

**NATIVE WETLAND AND RIPARIAN PLANT COMMUNITIES
IN THE WILLAMETTE VALLEY, OREGON**

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This is a portion of the final, Phase I Project: Inventory and Assessment Report entitled:

NATIVE WETLAND, RIPARIAN, AND UPLAND PLANT COMMUNITIES AND THEIR BIOTA IN THE WILLAMETTE VALLEY, OREGON

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INTRODUCTION

The report included an inventory of native riparian and wetland plant communities, an assessment of their threatened biota in the Willamette Valley, and an analysis of native upland plant communities as well. As part of the Multi-Scale Biodiversity Conservation project, the Oregon Natural Heritage Program was to provide detailed mapping of the chosen, small scale study area. The area chosen was the Lukimute River watershed, and adjacent subwatersheds. Since the chosen watershed is in the Willamette Watershed, the work done for the Geographic Initiative Program was expanded to allow for the production of the necessary riparian and wetland maps. The final report has been edited to include only the portions relevant to the Willamette Valley riparian and wetland inventory and mapping.

ABSTRACT

As part of the Willamette Basin Geographic Initiative Program, the Environmental Protection Agency (EPA) funded The Nature Conservancy of Oregon to inventory, classify, and map native wetland and riparian plant communities and their threatened biota in the Willamette Valley.

Between October 1994 and September 1996, we evaluated 172 wetland and riparian sites throughout the Willamette Valley. A site is a stream or river reach or wetland area that was inventoried at one to many locations. Of these sites, 21 are high-quality remnants important for future protection and restoration efforts. We identified 153 natural communities as occurring in native wetland and riparian habitats, of which 101 are new to the plant community classification of the Oregon Natural Heritage Program.

SUMMARY

As part of the Willamette Basin Geographic Initiative Program, the Environmental Protection Agency (EPA) funded The Nature Conservancy of Oregon (TNC) to conduct an inventory and assessment of the Willamette Valley. To accomplish this, TNC asked the Oregon Natural Heritage Program to inventory, classify, and map native wetland and riparian plant communities which could be found in the valley.

Between October 1994 and September 1996, we evaluated 172 wetland and riparian sites throughout the Willamette Valley. Of these sites, 21 are high-quality remnants important for future protection and restoration efforts. We identified 153 native wetland and riparian communities, of which 101 are new to the plant community classification of the Oregon Natural Heritage Program.

BACKGROUND OF PROJECT

This project was conducted in order to gather information about the Willamette Valley to aid in the development of the Willamette Valley Conservation Plan. The Willamette Valley represents one of the most threatened ecoregions in Oregon. This Phase I Project is a much needed project that has the potential to promote integrated efforts on a wide range of activities in the basin that have at their core the conservation of aquatic and terrestrial related natural resources.

The Willamette Valley was dominated by extensive and diverse riparian and wetland plant communities during presettlement times in the early 1800's (Johannessen et al. 1971). Settlement of the Willamette Valley, the endpoint of the Oregon Trail, brought dramatic changes to the landscape as it was cleared for pasture and drained for agricultural purposes (Boag 1992). Now only about 10% of the Willamette Valley remains in relatively natural vegetative communities. The Willamette Valley also became home to over two-thirds of the state's population by the end of the 1980's. Finally, the streams and rivers which drained into the Willamette Valley have changed significantly since presettlement times, with flood control dams and stream channelization projects resulting in a vastly different hydrologic regime than previously existed for the Willamette drainage (Seddell and Froggatt, 1984).

Nevertheless, in the face of extensive alteration of natural habitats, there remain examples of natural communities and populations of rare and threatened species. These occurrences, and the open spaces of the valley, are prime attractions to the human population there who desire increased connection to the outdoors for recreation and renewal. Maintaining biodiversity and restoring sites critical for conservation is as necessary for the long-term livability of the Willamette Valley as it is for the long-term survival of the species native to the ecoregion.

METHODS

I. Data Sources

Information for this project was obtained from (1) preexisting data housed by the Oregon Natural Heritage Program, originating from multiple sources, including field inventory by staff, as well as information gathered by public agencies, and (2) new data obtained from field work in wetland and riparian communities, funded for this project by EPA.

The Oregon Natural Heritage Program maintains the most complete database of threatened and endangered species and unique natural communities in Oregon. The Heritage Program was established by The Nature Conservancy in 1973, and began collecting occurrence records from a variety of sources at that time. In 1979, the state of Oregon officially recognized the Heritage Program in the Natural Heritage Act, which aligned the Program with the Division of State Lands in the Oregon state government. The Heritage Program receives no financial support from State government but relies instead upon fees for service contracts from governmental and non-governmental agencies and organizations. Information in the database is derived from museum and herbarium records, sensitive species surveys conducted by government employees and contractors, and from contract work done by Heritage Program staff. Heritage Program information is updated regularly with new information and from data sharing agreements with other sources.

The Heritage Program maintains its information in three redundant data retrieval systems. Occurrences of species of interest and unique natural communities are mapped on USGS topographic maps, using the updated 1:24,000 scale maps. Complete occurrence information is then entered into an Advanced Revelation software-based database called the Biological Conservation Database (BCD), developed by The Nature Conservancy specifically for use by heritage programs throughout the United States and Canada. Both extant and historical occurrences of rare plant and animal taxa, and rare plant communities, are tracked in the BCD database. The computerized database is routinely backed up for security. Finally, paper copies of original occurrence records are maintained in files at the Heritage Program.

II. Assessment of riparian and wetland vegetation

Field Work. Preliminary work identifying potential survey sites was conducted between October 1994 and August 1995. Fieldwork was conducted between September 1995 and September 1996. Fieldwork was conducted over the entire year except during floods.

The Willamette Valley was defined as the Willamette Valley Ecoregion outlined by Omernik and Gallant (1986). Sites were selected on the basis of aerial photos in the

Soil Survey Manuals for counties in the Willamette Valley (Williams 1972, Otte et al. 1974, Knezevich 1975, Knezevich 1982, Gerig 1985, Langridge 1987, Patching 1987). These manuals illustrate the extent of wetlands and riparian zones and the locations of hydric and floodplain soils. In addition, the files at the Oregon Natural Heritage Program were searched for potential site locations, knowledgeable people were asked about sites in the Valley, and good sites were noticed when driving around the Valley. Many sites, particularly those along the mainstem Willamette and North Santiam Rivers, could not be visited due to access problems across private lands.

Site Quality Determination. The principal determinant of site quality was the relationship between native and non-native vegetation. A site with an understory of more than 50% cover of non-native plant species was identified as an "exotic" site. In the Willamette Valley, nearly all exotics occur in the understory rather than in the overstory. Site quality for every site was judged by an on-site assessment. Most sites dominated by exotics had greater than 90% cover exotics in the understory.

Plot Data. Plot locations were selected subjectively in order to capture the breadth of variation of a plant community. At least 8 plots were placed in every plant community type identified (except in cases where insufficient area existed for eight plots to be conducted). Non-native plants were avoided, if possible, in plot site selection.

Plots were 100 m² circles in forested and scrub-shrub areas, 10 m² circles in perennial sedge, bunch grass, marsh and floating aquatic bed communities, and 0.25 m² squares in vernal pond communities. These sizes were based upon the published literature (Mueller-Dombois and Ellenberg 1974, Greig-Smith 1983, Bonham 1989, Krebs 1989) of species area curves for different vegetation types, and upon a working experience in these plant communities. In addition, the limited size of many plant communities in the Willamette Valley placed a constraint upon plot size.

The cover of each plant species was recorded in all plots. A gridded pvc frame was used to accurately assess the percent cover. Mean height was recorded for every species. Diameter for each tree, number of tree stems, distance to and elevation above the nearest body of water (if applicable), water depth at the plot site (if applicable), soil texture in a 3 way class (loam, coarse silt or sand, or cobbles), and signs of disturbance (evidence of flooding, logging, beaver activity, off-road vehicles etc.) were recorded. The date and observer(s) were also recorded.

Plot data were used to document and verify the plant communities described in this report. However, a quantitative or multivariate analysis of the vegetation data was beyond the scope of this project.

Site Mapping. Sites visited were mapped onto mylar overlays on 1:24,000 USGS topographic maps. Field notes and field drawn maps, in conjunction with aerial photos from the soil surveys, were used to delineate polygons on the overlays.

Mapping units for the forested and scrub-shrub wetland and riparian zones were based on the dominant overstory vegetation. The understory vegetation in these forests varies at a scale too fine to be captured on a 1:24,000 topographic map. These wooded vegetation mapping units were separated on the basis of whether the understory is predominantly native or non-native vegetation as discussed above. Aquatic floating bed, emergent wetland and vernal pond communities were mapped based on the dominant vegetation. A general emergent wetland mapping unit was also designated for those native emergent wetland types which did not fall into the common emergent wetland vegetation mapping units. An exotic emergent wetland mapping unit was also designated for the marshes dominated by non-native species. A bog mapping unit was designated for the one true bog found in the Valley. Other site quality parameters, such as large tree size, are not recorded on the topographic map overlays and were recorded in the site notes. Large high quality areas with rare plant communities or that provide connectivity between many native communities are discussed below. In addition, an unknown riparian forest mapping unit was designated for sites which could not be accessed. Mapping units are described in Appendix B.

The scale presented by a 1:24,000 topographic map limits the resolution with which an area can be mapped. Therefore, polygons were drawn only for sites larger than 30 m (100 ft) in width. The smallest polygon mapped was 0.1 ha (0.25 acre).

Plant communities. The rare natural communities in the Willamette Valley that were included in the coverage produced for this project include riparian and wetland communities, as well as rare upland communities. Most of the wetland and riparian data originated from this EPA-funded project, while upland community data were obtained from previous inventories of designated natural areas, such as Research Natural Areas on federal lands, as well as Nature Conservancy Preserves.

III. Field Inventory

Sites inventoried. One hundred sixty-five riparian and wetland sites were inventoried throughout the Willamette Valley. These are listed in Appendix A. The sites are widely dispersed across the entire Willamette Valley, with the exception of the Portland Metro area which has already been mapped by Metro. Over the course of the project, plant community data was recorded from 300 plots. Important sites that could not be inventoried because of access problems are discussed in Appendix C.

Mapping units and communities. Sixty-one mapping units were used for the broad scale classification for mapping purposes. Forty of these mapping units were for native plant communities. These "native" mapping units contained 153 native wetland and riparian communities, of which 101 are new to the plant community classification of the Oregon Natural Heritage Program. These communities were composed of: 8 aquatic bed and floating plant communities, 2 of which were new to the ONHP classification; 10 emergent wetland plant communities, 1 of which was new to the ONHP classification; 5 vernal pool communities, 3 of which were new to the ONHP

classification, 10 Willamette Prairie communities, 5 of which were new to the ONHP classification; 12 communities were located in a bog, 2 of which were new to the ONHP classification; 9 scrub-shrub communities, 4 of which were new to the ONHP classification; and 106 forested communities, 84 of which were new to the ONHP classification. Mapping units and communities are described in Appendix B. Sites were mapped on mylars for 79 USGS 1:24,000 quad maps. Appendix D contains a list of quad maps which were used.

Most sites inventoried in the Willamette Valley are dominated by non-native species. The most common invasive species in bottomland and wetland habitats are reed canary grass (*Phalaris arundinacea*), roughstalk bluegrass (*Poa trivialis*), Himalayan blackberry (*Rubus discolor*), nipplewort (*Lapsana communis*), English ivy (*Hedera helix*) and bittersweet nightshade (*Solanum dulcamara*). These species are very difficult to keep out of native areas and extremely difficult to control once they have invaded an area.

V. RECOMMENDATIONS

Throughout the Willamette Valley, riparian zones and wetlands are actively being developed. This was observed numerous times during the course of this project. Section 404 (wetland fill permit) violations appear to be commonplace. Privately owned wetlands and riparian areas throughout the Valley deserve increased protection from degradation and development.

Wetlands found on sites with high quality remnants have been included in a conservation priority list. The most important sites on private land are the Calapooia River, Muddy Creek, North Santiam River, Luckiamute River, Kingston Prairie, the Mission Bottoms area, and the Bull Run Creek fragment. Private lands along many other rivers and creeks are also worthy of protection. Public lands in the Willamette Valley need to be protected from degradation. Restoration activities could be attempted at non-native dominated areas on public lands, although protecting native habitat should clearly take precedence over restoration. Small emergent wetland sites are scattered throughout the Willamette Valley, both in and between the priority wetlands. These sites should be a focus of protection along with the forested riparian zones. Hydrological threats to these areas also need to be addressed. Large native emergent wetlands were not found outside of public lands.

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APPENDIX A. Summary of Sites Inventoried for Wetland and Riparian Natural Communities in the Willamette Valley.

This list contains names of the creeks and wetlands of interest that were visited during this project. The majority of inventories were conducted at road crossings. In depth inventories were conducted at wider riparian zones or riparian zones and wetlands with native vegetation.

Benton County

Beaver Creek
Berry Creek
Bull Run Creek
Camp Adair-riparian zones along creeks, marshy areas and ponds
Evergreen Creek
Hammer Creek
William L. Finley National Wildlife Refuge-the riparian zones of Brown, Gray, Hull, and Muddy Creeks, and McFadden Marsh.
Jackson Creek
Jackson-Frazier-extensive wet prairie, scrub-shrub and *Fraxinus latifolia* forests.
Marys River
Muddy Creek-extensive high quality riparian zones along the entire length of the creek
Mulkey Creek
Oak Creek
Powell Creek
Reese Creek
Smith Loop Road area-an extensive network of creeks, sloughs and ponds including McBeeLake, Riser Lake, and Whitaker Lake.
Soap Creek and several small tributaries
Stewart Slough
Willamette River-sites near Ingram Island, Irish Bend, Hoacum Island, Stahlbusch Island, Fischer Island, and east of Route 20 northeast of Corvallis.

Clackamas County

Barton County Park
Bonnie Lure State Park
Butte Creek
Camassia Preserve
Clackamas River-sites near Springwater Rd., Boat Launch 3201, Clackamas Highway, Barton County Park, Bonnie Lure State Park, and Milo McIver State Park.
Clear Creek
Deep Creek
Deep Creek County Park
Foster Creek
Little Cedar Creek

Martin Creek
Metzler County Park
Milk Creek
Milo McIver State Park
Molalla Creek
Molalla State Park
Mosier Creek
North Fork Deep Creek
Noyer Creek
Peach Cove Bog
Pudding River
Richardson Creek
Rock Creek
Thomas Creek
Willamette River-sites near Wilsonville, I-5, and Molalla State Park.

Lane County

Amazon Creek
Bear Creek
Camas Swale
Cedar Creek
Coast Fork - Middle Fork Willamette River confluence area
Coburg-several ponds, wetlands and creeks north of Coburg
Coyote Creek
Dillard Rd.-wet prairie between Rt. 99 and I-5 between Dillard and Ricketts Rd.
Elijah Bristow State Park-numerous sites around the Reservoir.
Fern Ridge Reservoir
Fisher Butte Research Natural Area
Hill Creek
Long Tom River north of Fern Ridge Reservoir
Long Tom River south of Fern Ridge Reservoir
Love Lake Rd. area
Mckenzie River
Middle Fork Willamette River-sites near confluence of the Middle and Coast Forks
Mohawk River
Row River
Silk Creek
Spencer Creek
Squaw Creek
Walterville Canal
Willamette River-sites near Harrisburg, Marshall Island, Boat Launch 5085, confluence
of the Willamette and McKenzie Rivers, I-5, Boat Launch 5091
Willow Creek
Willow Creek Nature Conservancy Preserve

Linn County

Beaver Creek
Bowers Rock State Park
Brush Creek
Butte Creek
Calapooia River-many riparian zones sites along the length of this river
Cogswell-Foster Preserve
Colorado Lake
Courtney Creek
Crabtree Creek
Crooks Creek
Dead River
Doeflers Marsh
Geren Island
Horseshoe Bend
Lake Creek (tributary of the Calapooia River)
Lake Creek (flows into the Willamette River at Hoacum Island)
Little Muddy Creek
Mill Creek
Muddy Creek
Noble Creek
North Santiam River-sites near the confluence of the North and South Santiam Rivers,
Jefferson-Scio Dr., Miller Rd., Boat Launch 4257, Shelburn Dr., River Dr.,
Stayton-Scio Rd., Geren Island, and Mehama.
Oak Creek
Onehorse Slough
Owl Creek
Pierce Creek
Plainview Creek
Santiam River-sites near Turnridge Rd., I-5, Mason Rd., and Jefferson.
Shedd Slough
Sodom Ditch
South Santiam River-sites near the confluence of the North and South Santiam Rivers,
Cyrus Rd., Route 226, and Lebanon.
Thomas Creek
Tub Run
Walton Slough
West Brush Creek
Willamette River-sites near Black Dog Bar, Bower's Rock State Park, Dead River, Route
34 crossing, Peoria, Irish Bend, Boat Launch 5103, and Harrisburg.

Marion County

Ankeny National Wildlife Refuge-Bashaw Creek, Miller Creek, and Sidney Power Ditch.

Case Creek

Champoeg Creek

Champoeg State Park

Deer Creek

East Champoeg Creek

South Yamhill

Goose Lake

Horseshoe Lake

Hubbard Lake

Little Pudding River

Mill Creek (near Aumsville)

Mill Creek (near Aurora)

Minto Island

Mission Creek

Mission Lake

North Santiam River-sites near confluence of the North and South Santiam Rivers,
Stayton-Scio Rd., Geren Island, Mehama, North Santiam State Park,
Fisherman's Bend State Park.

Patterson Creek

Pudding River

Ryan Creek

Santiam River-sites near the confluence of the Santiam and Willamette Rivers, Talbot
Rd., and I-5.

Senecal Creek

Silver Creek

Spongs Landing County Park

West Champoeg Creek

Willamette Mission State Park

Willamette River-sites near Willamette Mission State Park, Spongl County Park,
Champoeg State Park, and San Salvador Boat Launch.

Windsor Slough

Windsor Island Rd.-several sloughs and creeks cross this road.

Multnomah County

Beggars-tick Marsh

Columbia Slough

Oaks Bottoms

Smith and Bybee Lakes

Polk County

Ash Swale

Baskett Slough National Wildlife Refuge
Berry Creek
Fern Creek
Jont Creek
Little Luckiamute River
Luckiamute River
McTimmonds Creek
Middle Fork Ash Creek
North Fork Ash Creek
Rickreall Creek
Santiam Bar-confluence of the Luckiamute and Willamette Rivers
Soap Creek
Staats Creek
Willamette River-sites near Santiam Bar, Buena Vista, Wells Landing Rd., and Independence.

Washington County

Banks Swamp
Fanno Creek
Mill Creek (Nike Woods)
Johnson Creek

Yamhill County

Ash Swale
Baker Creek
Carlton State Game Refuge
Deer Creek
Harvey Creek
Holdridge Creek
Lambert Slough
North Yamhill River
Palmer Creek
Panther Creek
Salt Creek
South Yamhill River
West Fork Palmer Creek
Wheatland
Willamette Mission State Park
Willamette River-sites near Grand Island and Wilsonville Rd.
Yamhill River

APPENDIX B. Mapping units and their respective plant communities used for GIS data layers, Willamette Valley.

*=Communities new to ONHP classification. Mapping units are in bold, and communities included within that unit are listed underneath the mapping unit.

Names used as mapping units have six-letter codes in **BOLD**.

Aquatic bed rooted and floating plants

LEMMIN Floating aquatic beds

Floating aquatic beds are quite common on slow-moving to still waters throughout the Valley. However, areas of mappable size are infrequent.

LEMMIN *Lemna minor* bed

Lemna minor is the most common constituent of aquatic bed vegetation. *Azolla mexicana*, *Lemna minor*, *Wolffia columbiana* and *Spirodela polyrhiza* are common and occasionally dominant. *Wolffia borealis* is less common but was found at several sites mostly in Lane County. The aquatic liverwort *Ricciocarpos natans* is almost always present. The community is quite common but is almost always too small to map.

NUPPOL Yellow pond-lily and associated broad-leaved aquatic bed types

NUPPOL *Nuphar luteum* ssp. *polysepalum*

Occurs in ponds, sloughs and oxbows throughout the Valley. Frequently occurs with *Callitriche heterophylla*, *Ceratophyllum demersum*, *Elodea canadensis*, *Potamogeton natans* and *Sparganium emersum*.

CERDEM *Ceratophyllum demersum*

Small patches occur sporadically in ponds, sloughs and oxbows.

***CALHET** *Callitriche heterophylla*

Occurs in ponds, sloughs and oxbows throughout the Willamette Valley.

***RANAQU** *Ranunculus aquatilis*

Occurs in ponds, sloughs and oxbows throughout the Willamette Valley.

POTAMO *Potamogeton natans* bed

Occurs in ponds, sloughs and oxbows throughout the Willamette Valley. A common community but rarely large enough to map.

Emergent wetlands

BIDCER *Bidens cernua*

BIDCER *Bidens cernua* marsh

Occurs in sloughs and streams that dry up throughout the Willamette Valley. Only rarely achieves mappable dimensions.

BIDFRO *Bidens frondosa*

*BIDFRO *Bidens frondosa* marsh

Occurs in sloughs and streams that dry up throughout the Willamette Valley.
Only rarely achieves mappable dimensions.

EMEMAR emergent marshes and vernal ponds

Marshes occur scattered throughout the Valley. However, marshes dominated by native species are now quite infrequent.

CAROBN *Carex obnupta* wetland

This species occasionally occurs in marshes without a *Fraxinus latifolia* overstory. For example at Jackson-Frazier County Park, Benton County.

ELEMAC *Eleocharis macrostachya* marsh

This species is common throughout the Valley and can be found in marshes in the Finley National Wildlife Refuge in Benton County.

SAGLAT *Sagittaria latifolia* marsh

This type was not found to be mappable anywhere in the valley. Only tiny fragments were found. It does achieve mappable status along the Columbia River.

SCIAME *Scirpus acutus* marsh

Occasional throughout the Valley.

SCIMIC *Scirpus microcarpus* marsh

Occasional throughout the Valley.

SCITAB *Scirpus tabernaemontani* marsh

Occasional throughout the Valley.

ELEOVA *Eleocharis ovata* wetland

Common throughout the Valley in seasonally-flooded areas.

ELEPAL *Eleocharis palustris* wetland

On mudflats throughout the valley, particularly in shallow impoundments that dry up in summer.

EXOMAR marshes dominated by exotic species

Exotic marshes are common throughout the Valley and are nearly always completely dominated by *Phalaris arundinacea*.

EXOTIC Exotic vegetation (Wetland class unspecified).

GNAPAL *Gnaphalium palustre*

*GNAPAL *Gnaphalium palustre* sloughs

Only one site found. This is near the Calapooia River south of Tangent Dr. in Linn County.

*ERAHYP *Eragrostis hypnoides*

Another plant community found in the same slough as the GNAPAL community, as well as on exposed shores in sloughs along the Willamette River near Salem.

JUNCUS Wetlands dominated by species of *Juncus*.
Common throughout Valley.

LUDPAL *Ludwigia palustris*

LUDPAL-POLHYD *Ludwigia palustris-Polygonum hydropiperoides* marsh
Ludwigia palustris-Polygonum hydropiperoides vernal areas occur on the margins of ponds sporadically throughout the Valley, particularly in the southern half. This community only attains mappable dimensions along Courtney Creek on both sides of I-5.

LYSINA *Lysichiton americanum* with native understory.
Occasional in drainages at northern end of Valley.

OENSAR *Oenanthe sarmentosa*

OENSAR *Oenanthe sarmentosa* marsh

The plant species *Oenanthe sarmentosa* occurs in wet places throughout the Valley and is most common in Benton County. It usually occurs as an understory dominant in *Fraxinus latifolia* bottomland, i.e., FRALAT/OENSAR. It occasionally occurs without an overstory and only achieves a mappable size in Jackson-Frazier County Park, Benton County.

POLHYD Knotweed marsh

***POLHYD** *Polygonum hydropiperoides*

Polygonum hydropiperoides is common throughout the Valley along low energy streams and in backwaters. It infrequently occupies an area large enough to be mappable.

POLAMP *Polygonum amphibium*

Patches of *Polygonum amphibium* were observed occasionally and did not achieve mappable size.

SPARNA Bur-reed marsh

SPAEME *Sparganium emersum*

Occurs in ponds, sloughs and oxbows throughout the Willamette Valley. Very rarely occupies an area large enough to map.

SPAEUR *Sparganium eurycarpum*

Sparganium eurycarpum is less common than *Sparganium emersum* and was not observed to achieve mappable size.

TYPLAT *Typha latifolia*

TYPLAT *Typha latifolia*

Typha latifolia occurs scattered throughout the Valley. It infrequently achieves dominance over an area large enough to be mapped.

Willamette Valley Prairie

PRAINA-wet Willamette Valley prairie dominated by native species

BRODIA RIPARIAN *Brodiaea* ephemeral stream riparian
An unusual community dominated by sterile *Brodiaea* plants. Best represented in Kingston Prairie.

***CARDEN** *Carex densa*

Occurs in Jackson-Frazier County Park, Benton County.

CARDEN-ELEMAC *Carex densa-Eleocharis macrostachya*

Occurs in Jackson-Frazier County Park, Benton County.

***CARFET** *Carex feta*

Occurs in Jackson-Frazier County Park, Benton County.

CARUNI-HORBRA *Carex unilateralis-Hordeum brachyantherum*

Occurs in Jackson-Frazier County Park, Benton County

DESCES VALLEY PRAIRIE *Deschampsia cespitosa* valley prairie

One of the most endangered Willamette Valley plant communities. Occurs as scattered fragments.

***JUNBUF** *Juncus bufonius*

Occurs at Camassia Nature Conservancy Preserve.

ISONUT STREAMBED *Isoetes nuttallii* ephemeral streambed

Best represented in Kingston Prairie.

***MENARV** *Mentha arvensis*

Occurs in disturbed wet areas throughout the Valley.

***VERSCU** *Veronica scutellata*

Occurs in Jackson-Frazier County Park, Benton County

PRAIEX-wet Willamette Valley prairie dominated by exotic species

Bogs

BOGBOG-bog

Only one bog was located in the Willamette Valley. This bog is located at Peach Cove in Clackamas County. *Sphagnum* features were also found at Camassia Nature Conservancy Preserve near West Linn in Clackamas County. The Peach Cove bog contained the following communities (many of these communities have not been found elsewhere in the Willamette Valley):

CARVES *Carex vesicaria*

DULARU *Dulichium arundinaceum*

Last known population remaining in Willamette Valley occurs at Peach Cove bog

FRALAT/CAROBN *Fraxinus latifolia-Carex obnupta*

***FRALAT/RUBURS** *Fraxinus latifolia/Rubus ursinus*

LEMMIN *Lemna minor*

MENTRI *Menyanthes trifoliata*

Two known populations remaining in Willamette Valley occur at Peach Cove bog and Stout Mt .

NUPPOL *Nuphar polysepalum*

POLHYD *Polygonum hydropiperoides*

POTNAT *Potamogeton natans*

SPAEMU *Sparganium emersum*

*SPIDOU/CARCUS/SPHAGN *Spiraea douglasii/Carex cusickii/Sphagnum*

Only known occurrence in Willamette Valley found at Peach Cove bog.

*UTRVUL *Utricularia vulgaris*

Only known occurrence in Willamette Valley found at Peach Cove bog.

Scrub-shrub

CORSER-*Cornus sericea*

This type occurs along smaller rivers, streams and sloughs, usually where the banks are steep. Although it is quite common it rarely achieves mappable extent.

The communities are usually mapped as FRAXNA where they occur as small patches of *Cornus sericea* or *Cornus sericea-Salix sitchensis* in larger FRALAT-CORSER communities.

*CORSER *Cornus sericea*

Cornus sericea are common along the edges of steeped banked streams, rivers and sloughs throughout the Valley. CORSER occasionally dominates backwaters as along the Calapooia River north of Tangent Dr. in Linn County and is mappable.

CORSER-SALSIT *Cornus sericea-Salix sitchensis*

Salix sitchensis is a frequent co-dominant with *Cornus sericea* along waterways in the Willamette Valley.

SALICO *Salix* species growing on riverwash

Cobble and sandbanks are common throughout the Willamette Valley on both large rivers and small streams. These areas are dominated by *Salix sitchensis* with *Salix fluviatilis*, *Salix sessilifolia* and *Salix lucida* ssp. *lasiandra*. The most common herbaceous species is *Phalaris arundinacea*. A wide variety of other forbs and graminoids occur, most of which are exotic. This type is rarely encountered with native herbaceous cover, however it does often occur without any herbaceous cover.

SALFLU-SALLUC *Salix fluviatilis-Salix lucida* ssp. *lasiandra*

*SALSIT *Salix sitchensis*

The most common riverwash community type.

SALINA *Salix lucida* ssp. *lasiandra*, *Salix sitchensis*, *Salix fluviatilis*, *Salix hookeriana* (S. *piperi*), *Salix sessilifolia* and *Salix scouleriana* with native understory not growing on riverwash. This type is not common in the Willamette Valley since most willow sites have a predominantly non-native understory or tree species such as *Fraxinus latifolia* co- dominate with the *Salix* species.

SALHOO *Salix hookeriana* (S. *piperi*) shrub swamp

This community is rare in the Valley, the only known sites are at Camassia Nature Conservancy Preserve in Clackamas County, Beggars-tick Marsh in Multnomah County, and the Willow Creek Natural Area in Lane County.

SALHOO-SALSIT *Salix hookeriana* (S. *piperi*)/*Salix sitchensis*

Very infrequent with a native understory.

SALLUC/URTDIO *Salix lucida* ssp. *lasianдра*/*Urtica dioica*

Infrequent in the Valley due to the incursion of non-native species. However it can be found along the Luckiamute and Little Luckiamute Rivers

***SALSIT** *Salix sitchensis*

Found in sloughs, backwaters and along creeks throughout the Valley.

SALIEX *Salix lucida* ssp. *lasianдра*, *Salix sitchensis*, *Salix fluviatilis*, *Salix hookeriana* (*S. piperi*), *Salix sessilifolia* and *Salix scouleriana* with exotic understory not growing on riverwash. This type is common throughout the Valley. It occurs most commonly along streams and creeks where the tree canopy has been removed and also occurs in sloughs and backwaters. *Phalaris arundinacea* is the most common understory species.

SASIEX *Salix sitchensis* with exotic understory.

SPIDOU *Spiraea douglasii*

***SPIDOU** *Spiraea douglasii* shrub swamp

Spiraea douglasii is common throughout the Valley. The species usually occurs under *Fraxinus latifolia* canopy and is mapped as FRAXNA. When it occurs without an overstory it is mapped, although patches rarely obtain mappable size.

It occurs across a broad moisture and disturbance range although most frequently found on wetland soils along low energy streams.

Forested

EXOFOR-exotic shrubby old field with trees growing in it. These are usually abandoned agricultural land with wetland soils.

ACERNA-*Acer macrophyllum* with native understory

Plant communities dominated by *Acer macrophyllum* occur on terraces of the riparian zone, on non-wetland soils that are only occasionally flooded. These communities often occur as rather narrow strips between the creek bed and the upland agricultural land or development. Upland *Acer macrophyllum*-dominated communities also can occur outside of the riparian zone.

***ACEMAC/ACECIR** *Acer macrophyllum*/*Acer circinatum*

Common where native stands of *Acer macrophyllum* occur. *Hydrophyllum tenuipes* is common in this community.

***ACEMAC/CARDEW** *Acer macrophyllum*/*Carex deweyana*

Fairly common where native stands of *Acer macrophyllum* occur.

***ACEMAC/CORCOR** *Acer macrophyllum*/*Corylus cornuta*

Fairly common where native stands of *Acer macrophyllum* occur.

***ACEMAC/EQUHYE** *Acer macrophyllum*/*Equisetum hyemale*

Occurs as sporadic patches in native stands of *Acer macrophyllum*.

***ACEMAC/HYDTEN** *Acer macrophyllum*/*Hydrophyllum tenuipes*

Fairly common where native stands of *Acer macrophyllum* occur.

- *ACEMAC/MONSIB *Acer macrophyllum*/*Claytonia sibirica*
Fairly common where native stands of *Acer macrophyllum* occur.
- *ACEMAC/OEMCER *Acer macrophyllum*/*Oemleria cerasiformis*
Fairly common where native stands of *Acer macrophyllum* occur.
- *ACEMAC/RUBPAR *Acer macrophyllum*/*Rubus parviflorus*
Occasional where native stands of *Acer macrophyllum* occur. Found primarily in the northern part of the valley; occurs at Bowers Rock and Molalla State Parks.
- *ACEMAC/RUBURS *Acer macrophyllum*/*Rubus ursinus*
Fairly common where native stands of *Acer macrophyllum* occur.
- *ACEMAC/SAMRAC *Acer macrophyllum*/*Sambucus racemosa*
Fairly common where native stands of *Acer macrophyllum* occur.
- *ACEMAC/SYMALB *Acer macrophyllum*/*Symphoricarpos albus*
Common where native stands of *Acer macrophyllum* occur.
- *ACEMAC/SYMALB/URTDIO *Acer macrophyllum*/*Symphoricarpos albus*/*Urtica dioica*
Occurs at Santiam Bar and throughout the Valley.
- *ACEMAC/TELGRA *Acer macrophyllum*/*Tellima grandiflora*
Common where native stands of *Acer macrophyllum* occur.
- *ACEMAC/URTDIO *Acer macrophyllum*/*Urtica dioica*
Urtica dioica often achieves nearly 100% cover. Common throughout the Valley.
Hydrophyllum tenuipes is a common co-dominant in this community.

ACEREX-*Acer macrophyllum* with exotic understory
Common in the upper terraces and slopes of riparian zones throughout the Valley

ACALNA-*Acer macrophyllum*-*Alnus rubra* with native understory

- *ACEMAC-ALNRUB *Acer macrophyllum*-*Alnus rubra*
Common along small streams in valleys along the margin of the Willamette Valley. Occurs with a diversity of forbs and shrubs.

ACALEX-*Acer macrophyllum*-*Alnus rubra* with exotic.

ACFRNA-*Acer macrophyllum*-*Fraxinus latifolia* with native understory

- *ACEMAC-FRALAT/ACECIR *Acer macrophyllum*-*Fraxinus latifolia*/*Acer circinatum*
Common where *Fraxinus latifolia* and *Acer macrophyllum* co-occur throughout the Valley.

ACFREX-*Acer macrophyllum*-*Fraxinus latifolia* with exotic understory

ACPONA-*Acer macrophyllum*-*Populus balsamifera* ssp. *trichocarpa* with native understory. This is one of the most common mapping units along the larger rivers of the Willamette Valley. *Acer macrophyllum* are often not apparent from outside the community due to its smaller stature.

- *ACEMAC-POPBAL/EQUHYE *Acer macrophyllum*-*Populus balsamifera* ssp. *trichocarpa* /*Equisetum hyemale*. Sporadically occurs along the larger rivers

throughout the Valley.

- *ACEMAC-POPBAL/HYDTEN *Acer macrophyllum*-*Populus balsamifera* ssp. *trichocarpa*/ *Hydrophyllum tenuipes*. Occurs at Santiam Bar and is fairly common throughout the Valley
- *ACEMAC-POPBAL/RUBURS *Acer macrophyllum*-*Populus balsamifera* ssp. *trichocarpa*/ *Rubus ursinus*. Fairly common along the larger rivers throughout the Valley
- *ACEMAC-POPBAL/SYMALB *Acer macrophyllum*-*Populus balsamifera* ssp. *trichocarpa*/ *Symphoricarpos albus*. Common along the larger rivers throughout the Valley
- *ACEMAC-POPBAL/RUBURS-SYMALB/URTDIO *Acer macrophyllum*-*Populus balsamifera* ssp. *trichocarpa*/ *Rubus ursinus*-*Symphoricarpos albus*/ *Urtica dioica*
- *ACEMAC-POPBAL/URTDIO *Acer macrophyllum*-*Populus balsamifera* ssp. *trichocarpa*/ *Urtica dioica*. This community is common along the Willamette Valley such as on Grand Island. The *Urtica dioica* often achieves a nearly 100% cover.

ACPOEX-*Acer macrophyllum*-*Populus balsamifera* ssp. *trichocarpa* with exotic understory
Common in disturbed riparian zones of the larger rivers throughout the Valley.

ACPSNA-*Acer macrophyllum*-*Pseudotsuga menziesii* with native understory
This mapping unit is infrequent as a riparian zone type, although *P. menziesii* may have been more common in riparian zones prior to logging and clearing of riparian forests. This combination is also common on valley slopes above the riparian zone. As a riparian zone element it occurs in infrequently flooded areas on higher terraces. It often occurs as a small area with prevalent *Pseudotsuga menziesii* within a larger *Acer macrophyllum* riparian zone.

*ACEMAC-PSEMEN/CORCOR/HYDTEN *Acer macrophyllum*-*Pseudotsuga menziesii*/ *Corylus cornuta*/ *Hydrophyllum tenuipes*. This community occurs infrequently throughout the Valley in the upper level of the riparian zone. High quality stands can be found at Geren Island in the North Santiam River.

*ACEMAC-PSEMEN/CORCOR *Acer macrophyllum*-*Pseudotsuga menziesii*/ *Corylus cornuta*

This community occurs infrequently throughout the Valley in the upper level of the riparian zone.

*ACEMAC-PSEMEN/SYMALB/URTDIO *Acer macrophyllum*-*Pseudotsuga menziesii*/ *Symphoricarpos albus*/ *Urtica dioica*. This community occurs infrequently throughout the Valley in the upper level of the riparian zone.

*ACEMAC-PSEMEN/POLMUN *Acer macrophyllum*-*Pseudotsuga menziesii*/ *Polystichum munitum*. This is an upland plant community which occasionally enters the riparian zone. It is a very common upland community.

ACPSEX-*Acer macrophyllum*-*Pseudotsuga menziesii* with exotic understory
Occurs in the upper terraces and slopes of riparian zones throughout the Valley.

ALNUNA-*Alnus rubra* and *Alnus rhombifolia* with native understory

Alnus rubra and *A. rhombifolia* are sporadic constituents of riparian zones throughout the Valley, but occur as a community dominant most frequently along small streams in the margins of the Valley. *Alnus rhombifolia* is most prevalent in the southern portion of the valley and on the valley floor, while *A. rubra* occurs primarily in the northern part of the valley and along the margins of the Valley. *Alnus rubra* is also common outside of the riparian zone in the foothills adjacent to the Willamette Valley. *Alnus rubra* was the species most frequently encountered in this survey, and is the representative alder in the communities described below. Additional field work is needed to define and describe *A. rhombifolia* communities.

*ALNRUB/CORCOR *Alnus rubra/Corylus cornuta*

Found along streams and seeps throughout the Valley

*ALNRUB/CORSER *Alnus rubra/Cornus sericea*

Found along streams and seeps throughout the Valley

*ALNRUB/CORSER/LYSAME *Alnus rubra/Cornus sericea/Lysichiton americanum*

Found along streams and seeps mostly in the northern Valley and Valley margins

*ALNRUB/EQUHYE *Alnus rubra/Equisetum hyemale*

Found sporadically along streams and seeps. Occurs on Geren Island in the North Santiam River, Linn Co.

*ALNRUB/HYDTEN *Alnus rubra/Hydrophyllum tenuipes*

Found along streams and seeps throughout the Valley

*ALNRUB/LYSAME *Alnus rubra/Lysichiton americanum*

Found along streams and seeps mostly in the northern Valley and Valley margins.

ALNRUB/RUBSPE *Alnus rubra/Rubus spectabilis*

Found along streams and seeps mostly in the northern Valley and Valley margins.

*ALNRUB/STACOO *Alnus rubra/Stachys cooleyae*

Occurs occasionally in Clackamas County

*ALNRUB/URTDIO *Alnus rubra/Urtica dioica*

Found along streams and seeps throughout the Valley

ALNUEX-*Alnus rubra* with exotic understory

ALFRNA-*Alnus rubra-Fraxinus latifolia* with native understory

*ALNRUB-FRALAT/HYDTEN *Alnus rubra-Fraxinus latifolia/Hydrophyllum tenuipes*

Found along streams and seeps mostly in the northern Valley and Valley margins.

*ALNRUB-FRALAT/URTDIO *Alnus rubra-Fraxinus latifolia/Urtica dioica*

Found along streams and seeps mostly in the northern Valley and Valley margins.

ALFREX-*Alnus rubra-Fraxinus latifolia* with exotic understory

ALPONA-*Alnus rubra-Populus balsamifera* ssp. *trichocarpa* with native understory

- *ALNRUB-POPBAL/IMPCAP *Alnus rubra*-*Populus balsamifera* ssp. *trichocarpa*/*Impatiens capensis*
Occasional along creeks in Clackamas County
- *ALNRUB-POPBAL/RUBSPE *Alnus rubra*-*Populus balsamifera* ssp. *trichocarpa*/*Rubus spectabilis*
Occasional along creeks in Clackamas County
- *ALNRUB-POPBAL/SYMALB/URTDIO *Alnus rubra*-*Populus balsamifera* ssp. *trichocarpa*/*Symphoricarpos albus*/*Urtica dioica*
Sporadic along rivers and streams throughout the Valley. Most common in Clackamas County.

ALPOEX-*Alnus rubra*-*Populus balsamifera* ssp. *trichocarpa* with exotic understory

ALPSNA-*Alnus rubra*-*Pseudotsuga menziesii* with native understory

ALNRUB-PSEMEN *Alnus rubra*-*Pseudotsuga menziesii*
Occurs along creeks and streams in valleys mostly on the margins of the Willamette Valley.

ALPSEX-*Alnus rubra*-*Pseudotsuga menziesii* with exotic understory

ALTHNA *Alnus rubra*-*Thuja plicata* with native understory

Occurs along creeks and streams in valleys mostly on the margins of the Willamette Valley. Most common in Clackamas County.

ALNRUB-THUPLI/ACICIR *Alnus rubra*-*Thuja plicata*/*Acer circinatum*

Found along creeks in Clackamas County.

ALNRUB-THUPLI/RUBSPE *Alnus rubra*-*Thuja plicata*/*Rubus spectabilis*

Found along creeks in Clackamas County.

ALTHER *Alnus rubra*-*Thuja plicata* with exotic understory

Occurs along creeks and streams in valleys mostly on the margins of the Willamette Valley. Most common in Clackamas County.

CRATNA-*Crataegus douglasii* with native understory

Communities dominated by *Crataegus douglasii* occur on natural levees infrequently scattered throughout the central Willamette Valley. These communities rarely have understories of native species and very rarely achieve mappable size. *Crataegus douglasii* areas with a native understory can be found at Santiam Bar, Grand Island and Molalla State Park. These are natural levees along sloughs and oxbows and are frequently flooded.

CRADOU/HERLAN *Crataegus douglasii*/*Heracleum lanatum*

CRADOU/SYMALB *Crataegus douglasii*/*Symphoricarpos albus*

An infrequently found community. Occurs in Willamette Mission State Park.

CRADOU-SALIX/ROSWOO *Crataegus douglasii*-*Salix*/*Rosa woodsii*

*CRADOU/URTDIO *Crataegus douglasii*/*Urtica dioica*

This community occurs on natural levees at Grand Island.

CRATEX-*Crataegus douglasii* with exotic understory.

FRAXNA-*Fraxinus latifolia* with native understory

Fraxinus latifolia often dominates the overstory of forested wetlands and riparian zones throughout the Willamette Valley. These areas are frequently flooded or have saturated soils through a portion of the growing season.

*FRALAT/ACECIR/CARDEW *Fraxinus latifolia/Acer circinatum/Carex deweyana*

Fairly common throughout the Valley

*FRALAT/ACECIR/CAROBN *Fraxinus latifolia/Acer circinatum/Carex obnupta*

Fairly common throughout the Valley

*FRALAT/ACECIR/EQUHYE *Fraxinus latifolia/Acer circinatum/Equisetum hyemale*

Occurs sporadically throughout the Valley

*FRALAT/ACECIR/SMIRAC *Fraxinus latifolia/Acer circinatum/Smilicina racemosa*

Infrequently found along creeks in the northern part of the Willamette Valley.

Viola glabella is also often common in the community.

FRALAT/CAROBN *Fraxinus latifolia/Carex obnupta*

Perhaps the most characteristic forested wetland community throughout the Valley.

*FRALAT/CORCOR *Fraxinus latifolia/Corylus cornuta*

Hydrophyllum tenuipes is often dominant in the understory in this community

*FRALAT/CORSER *Fraxinus latifolia/Cornus sericea*

This community occurs on the edges of incised smaller rivers, streams and sloughs.

*FRALAT/CORSER/CAROBN *Fraxinus latifolia/Cornus sericea/Carex obnupta*

Occurs in backwaters throughout the Valley

*FRALAT/CRADOU *Fraxinus latifolia/Crataegus douglasii*

Occurs sporadically throughout the Valley

*FRALAT/JUNPAT *Fraxinus latifolia/Juncus patens*

Fairly common in the southern portion of the Willamette Valley

*FRALAT/OEMCER *Fraxinus latifolia/Oemleria cerasiformis*

Occurs as patches throughout the Valley

*FRALAT/RUBSPE *Fraxinus latifolia/Rubus spectabilis*

Infrequent through the Valley. Can be found at Santiam Bar.

*FRALAT/RUBURS *Fraxinus latifolia/Rubus ursinus*

Very common throughout the Valley.

*FRALAT/SPIDOU *Fraxinus latifolia/Spirea douglasii*

*FRALAT/SPIDOU/CAROBN *Fraxinus latifolia/Spirea douglasii/Carex obnupta*

*FRALAT/SYMALB *Fraxinus latifolia/Symphoricarpos albus*

This is the most common native riparian zone plant community in the Willamette Valley. Other co-dominants in this community are often *Claytonia sibirica*, *Hydrophyllum tenuipes*, *Corylus cornuta*, *Camassia quamash* and *Lonicera involucrata*.

*FRALAT/SYMALB/URTDIO *Fraxinus latifolia/Symphoricarpos albus/Urtica dioica*

Common throughout the Valley. *Hydrophyllum tenuipes* is a common co-dominant

*FRALAT/TELGRA *Fraxinus latifolia/Tellima grandiflora*

FRALAT/URTDIO *Fraxinus latifolia/Urtica dioica*

Common throughout the Valley. *Hydrophyllum tenuipes* is a common co-dominant

***FRALAT/VERCAL** *Fraxinus latifolia/Veratrum californicum* var. *caudatum*

Occasionally found along small streams; observed in Clackamas County and at the Willow Creek Natural Area in Lane County.

FRAXEX-*Fraxinus latifolia* with exotic understory

Fraxinus latifolia with an exotic understory covers most of the forested bottomlands of the Willamette Valley. Two major types occur: *Fraxinus latifolia/Phalaris arundinacea* and *Fraxinus latifolia/Poa trivialis*. These two types are quite different. *Phalaris arundinacea* communities are generally low in diversity and cover vast areas. Most small streams and creeks have buffers of this type. In *Fraxinus latifolia/Poa trivialis* areas, which occur throughout the Willamette Valley, a wide diversity of native species may co-occur with the *Poa trivialis*.

FRPONA-*Fraxinus latifolia-Populus balsamifera* ssp. *trichocarpa* with native understory

This is a common type throughout the Willamette Valley, but usually does not cover large areas. This is because it most commonly occurs with a non-native understory along the rivers of the Willamette Valley.

***FRALAT-POPBAL/CORCOR** *Fraxinus latifolia-Populus balsamifera* ssp. *trichocarpa/Corylus cornuta*. Found in riparian zones throughout the Valley

FRALAT-POPBAL/CORSER *Fraxinus latifolia-Populus balsamifera* ssp. *trichocarpa/Cornus sericea*

Found along rivers and streams throughout the Valley

***FRALAT-POPBAL/HYDTEN** *Fraxinus latifolia-Populus balsamifera* ssp. *trichocarpa/Hydrophyllum tenuipes*. Found in riparian zones throughout the Valley

***FRALAT-POPBAL/RUBSPE** *Fraxinus latifolia-Populus balsamifera* ssp. *trichocarpa/Rubus spectabilis*. Found on Grand Island. Infrequent in the Valley

***FRALAT-POPBAL/RUBURS** *Fraxinus latifolia-Populus balsamifera* ssp. *trichocarpa/Rubus ursinus*. Found in riparian zones throughout the Valley

FRALAT-POPBAL/SYMALB/URTDIO *Fraxinus latifolia-Populus balsamifera* ssp. *trichocarpa/Symphoricarpos albus*. Found in riparian zones throughout the Valley

***FRALAT-POPBAL/URTDIO** *Fraxinus latifolia-Populus balsamifera* ssp. *trichocarpa/Urtica dioica*

Found in riparian zones throughout the Valley

FRPOEX-*Fraxinus latifolia-Populus balsamifera* ssp. *trichocarpa* with exotic understory

FRPSNA-*Fraxinus latifolia-Pseudotsuga menziesii* with native understory.

FRQUANA-*Fraxinus latifolia-Quercus garryana* with native understory

This mapping unit is commonly found along the margins of slower streams and sloughs in the southern and central portions of the Valley. It is well represented along Muddy Creek in Benton County.

- *FRALAT-QUEGAR/ACECIR *Fraxinus latifolia-Quercus garryana/Acer circinatum*
Occurs along the Calapooia River in Linn County and sporadically elsewhere.
- *FRALAT-QUEGAR/HERLAN *Fraxinus latifolia-Quercus garryana/Heracleum lanatum*
Occurs along the Calapooia River in Linn County and sporadically elsewhere.
- *FRALAT-QUEGAR/RUBURS *Fraxinus latifolia-Quercus garryana/Rubus ursinus*
Occurs along Muddy Creek in Benton County, not common in the rest of the Valley
- *FRALAT-QUEGAR/SPIDOU *Fraxinus latifolia-Quercus garryana/Spirea douglasii*
Occurs along Muddy Creek in Benton County, not common in the rest of the Valley
- *FRALAT-QUEGAR/SYMALB *Fraxinus latifolia-Quercus garryana/Symphoricarpos albus*
Occurs along Muddy Creek in Benton County, not common in the rest of the Valley

FRQUEX-*Fraxinus latifolia-Quercus garryana* with exotic understory
Common in disturbed riparian zones Benton, Linn and Lane Counties.

FRSANA-*Fraxinus latifolia-Salix lucida* ssp. *lasiandra* with native understory
This mapping unit is infrequently found due to the preponderance of non-native species usually found in the plant communities of this unit. In addition it forms very narrow strips along waterways and hence is unmappable.

FRALAT-SALLUC *Fraxinus latifolia-Salix lucida* ssp. *lasiandra*
This type is infrequently found along creeks, rivers and sloughs throughout the Willamette Valley, such as along the Luckiamute River.

FRALAT-SALLUC/CORSER *Fraxinus latifolia-Salix lucida* ssp. *lasiandra/Cornus sericea*
This type is infrequently found along creeks, rivers and sloughs throughout the Willamette Valley, such as along the Luckiamute River.

FRSAEX *Fraxinus latifolia-Salix lucida* ssp. *lasiandra* with exotic understory
This type is common along sloughs and streams throughout the Willamette Valley. *Rubus discolor* often dominates the understory with *Phalaris arundinacea* along the edge of the slough or stream.

POPUNA-*Populus balsamifera* ssp. *trichocarpa* with native understory
Populus balsamifera ssp. *trichocarpa* is common in the riparian zones along the major rivers and tributaries of the Willamette Valley. Soils are usually only occasionally flooded during the growing season and are usually sandy.

*POPBAL/ACECIR/HYDTEN *Populus balsamifera* ssp. *trichocarpa/Acer circinatum/Hydrophyllum tenuipes*. Fairly common in the Willamette Valley. Occurs in Molalla State Park.

POPBAL/CRADOU *Populus balsamifera* ssp. *trichocarpa /Crataegus douglasii*
This community occurs on berms along rivers and back sloughs. It is similar and often adjacent to the *Crataegus douglasii* communities found in the Valley. Santiam Bar is one of the few areas where this community contains native

understory species.

*POPBAL/CORCOR *Populus balsamifera* ssp. *trichocarpa* /*Corylus cornuta*
Fairly common throughout the Valley. *Hydrophyllum tenuipes* is a common associate species.

POPBAL/CORSER *Populus balsamifera* ssp. *trichocarpa* /*Cornus sericea*
This community occurs on the edges of rivers, streams and sloughs and in patches in low lying areas. It is less common than FRALAT/CORSER and FRALAT-POPBAL/ CORSER. This community is best represented at Molalla State Park.

POPBAL/CORSER/IMPCAP *Populus balsamifera* ssp. *trichocarpa* /*Cornus sericea*/ *Impatiens capensis*. Not common in the Willamette Valley. Found in Molalla State Park.

*POPBAL/EQUHYE *Populus balsamifera* ssp. *trichocarpa*/ *Equisetum hyemale*
Occurs sporadically along the larger rivers throughout the Valley. Occurs on Geren Island in the North Santiam River, Linn Co.

*POPBAL/RUBSPE *Populus balsamifera* ssp. *trichocarpa* /*Rubus spectabilis*
Infrequently found in bottomlands near the Willamette River. Best represented in Molalla State Park and at Grand Island.

*POPBAL/SALLUC *Populus balsamifera* ssp. *trichocarpa*/ *Salix lucida* ssp. *lasiandra*
Infrequent in the Valley due to the preponderance of non-native understory. These two tree species with an understory of *Phalaris arundinacea* are common along large rivers throughout the Valley.

POPBAL/SYMALB *Populus balsamifera* ssp. *trichocarpa*/ *Symphoricarpos albus*
Common in riparian zones of larger rivers throughout the Valley. *Hydrophyllum tenuipes* is a common associate species.

*POPBAL/SYMALB/URTDIO *Populus balsamifera* ssp. *trichocarpa*/ *Symphoricarpos albus*/ *Urtica dioica*. Common in riparian zones of larger rivers throughout the Valley. *Hydrophyllum tenuipes* is a common associate species.

*POPBAL/URTDIO *Populus balsamifera* ssp. *trichocarpa*/ *Urtica dioica*
Common in riparian zones of larger rivers throughout the Valley. *Hydrophyllum tenuipes* is often a co-dominant in this community.

POPSNA-*Populus balsamifera* ssp. *trichocarpa*-*Pseudotsuga menziesii* with native understory

Occurs on Geren Island in the North Santiam River, Linn County.

POPBAL-PSUMEN *Populus balsamifera* ssp. *trichocarpa*/ *Pseudotsuga menziesii*

POPUEX-*Populus balsamifera* var. *trichocarpa* with exotic understory.

POQUEX-*Populus balsamifera* var. *trichocarpa*-*Quercus garryana* with exotic understory.

POSAEX-*Populus balsamifera* var. *trichocarpa*-*Salix* with exotic understory.

POTHNA-*Populus balsamifera* ssp. *trichocarpa*/ *Thuja plicata* with native understory
Infrequent riparian zone type in Clackamas County.

POTHEX-*Populus balsamifera* ssp. *trichocarpa*/*Thuja plicata* with exotic understory
Infrequent riparian zone type in Clackamas County.

POPTRE-*Populus tremuloides* with native understory

*POPTRE/SPIDOU/SPHMEN *Populus tremuloides*/*Spiraea douglasii*/*Sphagnum mendocinum*

A small *Populus tremuloides* wetland exists in Camassia Nature Conservancy Preserve in Clackamas County. This is the only occurrence known in the Willamette Valley.

PSEUNA-*Pseudotsuga menziesii* with native understory

Pseudotsuga menziesii riparian is very infrequent in the Willamette Valley.

However, *Pseudotsuga menziesii* woods are common outside of the riparian zone, particularly on the margins of the Willamette Valley.

*PSEMEN/BERAQU *Pseudotsuga menziessii*/*Berberis aquifolium*

Found at Fishermans Bend State Park on the Clackamas River in Clackamas County.

PSEMEN/SYMALB *Pseudotsuga menziessii*/*Symphoricarpos albus*

Found at Fishermans Bend State Park on the Clackamas River in Clackamas County.

THUPLI-TSUHET/OXAORE *Thuja plicata*-*Tsuga heterophylla*/*Oxalis oregana*

This community is much more common in the Cascades and Coast Range. In the Willamette Valley it occurs primarily along streams in the northern Valley. It occurs as a small patch of old growth along the Clackamas River one km upstream from Bonnie Lure State Park. *Pseudotsuga menziesii* and *Polystichum munitum* were also common in the patch. Also occurs as small patches in Milo McIver State Park.

PSEUEX-*Pseudotsuga menziesii* with exotic understory.

PSQUNA-*Pseudotsuga menziesii*-*Quercus garryana* with native understory

This mapping unit is very infrequent along riparian zones.

PSQUEX-*Pseudotsuga menziesii*-*Quercus garryana* with exotic understory

This mapping unit is very infrequent along riparian zones.

QUERNA-*Quercus garryana* with native understory

Quercus garryana communities occur principally in Linn, Benton and Lane Counties. Usually rather linear in nature. Best developed along Muddy Creek in Benton County. Upland *Quercus garryana* communities also occur adjacent to the riparian zone.

*QUEGAR/CORCOR *Quercus garryana*/*Corylus cornuta*

Occasional through the southern part of the Valley

*QUEGAR/CORCOR/RUBURS-CARDEW *Quercus garryana*/*Corylus cornuta*/*Rubus ursinus*- *Carex deweyana*

- *QUEGAR/HOLDIS *Quercus garryana/Holodiscus discolor*
Very infrequent in the riparian zone. Found in the riparian zones of Lake Creek and the Calapooia River in Linn County.
- *QUEGAR/RUBURS *Quercus garryana/Rubus ursinus*
Occasional through the southern part of the Valley
- *QUEGAR/SYMALB *Quercus garryana/Symphoricarpos albus*
Occurs on natural levees along Muddy Creek in Benton County. *Camassia quamash* often very common in this community.

QUEREX-*Quercus garryana* with exotic understory

This mapping unit is most common in Linn, Benton and Lane Counties.

RIPFOR-riparian forest-species composition uncertain. These are the many sites that could not be visited because permission was not received to enter private property.

THUJNA *Thuja plicata* with native understory

Thuja plicata occurs sporadically throughout the Willamette Valley, primarily in the north. It is fairly common in some areas of Clackamas County. However, it only occasionally attains the status of community dominant.

ABIGRA-THUPLI/POLMUN *Abies grandis-Thuja plicata/Polystichum munitum*

This community is found at Elijah Bristow State Park in Lane County.

*THUPLI/ACICIR *Thuja plicata/Acer circinatum*

Occurs in wet areas along streams principally in Marion and Clackamas County.

THUPLI/LYSAME *Thuja plicata/Lysichiton americanum*

Occurs in wet areas along streams principally in Marion and Clackamas County.

*ACEMAC-THUPLI/HYDTEN *Acer macrophyllum-Thuja plicata/Hydrophyllum tenuipes*
Found in Milo McIver State Park, Clackamas County.

APPENDIX C. Important Sites in the Willamette Valley that were not inventoried during this project.

There were many inaccessible areas in this study. Most of them, however, are probably not of great importance. However, along the major Rivers many large inaccessible riparian areas are located. The best way to visit these sites would be by boat which was not practicable in this survey. The most important sites that were not inventoried are listed below.

Willamette River

The largest concentration of inaccessible riparian sites are between Kiger Island and Harrisburg. Several smaller riparian sites were inaccessible between Harrisburg and the Mckenzie River confluence. Access problems were also experienced at a few sites between Corvallis and Wheatland such as Lower Kiger Island, Tyson, and Windsor Island. In addition, several sites were inaccessible in the north part of Grand Island and along the Willamette River east of Dayton.

Santiam River

Several large inaccessible riparian sites are located between the confluence of the Santiam River with the Willamette River and I-5.

North Santiam River

Several large inaccessible riparian sites are located between McKinney Bottom and Mehema, particularly east of Geren Island.

South Santiam River

Several large inaccessible riparian sites are located between Route 226 and Lebanon. Also, north of Route 226 is an inaccessible site at Wilkinson Bend.

Yamhill River

A large riparian zone exists between Pacific Highway South and Bellevue Highway on the Yamhill River.

APPENDIX D. Topographic maps for which elements were digitized.

Airlie North	Airlie South
Albany	Amity
Ballston	Beaverton
Brownsville	Canby
Carlton	Cheshire
Coburg	Corvallis
Cottage Grove	Crabtree
Crawfordsville	Creswell
Crow	Dallas
Damascus	Dayton
Dorena Lake	Dundee
Elwood	Estacada
Eugene East	Eugene West
Flat Mountain	Fox Hollow
Gervais	Gladstone
Greenberry	Halsey
Harrisburg	Indian Head
Jasper	Jordan
Junction City	Lacomb
Lebanon	Lewisburg
Linnton	Lowell
Lyons	McMinnville
Molalla	Monmouth
Monroe	Muddy Valley
Newberg	Noti
One Horse Slough	Oregon City
Peoria	Redland
Rickreall	Salem East
Salem West	Sandy
Scio	Scotts Mills
Sheridan	Sherwood
Sidney	Silverton
Springfield	St. Paul
Stayton	Stayton Northeast
Stout Mountain	Tangent
Turner	Union Point
Veneta	Waterloo
Walterville	Wilhoit
Woodburn	Yoder