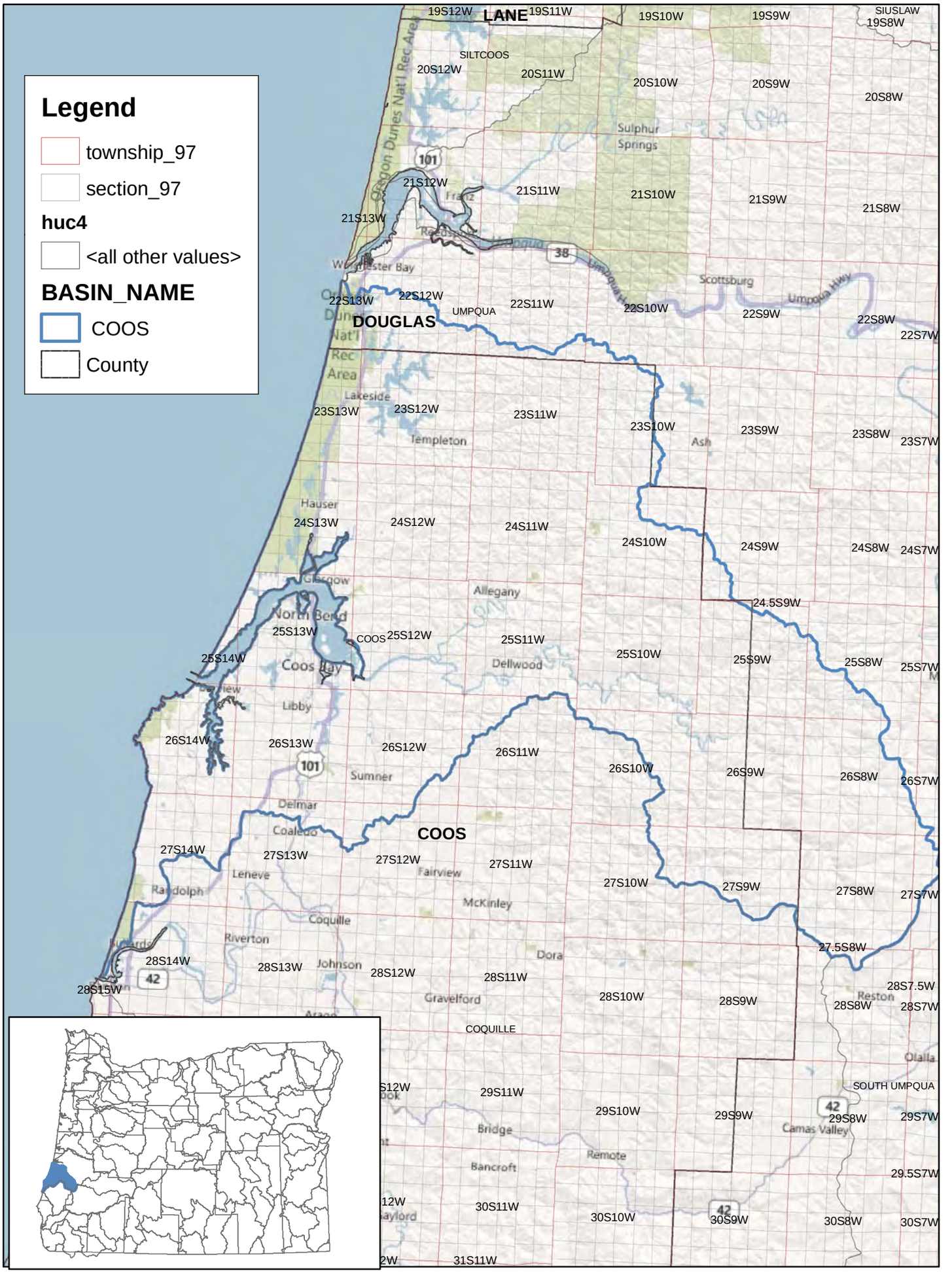
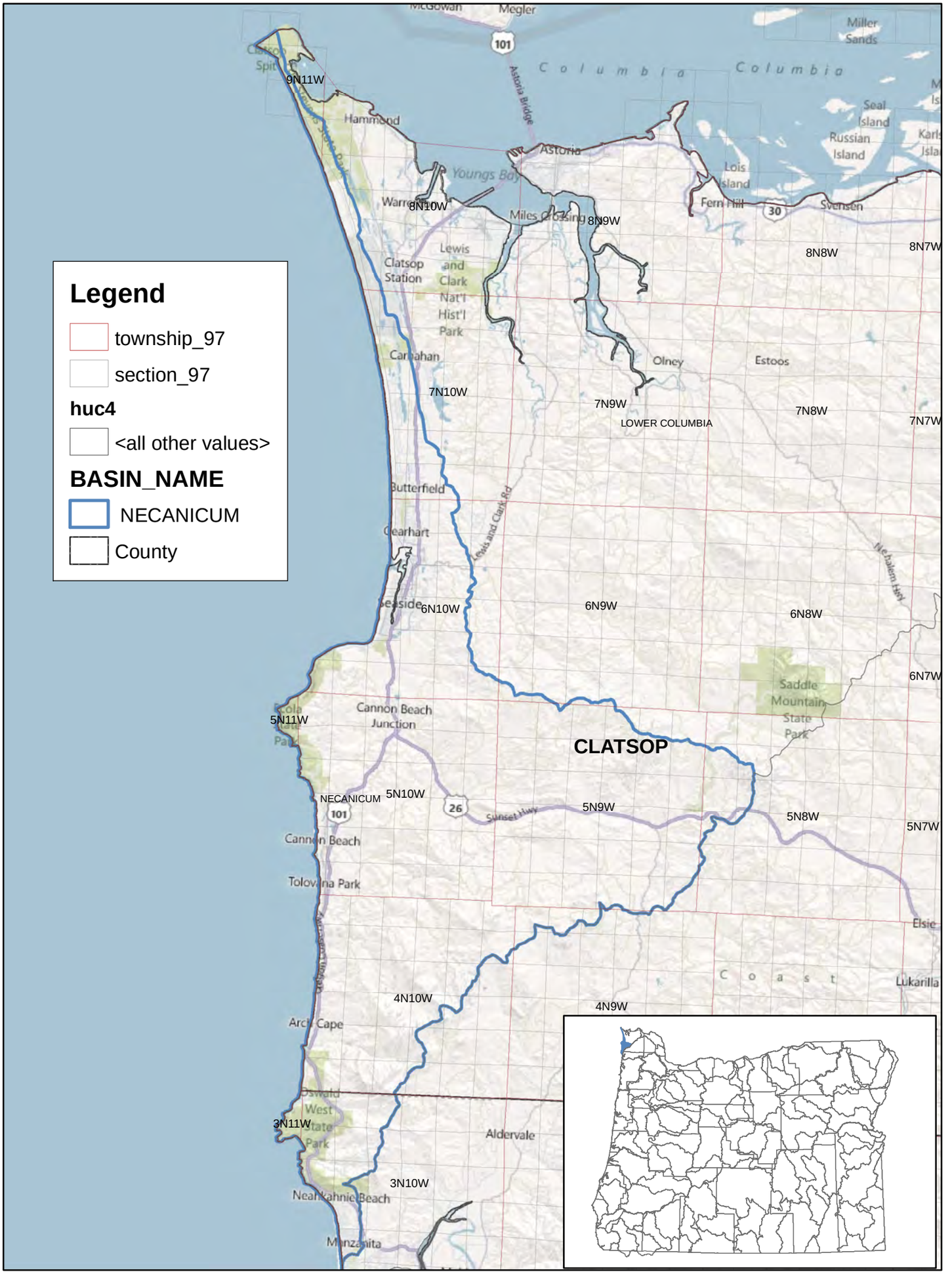
Coos In-Lieu Fee Service Area



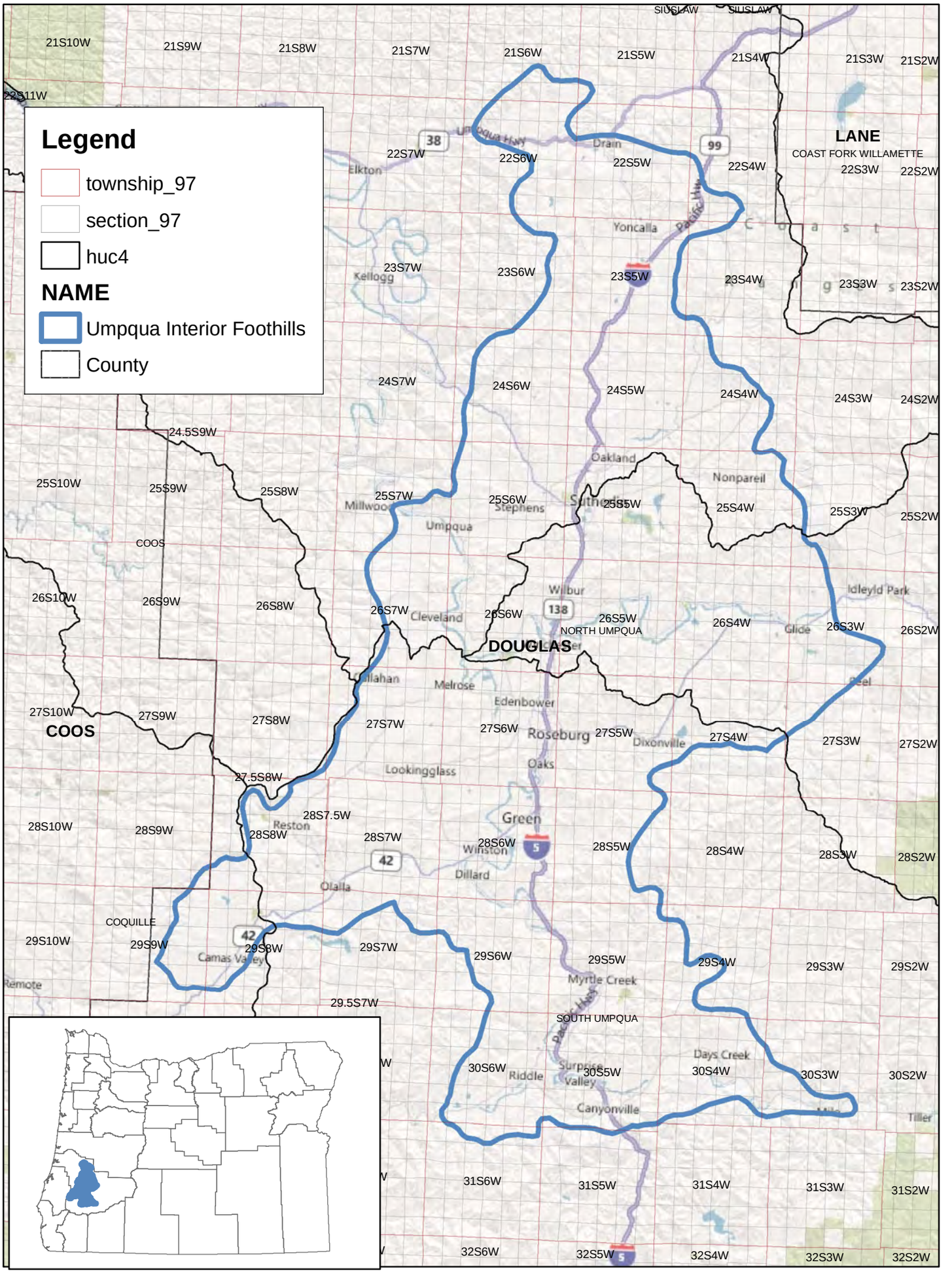
Lower Columbia In-Lieu Fee Service Area

Lower Willamette In-Lieu Fee Service Area

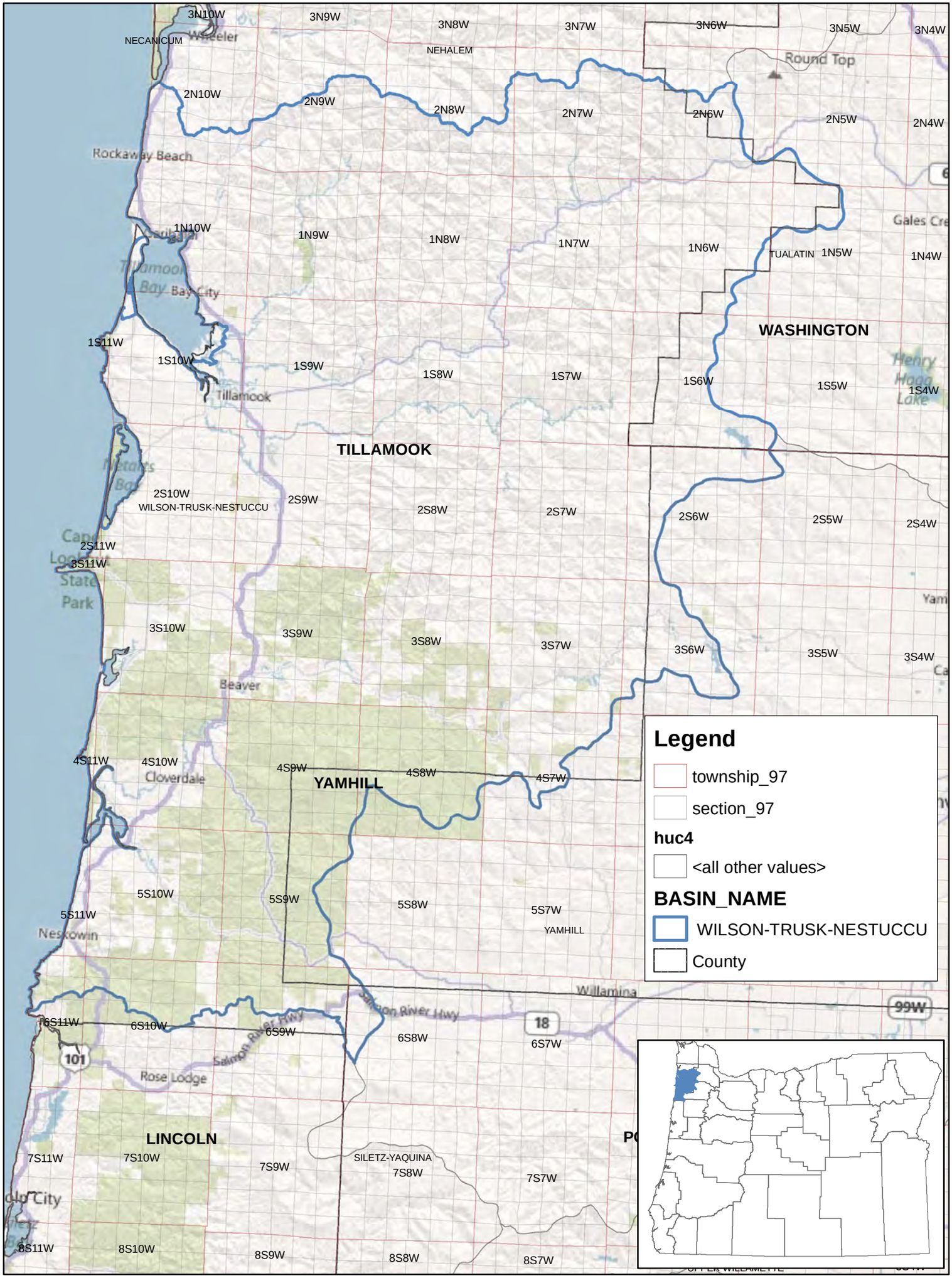
Necanicum In-Lieu Fee Service Area



Umpqua In-Lieu Fee Service Area



WilsonTrask Nestucca In-Lieu Fee Service Area



XVI. Exhibit F: Statement of Sale of Credit

Oregon
Theodore R. Kulongoski, Governor

Department of State Lands
775 Summer Street NE, Suite 100
Salem, OR 97301-1279
(503) 986-5200
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www.oregonstatelands.us.

State Land Board

Theodore R. Kulongoski
Governor

Bill Bradbury
Secretary of State

Randall Edwards
State Treasurer

CENWP-OD-G Policy Specialist
P.O. Box 2946
Portland, Oregon 97208-2946

Subject: Statement of Sale for (Number of Credits) Mitigation Credits from the Project Name to Permittee Name

Date

The Department of State Lands (DSL) has a Memorandum of Agreement with the U.S. Army Corps of Engineers (Corps) to establish and operate an In-Lieu Fee Program.

This letter confirms the sale of (Number of Credits) credits of (Resource Type A), and (Number of Credits) credits of (Resource Type B). These credits are being used as compensatory mitigation for (Number of Acres) acres of impact to (Resource Type A), and (Number of Acres) acres of impact to (Resource Type B) in the (Impact HUC) as authorized by DA permit (DA permit number) and Oregon Removal-Fill Permit/GA (DSL permit number).

By selling credits to the permittee above permittee, DSL is the party responsible for fulfilling the mitigation aspect of the Permit(s) listed above.