Wetland Regulatory Compliance in the Willamette Valley, Oregon: 1982 to 1994

Oregon Division of State Lands
Wetlands Program

December, 2000

Wetland Regulatory Compliance in the Willamette Valley, Oregon: 1982 to 1994

Study conducted by:

Joel Shaich
Oregon Division of State Lands

This report is published by:
Wetlands Program
Division of State Lands
775 Summer Street NE
Salem, OR 97301-1279

December 2000

This study was funded in part by the U.S. Environmental Protection Agency, Region 10, through a State Wetland Protection Grant to the Oregon Division of State Lands.

This report should be cited as follows:

Shaich, J.A., 2000. *Wetland Regulatory Compliance in the Willamette Valley, Oregon: 1982 to 1994.* Oregon Division of State Lands, Salem, Oregon.

ACKNOWLEDGMENTS

Janet Morlan, Wetlands Program Team Leader for the Division of State Lands (DSL), was the driving force for this project from start to finish. Janet co-authored the work plan, ensured that the necessary resources were available and provided critical review of the drafts.

Paul van Houten, DSL, helped immensely with data retrieval and analysis from the DSL database.

U.S. Department of Agriculture Farm Services Agency and Natural Resources Conservation Service staff in the Hillsboro, Oregon City, Salem, Dallas, Tangent, McMinnville, Eugene, and Portland offices helped me access aerial photographs and other resources. Kris Homma, Natural Resources Conservation Agency, was particularly helpful in researching a number of study sites in the northern Willamette Valley.

Ken Bierly, Oregon Watershed Enhancement Board; Elaine Blok and Dennis Peters of the U.S. Fish and Wildlife Service National Wetlands Inventory; Joe Eilers, E&S Environmental Chemistry; Jim Goudzwaard, Portland District Corps of Engineers; and Yvonne Vallette, U.S. Environmental Protection Agency, provided feedback on the initial draft. Jim Goudzwaard was especially helpful in providing access to the Corps' aerial photograph collection and regulatory database.

Contents

List of Tables

Page

List of Figures

1.0 EXECUTIVE SUMMARY

This report documents the results of an investigation of wetland changes in the Willamette Valley for compliance with state Removal-Fill Law permit requirements. It was conducted as a follow-up to the study described in the report, *Wetland and Land Use Change in the Willamette Valley, Oregon: 1982 to 1994* ("Wetland Change Study") published by the Division of State Lands (DSL) in December, 1998. The Wetland Change Study relied on aerial photographic interpretation of sample plots to develop statistically valid estimates of Willamette Valley wetland changes. The key finding was a net loss of 6,877 acres of wetlands to uplands during the study period, an average of 573 acres of wetland loss per year. Sixty-four percent of the loss was due to conversion of wetlands to upland agriculture, with the remainder caused by urban or rural development and other activities.

The Wetland Change Study did not determine whether the identified wetland changes were subject to, or in compliance with, Removal-Fill Law permit requirements. Thus, the primary goal of this study was to determine whether, and to what extent, the wetland changes and associated land uses (agriculture, urban development, rural development, and forestry) were regulated by DSL under the state Removal-Fill Law. The Removal-Fill Law requires that a permit be obtained from DSL for fill, removal or alteration of material in waters of the state, including wetlands. The wetland changes reviewed for both studies included wetland losses, wetland gains and wetland-to-wetland type changes. This study analyzed the wetland changes and associated land uses to determine if they were subject to permit requirements and, if so, if they were authorized by permit or were a violation. The results were used to estimate causes of wetland change and compliance with wetland regulations for the entire study area.

A secondary goal of the study was to gain a more complete picture of the role of government programs in regulating or influencing activities causing wetland changes by reviewing the records of three related government wetland programs that address activities exempt from the Removal-Fill Law. Records of U.S. Department of Agriculture (USDA) actions implementing the federal Food Security Act wetland conservation provisions ("Swampbuster") were reviewed to identify USDA actions related to the changes involving agricultural activities. The USDA conducts wetland determinations on agricultural lands, including identification of converted wetlands (as defined by USDA, wetlands modified after December 23, 1985, to allow production of an agricultural commodity crop). USDA program participants can become ineligible for certain USDA program benefits if a converted wetland is documented. Review of state Department of Forestry actions implementing the wetland protection requirements of the state Forest Practices Act and of selected actions of the Corps of Engineers implementing the federal Clean Water Act Section 404 program was attempted, but could not be completed due to problems accessing agency records for the study period.

1.1 RESULTS

2.0 Removal-Fill Law Regulatory Status of Wetland Changes

- 59% of the wetland changes were not subject to permit requirements because they involved unregulated activities or wetland types not regulated at that time, or were caused by activities exempted from state regulation.
- 35% of the wetland changes were subject to permit requirements.
- 5% could not be determined due to insufficient information.

2.1 Of the Changes Subject to Removal-Fill Law Permit Requirements

- 57% were agricultural conversions, primarily wetland conversion to crop land.
- 18% were for wetland creation, restoration and enhancement activities.
- 18% were for urban and rural development.
- 5% were for pond construction.
- 3% were forested wetland clearing for an undetermined land use.

2.2 Compliance With Removal-Fill Law Permit Requirements

- 30% of the wetland changes subject to permit requirements were authorized by a DSL permit.
- 70% of the wetland changes subject to permit requirements were not authorized and were apparent violations.

2.3 Compliance By Land Use Activity

- 100% of wetland changes due to wetland creation, restoration and enhancement activities subject to permit requirements were authorized by a DSL permit.
- 66% of wetland changes due to urban and rural development subject to permit requirements were authorized by a DSL permit.
- None (0%) of the wetland changes due to agricultural conversions and pond construction subject to permit requirements were authorized by a DSL permit.
- Agricultural conversions were responsible for 81% of all unauthorized wetland changes, far more than the non-compliance rate for any of the other land use activities.

2.4 DSL Enforcement Program

- DSL's enforcement program played virtually no role in regulating the unauthorized activities; enforcement actions were documented for less than 1% of the apparent violations.

2.5 USDA Food Security Act (Swampbuster) Activity

- Thirty-nine discrete wetland change locations potentially met the USDA definition of converted wetland.
- Only two of the wetland change locations were identified by USDA as converted wetland and the accompanying files did not note any Swampbuster enforcement action.
- USDA staff stated that most of the subject properties were not enrolled in commodity support programs subject to the Swampbuster provisions of the Food Security Act.

3.0 DISCUSSION

The most striking result of this investigation is the substantial difference in compliance between agricultural activities and urban or rural development activities. A brief examination of Oregon's wetland and land use programs identifies the primary institutional context for this difference. Passage of Oregon's Wetland Conservation Act in 1989 established a number of initiatives that have increased coordination between DSL's regulatory program and local government land use planning and regulations. However, virtually all of this state-local integration addresses urban and rural development; there is no comparable linkage for agricultural activities. The result is that many development activities are addressed by local governments in coordination with DSL through the Wetland Land Use Notification program.[1] Local government approvals are not required for most agricultural activities, such as crop land expansion, thus Wetland Land Use Notice requirements are not triggered. In addition, there is no land use planning Goal 5 requirement for protection of "significant wetlands" outside urban growth boundaries, where most agricultural land is located.

This institutional difference is compounded by the difference in the activities themselves—urban conversions are typically obvious and clearly require a state permit, while many agricultural activities partially alter wetlands and permit requirements are less clear. Similarly, DSL's enforcement program does not adequately address agricultural non-compliance. The program is largely complaint driven, an approach that is effective in urban areas where wetland alteration activities—and the heavy equipment used—are usually visible to the public due to the small lot sizes and dense road networks. Activities on large agricultural parcels in rural areas are far less likely to be observed by the public and reported to DSL.

The study results also confirm Swampbuster's limited potential to protect wetlands on agricultural lands in the Willamette Valley. According to the USDA, only 32% of agricultural lands in Willamette Valley counties were enrolled in USDA programs

[1] The Wetland Land Use Notification program requires local governments to check wetland inventory maps when reviewing development proposals and notify the applicant and DSL when a development site contains a mapped wetland.

subject to the wetland conservation provisions of the Food Security Act. Major Willamette Valley crops such as grass seed, nursery stock and specialty crops (grapes, orchards, berries) are not commodity crops and are not eligible for USDA support.

These two studies—the initial Wetland Change Study and the Regulatory Compliance Study—point to specific gaps and needs pertinent to improving the effectiveness of regulatory and incentive programs aimed at maintaining and restoring the state's wetland resources.

4.0 INTRODUCTION

Regulatory programs to conserve wetlands in Oregon were first enacted nearly 30 years ago. In 1971 the Oregon Removal-Fill Law established state regulation of fill activities in estuarine wetlands. Today, virtually all of Oregon's diverse wetland types are regulated under a variety of local, state and federal programs. There has been limited assessment of the effectiveness of these regulatory programs in managing changes to the state's wetland resources. The Oregon Division of State Lands (DSL), which implements the state Removal-Fill Law, conducted a field-based study of permitted wetland losses and associated compensatory mitigation in the Portland metropolitan area and determined that the regulatory process led to a small net loss of wetlands and a permitted change from palustrine emergent wetlands to aquatic bed/open water ponds (Shaich and Franklin, 1995). That study also found that one or more permit conditions were violated by 64% of the projects. A DSL field-based compliance monitoring study in 1997-98 reviewed more than 250 permitted projects in wetlands and other waterway types and found that 42% were in violation of one or more permit conditions (DSL, 1999). No study to date has examined wetland changes caused by unauthorized activities or activities exempt from regulation.

DSL recently completed a study of wetland changes in the Willamette Valley from the mid-1980s to mid-1990s. The study, *Wetland and Land Use Change in the Willamette Valley, Oregon: 1982 to 1994* [2], (hereinafter referred to as the "Wetland Change Study") used aerial photographic interpretation to develop statistically valid estimates of Willamette Valley wetland changes. The key finding was that a net loss of 6,877 acres of wetlands to uplands had occurred during the study period, an average of 573 acres of wetland loss per year. Sixty-four percent of the loss was due to conversion of wetlands to upland agriculture with the remainder caused by urban and rural development, roads, and other activities.

This study evaluated wetland changes identified in the Wetland Change Study for compliance with Oregon's wetland regulatory requirements. The primary goal of this study was to use the wetland change results and aerial photograph interpretations from the Wetland Change Study to determine whether, and to what extent, the specific wetland changes identified (losses, gains and wetland-to-wetland type changes) and the associated land uses (agriculture, urban development, rural development, and forestry) were regulated by DSL under the state Removal-Fill Law. The Removal-Fill Law requires a permit from DSL for fill, removal or alteration of material in waters of the state, including wetlands. Although it does not regulate every type of activity that can affect wetlands, it is the most comprehensive regulatory program in Oregon for activities that cause the types of wetland changes identified in the Wetland Change Study. Wetland changes were reviewed to determine if they were subject to Removal-Fill Law permit requirements or were exempt, were authorized by permit if subject to permit

[2]Daggett, S.G., M.E. Boule, J.A. Bernert, J.M. Eilers, E. Blok, D. Peters, and J. Morlan, 1998. *Wetland and Land Use Change in the Willamette Valley, Oregon: 1982 to 1994.* Shapiro and Associates, Inc. Report to the Oregon Division of State Lands. 2 volumes: Volume 1: Final Report and Volume 2: Technical Appendices

requirements, or were in violation of permit conditions. For unauthorized (unpermitted) wetland changes and violations of permit conditions DSL records were reviewed for associated agency enforcement actions. Land uses associated with exempt, permitted and unauthorized wetland change activities were identified.

A second goal of the study was to obtain a more complete picture of the role of regulatory programs on wetland changes by evaluating government programs that regulated activities affecting wetlands that were not regulated by or were exempt from the Removal-Fill Law. The Removal-Fill Law provides exemptions for some fill and removal activities in wetlands under certain conditions. Forest management practices in wetlands on forest land are exempt from the Removal-Fill Law and regulated instead by the Department of Forestry (DOF) under the Forest Practices Act (FPA). To evaluate the role of the FPA in regulating wetland changes related to forestry activities the study reviewed DOF authorizations for timber harvest activities in wetlands. The placement of fill material for dam construction and water diversions is also exempt from Removal-Fill Law regulation but is regulated by the Water Resources Commission and Water Resources Department under separate state statutes. Activities of these agencies were not evaluated, in part due to time constraints, and because a review of the Wetland Change Study aerial photographs indicated that dam and diversion activities played a minor role in causing the wetland changes.

In addition to state regulatory programs there are also federal and local government regulatory programs in Oregon for activities that can cause wetland changes. The federal Clean Water Act Section 404 program ("404 program") requires permits from the Army Corps of Engineers for the placement of fill material into "waters of the United States" which includes wetlands. The U.S. Environmental Protection Agency also has regulatory responsibilities for certain aspects of the program. The 404 program regulation of fill activities is similar to Removal-Fill Law regulation. The two programs used the same wetland jurisdictional definition for most of the study period (1985 – 1994). Significant differences, for the purposes of this study, are that the 404 program does not regulate removal activities and that the 404 program authorizes a majority of the activities under general permits, a set of pre-authorizations for specific activities that require limited or no individual review by the Corps of Engineers. 404 program regulatory actions in the study area during the study period are assumed to be consistent with or less restrictive than Removal-Fill Law regulatory actions, with two important exceptions that are discussed below. A comprehensive review of the 404 program was not undertaken for this study because reviewing 404 program regulatory actions that were consistent with or less restrictive than Removal-Fill Law regulatory actions would provide little additional information on the regulatory status of the wetland changes involved. Two circumstances were identified where the 404 program potentially regulated wetlands or activities that the DSL program did not: (1) 404 program regulation of certain wetland types that were not subject to Removal-Fill Law jurisdiction prior to 1985, and, (2) independent enforcement actions by the Corps of Engineers at sites where DSL was not involved in enforcement action. Corps of Engineers records were reviewed for regulatory actions that occurred in these two circumstances.

During much of the study period the federal government has attempted to rely on the U.S. Department of Agriculture (USDA) through its authority under the Food Security Act as

the lead federal agency for wetland issues on agricultural lands, including making wetland jurisdictional determinations for the 404 program. The 1985 Food Security Act, as amended, contains mechanisms to prevent the conversion of wetlands by USDA program participants. Although not a permit program, it was included in this study because of its unique potential to deter wetland loss on agricultural lands, which comprise 52% of the study area. The wetland conservation ("Swampbuster") provisions of the Food Security Act link eligibility for USDA program benefits to "converted wetlands." Converted wetlands[3] are defined under the Food Security Act as "wetland that has been drained, dredged, filled, leveled or otherwise manipulated, including the removal of woody vegetation, or any activity that results in impairing or reducing the flow, circulation or reach of water, and makes the production of an agricultural commodity possible." USDA program participants can become ineligible for certain USDA program benefits if they convert wetlands after December 23, 1985 to enable production of commodities. The study reviewed USDA records to evaluate the role of the Food Security Act in wetland changes that potentially met the definition of converted wetlands.

Local regulatory programs in Oregon can include wetland conservation elements ranging from grading permit requirements to comprehensive wetland protection ordinances under Goal 5 (Natural Resources) elements of local comprehensive plans. However, the prevalence and requirements of these local programs varies across the state and many local governments had few, if any, specific regulatory requirements for activities in wetlands during the study period. This study did not review the role of local programs in regulating wetland changes due to the inconsistencies in local wetland regulatory programs across the state and the generally limited role of local governments in wetlands regulation during the study period.

[3]Converted wetland as defined in the Food Security Act is not equivalent to "converted wetland" in the state Removal-Fill Law.

5.0 METHODS

The Wetland Change Study used a probability-based sample design that allowed the results of limited sampling to be used to make estimates for the entire study area, with a quantified uncertainty range. The study area was the Willamette Valley Ecoregion, comprised of 4,970 square mile sections (Figure 1). Agriculture is the most extensive land use in the study area (more than 50%) with the remainder in forestry and development (see the Wetland Change Study for details). One hundred and fourteen sample plots, each one square mile in size, were established to represent the entire study area. Within these plots, aerial photographs from 1982 and 1994 were used to map wetlands, uplands, and changes over the study period. Wetlands of 0.25 acres in size and larger were mapped. Four hundred and three discrete wetland changes were mapped, including 359 wetland changes mapped as polygons and 44 wetland changes mapped as linear features (lines) because they were too narrow to map as polygons. Wetland and land use cover type abbreviations used in the Wetland Change Study and in this report are in Table 1.

For this study, all of the 359 wetland changes mapped as polygons were reviewed. The linear changes were not reviewed due to time constraints. The results were used to estimate causes of wetland change and compliance with wetland regulations for the entire study area using the same extrapolation methods as the Wetland Change Study. For details on the methods used in the Wetland Change Study and the results of the study refer to volumes 1 and 2 of the final report.

The Removal-Fill Law regulatory review was completed in two steps—data collection and regulatory determinations.

5.1 Data Collection

The primary objective of data collection was to gather adequate data to support the regulatory determinations described below. Data were collected on land use activities (e.g. clearing, filling, ditching, cropping, construction), changes in wetland jurisdictional status and wetland type, approximate dates of changes, and any regulatory and resource agency activities related to the observed change. Tax assessor maps were used as needed to more precisely determine wetland change locations and to identify ownership for agency record searches. Plot files from the Wetland Change Study and DSL regulatory files were the primary data sources.

Plot files from the Wetland Change Study contained the interpreted 1980s and 1990s aerial photographs, site visit notes by the photo-interpreters, plot location maps, and copies of the relevant sections of U.S. Geological Survey topographic quadrangle maps, county soil survey maps and national wetlands inventory maps.

Figure 1. Location map showing the Willamette Valley Ecoregion (study area) with the Willamette River Basin

(placeholder page)

Table 1. Wetland and Land Use Type Abbreviations

Abbreviation	Wetland Types	Common Description
PFO	Palustrine Forested	Forested Wetlands
PSS	Palustrine Scrub Shrub	Shrub Wetlands
PEM	Palustrine Emergent	Marshes/Wet Pastures
PUS	Palustrine Unconsolidated Shore	Shallow/Unvegetated Ponds
PUB	Palustrine Unconsolidated Bottom	Open Water Ponds
PAB	Palustrine Aquatic Bed	Floating or Submerged Vegetation
Pf	Palustrine Farmed	Cropped wetlands
WFP	Wet Forested Plantation	Planted Pine/Cottonwoods in Wetland Conditions
Abbreviation	**Deepwater Habitat Types**	**Common Description**
LAC	Lacustrine	Lakes/Reservoirs
RIV	Riverine	River Systems
Abbreviation	**Upland Land Use/Cover Types**	**Common Description**
UA	Agriculture	Crop Producing/Pasture
UB	Built/Urban	Cities and Towns
URD	Rural Development	Rural Building/Development
UFP	Forested Plantation	Christmas Tree Farms & Cottonwood Plantations (drained)
UO	Other Uplands	Uplands not fitting other category

More than 300 DSL regulatory files were reviewed, including electronic databases and associated original paper records of permit files, enforcement files and wetland determination files. Records were generally identified in databases by location information, including county and legal description (township, range and section). Virtually all relevant paper records for files identified in the electronic databases were located in the DSL paper file collections.

Electronic database data quality was not evaluated in detail but appeared to be good. Approximately 5–10% of database files did not contain adequate location information to allow retrieval of relevant paper files. These file listings were visually scanned and determined in most cases to be records for activities that were not relevant to the study. These included activities outside the study area; not in study plot locations; occurring outside the study time period; or not requiring agency action (incomplete permit applications, withdrawn applications, determination of no DSL jurisdiction, determination of no violation).

The wetland mapping in the Wetland Change Study was re-evaluated as part of the regulatory determination process and found to be highly accurate. As part of the data

collection process, 41 DSL wetland determination files for sites located in 18 study plots were reviewed. These files contained onsite, high resolution wetland delineation reports by wetland consultants. The delineation reports were all concurred with by DSL. Nearly all of the delineation reports were consistent with the Wetland Change Study mapping, taking into account the differences in mapping standards. In three of the delineation reports, additional wetlands were identified that were not mapped in the Wetland Change Study, including a 2.65 acre wetland, a wetland of approximately 1–2 acres, and a wetland ditch.

Supplemental data was also collected from the USDA aerial photo slides and from Portland District Corps of Engineers aerial photographs. USDA aerial slides were true color, usually taken in late spring or early summer, and generally included photographs taken annually during the study period. Corps of Engineers aerial photographs varied in available dates and formats. For selected sites, additional data was collected through site visits, personal interviews and from agency records of the USDA, Corps of Engineers, and Oregon Department of Forestry.

5.2 Removal-Fill Law Regulatory Determinations

The collected data was used to make regulatory determinations for each discrete wetland change, based on the permit requirements of the Removal-Fill Law that were in place at the time of the change. Wetland changes were reviewed to determine if they were subject to Removal-Fill Law permit requirements, were exempt, were authorized by permit if subject to permit requirements, or were in violation of permit conditions. For unauthorized (unpermitted) wetland changes and violations of permit conditions DSL records were reviewed for associated agency enforcement actions.

Available information to support regulatory determinations for this study varied from clear and conclusive evidence in agency files, site visits and/or air photos to a minimum standard of an off-site wetland jurisdictional determination. The minimum threshold for making regulatory determinations was that the information had to be adequate to support an agency action, such as requiring a wetland delineation report prior to development, requiring a permit application prior to development, or issuing a cease and desist order to stop a violation.

Throughout the study period amendments to state law, administrative rules and technical guidance changed the jurisdictional criteria for wetlands and the exemptions for regulated activities in wetlands. Key regulatory, administrative and technical changes and their regulatory significance are listed in Table 2. Determination of the applicable permit requirements for each wetland change was a two step process. First, a determination of the jurisdictional status of the wetland at the time of the change (pre-change) was made using the jurisdictional information developed for each wetland type (Table 3). Second, for those wetlands that were jurisdictional, the applicable exemptions were reviewed to determine if the activity was not regulated under the Removal-Fill Law or was regulated but was exempt from permit requirements (Table 4).

Table 2. Key Regulatory, Administrative and Technical Changes Affecting DSL Wetland Jurisdiction, 1982 - 1994

Year	Event	Regulatory Significance
1978[1]	DSL Administrative Rules revised	Last modification of rules prior to study period
1985[2]	DSL Administrative Rules revised	Adopted federal definition of wetlands, broadened jurisdiction to include wetlands with woody vegetation (scrub-shrub and forested), with facultative plant communities, and with saturated hydrologic regimes; clarified jurisdiction over created wetlands
1989	Federal Manual for Identifying and Delineating Jurisdictional Wetlands published[3]	Science based wetland identification method, supported identification of cropped wetlands
1989	Senate Bill 3 modifies Removal Fill Law and establishes comprehensive state wetlands program	Definition of "converted wetland" established, agricultural and maintenance exemptions added; wetland definition codified in state law
1990	Regulatory Guidance Letter 90-7 issued by Corps of Engineers[4]	Exempted "prior converted" wetlands as defined by the USDA
1992	DSL Administrative Rule revisions	New criteria to determine jurisdiction for created wetlands based on usage, size, zoning, other factors.

Notes:

[1] In the 1978 rules wetlands were defined as “swamps, marshes, and other land areas frequently covered by water to a depth great enough to limit vegetation to water-loving types not found in well-drained locations.” The rules further limited jurisdiction over wetlands to “ . . . wetlands lying below the elevation at which significant woody vegetation (trees, etc.) ceases to grow because of frequent inundation.”

[2] The rules became effective in December 1984 but were implemented in practice in 1985. They are referred to as the “1985 rules” in this report.

[3] DSL used this manual from 1989 to 1993 at which time the agency adopted the 1987 Corps of Engineers Wetland Delineation Manual. The change in manuals has had virtually no effect on DSL wetland jurisdictional determinations.

[4] Regulatory Guidance Letter (RGL) 90-7 issued by the Corps of Engineers defined "prior converted" wetlands as being exempt from federal permit requirements. DSL subsequently exempted prior converted wetlands from state permit requirements for the duration of the study period.

These events are noted because they resulted in specific changes in the jurisdictional status of one or more wetland types or because they resulted in changes in exempt activities. The effects of these changes on specific wetland types are depicted in Table 3.

Table 3. Wetland Jurisdictional Changes, 1982 - 1994

Year & Event[1]	Natural Wetlands					Wetlands Created in Uplands		
	PUB PAB	PEM	PSS	PFO	Pf	Vegetated Wetlands	Ponds	Channels
1978 Rules	Jurisdictional	Only if inundated and with obligate wetland vegetation	Not jurisdictional	Not jurisdictional	Not jurisdictional	Not jurisdictional	Mill ponds exempt	Not jurisdictional
1985[2] Rules	Jurisdictional	Jurisdictional	Jurisdictional	Jurisdictional	Technically jurisdictional but not regulated in practice	If aquatic life and habitats and FOC[3]	If aquatic life and habitats and FOC	If aquatic life and habitats and FOC
1989 Manual	Jurisdictional	Jurisdictional	Jurisdictional	Jurisdictional	Jurisdictional	If aquatic life and habitats and FOC	If aquatic life and habitats and FOC	If aquatic life and habitats and FOC
1989 Statute	Jurisdictional	Jurisdictional	Jurisdictional	Jurisdictional	Jurisdictional	If aquatic life and habitats and FOC	If aquatic life and habitats and FOC	If aquatic life and habitats and FOC
1990 RGL 90-7	Jurisdictional	Jurisdictional	Jurisdictional	Jurisdictional	Jurisdictional except if prior converted	If aquatic life and habitats and FOC	If aquatic life and habitats and FOC	If aquatic life and habitats and FOC
1992 Rules	Jurisdictional	Jurisdictional	Jurisdictional	Jurisdictional	Jurisdictional except if prior converted	Varies by usage, zoning and size	Varies by usage, zoning and size	If food or game fish and FOC

Notes:
[1] Refer to Table 2 for descriptions of events.
[2] The rules became effective in December 1984 but were implemented in practice in 1985. They are referred to as the "1985 rules" in this report.
[3] FOC is "free and open connection" to other waters of the state.

Table 4. Selected exemptions from Removal-Fill Law permit requirements, 1982 - 1994

Exempt Entire Study Period: 1982 - 1994

•Fill or removal for forest management practices on forestland within non-navigable waterways (including wetlands) conducted in accordance with the Oregon Forest Practices Act.

•Fill for dams regulated by the Water Resources Commission under ORS 543 and fills for water diversions regulated by the Water Resources Department under ORS 537&539.

•Fill or removal of less than 50 cubic yards of material.[(1)]

•Vegetation management without fill or removal of material.

Exempt September 1989 - 1994

•Maintenance of structures, i.e. dikes, levees, ditches, tide gates, tile drain systems, etc.

•Normal farming and ranching, minor drainage in converted wetlands (Pf).

•Maintenance of farm roads on exclusive farm use zoned lands.

•Maintenance or drainage of farm and stock ponds on exclusive farm use zoned lands.

[(1)] Fill or removal of any amount in state scenic waterways requires a DSL permit, however, no wetland changes in the study area occurred in state scenic waterways.

The most significant regulatory change during the study period was the 1985 DSL administrative rule amendment[4] that adopted the federal definition of wetlands used in the 404 program. This definition included all of the wetland types found in Oregon. Prior to this change, DSL's definition of wetlands was limited to wetlands with annual or permanent ponding dominated by obligate[5] herbaceous (non-woody) plant species. The adoption of the federal wetland definition expanded the set of regulated wetlands to include wetlands that had only irregular ponding or saturated soil hydrologic regimes. It also included wetlands dominated by facultative wetland plant communities and those dominated by woody plants. The adoption of this wetland definition expanded state jurisdiction to include wetland meadows and prairies (PEM), shrub dominated wetlands (PSS) and forested wetlands (PFO).

There were also a number of changes in the regulatory status of cropped wetlands during the study period. Cropped wetlands are natural wetlands that have been modified to support the growing of agricultural crops but retain hydric (wetland) soils and wetland hydrologic characteristics (ponding and/or saturated soils). Modifications generally include the removal of native vegetation and attempts at drainage. (Areas that have been completely drained and no longer have wetland hydrology are not considered wetlands). Cropped wetlands, although technically jurisdictional following the 1985 DSL rule amendments, were not regulated in practice under the Removal-Fill Law until 1989 when DSL began using the newly issued Federal Manual for Identifying and Delineating Jurisdictional Wetlands. The Federal Manual provided standard methods for the identification and delineation of cropped wetlands, consistent with the definition of wetlands used by DSL. For the purposes of this study, cropped wetlands are considered non-jurisdictional until 1989. That same year Senate Bill 3 established an exemption to the Removal-Fill Law for normal farming and ranching activities (plowing, grazing, seeding, harvesting, etc.) and maintenance of drainage structures (dikes, ditches, tile drains, etc.) in "converted wetlands." Converted wetlands[6] as defined in the Removal-Fill Law are essentially the same as cropped wetlands. The result of the exemptions was that DSL permits were only required for non-farm related activities in cropped wetlands.

In 1990 the Corps of Engineers issued regulatory guidance that classified cropped wetlands into two separate groups for regulatory purposes (Regulatory Guidance Letter 90-7). "Farmed wetlands" included cropped wetlands that were ponded for 15 days or longer during the growing season and were subject to 404 program permit requirements. "Prior converted croplands" included cropped wetlands that were ponded for less than 15 consecutive days during the growing season; these were not regulated. DSL subsequently adhered to these definitions for the Removal-Fill Law program for the duration of the study period and exempted all activities on prior converted cropland.

---

[4] The rules became effective in December 1984 but were implemented in practice in 1985. They are referred to as the "1985 rules" in this report.

[5] The U.S. Fish and Wildlife Service has developed a rating system indicating the frequency with which a particular plant species occurs in wetlands. Obligate wetland plants such as Cattail (*Typha* sp.) or Skunk cabbage (*Lysichiton americanum*) almost always occur in wetlands. Facultative wetland plants occur in both wetlands and nonwetlands.

[6] Converted wetland as defined in the state Removal-Fill Law is not equivalent to "converted wetland" in the Food Security Act.

5.3 Evaluation of Other Agency Programs

Evaluation of other agency programs was based on the data collection described previously and review of relevant agency records. Specific procedures for evaluating each agency program are described in the following sections.

5.3.1 Oregon Forest Practices Act

Forest management practices on state and privately owned lands in Oregon are regulated by the Oregon Department of Forestry (DOF) under the Oregon Forest Practices Act (FPA). Forest management practices involving fill and removal in wetlands are exempt from the Removal-Fill Law if they are on forestland and within non-navigable waterways, and if they are conducted in accordance with FPA requirements. Fill and removal activities that may be associated with forest management practices but are not regulated under the FPA are subject to Removal-Fill Law permit requirements. An example is the removal of stumps in wetlands following timber harvest to convert forestland to other uses, such as crop land. The FPA was amended in 1987 to include more stringent wetland protection requirements. Rules implementing these requirements went into effect in 1991.

Only changes to forested wetlands were reviewed to determine the role of the FPA in regulating wetland changes. Forest management practices regulated under the FPA can affect other wetland types; however, a review of the Wetland Change Study aerial photographs found that few of the changes to non-forested wetlands appeared to be related to forest management practices. Local DOF offices were contacted and records requested on any regulatory actions in the forested wetland change locations.

5.3.2 Federal Clean Water Act Section 404 Permit Program

Two circumstances were identified where the 404 program potentially regulated wetlands or activities that the DSL program did not. The first was 404 program regulation of certain wetland types that were not subject to Removal-Fill Law jurisdiction prior to 1985. The Corps of Engineers wetland definition includes all of the wetland types found in Oregon. DSL did not adopt this wetland definition until 1985. Prior to that time DSL used a less inclusive wetland definition that excluded forested and shrub-dominated wetlands, and any wetlands without regular ponding. The study reviewed Corps of Engineers records for regulatory actions under the 404 program from 1982 – 1985 involving the wetland types excluded from Removal-Fill Law regulation. The second circumstance was independent enforcement actions by the Corps of Engineers at sites where DSL was not involved in enforcement action. Corps of Engineers records were reviewed for enforcement actions throughout the study period that were independent from DSL enforcement actions. The Portland District Corps of Engineers regulatory database was queried for relevant records with the assistance of Corps personnel with expertise in the database.

5.3.3 Federal Food Security Act

The Food Security Act has the potential to deter wetland changes caused by conversion of wetlands to crop land. Potential converted wetlands (USDA definition) were identified from Wetland Change Study results and aerial photograph review. Because converted wetlands, by definition, were converted to crop land after December 23, 1985, it was necessary to determine when the conversions occurred. USDA aerial slides, taken annually throughout the study period, were reviewed to determine if conversions occurred prior to or after December 23, 1985. For conversions that occurred after that date USDA staff were interviewed regarding potential converted wetlands. USDA wetland determination maps were reviewed to determine if USDA had conducted wetland determinations and relevant USDA wetland determination files were reviewed.

6.0 RESULTS

In the discussion below, the numbers of wetland changes are those mapped in the sample plots. The acreage figures are for the entire Willamette Valley study area, based on the extrapolation methods previously referred to. The results of this study have approximately 5% to 10% uncertainty as determined by the sampling density and methodology. See the Wetland Change Study for a full discussion of the sample design.

6.1 Removal-Fill Law Program

The regulatory status of Willamette Valley wetland changes is depicted in Table 5. Regulatory determinations were made for approximately 95%, (28,411 acres) of the wetland change (304 of the 359 mapped wetland changes in sample plots). Regulatory status could not be determined for 5% of the wetland change acreage (1,639 acres). These were predominately vegetation removal activities where the occurrence of fill or removal activity subject to regulation could not be established, intermittent streams that may or may not have included wetlands, and fill or removal activities of unknown volume, possibly less than 50 cubic yards (the state permit threshold). No DSL records were found for any of these sites. These wetland changes will not be discussed further in this report.

6.1.1 Wetland Changes Not Subject to Permit Requirements

Approximately 59% of the wetland changes (17,788 acres) were not subject to permit requirements (204 of 359 mapped wetland changes in the sample plots). See Table 5 for details. The largest portion, which included 39% of all wetland changes (11,817 acres), was due to natural changes in vegetation structure in unmanaged wetlands and wetlands in abandoned agricultural fields. These included emergent wetlands that changed to scrub-shrub or forested wetlands, and uplands and cropped wetlands that changed to emergent, scrub-shrub or forested wetlands. Approximately 8 % were impacts to forested and scrub-shrub wetlands that occurred prior to DSL jurisdiction over these wetland types in 1985 (2,334 acres). Five percent were caused by exempt ongoing agricultural activities in cropped wetlands (1,409 acres). Minor components included sites identified in the Wetland Change Study that, upon review of additional information, did not meet the criteria for actual wetland changes, wetland changes in exempt intermittent streams and artificially created wetlands, creation of wetlands from uplands (non-wetlands), conversion of cropped wetlands to uplands (prior to DSL Jurisdiction or through exempt activities), exempt fill and removals of less than 50 cubic yards, and exempt vegetation removal.

Table 5. Regulatory Status of Willamette Valley Wetland Changes

Regulatory Status		**Rationale**	**Acres**	**%**
No Removal-Fill Permit Required	•Natural vegetation changes; abandoned fields restoring naturally	No regulated activity	11,816.69	39.32
	•PFO; PSS impacts before 1985 administrative rule amendments asserted jurisdiction	Non-jurisdictional wetland types	2,334.14	7.77
	•Ongoing agricultural activities in cropped wetlands	Non-jurisdictional wetland type until 1989; exempt activity from 1989	1,409.49	4.69
	•No wetland change occurred (based on additional information)	No regulated activity	690.40	2.30
	•Activities in intermittent streams without fish values or in artificial wetlands	Non-jurisdictional wetland types	617.99	2.06
	•Creation of wetlands in natural uplands, in fill material or in prior converted cropland	No activity in jurisdictional wetlands	398.01	1.32
	•Cropped wetlands converted to uplands through normal agricultural activities	Non-jurisdictional wetland type until 1989; exempt activity from 1989	388.02	1.29
	•Fill/removal under 50 cubic yards of material; vegetation removal (no ground alteration)	Exempt activities	133.04	0.44
Subtotal			**17,787.78**	**59.19**
Removal-Fill Permit Required		Regulated activities in jurisdictional wetlands	**10,623.13**	**35.35**
Subtotal			**28,410.91**	**94.54**
Regulatory Status Not Determined		Insufficient information	**1,639.29**	**5.46**
Total			**30,050.20**	**100.00**

6.1.2 Wetland Changes Subject to Permit Requirements

Permits were required for 35% (10,623 acres) of the wetland changes (100 of the 359 mapped wetland changes in the sample plots) (Table 5). Wetland changes subject to DSL permit requirements were caused by five types of land use activities (Table 6). Agricultural conversions were the most common, responsible for 57% (6,008 acres) of the wetland changes. Looking at the agricultural conversions alone, the majority involved converting wetlands to crop land (5,344 acres or 89% of the agricultural conversions), with conversion of wetlands to pasture and other agricultural uses accounting for the remainder. Wetland creation, restoration and enhancement activities accounted for 18% (1,921 acres). Urban and rural development caused another 18% of the wetland changes (1,884 acres). Pond construction caused 5% (529 acres) of the wetland changes. Three percent (280 acres) of the wetland changes were forested wetland clearing that could not be positively ascribed to a particular land use. These all occurred in agricultural areas surrounded by or adjacent to crop lands, which suggests that they were related to agriculture, possibly agricultural conversions in progress or abandoned conversions due to problems with soil wetness. However, this could not be verified.

6.1.3 Compliance With Removal-Fill Law Permit Requirements

Overall compliance with Removal-Fill Law permit requirements was 30% (3,174 of 10,623 acres of activities subject to permit requirement) for the study period (Table 6). Seventy percent (7,449 acres) of the wetland changes subject to DSL permit requirements occurred without permit authorization, in apparent violation of the Removal-Fill Law. Compliance rates with the permit requirement varied widely among land use activities, from 100% compliance for creation, restoration and enhancement projects, to 66% compliance for urban and rural development, to 0% compliance for agricultural conversions[7], pond construction[8] and forested wetland clearing (land use undetermined). Agricultural conversions were responsible for 81% of all non-complying wetland changes, an order of magnitude larger than non-compliance for any of the other land use activities (Figure 2). The Wetland Change Study design did not support an analysis of trends over time within the study period so it could not be determined if the compliance problems occurred early in the study period and are improving, were spread evenly throughout the study period, or became worse later in the study period.

[7] Agricultural conversions in forested wetlands involved tree removal that could have been timber harvest activities authorized under the FPA. This could not be determined from DOF records. However, all of the agricultural conversions of forested wetland appeared to include stump removal (no stumps were observed in the resulting crop and pasture land) which is not exempt under the Removal-Fill Law.

[8] Pond construction involved fill and/or removal activities. Removal activities in wetlands associated with pond construction are subject to Removal-Fill Law permit requirements. Fill activities associated with water diversions under water rights issued by the Water Resources Department are exempt from the Removal-Fill Law permit requirements. Removal activities are not exempt.

6.1.4 DSL Enforcement Activity

DSL's enforcement program played virtually no role in regulating unauthorized activities in wetlands. Only one enforcement file was identified that addressed unpermitted wetland changes. The acreage associated was less than one percent of the 7,449 acres of unpermitted wetland changes. The unpermitted action involved construction of a solid waste disposal facility in wetlands.

Table 6. Land Use Activities Subject to Removal Fill Law Permit Requirements

	Wetland Change		DSL Permit Issued			No DSL Permit Issued	
Land Use Activity	**Acres**	**%**	**Acres**	**%**	% Per Land Use Activity	**Acres**	**%**
Agricultural Conversion							
Crop Land	5,343.72	50.30	0			5,343.72	
Pasture, Other	664.34	6.26	0			664.34	
Subtotal	6,008.06	56.56	0		0	6,008.06	
Creation, Restoration & Enhancement	1,921.12	18.08	1,921.12		100.00	0	
Urban & Rural Development	1,884.44	17.74	1,252.76		66.48	631.68	
Pond Construction	529.27	4.98	0		0	529.27	
Forested Wetland Clearing, Land Use Undetermined	280.24	2.64	0		0	280.24	
Total	**10,623.13**	**100.00**	**3,173.88**	**29.88**		**7,449.25**	**70.12**

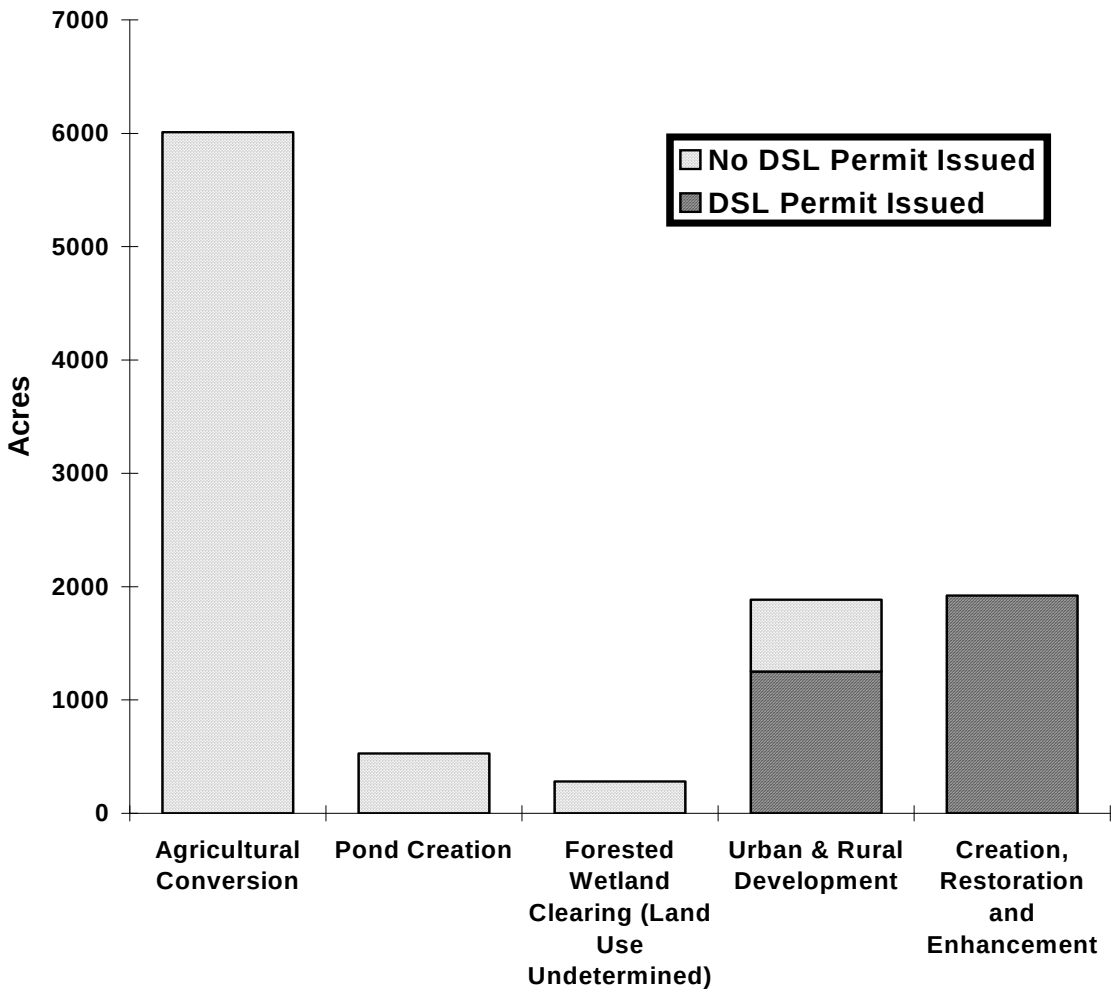

Figure 2. Compliance with Removal-Fill Law Permit Requirements

6.2 Other Agency Programs

A secondary goal of this study was to determine the role of other government programs in supplementing the Removal-Fill Law by regulating or managing activities that caused wetland changes.

6.2.1 Oregon Forest Practices Act

Eighty wetland changes mapped in sample plots involved conversion of forested wetland to upland or other wetland types. Twelve of the sites were dropped from further review because it was determined that they involved only natural vegetation changes, or were urban or rural development authorized by DSL permit. This left 68 sites representing

4,720 acres of wetland changes potentially subject to the FPA. However, research into the role of the FPA in regulating these wetland changes was hampered by problems in accessing Department of Forestry records. The primary DOF regulatory records are timber harvest notices. Timber harvest notice records are purged by the Department after seven years. Consequently, paper records of timber harvest notices were only available for the last one to two years of the study period. Computer databases in regional Department of Forestry offices do contain electronic files but data quality is inconsistent, according to Department staff. Prior to 1990, records are often listed only by operator name rather than landowner name. Department of Forestry staff checked on approximately 20 of the largest forested wetland change sites, including those with wetland changes occurring in the 1990s, but found only one relevant record, which was for a site later determined to have been an upland forest, not wetland. No meaningful results could be obtained about the role of the Forest Practices Act in regulating wetland change for this study.

6.2.2 Federal Clean Water Act Section 404 Permit Program

Two circumstances were identified where the 404 program potentially regulated wetlands or activities that the DSL program did not. The first was 404 program regulatory actions from 1982 – 1985 involving wetland types (PFO, PSS, and wetlands without regular ponding) excluded from Removal-Fill Law regulation. The second was independent enforcement actions by the Corps of Engineers at sites where DSL was not involved in enforcement action. The Portland District Corps of Engineers' Regulatory Analysis and Management System (RAMS) electronic database was queried for information on relevant activities. However, RAMS files created prior to 1991 generally do not include locational information that would have allowed for efficient identification of relevant records (Byron Blankenship, Corps of Engineers). No information on the Corps of Engineers role in regulating activities in forested, shrub or non-ponding wetlands prior to 1985 could be efficiently collected. For Corps of Engineers enforcement activities independent of DSL, no information could be collected for the period prior to 1991 due to the lack of locational information in RAMS. The period 1991-1994 was not reviewed, in part due to time limitations, and because the author knows from personal experience as a DSL enforcement specialist during that time period that most, if not all, 404 program enforcement actions during the period were entered into DSL's database and not undertaken independently. No meaningful results were obtained about the role of the 404 program in regulating wetland changes that the Removal-Fill Law program did not.

6.2.3 Federal Food Security Act

Most of the wetland changes identified as conversion of wetland to cropland occurred after December, 1985 and potentially met the USDA definition of converted wetland. This included 39 discrete wetland change locations in 20 plots. USDA wetland determination maps were reviewed for all of these locations. Most of the sites had not had a USDA wetland determination conducted. Of those that had, only 2 were identified by USDA as converted wetland. The accompanying USDA files for the 2 locations did not note any Swampbuster enforcement action. USDA staff confirmed that most of the

properties were not enrolled in commodity support programs subject to the Swampbuster provisions of the Food Security Act.

7.0 DISCUSSION

The majority of activities subject to Removal-Fill Law permit requirements were agricultural (56%) and included the conversion of 6,008 acres of wetlands to crop land, pasture, and other agricultural uses. Urban and rural development impacted 1,921 acres of wetlands (18%). Compliance results for these two types of land use activities were very different. None of the wetland conversions attributed to agricultural activities were authorized by removal-fill permit nor were any enforcement actions taken by DSL for these activities. Presumably, then, no consideration of avoidance or minimization, or compensatory wetland mitigation was completed for these impacts. In contrast, 66% of urban and rural development wetland changes were authorized by permit and subject to mitigation requirements.

A brief examination of Oregon's wetland and land use programs identifies the primary institutional context for this difference. Passage of Oregon's Wetland Conservation Act in 1989 established a number of initiatives that have increased coordination between DSL's regulatory program and local government land use planning and regulations. However, virtually all of this state-local integration addresses urban and rural development; there is no comparable linkage for agricultural activities. The result is that many development activities are addressed by local governments in coordination with DSL through the Wetland Land Use Notification program.[9] Local government approvals are not required for most agricultural activities, such as crop land expansion, thus Wetland Land Use Notice requirements are not triggered. In addition, there is no land use planning Goal 5 requirement for protection of "significant wetlands" outside urban growth boundaries, where most agricultural land is located.

This institutional difference is compounded by the difference in the activities themselves—urban conversions are typically obvious and clearly require a state permit, while many agricultural activities partially alter wetlands and permit requirements are less clear. Similarly, DSL's enforcement program does not adequately address agricultural non-compliance. The program is largely complaint driven, an approach that is effective in urban areas where wetland alteration activities—and the heavy equipment used—are usually visible to the public due to the small lot sizes and dense road networks. Activities on large agricultural parcels in rural areas are far less likely to be observed by the public and reported to DSL. DSL's enforcement program potentially could become more active in addressing the agricultural compliance issue but this would require changes in enforcement methods. The CWA 404 enforcement program is unlikely to be any more effective in addressing the agricultural compliance issue than the DSL program because it suffers from the same weaknesses of being complaint driven and having no established framework for capturing agricultural activities in the permit program.

In recent years the federal government has attempted to rely on the USDA, through its authority under the Food Security Act Swampbuster provisions, as the lead federal

[9] The Wetland Land Use Notification program requires local governments to check wetland inventory maps when reviewing development proposals and notify the applicant and DSL when a development site contains a mapped wetland.

agency for wetland issues on agricultural lands, including making jurisdictional determinations for the 404 program. In regions of the United States where commodity crops are a major portion of agricultural production and where producer participation in USDA programs is widespread, the threat of losing USDA support has the potential to protect wetlands in agricultural lands. However, for the Willamette Valley the potential is quite limited. According to the 1997 USDA Census of Agriculture, only 32% of agricultural lands in Willamette Valley counties were enrolled in USDA programs subject to the wetland conservation provisions of the Food Security Act. Major Willamette Valley crops such as grass seed, nursery stock and specialty crops (grapes, orchards, berries) are not commodity crops and are not eligible for USDA support (Lee Go, Farm Services Agency). Review of USDA wetland conservation activities for sites identified in this study as potential converted wetlands confirmed that the program plays a small role in preventing wetland losses in the Willamette Valley. Of 39 wetland conversions to cropland, only two were identified by the USDA as converted wetlands.

This study—along with the initial Wetland Change Study—points to specific needs pertinent to improving the effectiveness of regulatory and incentive programs aimed at maintaining and restoring the state's wetland resources.

REFERENCES

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. *Classification of wetland and deepwater habitats of the United States.* U.S. Department of the Interior, Fish and Wildlife Service. FWS/OBS-79/31.

Daggett, S.G., M.E. Boule, J.A. Bernert, J.M. Eilers, E. Blok, D. Peters, and J. Morlan, 1998. *Wetland and Land Use Change in the Willamette Valley, Oregon: 1982 to 1994.* Shapiro and Associates, Inc. Report to the Oregon Division of State Lands. 2 volumes: Volume 1: Final Report and Volume 2: Technical Appendices

Environmental Laboratory. (1987). *Corps of Engineers Wetlands Delineation Manual*, Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Miss.

Oregon Division of State Lands. 1999. *Summary of activities in the removal-fill program for waters of the state: 1995-1997 Biennium*. Compiled by Eric Metz. Oregon Division of State Lands, Salem, Oregon.

Shaich, J. A., and K. T. Franklin. 1995. *Wetland compensatory mitigation in Oregon: a program evaluation with a focus on Portland metro area projects.* Oregon Division of State Lands, Salem, Oregon.