



FINAL PROJECT REPORT Oregon Watershed Enhancement Board Grant 99-803/99-420



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Coos-Coquille Basin Estuarine Wetland Protection and Restoration Project

2000 - 2005 Oregon Watershed Enhancement Board Grant #99-803 Final Grant Report Grant Administered by: Coos Watershed Association

Executive Summary. The Coos-Coquille Basin Estuarine Wetland Protection and Restoration project was an innovative partnership among the Coos Watershed Association (CoosWA) and Coquille Watershed Association (CWA), the Oregon Watershed Enhancement Board (OWEB) and the U.S. Fish & Wildlife Service (USFWS). Funding of \$1,180,000 for the project was provided by an OWEB grant to the Coos Watershed Association (CoosWA) that combined both state Measure 66 capital funds (\$360,000) to match the U.S.F.W.S. Coastal Program grant (\$820,000). Of the total funds, \$720,000 in Federal funds were identified for coastal wetland acquisitions and easements (including expenses); \$427,273 was allocated for wetland restoration projects; and \$32,727 was provided for fiscal administration for the state portion of the restoration budget. Another \$100,000 in match from the South Slough National Estuarine Research Reserve (SSNERR) was pledged for use in acquisition projects approve by the South Slough Management Commission.

Funds provided by the Coos-Coquille Basin Estuarine Wetland Protection and Restoration Project were used to acquire fee-title wetlands, acquire or supplement funding, for conservation easements on coastal wetlands, and were used for restoration of coastal wetlands. One fee-title acquisition consisting of 168.7 acres was purchased (with an additional 84.7 acres of adjacent property dedicated to wetland restoration). Conservation easements were purchased (or NRCS funds supplemented) on three properties covering 270 acres. Direct project costs associated with the acquisitions and easements totaled \$704,022, out of which \$416,574 was provided by the Federal portion (99-803) of the grant. Direct payments for acquisitions and easements totaled \$306,925, with an additional \$\$39,991. Another \$7,869 in funding was provided for project expenses that did not result in acquisitions and easements; project management expenses for the acquisition and easement portion of the grant totaled \$61,789 (17.4%). An additional \$364,229 in matching contributions were obtained for the Federal acquisitions and easements, principally from the USDA Commodity Credit Corporation (WRP and Loan Default program), with the Coos Bay/North Bend Water Board providing \$48,329 through the acquisition of an adjacent property.

Restoration projects funded under the Coos-Coquille Basin Estuarine Wetland Protection and Restoration Project resulted in 448 acres of coastal wetlands restored using grant funds, 380 acres within protected easements/acquisition and 68 acres under shorter-term Land Use Agreements. Of the twelve restoration projects that received funding under this grant, nine resulted in actual restoration on-the-ground, another two projects involved planning and data collection, and one project was ultimately unsuccessful due to landowner resistance to requirements under his conservation easement with the USDA-Commodity Credit Corporation. Expenses (including match) for the restoration program of this grant totaled \$1,032,225, of which \$329,709 was provided by the Federal portion of the grant (99-803), and \$360,000 by the state of Oregon (OWEB) portion of the grant (99-420). Another \$49,108 in OWEB grants provided supplemental funding for the restoration projects. Other matching funds for the restoration projects totaled \$23,685, with another \$62,701 for fiscal administration of the coastal wetlands restoration program within the Federal and state grants.

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(1) A description of the project including background on the problem which generated the project.

This project is a partnership among the USFWS Coastal Wetlands Conservation Grant Program, OWEB, and the Coos and Coquille Watershed Associations. The project helped fund purchases of land and conservation easements and habitat restoration along sloughs around Coos Bay and the lower Coquille River (see Map 1 for project locations). The project was designed to restore and create permanent protected status for wetlands in the Coos and Coquille valleys in southwestern Oregon. These wetlands are known to provide exceptional rearing habitat for threatened salmonid species, and represent an essential component of healthy coastal ecosystems. Over the past hundred years, most of the functional values for these wetlands have been lost. Some have been filled for development, while others have been converted to agricultural (grazing) use by means of dikes, tidegates, and ditches for improved drainage.

Many of the Coos and Coquille wetlands converted for agricultural use are rapidly losing economic value. Local agricultural operations were traditional small, family-owned businesses, and like similar small farms across the country they are finding it increasingly difficult to compete with larger operations that may enjoy more favorable growing conditions or more convenient transportation routes.

The project was designed to give interested landowners a mechanism for returning their unwanted or unproductive wetland pastures to full ecological function and, where desired, to receive full market value compensation for that land with which to reduce debt or otherwise improve new or existing businesses activities. All activities were voluntarily entered into by a landowner, and were either specifically approved by a Wetlands Technical Advisory Committee (WTAC) or a NRCS Wetland Reserve Program project. The WTAC provided initial guidance and oversight on the feasibility and appropriateness of candidate projects, and ultimately forwarded a "recommendation to proceed" to the Coos and Coquille Watershed Association's boards. This committee included technical specialists and representatives from each of the two watershed associations operating in the grant's geographic area. One technical specialist was provided by the South Slough National Estuarine Research Reserve (SSNERR). A second committee member was an ODFW fish biologist; a third member was a local representative of the Natural Resources Conservation Service; and the South Coast Land Conservancy supplied the fourth member. Additional assistance was sought as needed on issues involving hydrology and engineering and other special disciplines. These additional individuals were not formal members of the committee.

The original grant agreement specified a process for identifying and approving potential acquisition, easement, and restoration projects. All projects, whether acquisitions, easements or restoration, were required to be voluntarily entered into by the landowner. Potential projects were to be nominated by either the Coos or Coquille Watershed Associations, by the Natural Resources Conservation Service (NRCS) through its Wetland Reserve Program (WRP), by SSNERR, or through the Wetland Technical Advisory Committee at its staff. Nominated projects were presented to the Wetlands Technical Advisory Committee, comprised of technical staff from CoosWA, CWA, NRCS, SSNERR, and the South Coast Land Conservancy (SCLC), Oregon Department of Fish & Wildlife (ODFW), and a representative each from the Coos and Coquille Watershed Associations' Board of Directors. Five WRP projects that were approved prior to December 1, 1999 were "grandfathered" as eligible for grant funding. The SSNERR was also allowed to designate \$300,000 of acquisition and easement projects in exchange for their \$100,000 match contributions. However, due to Oregon Legislative prohibitions on expenditure of SSNERR funds for acquisitions, the SSNERR Management Commission withdrew their match and ability to designate projects.

A local wetlands project manager served as staff to the WTAC. The responsibilities of the wetlands project manager included developing projects under the direction of the WTAC, and serving as the local coordinator and contact for projects to be considered for funding under this grant. The wetlands project manager served as the coordinator for landowners, local government, the community, and potential



project partners on issues such as project planning and design, landowner outreach, and development of funding strategies.

The following are landowners who participated in restoring wetlands on their property:

Sinko WRP Easement and Restoration

Winter rearing habitat for juvenile salmonids (especially coho and Chinook salmon) is a commonly identified limiting factor (State of Oregon, *Oregon Coastal Coho Assessment* (2005). The Sinko WRP conservation easement and its associated restoration actions are intended to address this limiting factor, as well as restore wetlands and wet pastures for waterfowl use.

The Sinko project acquired an easement on 200 acres of farmed wetland in order to restore historic wetland habitat through the USDA Wetland Reserve Program, with additional funding provide by this grant. The project was one of the original five NRCS Wetland Preserve Projects identified in the grant proposal to be "grandfathered" into project. The property was previously used as dairy pasture (see Figure 1 and Appendix 1).

The project also addressed upper-watershed salmonid habitat by correcting the existing fish barriers and reestablishing native vegetation to shade waterways and reduce water temperatures in lower estuarine rearing habitat areas (see Figure 2). The restoration portion of the project was implemented in two phases.



Figure 1. Sinko property before wetland restoration. North property line, looking southwest. April 3, 2000



Figure 2. Sinko property before restoration. Slough at southeast property corner. April 3, 2000

Fredrickson WRP Project

The Fredrickson wetland restoration project involved the acquisition of an easement on twelve acres bordering the west bank of Palouse Creek near the mouth of Palouse Slough (see Appendix 2). This was another WRP project that was "grandfathered" into the Coos-Coquille Basin Estuarine Wetland Protection and Restoration Project grant.

The project purpose is to return the farmed wetland pasture to its original tidally influenced marshland, and increase the habitat to benefit of Coho salmon.



Figure 3. Frederickson WRP, October 2004.

Brunschmid WRP Project

The Brunschmid WRP project was one of the five WRP sites "grandfathered" into the Coos-Coquille Basin Estuarine Wetland Protection and Restoration Project grant. Values at the site currently provide for freshwater wetland habitats. If, and when, the immediately downstream landowner removes tide gates (or breaches dikes, which is naturally occurring), the site has potential to provide High Marsh and Tidal Channel estuarine wetland habitats. The Brunschmid WRP easement covers 17 acres of former pastureland that is not naturally reverting to freshwater marsh (see Appendix 3).



Figure 4. Brundschmid WRP, October 2004.

Schrader Wetland Easement and Restoration

The Schrader project involved the acquisition of an easement (held by the South Coast Land Conservancy) of 58 acres of farmland, located off of Highway 42 just outside of the city of Myrtle Point (see Appendix 4). The site contains several streams and numerous seeps, which feed the wetland and connect it to the tidally influenced South Fork Coquille River (see Figures 5 and 6). The project was identified by the WTAC Project Manager and the Coquille Watershed Association as having high potential to provide summer and winter salmonid rearing habitat if connectivity with the Coquille River was improved. In addition, because of the sites location adjacent to the Town of Myrtle Point, and right next to the High School and Coos County Fair Grounds, there is a high potential for public education and outreach available at the project.



Cowan WRP Easement and Restoration

Figure 5. Schrader WRP, June 2001.

Figure 6. Schrader Easement, June 2001.

The Cowan WRP project was one of the five WRP sites "grandfathered" into the Coos-Coquille Basin Estuarine Wetland Protection and Restoration Project grant. Estuarine wetland functions at this site are limited by a tide gate located at the mouth of Larson Slough; however, the site provides high potential for juvenile salmonid (principally coho salmon) winter freshwater rearing habitat. The easement involves an



Figure 7. Cowan WRP site, March 2004.

area that was historically a saltwater marsh but is currently 90 acres of an artificially created freshwater tidal marsh due to an agricultural dike system and the construction of the original Roosevelt (Coast) Highway (see Figure 7 and Appendix 5).

Snyder Wetland Restoration

The Snyder project involves an area of 55 acres of pastureland bordering the Coquille Slough (see Appendix 6). The project was identified by the Coquille Watershed Association as a potential project for the Coos-Coquille Basin Estuarine Wetland Protection and Restoration Project. Its ecological value is in providing juvenile salmonid winter rearing habitat in lower watershed areas. Prior to restoration actions, the project area was bisected by a slough and about 40 acres are jurisdictional wetlands, but a natural levee surrounded the site and a tide gate prevented tidal connectivity with the Coquille River. The site receives seasonal flow from a couple of freshwater



Figure 8. Snyder Wetland Restoration. Split channel around island. July13, 2004.

streams, and a ditch ending in a formerly tidegated culvert both drains and floods the property.

Restoration objectives for this site are to:

- Create open channel flow between the tidal Coquille River and the wetlands that will allow tides above mean tide level (MTL) to flood the wetlands;
- Prove deep-water habitat that will thermally stratify so that juvenile salmon could seek thermal refuge during the heat of the summer; and
- Provide structurally complex habitat so that these young fish could seek refuge from predators.

Seelander Wetland Tidal Reconnection

The Seelander wetland restoration project reconnected approximately 11 acres of wetland to Catching Slough, a tributary to the Coos Bay estuary (see Figure 9 and Appendix 7). The potential project was brought to the WTAC by the Coos Watershed Association as part of a larger road improvement program with the Coos County Road Department as a partner. The restoration site is located just below the head of tide in Catching Slough (head of tide controlled by multiple tide gates on Catching and Seelander Creeks. The objective of the project was to re-connect an existing freshwater pond and adjacent wetlands with tidal flows in Catching Slough. In addition to its wetland



Figure 9. Seelander restoration site. January 20, 2004.

values, we expected that the reconnected area would be available to juvenile coho and Chinook salmon for summer and winter rearing habitat. Prior to the project, the pond/wetland complex was connected to the Slough through a 48" metal culvert with a failed tide gate. Juvenile fish passage from the Slough into the pond/wetland was impeded due to high velocities in the undersized culvert during tidal exchanges. The history of land use at the site is quite interesting. The site has been inundated as a freshwater marsh for at least ten years. The area inundated was originally within the channel of Catching Slough, as indicated by the State of Oregon owning a meandered portion through the existing pond. A railroad track on trestles bisected the original channel, and according to locals, a pond was created to store logs. At some point, probably in the nineteen twenties, the railroad was converted to a county road (probably through the Farm to Market Road (FMR) program). At that time, the portion of Catching Slough in the project area was straightened by dredging and the spoils deposited on the original railroad trestles. A culvert was placed within the road fill and various tide gates were attached over the years.

Perrin Wetland Tidal Reconnection

The Perrin site is also located on the Catching Slough tidal system. This project was brought to the WTAC by the Coos Watershed Association as part of a larger road improvement partnership with the Coos County Road Department. The objective of this project was to



Figure 10. Freshwater marsh to be econnected with Caching Slough at the Perrin site.

re-connect an existing 2-acre wetland for summer and winter juvenile salmon rearing habitat (see Figure 10 and Appendix 8). An additional 0.75 miles of potential spawning habitat is available upstream from the wetland. The hydrology and drainage patterns in the existing wetland will more closely mimic estuarine High Marsh and Tidal Channels.

At this site, the existing corrugated metal culvert had failed, and the cast iron tide gate on the Catching Slough side had broken completely off. The landowner did not desire a tide gate, opening the possibility to reconnect an existing freshwater wetland (former pasture) and stream to tidal exchange with Catching Slough.

Matson Creek Wetland Preserve (Rose Dairy)

The Matson Creek Wetland Preserve is the only fee-title land acquisition completed using funds from the Coos-Coquille Basin Estuarine Wetland Protection and Restoration Project. The project was brought to the WTAC by the grant program manager. The site involves an 180-acre diked wetland pasture on Catching Slough, formerly a dairy operation (see Figures 11 and 12, Appendix 9). Matson Creek drains into the site and provides potential spawning habitat for coho and chinook salmon in its upper reaches (currently inaccessible due to tide gates). The objective for acquisition at this site is to provide a protected estuarine wetland area in lower Catching Slough. Restoration of the former wetland will restore the natural hydrology of the Matson Creek, as well as allow tidal flooding of the site. The wetland pastures have the potential to provide significant salmonid juvenile summer and winter rearing habitat. Existing tide gates prevented or restricted the tidal access of the slough and drains freshwater from the uplands area. Dikes along the north and south ditches prevented any tidewater that may have leaked through these tidegates from reaching the floodplain. These ditches accelerated freshwater drainage and redirected all freshwater flows.



Figure 11. Matson Creek Wetland Preserve before project implementation, July10, 2000.



Figure 12. Rose Dairy (Matson Creek). Before project implementation, July10, 2000

Anderson Creek Wetland Restoration

Coos-Coquille Basin Estuarine Wetland Protection and Restoration Project grant funds were used for portions of Phase III of the Anderson Creek restoration, a tributary of the upper Winchester Tidelands Restoration Project Area within the South Slough Reserve (see Figure 13 and Appendix 10). This project was brought to the WTAC by the staff of the South Slough National Estuarine Research Reserve (SSNERR), a partner in the Coos-Coquille Basin Estuarine Wetland Protection and Restoration Project. Objectives of this project were to restore relict wet pastures, that had ditched and straightened stream channels, to high marsh and tidal channels in



Figure 13. Anderson Creek Wetland Restoration. 2002.

the lower project area and freshwater marsh and meandered stream channels in the upper project area.

Salmon Rearing Habitat Enhancement Project

The South Slough Salmon Rearing Habitat Enhancement Project was brought to the WTAC by the staff of the South Slough National Estuarine Research Reserve (SSNERR), a partner in the Coos-Coquille Basin Estuarine Wetland Protection and Restoration Project. This project forms part of the South Slough Reserve's Winchester Tidelands Restoration Project (WTRP), started in 1996. The project site is located in the upper portion of the South Slough estuary, an approximately 1,800-acre tidal inlet, near the mouth of the Coos River within the South Slough National Estuarine Research Reserve (see Figure 14 and Appendix 11).

The objective of the project is to increase habitat complexity in estuarine tidal channels through the placement of large wood. Prior to the project, the amount of large wood in the Winchester and Anderson Creek area of SSNERR was below the amount



Figure 14. Portion of the Salmon Rearing Habitat Enhancement Project channel in Winchester Creek.

historically present before channel clearing and snagging was conducted to enable navigation. This area of Sough Slough has a history of logging railroads, diking, channel straightening and realignment, and removal of downed trees from the channel. As part of restoration program at SSNERR, dikes have been removed, channels have been realigned back to a semblance of their meandered pattern, and wetland vegetation has been restored through natural regeneration and planting. The means to meet the objective to increase in-channel habitat complexity was through the placement of whole trees with rootwads and large logs back into tidal and stream channels within the restoration area.

Other Potential Projects Which Did Not Result in Acquisitions, Easements, or Restoration

Many other landowners have worked with staff to explore possible participation in this program, but have either been deferred to other programs more beneficial to their goals, or have decided against involvement. These include:

- <u>Larry and Sylvia Mangan</u> (Haynes Inlet). As of November 2002, proposed WRP, proposed restoration. Mangan was still interested, but the private individual who held the real estate contract on the property refuses to agree to subordinate his interest in the proposed NRCS easement. Mortgage refinancing in 2004 resolved this problem and discussions are currently (September 2004) underway to initiate restoration planning.
- <u>Lionel and Priscilla Deronden-pas</u> (Catching Slough). Potential dike removal around six acres, easement.
- <u>Louis Evoniuk</u> (Catching Slough). Evoniuk Oxbow project, proposed channel restoration. Project would reintroduce tidal influence to a historic slough channel owned by the state and to associate privately-owned (originally tidal) marsh. The site was originally an oxbow bend in the main channel of Catching Slough. Several other tidal wetland restoration projects have been completed in the vicinity. Owner may have been willing to consider the idea of eventually selling.
- <u>Melody Caldera and Jim Oxford</u> (Day Creek). This project would restore fish and wildlife habitat on pastures on Day Creek to a natural wetland condition.
- <u>Lori Paxton</u> (Coalbank Slough). Potential restoration project. Staff has had continuing discussions but no restoration opportunities have emerged.
- <u>Cecil Nix</u> (Haynes Inlet). The potential project is on a Community Credit Corporation buyout of a defaulted loan. It would have put 62 acres of property in wetland restoration, working with Ducks Unlimited and ODOT. No restoration has been undertaken due to landowner resistance to restoration, and Farm Service Agency unwillingness to force it. In 2005, DEQ discovered that Mr. Nix had allowed contaminated fill to be place to reinforce a dike and required remediation. Unlikely that restoration will occur with the present landowner.
- <u>Dennis and Kathy Dingus</u> (Coquille River). This was a past potential project that was not realized. An appraisal of the Dingus property was done in 2001 by Lester D. Cordill, Appraiser, to look at the value of the entire property and the value after the potential conservation easement would be in place. A valuation could not be met that met the owner's expectations.
- <u>Charles & Sharon Waterman</u> (Beaver Slough). This was a potential project that was not realized. CWA looked into purchasing 520 acres for wetland restoration.
- <u>Becker</u> (Coquille Valley, Fat Elk area): In this past potential project the landowner proposed to sell an easement to the Wetland Reserve Program (WRP), and to sell his remaining interest in the land to a local duck club. WRP easement allowed duck hunting. Restoration would have most likely focused on slowing drainage and prolonging inundation. Adjacent properties already flood every winter and most may be adequately protected by existing dikes. Property lines would need to be established by survey. The land to the east would need a new dike. The uphill neighbor to the south would need to be contacted to determine if the lowest edge of his property may be included in the project area.
- <u>Michael S. Bladyka</u> (Coos Tidelands, along Cape Arago Highway). This past potential project looked at purchasing this landowner's property in 2001 for wetland restoration purposes. At the time the property was undeveloped and quite overgrown.
- <u>Mr. and Mrs. Donald Pouncey</u> (lower Coquille River near Parkersburg road). This potential project explored the possibility of purchasing an easement of the landowner's property located on the lower Coquille River. Owners of a small piece of mostly high ground that is flanked on both sides by

Pouncey's property were discussing the sale of their property to Oregon Department of Fish and Wildlife in 2002. CWA requested that the landowner look into selling the entire parcel or some pastureland subset.

• <u>Sitka Dock</u> otherwise known as Sitka Wetlands/Mill Site: (Coos Bay tidelands along Cape Arago Highway, between Empire and Bayview State Wayside): This potential project has 216 acres. Approximately 140 acres are a combination of tideland and freshwater Sitka Spruce swamp, of which few examples remain in Coos Bay. The remaining 80 acres is created by fill that includes appreciable amounts, several feet deep, of compacted wood waste from mill operation. CoosWA looked at a project scope ranging from relatively small, e.g. purchase of easement only on the wetlands, with the existing upland fill area sold separately by landowner for development to more ambitious, e.g. acquisition of entire site, with the upland fill area either planted up or restored to marsh conditions. Another possibility looked at was to have upland fill area used for public or private non-motorized camping. One idea was to develop a string of protected areas north from this site to Empire boat ramp. Areas to south and east have little or no potential for wetland/habitat. The site is currently being developed as condominiums.

(2) A list of the volunteers who participated in the project including the work accomplished and total hours worked.

Volunteers who participated in one or more phases of the project include landowners Mr. Becker, Michael S. Bladyka, Marjorie Brunschmid, Melody Caldera, William and Rebecca Cowan, Lionel and Priscilla Deronden, Dennis and Kathy Dingus, Louis Evoniuk, Kenneth and Patricia Fredrickson, Larry and Sylvia Mangan, Cecil Nix, Jim Oxford, Lori Paxton, Mr. & Mrs. Donald Pouncey, Chris and Gail Shrader, Leif and Jennifer Shrader, Doug and Sharon Sinko, Peter and Theresa Snyder, Dave Stout, and Charles and Sharon Waterman.

(3) A list of other participants who assisted with the project.

Overall Project Management. The project was initially created by Anne Donnelly when she was Executive Director of the Coos Watershed Association, with the assistance of Ken Bierly, Deputy Director of the Oregon Watershed Enhancement Board and Ester Lev, Executive Director of The Wetlands Conservancy. Ms. Donnelly became the Wetlands Program Manager for the grant, through an agreement with the South Coast Land Conservancy (SCLS), in June, 2000. Jon Souder, Executive Director of the Coos Watershed Association became Project Manager when the SCLC terminated its agreement with CoosWA in December, 2002 after Ms. Donnelly found other employment. Jennifer Hampel was Coordinator of the Coquille Watershed Association during the term of the grant.

Wetland Technical Advisory Committee (WTAC). Members of the WTAC who provided advice and review of project proposals were: Karla Bird (BLM), Craig Cornu (SSNERR), Jennifer Hampel (CoquilleWA), Jan Hodder (OIMB), Esther Lev (The Wetlands Conservancy), Don Messerle (CoosWA board), Bruce Miller (ODFW), and Randy Smith (ODFW), and Tom Purvis (NRCS).

Individual Restoration Project Partners. The following people were responsible for identifying, planning, implementing, and managing projects funded by the Coos-Coquille Estuarine Wetland Protection and Restoration Project:

<u>Sinko WRP Easement and Restoration</u>. Project was initially referred by Laura Tesler, then with the Oregon Department of Agriculture. Tom Purvis, NRCS, managed the paperwork to move the project into the Wetland Reserve Program (WRP). Project design and implementation was done by Ducks Unlimited (Steve Donovan, Dan Golner, and Randy van Hoy). Bruce Follansbee designed and executed the planting plan and subsequent maintenance.

<u>Frederickson WRP Easement</u>. Landowner Kenneth Fredrickson contacted Anne Donnelly after notice of the grant was mentioned in the local newspaper. Tom Purvis, NRCS, managed the paperwork to move the project into the Wetland Reserve Program (WRP). Laura Brophy of Green Point Consulting prepared the site reconnaissance report.

<u>Brunschmid WRP Easement</u>. The landowner was referred to the Wetland Program Manager by ODFW. Tom Purvis, NRCS, managed the paperwork to move the project into the Wetland Reserve Program (WRP). Laura Brophy of Green Point Consulting prepared the site reconnaissance report. Kevin Craig, then of the Coos Watershed Association managed the topographic survey and digital elevation model creation, and Kristin Hovenkotter-Grecko (CoosWA) set up and monitored the groundwater wells.

<u>Schraeder Wetland Easement and Restoration</u>. This project was referred by the Coquille Watershed Association to the Wetlands Program Manager. Installation of the railcar bridge was managed by Anne Donnelly. Fencing was under by the crew of the Coquille Watershed Association.

<u>CowanWRP Easement and Restoration</u>. This project was referred to the Wetlands Program Manager by Pamela Blake, Oregon DEQ in Coos Bay. Tom Purvis, NRCS, managed the paperwork to move the project into the Wetland Reserve Program (WRP). Project design and implementation was done by Ducks Unlimited (Steve Donovan, Dan Golner, and Randy van Hoy). Laura Brophy of Green Point Consulting prepared planting plan for the project. Mat-thew Anderson, Projects Manager for CoosWA implemented the planting plan.

<u>Snyder Wetland Restoration</u>. This project was referred by the Coquille Watershed Association to the Wetlands Program Manager. Project design was done by Michael Scalisi. Project management and implementation was overseen by Jennifer Hampel, Coordinator, Coquille Watershed Association.

<u>Seelander Wetland Tidal Reconnection</u>. This project was identified through culvert surveys conducted by Mike Lester and Chuck Matayo of the Coos Watershed Association. John Colby, then Projects Manager for the CoosWA, prepared the proposal as part of a larger, joint Coos County Road Department and Coos Watershed Association project to upgrade County roads adjacent to Catching Slough. Jon Souder was program manager for implementation of the project. Don Poirer did the engineering, and Leo Kuntz of Nehalem Marine did the installation.

<u>Perrin Wetland Tidal Reconnection</u>. This project was identified through culvert surveys conducted by Mike Lester and Chuck Matayo of the Coos Watershed Association. John Colby, then Projects Manager for the CoosWA, prepared the proposal as part of a larger, joint Coos County Road Department and Coos Watershed Association project to upgrade County roads adjacent to Catching Slough. Jon Souder was program manager for implementation of the project. Don Poirer did the engineering, and Leo Kuntz of Nehalem Marine did the installation. <u>Matson Creek Wetland Preserve Acquisition and Restoration</u>. This property had been long identified by the Oregon Department of Fish and Wildlife as a possible restoration site. Anne Donnelly first became aware of the upcoming Sheriff's sale of the property. Ms. Donnelly brought in Rob Schab of the Coos Bay-North Bend Water Board as a project partner to assist in the restoration. Ester Lev, Executive Director of The Wetlands Conservancy was the program manager for the restoration actions. Bruce Follansbee managed the on-site components (trash removal, replanting, and road upgrades). Dan Draper, CoosWA, established the native plant nursery.

<u>Anderson Creek (SSNERR) Wetland Restoration</u>. This project was identified as a component of the Winchester Tidelands Restoration Project. Craig Cornu, SSNERR, was program manager. Topographic surveys were conducted by Randy van Hoy, Ducks Unlimited, who also did the site design. Bruce Follansbee designed and implemented the planting plan. Rick Howard, CoosWA, did the herbicide applications to control invasive species. Benny Hemstead dug the new channel; and Dennis Bachman filled the old channels and decommissioned the road. Bruce Miller (ODFW), Michele Kohler (then SSNERR), Laura Brophy (Green Point Consulting), Ralph Garano (Earth Design Consultants), and Ayesha Gray (SSNERR) have all assisted with the monitoring.

South Slough (SSNERR) Salmon Rearing Habitat Restoration. This project became possible through the efforts of the Oregon Department of Transportation (John Rausch), Oregon Department of Fish and Wildlife (Mike Gray), and Oregon State Parks (Larry Becker). Craig Cornu, SSNERR, was the project manager. Todd Peterson of Columbia Helicopters pulled their end together. Craig Cornu (SSNERR), Matthew Anderson (CoosWA), Jennifer Feola and Bruce Miller (ODFW) were on the receiving end of the trees; Jon Souder (CoosWA) worked the lifting side. John Bragg and Mike Graybill (SSNERR) handled media relations; and Mike Lester and Kristen Hovenkotter-Grecko (CoosWA) controlled traffic, along with Northwest Traffic Control Services. Television station KCBY created a new story on the operation. Ayesha Gray (SSNERR), Ralph Garano (Earth Design Consultants), Stan Van de Wetering (Siletz Tribe), Michele Kohler (ABR, Inc.), and Watershed Sciences for the LiDAR flight, are all conducting monitoring associated with the project.

(4) The materials and methods used in the project.

The project was initially publicized through a television news story, a video of which was previously provided to OWEB. Newspaper coverage of the project included a story in The World and in The Capital Press. Typically, an interested landowner was either referred to the watershed association by a representative of a natural resource agency, had heard of us through the grapevine and initiated a call, or was contacted "cold" by watershed association staff (consistent with local restoration priorities and geographic areas of emphasis). Then, a project concept was developed for preliminary review by a committee comprised of both technical and "lay" watershed association members. Depending on the committee's recommendation, a project concept was either developed more intensively, deferred, or dropped entirely. When a preliminary approved concept was developed to the committee's satisfaction, it was again reviewed and forwarded for approval by the entire watershed association board.

Title acquisitions with federal funds were considered only where the landowner wished to sell, where the proposed acquisition was not inconsistent with adjacent uses, where the project was biologically sound, and where the price and ultimate title-holder had been pre-approved by the participating federal agency. Owners of properties adjoining the proposed acquisition were notified of and provided the opportunity for

a detailed briefing on the proposed purchase and were given the opportunity to express concerns prior to approval of the acquisition by OWEB.

(5) The results shown or expected from the completed project.

This section provides a description of the results for each of the acquisition, easement, and/or restoration projects individually listed in Section 1 above. For each project, the area covered by the project and the features of any restoration actions funded by this grant will be provided.

Sinko WRP Easement and Restoration

The Sinko WRP wetland restoration covered the largest area of any project funded by this grant. In order to complete the WRP contract, an additional \$49,000 in grant funding was used to supplement the USDA easement amount. This additional amount was based on a property appraisal. Since this was the first WRP supplement funded by this grant, the \$24,979 in appraisal fees, property lot line adjustments, and administrative expenses to execute the agreement reflect the complexity of the project. Restoration expenditures totaled \$279,581, including \$54,666 in Federal funds from OWEB grant 99-803, \$156,952 in state funds from OWEB 99-420, and \$57,215 from NRCS as part of the Wetlands Reserve Program.



Figure 15. Panorama of Sinko restoration; note meandering channel and replanted borrow site.

Project Work Completed. The Sinko restoration project covers the 210 acres under the WRP contract based on designs and project management by Ducks Unlimited (see Figure 15). Restoration was implemented in two phases. Phase I of the project covered approximately 80 acres of the entire area and consisted of:

- Detailed topographic survey of the 210 acre project site with a 0.5 foot contour interval;
- Filling 6,210 linear feet (1.7 acres) of drainage ditches with spoil excavated from new channels, including installation of ditch plugs at 15 sites to protect the filled drainage ditches from erosion and channel re-capture;
- Restoring sinuous channels and reconnecting existing channel fragments by excavating 6,300 cubic yards of material from 13,000 feet of new channel covering 7.89 acres;
- Creating five planting berms within the project area covering 2.24 acres and utilizing 3,800 cubic yards of fill from an upland area;
- Creating a 400 foot levee and habitat bench (0.37 acres) to protect an adjacent landowner; and
- Planting the 2.24 acres of berms with native woody vegetation, consisting of about 2,000 willows and 1,600 Oregon ash.

Phase II in the summer of 2004 continued these activities on the remaining 130 acres, including:

- Adding an additional 100' to the Phase 1 levee and constructing a fish passage and water control structure;
- Filling 12,000' of linear drainage ditches (4.68 acres) with 29,000 cubic yards of material from the new channel reconstruction and borrow sites, including the installation of 20 ditch plugs to protect the fills;
- Sinuous channel restoration and reconnection covering 6,700' (2.88 acres) and involving the removal of 4,100 cubic yards of material;
- Removing 13,000 cubic yards of material to create a 3,800' perimeter ditch to protect neighboring property's existing drainage; and
- Supplemental planting on the berms and re-vegetation with 2,310 trees and shrubs on the upland borrow and disposal areas covering approximately 5 acres.
- During both the summers of 2004 and 2005 post-planting maintenance was performed on the berms and upland areas to increase the survival and growth of the trees and shrubs.

Completed in the summer of 2004, Phase II also includes water level and flow monitoring as well as fish monitoring. This was done in order to determine the connectivity of the wetland to the Coquille River, and how well the half-round riser water control structure, installed between the river and wetland area, functions for fish passage. The Oregon Department of Fish and Wildlife and the National Marine Fisheries Service provided data on fish assemblage present during the winter and spring.

Attainment of Project Objectives. The results expected from the Sinko Wetland Restoration project are to improve wildlife habitat while continuing to run an organic dairy farm on a different portion of the property. This project will ultimately restore and enhance over 210 acres of agricultural wetlands adjacent to the Coquille River allowing for the resumption of natural wetland processes, recovery of lost wetland functions, and provision of habitat for numerous wetland dependent species, including rearing habitat for endangered salmonids.

Extensive research has shown that the type of wetlands restored offer excellent fall, winter, and spring rearing habitat for endangered salmon, other threatened and endangered species, migratory birds, and other wetland wildlife. Fish passage has been increased through the installation of a fish friendly water control structure which will also ensure the wetland will hold water during the desired time period (until mid June). This allows for moist soil management that promotes native wetland plant species and discourages reed canary grass, which often displaces native plants. This water control structure also provides for ingress/egress of fish after flooding events, reducing stranding potential.

Frederickson WRP Easement and Restoration

Project Work Completed. The 12 acre USDA Wetland Reserve Program easement was executed on November 30, 2001 (see Figure 16). Coos-Coquille Basin Estuarine Wetland Protection and Restoration Project funds in the amount of \$5,225 supplemented the \$19,600 provided by the USDA for the perpetual easement based on an appraisal of the property by Marineau and Associates. An additional \$2,450 was expended for appraisal and administrative costs associated with obtaining the easement.



Figure 16. Fredrickson Easement, September, 2005.

The original restoration plan for the Fredrickson WRP easement contemplated expending approximately \$25,000 to fill approximately 1,290 feet of linear drainage ditches, create a meandering stream network within the central portion of the12 acre WRP site, and place large wood in, and adjacent to, the new channels.

A "Site Reconnaissance and Commendations" report was prepared on the Fredrickson WRP Easement and Restoration site by Laura Brophy of Green Point Consulting (see Appendix 12). The recommendations from this report are to:

- Obtain a detailed topographic survey of the project area (0.5 contour interval);
- Coordinate with the adjacent landowner on the South to determine whether restoration of remnant tidal channels would be acceptable if they affected their property; otherwise design a berm to protect them;
- Construct a meandered, dendretic channel network to mimic the remnant tidal drainage, utilizing areas of subsurface flow in the existing wet pasture as available;
- Place large wood into, and adjacent to, the new channels; and
- Control reed canary grass that exists at the site to prevent its spread in the absence of grazing.

A total of \$2,752 was expended in restoration activities using grant funds. These expenditures basically were used for the preparation of the Green Point site reconnaissance report. The recommendations of the Green Point report will be used in the future as restoration actions are undertaken by NRCS through their Wetland Reserve Program.

Attainment of Project Objectives. The project objective of obtaining a perpetual conservation easement on 12 acres at the Fredrickson site was achieved. Restoration planning was initiated, and steps needed to restore the area were clearly identified. However, due to time constraints, additional progress towards completing these identified restoration activities have not occurred. We expect that NRCS will be willing to fund activities needed to restore this site using their own resources. Until that time, attainment of the restoration objective of providing juvenile salmonid winter rearing habitat will only partially be obtained. Limited winter rearing and escape habitat will be provided during high flow events, but winter rearing habitat in the proposed network of stream channels will not be realized.

Brunschmid WRP Easement and Restoration

Project Work Completed. The 17-acre Brunschmid WRP perpetual easement was executed in 2001 (see Figure 17). In the WRP proposal, \$25,000 in restoration expenses were budgeted, including \$11,000 from the Coos-Coquille Basin Estuarine Wetland Protection and Restoration Project. Site planning, topographic mapping, and groundwater monitoring expenses from grant funds totaled \$12,813.

The original project proposal anticipated:

- Removing the tide gates on an adjacent, ^{Figure 1}, down-stream, property that block tidal flow into the site;
 - Filling 2,500' of the ditches on the east and west sides of the pasture;



- Reconnecting freshwater drainage with the remnant historic channel through excavation of a 2,500' pilot channel;
- Planting native trees and shrubs on the 8.0 acres of higher and drier edges of the project; and
- Excluding livestock.

Detailed planning for the wetland restoration was anticipated as part of the project. A "Site Reconnaissance and Commendations" report was prepared on the Brunschmid WRP Easement and Restoration site by Laura Brophy of Green Point Consulting (see Appendix 13). Baseline data collection recommendations to assist in restoration design are to:

• Conduct a detailed elevation topographic survey of the site, including the invert elevations for the culverts and cattle passage under East Bay Drive;



Figure 18. Groundwater monitoring wells, October, 2004.

- Establish a network of groundwater monitoring wells and measure water elevations over the course of a year (see Figure 18);
- Establish a tidal elevation gauge, either within the culvert on East Bay Drive or on the outside of the adjacent property dike;
- Periodically sample salinity in the channel between the tide gate and East Bay Drive, and within the existing ditches on the property.

The results of the topographic survey, and location of the groundwater monitoring wells, are shown in a map found in Appendix 3. The remaining two baseline data collection efforts were deferred until we had better knowledge of the adjacent, downstream, landowner's intent with their property.

We also worked extensively with the upstream landowners to reduce sedimentation resulting from legacy forest roads. A road and landing survey was completed for the drainage area above the wetland site, and recommendations for remedial actions are being incorporated into the Coos Bay Lowlands Watershed Assessment and Action Plan. Depending upon the results of a priority-setting process, corrective actions, including road decommissioning and drainage improvements, will be scheduled in the oncoming years.

Attainment of Project Objectives. The expected results of the Brundschmid WRP project are to improve the connection between the Coos Bay estuary and a 17-acre wetland, which will facilitate development of natural drainage and wetland vegetation within the valley. Assessment of the existing hydrologic conditions indicates reactivating the original meandering course of the historic channel may restore the natural hydrology and plant community ranging from estuarine to freshwater marsh conditions. However, until the status of the downstream tide gates on the adjacent property are resolved (see Figure 19), there is the



Figure 19. Panoramic view of the downstream property across East Bay Drive from the Brunschmid WRP.

potential to adversely affect development of freshwater wetlands if culverts under East Bay Drive are altered. Attempts to contact these landowners over the past two years have been unsuccessful. Preliminary results of our monitoring and planning efforts indicate the need for additional design consultation and potential project objective revisions as a result.

Schraeder Wetland Easement

Project Work Completed. The 59.6 acre easement on this property was executed on October 19, 2002 (see Figure 20). The cost for the easement was \$42,700, with an additional \$7,123 in direct expenses for an appraisal and legal fees, and other acquisition costs. Funds for these expenses were provided from the Federal portion of the Coos-Coquille Basin Estuarine Wetland Protection and Restoration Project (99-



Figuer 20. Panoramic view of the Schraeder Wetland Easement, September, 2005.

803). Title to the easement is held by the South Coast Land Conservancy (SCLC). Restoration expenses at the Schraeder Wetland Easement totaled \$37,959, including \$509 from the Federal portion (99-803) and \$31,326 from the state portion (99-420) of the grant. Additional restoration funds were provided by the U.S. Fish & Wildlife Service's Partners in Fish and Wildlife grant program.

No wetland restoration activities were needed at the Schrader easement since the area was already well developed. A clogged and undersized culvert (see Figure 20) was replaced by a 60-foot railcar bridge at the southwest corner of the area to allow farm vehicle access across the stream channel where the stream crossed the Schrader property. This project feature will allow better connectivity between the Coquille River and the wetland for coho juvenile summer and winter rearing habitat.

The project also included fencing 4,224 feet of fivestrand barbed wire fence along the main ditch system

Figure 20. Culvert intake, June 2001.

just outside of the southern side easement, and placement of rootwads in the channel to provide cover and habitat complexity.

Attainment of Project Objectives. Through the established easement and additional riparian fencing, fish and wildlife habitat, including juvenile coho and cutthroat trout, will be protected for years to come. The easement appears to have been a successful way to protect the wetland. Unfortunately, the property owner, Lief Schraeder, has run into financial difficulties subsequent to the easement and has attempted to sell not only the property, but also the railcar bridge. The easement and Land Use Agreement have sufficiently protected not only the infrastructure and biological integrity of the project.

Cowan WRP Easement and Wetland Restoration

Project Work Completed. The 75-acre WRP easement was executed on March 19, 1999 between the landowners, William and Rebecca Cowan, and the USDA-NRCS. Because the project extent was reduced from the original size, no supplemental Coos-Coquille Basin Estuarine Wetland Protection and Restoration Project funds were needed to acquire the easement. Overall restoration expenses at the Cowan WRP easement were \$119,563, with \$6,043 being expended from the Federal portion (99-803) and \$5,533 from the state portion (99-420) of the grant. The remaining restoration funding came from the NRCS (\$56,702), Ducks Unlimited (\$11,285), the Oregon Department of Forestry (\$15,000), and the U.S. Forest Service (\$25,000). The latter two sources were provided as block grants to Ducks Unlimited (DU).

Wetland restoration planning was conducted and implementation supervised by Ducks Unlimited. A topographic survey of the entire site with 1-foot contour intervals was completed by DU in 2000. Corps of Engineers (2001-00261) and DSL (OR-42-1) were obtained in June, 2001. Construction was completed during the in-water work period in the summer/fall of 2001. All funding for the wetland restoration was provided by non-Coastal Wetlands grant funds. Project features for the wetland restoration include:

- Constructing two ditch plugs on the north (250' long) and south (150' long) ditches to alter site hydrology;
- Excavating 2,700 cubic yards over 1.63 acres of material to reshape the existing pasture into wetland and provide1,420 linear feet of swales (islands) for waterfowl breeding;
- Raising 460' of the existing driveway along the south boundary of the WRP to protect the adjacent property from flooding; and
- Repairing 60 linear feet of breached dike and installing a control structure with fish ladder to pool water within the wetland while allowing juvenile fish passage between the wetlands and Larson Slough.



Figure 21. Panoramic view over the Cowan WRP easement, September, 2005.

No revegetation was done during the initial wetland restoration activities. In the fall of 2003, the Coos Watershed Association contacted the land owner to propose supplemental planting to improve shade, vegetative diversity, and bank stability within the WRP and along the banks and drains for the remainder of the lowland property. As part of this activity, we engaged Laura Brophy of Green Point Consulting to conduct a site reconnaissance. Her report was completed in November, 2003 (see Appendix 14) and provided the following planting recommendations:

- Plant low trees and shrubs on the dike to meet landowner's objectives of keeping the site relatively open; taller trees (such as spruce and cedar) can be planted along the drain and Larson Slough at the northern end of the project;
- Interior shrub plantings along channel banks (for shade and erosion control) should include brackish- and water-tolerant species such as Pacific crabapple, coast willow, and black twinberry);
- Control reed canary grass, which is beginning to out-compete other native plants, through control of seeding (i.e., mowing), shading, scalping, or herbicide application.

Coastal Wetland grant funding was used to create and implement a plan to restore the native wetland vegetation communities within the project area. The lands surrounding the wetland were planted with western red cedar, Oregon ash, pacific crab apple, and Sitka spruce. Channel areas were planted with willows, red osier dogwood, and pacific ninebark. Approximately 6.1 acres of the project site during March, 2004 (see Figure 22). Approximately 4,732 trees were planted, including about 3,000 willows along the dike.

Attainment of Project Objectives. The restoration of the Cowan wetland will provide about 75 acres of seasonal and temporal wetland habitat and prolong the period of surface inundation. Additional constructed channels and open water areas will increase aquatic habitats at the site. However, fish passage at water control structures placed at the breeched dike between the Larson Slough and the wetland has been reduced from its pre-project condition in an effort to maintain water levels in the marsh. Fish access to these areas will be maintained via the water control structure and its fish ladder. Monitoring is in place for DU to determine the efficacy of these structures in passing fish. The planted areas on the dike surrounding the wetland are expected to enhance the habitat for the aquatic and terrestrial wildlife present, as well as enhancing the rearing habitat and water temperatures for juvenile salmon.



Figure 22. Cowan WRP planting plan.

Snyder Wetland Restoration

The approximately 55-acre portion of Peter and Teresa Snyder's 95 acre property was restored in summer/fall of 2004 (see Figure 23). The restoration cost \$53,519, of which \$26,194 was obtained from the Federal portion (99-803), and \$3,325 from the state portion (99-420) of the Coos-Coquille Basin Estuarine Wetland Protection and Restoration Project. Matching funds for the wetland restoration were provided by the U.S. Fish & Wildlife Service's Partner's For Fish & Wildlife grant to the Coquille Watershed Association (\$21,000), and from the U.S. Bureau of Land Management's Jobs-in-the-Woods program (\$1,000).



Figure 23. Panoramic overview of the northern end of the Snyder Wetland Restoration Project, September, 2005.

Project Work Completed. Site planning, permitting, and construction for the Snyder Wetland Restoration Project was conducted by the Coquille Watershed Association. The following activities were completed:

- A detailed topographic map of the property was completed prior to project design in 2003.
- Construction permits were obtained from the Corps of Engineers (letter dated February 25, 2004) under Nationwide Permits NWP27 (Stream and Wetland Restoration Activities, NWP14 (Linear Transportation Projects), and NP33 (Temporary Construction, Access, and Dewatering). The project was permitted by the Oregon Department of State Lands under its General Authorization

33152-GA. An administrative conductional use permits ACU-03-26 was received from the Coos County Planning Department on August 28, 2003.

- The existing, natural levee between the field and the Coquille River was breeched (see Figure 24), and 3,870 cubic yards of fill were removed to create a new 1,370' inlet with a width of between 50' at the inlet to 130' at its upper end. Boulders will be placed within the first 400' from the River, and rootwads and logs will be placed periodically throughout the channel length.
- Two low tide channels of 2' to 3' deep, 6' to 10' wide, and 230' long were constructed to



Figure 24. Snyder Wetland Restoration, opening inlet and breaching the Coquille River bank, July 28, 2004.

tie existing wetlands to the new inlet channel. Approximately 640 cubic yards of material were removed and placed as berms to protect adjacent properties and the Snyder's north pasture.

- The existing "North Slough" had 0.5 to 1.0 feet of material dredged out at selected locations, and a 500' new tidal channel was excavated, to increase access to wetlands and tidal fluxes. The 1,185 cubic yards of material excavated were used to raise the marsh surface and create islands. Rootwads and logs were placed along this reach to provide "nick points" for tidal flows to create pools and provide cover. All banks were planted with native vegetation.
- Along the central main ditch, approximately 490 cubic yards of materials were excavated to create a new marsh surface and pools. Spoils from this excavation were placed in a secondary ditch to assist in creating a graded, sloping surface to prevent fish stranding.
- An additional tidal channel extending 520 feet to the south was excavated, removing 865 cubic yards of material, of which 40 will be used to create an island, with the remainder deposited on an upland area.
- Two new tidal channels approximately 900 feet long were constructed at the southern end of the project area by removing 855 cubic yards of material. Six pools were excavated in these channels, and an additional two channels, one 160' and the other 110' long, were excavated to capture and deliver groundwater to the South Bottom channels and pools.

Attainment of Project Objectives. The inlet mouth of the newly created channel to the Coquille River will allow tides from the river to flow into the wetlands providing deep-water summer rearing habitat for salmon. The increased habitat complexity resulting from the placed woody debris and wet meadow pools will provide shelter from predators for the juvenile salmon. From all appearances, the project is successful, and project objectives should be met as the site matures.

Seelander Wetland Tidal Reconnection

The Seelander Wetland Tidal Reconnection was part of a larger Coos Watershed Association and Coos County Road Department project to upgrade culverts on the East Catching Slough and Old Wagon Roads. Tidal reconnection at this site cost \$57,762, including \$7,929 from the Federal portion (99-803) and \$38,180 from the state portion (99-420) of the Coos-Coquille Basin Estuarine Wetland Protection and Restoration Project. Coos County provided \$11,653 in match associated with raising the road and berm on the south side of the wetland, and repaving East Catching Slough Road after the culvert replacement.

Project Work Completed. The reconnection of an 11-acre wetland to Catching Slough at the Seelander wetland site consisted of the following activities:

- Site topographic surveys were conducted in June, 2003 by Don Poirer. In addition to the topographic survey, a Flood Certification was provided to the County Planning Department.
- Corps of Engineer (2003-00512) Nationwide Permits NWP3 (Maintenance), NWP13 (Bank Stabilization), NWP14 (Linear Transportation Projects), and NWP18 (Filling Existing Culverts) construction permits were obtained. A Department of State Lands (DSL) General Authorization for Fish Habitat Enhancement (30935-GA) was also obtained.
- The existing 36" by culvert was removed and replaced by an 87" x 137" x 60' pipe arch culvert (see Figure 25). Culvert replacement entailed removing approximately 600 cubic yards of road fill. This fill was placed on an existing farm road at the northern edge of the project to raise its elevation by about a foot to protect the adjacent fields.

- A 12" concrete reinforced pad was placed on top of the culvert to protect it against deformation after heavy truck traffic on the road raised concerns about its stability (see Figure 25). The \$12,000 cost for this project was not anticipated in the original project budget.
- The Seelander Road on the south edge of the wetland was raised approximately 1.5 feet to protect the adjacent landowners. When there was concern about the lack of free board on this road during the first winter after project completion, the County Road Department placed a berm of approximately 1 foot high on the wetland side of the road. No additional fill in the wetland was required from either operation.



Figure 25. Seelander. Catching Slough side of new culvert showing concrete pad.



Figure 26. Panorama of the Seelander Wetland looking north from Seelander Road, September, 2005.

Attainment of Project Objectives. It is expected that the wetland will now provide juvenile rearing habitat for coho and chinook salmon, as well as other larval marine fish (see Figure 26). Prior to the project, wa-

ter velocities during tidal exchanges through an existing culvert prohibited fish passage at any time. With the larger pipe in place, tidal flushing increased, while water velocities decreased, leading to better juvenile passage between the 11-acre wetland and Catching Slough. Of particular note is the amount of flow from Catching Slough directed through the 12' wide by 8' high culvert. During flood tides, a considerable portion of the Slough's flow is captured by the culvert, which has resulted in large amounts of wood "rafting" into the wetland (see Figure 27).



Figure 27. Panorama of the inlet channel into the Seelander wetland showing rafted wood, September, 2005.

Perrin Wetland Tidal Reconnection

The Perrin Wetland Tidal Reconnection was part of a larger Coos Watershed Association and Coos County Road Department project to upgrade culverts on the East Catching Slough and Old Wagon Roads. Tidal reconnection at this site cost \$24,906, including \$101 from the Federal portion (99-803) and \$18,805 from the state portion (99-420) of the Coos-Coquille Basin Estuarine Wetland Protection and Restoration Project. Coos County provided \$6,000 in match associated with repaving Old Wagon Road after the culvert replacement. The County also arranged with Verizon to provide a temporary telephone line around the culvert site during removal of the existing culvert and replacement with the new culvert.

Project Work Completed. The reconnection of a 2-acre wetland and about 0.75 miles of potential coho salmon spawning habitat to Catching Slough at the Perrin wetland site consisted of the following activities:

- Site topographic surveys were conducted in June, 2003 by Don Poirer. In addition to the topographic survey, a Flood Certification was provided to the County Planning Department.
- Corps of Engineer (2003-00512) Nationwide Permits NWP3 (Maintenance), NWP13 (Bank Stabilization), NWP14 (Linear Transportation Projects), and NWP18 (Filling Existing Culverts) construction permits were obtained. A Department of State Lands (DSL) General Authorization

for Fish Habitat Enhancement (30935-GA) was also obtained.

- The existing 30" by 50' culvert was removed and replaced with a 55" x 73" x 54' pipe arch culvert (see Figure 28). Culvert replacement entailed removing approximately 300 cubic yards of road fill. This fill was disposed in an upland site adjacent to the project area.
- Two existing cedar culverts at the edges of the wetland running under the Old Wagon Road were blocked and filled with concrete slurry. Drainage from these relict ditches was rerouted through the main culvert.



Figure 28. Culvert showing tidal exchange at the Perrin Tidal Reconnection site, September, 2005.

Attainment of Project Objectives. The restoration of the Perrin wetland is expected to increase fish passage, both to the 2 acre wetland as well as into the two tributaries above the wetland (see Figure 29). Changes in the hydrology have reconnected channel to stream flow above the wetland to the tidal slough as a result of the removal of the broken tide gate. The vegetative composition of



Figure 29. Panoramic view over the Perrin wetland above Old Wagon Road, September, 2005.

the wetland is beginning to change as more saline water enters through the new culvert. No monitoring has been done to date to document use of the wetlands by juvenile salmonids, spawning fish, or vegetative changes.

Matson Creek Wetland Preserve

The Matson Creek Wetland Preserve was the one fee-title property acquisition funded by the Coos-Coquille Basin Estuarine Wetland Protection and Restoration Project. The 182 acre property was purchased for \$210,000 at a Sheriff's auction on July 31, 2000 and title taken by The Wetlands Conservancy (TWC) of Tualatin, Oregon on February 21, 2001. Funding for the acquisition came from the Federal portion (99-803) of the grant. Administrative expenses related to the acquisition (appraisals, legal fees, etc.) totaled \$8,439, \$5,439 coming from the Federal portion of the grant and \$3,000 from TWC as match. Subsequent to this purchase, the Coos Bay/North Bend Water Board arranged to transfer a portion of its mitigation obligations for its Merritt Dam and Reservoir Expansion Project to the Matson Creek Wetland Preserve. As one component in filling its mitigation obligations, the Water Board purchased for \$48,329 an adjoining property of 84.7 acres that will be incorporated into the overall wetland restoration plan (an easement and agreement between the Water Board and TWC is currently being negotiated).

As of June 30, 2005, \$129,514 has been expended, \$100,395 from the Federal portion (99-803), and \$25,969 from the state portion (99-420) of the Coos-Coquille Basin Estuarine Wetland Protection and Restoration Project. The Coos Bay/North Bend Water Board committed another \$15,000 as its portion of raising a levee to protect an adjoining property owner from flooding. Finally, the Water Board will pay for re-connecting the wetlands to Catching Slough by removing tide gates and installing culverts or a bridge on East Catching Slough Road, as well as funding restoration activities such as re-grading, ditch filling, and natural wetland vegetation establishment throughout the project area (i.e., both TWC Matson Creek Wetland Preserve and Water Board owned land). At project completion, approximately 38.0 acres of tidal, brackish wetlands re-established, and 19.0 acres of freshwater wetland will be enhanced.

Project Work Completed. The following activities have been completed at the Matson Creek Wetland Preserve during the grant period:

- A site topographic map was prepared by Stuntzner Engineering.
- Corps of Engineers and Department of State Lands construction permits were obtained for future restoration actions.
- Trash was removed over about 17 acres, including a 5-acre dump site. This involved disposal of approximately 207 tires, 53 vehicles, 3 mobile homes, and 200 cubic yards of trash.
- Upland revegetation with trees and shrubs occurred on approximately 3.2 acres. This activity included site preparation, planting, tree protection, and post-planting competing vegetation control. Himalayan blackberry was controlled in the planting area, as well as on another 4.3 acres adjacent to the wetlands and at the old mobile home sites.
- A nursery area (with water supply) was established to provide cuttings and to grow out seedlings for future revegetation efforts.
- An approximately 2,600 foot long dike was improved along the existing northern drain to protect an upstream landowner (see Figure 29).
- Approximately 3,270 feet of roads leading to the buildings in the southern part of the project area were stabilized and improved through grading, installing two fish passage culverts (replacing 6" pipes) and five ditch relief culverts, and rocking the road and parking areas. A gate was installed at the entrance to the road to protect from unauthorized entry.



Figure 29. Lower portion of the Matson Creek Wetland Preserve showing the raised dike to protect drainage for upstream landowners. September. 2005.

Attainment of Project Objectives. The expected results of the Matson Creek Restoration Project are the reestablishment of natural physical and temporal extent of tidal flooding and nutrient exchange. For the upper freshwater areas, the expected results are to establish natural drainage patterns to allow development of natural range of habitat. Upland grassy areas will be planted with native upland shrub and tree species and riparian areas on the uplands and channels will be replanted with a more diverse plant community. Control of invasive plant species such as Himalayan blackberry and Reed canary grass will be implemented as well. All these actions should help provide the continued availability at the site of food, cover and nesting opportunities for native fish and wildlife species.

Wetland restoration at the Matson Creek site has proceeded more slowly than originally anticipated. Over one year was required to remove the previous owners from the property without evicting them (an undesirable outcome from a public relations standpoint). Purchasing the adjacent Anthony property took over two years, and resolving the potential flooding at the Elk Lake Corporation (Ashcroft) property took another year and a half, and was only recently completed. Raising the dike along the north drainage was the ultimate outcome to protect their lands.

Site cleanup and stabilization required the bulk of the restoration expenses to date. We were constantly amazed at the amount of trash that needed to be removed, and the difficulty of obtaining titles or permission to remove the vehicles and mobile homes. Upgrades to stabilize access roads and provide site security were deemed necessary before additional wetland-related restoration activities could occur. At this point, the Matson Creek Wetland Preserve site is now finally at the point where major wetland restoration



Figure 30. Panoramic overview of the Matson Creek Wetland Preserve from the entrance road, September, 2005.

activities, such as filling ditches, removing levees, and opening tidal reconnection to Catching Slough can occur (see Figure 30). It will probably take at least another two years before the remaining construction tasks are completed.

Anderson Creek (SSNERR) Wetland Restoration

The Anderson Creek wetland restoration is one component of the South Slough National Estuarine Research Reserve's Winchester Tidelands Restoration project. Restoration activities at this site have been funded by a variety of sources, including an April, 2003 OWEB grant (203-028) of \$42,330, the NRCS Wetland Reserve Program for \$23,830, and an earlier U.S. Fish & Wildlife Service Coastal Program grant (C2) with \$55,000 expended at Anderson Creek. Funding from the Coos-Coquille Basin Estuarine Wetland Protection and Restoration Project provided \$12,319 from the Federal portion (99-803).

Project Work Completed. Begun in the fall of 2003, work at the Anderson Creek wetland restoration site is largely complete. The following activities have been completed:

- A detailed topographic survey of the restoration site, including vertical control points, was completed by Ducks Unlimited in the fall of 2003.
- Constructed a new, meandering channel of approximately 3,806 linear feet along the central part of the Anderson Creek valley during the summers of 2001 and 2002 (see Figure 31).
- Filled and plugged approximately 2,789 linear feet of drainage ditch running along the south side of the valley in August, 2002.
- Placed 35 large cull conifer logs, and cut red alder from the ditch filling, in the new channel to encourage development of scour pools and to provide cover for juvenile fish.

In the fall, 2003, about 2,300 feet of road



Figure 31. Newly constructed, meandered, low flow channel within a broader graded floodplain in Anderson Creek, November, 2002.

along the north side of the Anderson Creek Anderson Creek, November, 2002. valley was decommissioned, using the material to fill an adjacent ditch, pulled a culvert on the north tributary that had created a 6' barrier to fish passage, and removing other culverts that had captured side drainages.

- Planted wetland and riparian vegetation over the 8 acre project site, including 6,000 willow stakes, 250 native trees and shrubs (Sitka spruce, red elderberry, wax myrtle, evergreen huckleberry, western red cedar, and western hemlock), 7,680 plugs of slough sedge, and 1,920.plugs of small-fruited bulrush in the winter of 2003.
- Controlled reed canary grass and Himalayan blackberry through a combination of scalping, cutting, and herbicide application.
- Conducted post-planting competing vegetation control during the growing seasons of 2003, 2004, and 2005.
- Additional large wood (Sitka spruce logs with attached rootwads) was placed by helicopter in lower Anderson Creek during September, 2004 as part of the South Slough Salmon Rearing Habitat Enhancement project (see discussion below).
- Conducted monitoring of turbidity, stream water temperatures, and coliform bacteria before, during, and after construction activities. Monitoring of vegetation development, channel morphology changes, and habitat usage by juvenile salmonids is on-going.

Attainment of Project Objectives. In Phase I, ditches were filled and the existing channel reformed creating a more natural meandering course (see Figure 32). Adaptive management such as monitoring for fish use, the response and survivorship of native wetland vegetation, and changes in the plant community are

being implemented. This new channel and surrounding wetland will provide habitat for juvenile salmonid fish and other wetland wildlife.



Figure 32. False color infrared aerial photograph of the Anderson Creek channel, 2004

Initial water quality monitoring results have been quite satisfying. Water quality changes were temporary in nature during construction activities, as expected. Stream water temperatures were significantly higher (i.e., $+10^{\circ}$ F) in the areas where blackberry and alder were removed (and because the pre-project, channelized stream lay against the southern valley wall). These high temperatures were reduced approximately 5°F after the first year of vegetation growth in 2004, and based on experiences at other, similar sites, our expectation is that they will continue to decrease as vegetation becomes established and the channel becomes shaded.

Monitoring has also shown that channel morphology continues to develop in response to winter freshets. Secondary, overflow channels have developed, pools have scoured, and sediments redistributed ito bar and riffle formations, often associated with the placed large wood. Fish sampling has shown use by 50 juvenile coho salmon in the summers of 2003 and 2004, and use by subyearling cutthroat trout is increasing. As pool habitats continue to develop, and summer stream water temperatures decline, use of the restoration area by juvenile coho salmon should increase.

At this point, it appears that most, if not all, the short-term project objectives have been met at this site. Attainment of long term project objectives appears just to be a matter of time. Longer term objectives will likely be realized once beaver re-colonize Anderson Creek and create pools.

South Slough Salmon Rearing Habitat Enhancement Project

The South Slough Salmon Rearing Habitat Enhancement Project is one component of the South Slough National Estuarine Research Reserve's Winchester Tidelands Restoration project. Restoration activities have been funded by a variety of sources, including a Fish America Foundation grant (\$23,830, using NOAA Community Based Restoration funds), with additional match from the Oregon State Parks Department (\$6,800) and the Oregon Department of Fish and Wildlife (\$1,200). Funding from the Coos-Coquille Basin Estuarine Wetland Protection and Restoration Project provided \$68,418 from the Federal

portion (99-803), and \$26,473 from the state portion (99-420). Additional OWEB funding (295-111) in the amount of \$119,217 will be used for intensive progress effectiveness monitoring in the fall, 2005 through 2007.

Project Work Completed. This project was initiated when the Oregon Department of Transportation informed the Oregon Department of Fish and Wildlife (ODFW) that approximately 40 large Sitka spruce trees would be available for removal during a realignment of Cape Arago Highway within the Sunset Bay State Park. Staff from ODFW, SSNERR, and CoosWA met to determine whether these trees could be used for restoration activities, and if so, how the removal and placement could be funded. The team quickly identified Winchester Creek and associated areas within the South Slough National Estuarine Research Reserve as an ideal location for the placement, with funding available from the above identified sources. Project activities included:



Figure 33. Helicopter placing trees at the South Slough Salmon Rearing Enhancement project. September 2004.

- Coordinating with the U.S. Forest Service, Siuslaw Watershed Council, and Columbia Helicopters to obtain lift services during a previously scheduled project. This allowed us to minimize mobilization costs for Columbia Helicopter.
- Obtaining Corps of Engineer and Department of State Lands permits for the large wood placement.
- Executing an agreement with Oregon State Parks for their contribution of trees to the restoration project (n.b., this agreement is now the model applied statewide by the Parks Department).
- Arranging for a contractor to push over the trees in the right-of-way and prepare them for lifting (i.e., properly staging, limbing, and bucking if needed).
- Coordination of activities on the date of lifting, including communication with the ground and helicopter crews, traffic control, and public relations (see Figures 33 and 34).
- Rehabilitation of the area disturbed by the tree pushing, including regarding skid trails and silt fencing.
- Monitoring project results, including baseline channel morphology, macro-invertebrate populations, and juvenile fish usage of placed wood through underwater videography.



Figure 34. Location of helicopter-placed trees in the northern South Slough Salmon Rearing Habitat Restoration project area.

• Acquisition of LiDAR data to create a digital elevation model (DEM), and color infra-red remote sensing images, for the South Slough system to assist in tracking wetland and tidal channel morphology changes associated with the large wood placement.

Attainment of Project Objectives. The placement of large wood will improve habitat complexity and diversity for juvenile salmonids and other estuarine dependent species within Winchester, Anderson, and Dalton Creeks. Results of the monitoring of this project will provide an important salmonid habitat element missing in previous fish habitat monitoring conducted to date at the Reserve. In addition, this monitoring will help reinforce an emerging understanding of the role estuarine habitats in the life history of coastal salmonids and other estuarine dependent species, particularly the role of large wood in estuarine ecosystems. Questions to be addressed will include: 1) What is the density of fish associated with project placed trees at varying during the tidal cycle; and 2) How does the density of fish associated with project placed trees compare with reaches at similar depths without large wood structures at varying times during the tidal cycle? Results will be reported directly to restoration practitioners and coastal decision-makers, papers prepared for the scientific literature, in the context of on-going restoration monitoring at the Reserve. Expected results also include improved understanding of the links between healthy, well-managed estuaries and healthy sport fish populations for the local community and coastal decision-makers.

(6) Such other information as would be helpful in evaluating the strengths and weaknesses of project methods, materials or assumptions.

This project demonstrated demand for a locally-based, non-program-specific service through which private property owners can identify the range of available government restoration and acquisition programs, be advised of programs best suited to specific landowner objectives, and obtain the services of a local facilitator and liaison with the multiple state and federal agencies typically involved in acquisition or restoration work. Many landowners who contacted the project manager to inquire about such programs commented that they were at best only dimly aware of the existence of easement and acquisition options, misunderstood the mechanics of such programs, did not know what government agency to contact, or feared that working with a government entity would leave them overwhelmed or lost in the shuffle.

State and Federal agency staff were typically very supportive when contacted to help with a particular project, and individual agency employees were very willing to work collaboratively and solve unanticipated conflicts. Howevr, it is still extremely difficult to coordinate among them, nor do all agencies have staff members familiar with the agency's own programs. No agency appears to have a staff member dedicated exclusively to acquisition and restoration projects, and none is necessarily aware of or well informed about similar programs offered by other entities. Thus, it was not always possible for agency staff to respond quickly to changing circumstances. It is highly unlikely that any one of the agencies would have had the staff time necessary to shepherd these projects through to completion. As it was, landowners occasionally experienced appreciable delays and frustration; several have observed that without the practical assistance and emotional support provided by this project, they would have simply given up.

The grant mechanisms for acquisition were wholly inappropriate to the acquisition phase of the project. The prescribed process gave local residents and local government the impression that they were empowered to impose their own philosophical views on an individual landowner attempting to exercise the right of alienation. The prescribed "invitation to comment" apparently encouraged neighbors in some cases to believe themselves entitled to control an adjacent landowner through harassment and intimidation. Under the prescribed process, individuals who had no legal interest in the property whatsoever were effectively given veto power over a private landowner's decision to sell, and/or were

able to abuse the process to create significant roadblocks for the private landowner. As a result of the activities required by the process, it was not possible to give landowners any reliable predictions as to the probable timing, or even the likely outcome, of a proposed acquisition. In addition to the normal tasks associated with an acquisition—preliminary meetings and planning, appraisals, grantor review, title insurance and closing—this project also required as a condition of each acquisition that the grantee identify, locate and solicit comments on the proposed acquisition from all adjacent landowners (whether or not any restoration work was planned). In addition, the board of directors of the appropriate watershed association reviewed and approveed the proposed acquisition; County Commissioners were briefed and invited to comment on the proposed acquisition. Proof of all of those actions occurred had to be provided to the grantor prior to release of funds for the acquisition or easement.

Notification to neighbors and local government is clearly appropriate—indeed, is required by law—if and when a landowner proposes a change in hydrologic function. There is no apparent basis, however, for involving third parties when a landowner is simply selling an easement.

(7) Final accounting required, non-OWEB 25% Match (In-kind/Contribution).

\$720.000

\$0

\$720.000

Fee/Easement

/arious Fee and Easements

~ 460

CWCG -Federal

CWCG -State

Total Cost

Fee Title, Easement

Parcel Name/Identification

Acres

PLANNED

Funding Source

The table below, and on the next page, provide information on contributions made for the overall project. Because the Coos-Coquille Basin Estuarine Wetland Protection and Restoration Project was self-matched, i.e., the Federal portion (99-803) matched the state portion (99-420), and vice-versa, the information provided here represents how this grant's funds leveraged additional funding from a wide variety of partners.

Totals				\$720,000	\$0	\$720,000				
		ACTUAL					Funding Sourc	e		
	Acres	Parcel Name/Identification	Fee Title, Easement	Total Cost	CWCG - State	CWCG - Federal	USDA- Commodity Credit Corp.**	The Wetlands Conservancy	CB/NB Water Board	Date of Acquisition
	182	Matson Creek (Rose Dairy)	Fee Title	\$210,000		\$210,000				08/2000
		Appraisal/administrative expenses		\$8,439		\$5,439		\$3,000		
	85	Adjacent supplemental property purchase	Fee Title	\$48,329					\$48,329	
	200	Sinko WRP	Easement	\$343,000		\$49,000	\$294,000			10/2000
		Appraisal/administrative expenses		\$24,979		\$24,979				
	12	Frederickson WRP	Easement	\$24,125		\$5,225	\$18,900			10/2001
		Appraisal/administrative expenses		\$2,450		\$2,450				
	58	Schrader Wetland Easement	Easement	\$42,700		\$42,700				10/2001
		Appraisal/administrative expenses		\$7,123		\$7,123				
		Administrative Expenses Not Resulting in Acq	uisitions*	\$7,869		\$7,869				
		Project Management For Acquisitions & Ease	ments	\$61,789		\$61,789				
Totals	537			\$704,022		\$416,574	\$312,900	\$3,000	\$48,329	
			Explanations of	deviations fre	om Planned					
* CWCG	funding will be	s used for planning, appraisal, and/or legal	Matson Creek: Fe	se title purchas	sed and trans	ferred to The	Wetlands Cons	servancy followir	ng procedure	s outlined in
fees even	if the propert	ty was not purchased.	grant agreement.	Appraised pric	ce of \$246,50	00 not neede	d at Sheriff's aud	ction. Additional	area purcha	sed by CB/NB
** Non-m	atching other	Federal agency funds.	Water Board for r	nitigation and	to protect ad	acent landov	vners from flood	ing. Additional n	natch funds in	nclude
			\$48,329 from the	Water Board	and \$3,000 fi	om The Wet	lands Conserval	ncy.		
			Schrader: Easem	ient purchased	l and transfe	red to the Sc	outh Coast Land	Conservancy fc	ollowing proce	edures
		-	outlined in grant a	agreement.						
			Project Locatior	ns Where Adn	ninistrative I	Expenses In	curred Not Res	ulting in Acqui	isition:	
			Brundschmid: CV	VCG funds not	needed for a	aquisition; init	ial restoration pl	anning being co	inducted.	
			Dingus: Couldn't	agree on a val	uation of eas	ement.				
			Daugherty: The D	Jaughterty's pc	irtion of Rano	Jolph Island (Coquille R.) was	s appraised. Cou	uldn't agree o	n a valuation
		-	of the easement	to date.						
		_=1	<u> Vlangan</u> : Real est	tate contract h	older wouldn	t subordinate	e; refinanced 9/2	004 and discuss	sions about	
			acquisition/restor	ation reinitiated	-i					
		-1	<u>Cowan</u> - \$4,800 ii	n Federal CW0	CG funds use	ed for apprais	al. Supplementa	al funding to WR	R not neede	q
			pecause of reduc	ton in project e	extent.					

Status Date: 8/31/2005

OWEB

SUMMARY PERFORMANCE REPORT FOR COASTAL WETLANDS CONSERVATION GRANTS (CWCG)

C-4-1 COOS-COQUILLE PROTECTION & ACQUISTION 1/1/2000 9/30/2005 OREGON

ACQUISITIONS

STATE: GRANT NO: GRANT TITLE: START DATE: CLOSURE DATE: FINAL RPT REC'D:

South Slough NERR

> U.S. Forest Service

Oregon Dep't. Forestry

> Ducks Unlimited

Bureau of Land Management (JITW)

U.S. Fish & E Wildlife (PFW)

Oregon Fish & Wildlife

Funding So Oregon State Parks

Fish America Foundation

Coos County

NRCS - WRP

OWEB -Other Grants

CWCG -State

CWCG -Federal

Total Cost

PLANNED Type of Action

Acres

Т	Т	Т				Г										2					2			
					South Slough NERR											\$1,00					\$1,00			
					U.S. Forest Service			\$25,000													\$25,000			
					Oregon Dep't. Forestry		\$8,266	\$15,000													\$23,266			
					Ducks Unlimited		\$2,482	\$11,285													\$13,767			
					Bureau of Land Management (JITW)										\$3,000						\$3,000		estoring naturally.	
					U.S. Fish & Wildlife (PFW)							\$6,125			\$21,000						\$ 27,125		ter wetland re	
				ource	Oregon Fish & Wildlife												\$1,200				\$1,200		ection; freshwat	
				Funding S	Oregon State Parks												\$6,800				\$6,800		of tidal reconne	
	Ī				Fish America Foundation												\$36,850				\$36,850		rent possibility	l soon.
					Coos County								\$11,653	\$6,000							\$17,653	if time.	itoring. No curr	ikely to be sold
					NRCS - WRP		\$57,215	\$56,702								\$23,830					\$137,747	leted. Ran out c	twater level mor	push. Property
					OWEB - Other Grants	\$3,150					\$3,628					\$42,330					\$49,108	/ey work comp	survey, ground	FSA wouldn't
000,0000			\$360,000		CWCG - State	\$25,969	\$156,952	\$5,533	\$988	\$8,285	\$4,567	\$31,326	\$38,180	\$18,805	\$3,325	\$0	\$26,473		\$6,871	\$32,727	\$360,000	nd some sur	topographic	o restoration
\$ 100°000			\$100,000		CWCG - Federal	\$100,395	\$54,666	\$6,043	\$1,764	\$4,528	\$55	\$509	\$7,929	\$101	\$26,194	\$12,319	\$68,418		\$16,814	\$29,974	\$329,709	site design ai	al site design,	ner resistant t
000,000¢			\$360,000		Total Cost	\$129,514	\$279,581	\$119,563	\$2,752	\$12,813	\$8,250	\$37,959	\$57,762	\$24,906	\$53,519	\$79,479	\$139,741		\$23,685	\$62,701	\$1,032,225	Fredrickson: Initial	Brundschmid: Initia	Nix CCC: Landowi
nanadeino				ACTUAL	Type of Action	Matson Creek	Sinko WRP Wetland Restoration	Cowan WRP Wetland Restoration	Frederickson WRP Restoration	Brundschmid WRP Restoration	Nix CCC Easement Wetland Restoration	Schrader Wetland Restoration	Sealander Wetland Tidal Reconnection	Perrin Wetland Tidal Reconnection	Snyder Wetland Restoration	Anderson Wetland Restoration	S. Slough Salmon Rearing Hab. Enhance.	Project management expenses not resulting	in site-specific restoration project	Administration		Explanations of deviations from Planned: F		
					Acres	12	200	75	0	0	0	58	11	2	55	15	20				448			
	•		Totals																		Totals			

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RESTORATIONS