

wildlife utilizing adjacent upland areas with no water.					
Site	Listed LWI	Acres	WHA Score	WHA Source	Area Map#
<b>S04- Springfield Millrace B, Industrial, Mill Pond</b>	Yes	43.0	40-41	Ester Lev, 1990	9, 10
<b>Description:</b>					
<p>The Millrace runs from the Willamette River to the Mill Pond adjacent to the Booth Kelly site in Springfield. The upper stretches of the Millrace (Site S03) provide higher value wildlife habitat than the stretch within Site S04. This lower stretch of the Mill Race has a thin riparian strip with industrial and agricultural uses immediately adjacent. Noise, activity, and runoff from adjacent activities may adversely impact wildlife use of the Millrace. Water quality should be monitored.</p>					
Site	Listed LWI	Acres	WHA Score	WHA Source	Area Map#
<b>S07-Brand S/Natron</b>	Yes	23.9	34	Ester Lev, 1990	9, 12
<b>Description:</b>					
<p>Site S07 in east Springfield is a series of irrigation ponds and slough channels. The entire site has been altered and is highly disturbed. Riparian vegetation along the ponds where present is diverse and dense. The slough channels are vegetated with rush, sedge, spreading bentgrass, cattail, and Himalayan blackberry. The open water and adjacent riparian vegetation provide habitat for waterfowl, shorebirds, and some songbird species.</p>					
Site	Listed LWI	Acres	WHA Score	WHA Source	Area Map#
<b>S09-Weyerhaeuser B</b>	No	71.9	50	Ester Lev, 1990	10, 11
<b>Description</b>					
<p>This site is located south of Highway 126 near the Weyerhaeuser industrial site. It is connected to the McKenzie River via slough channels that pass beneath Highway 126. Two ponds on the site are former borrow pits. Vegetation includes overstory of bigleaf maple and black cottonwood and an understory of willow, red alder, and snowberry. The site scores high on diversity and quality of the water features on the site.</p>					
Site	Listed LWI	Acres	WHA Score	WHA Source	Area Map#
<b>S10-Weyerhaeuser A</b>	No	195.0	70	Ester Lev, 1990	11
<b>Description:</b>					
<p>The site is north of Highway 126 near Weyerhaeuser. The site has a large forested area with excellent structural diversity, abundant sources of food, water and cover, and strong connections with other wildlife habitat sites. Vegetation includes black cottonwood, willow,</p>					

snowberry, sedge, rush, and cattail. The site is a major wildlife corridor and provides vital components of fish habitat for fish.					
Site	Listed LWI	Acres	WHA Score	WHA Source	Area Map#
<b>S12/13-Q Street Ditch</b>	Yes	39.0	45 (Trees) 36 (Treeless)	Ester Lev, 1990	6, 10, 11
<b>Description:</b>					
The Q Street ditch flows from 28 <sup>th</sup> and Main in Springfield northward to I-105 and then flows westerly, parallel to I-105, under I-5, across to Alton Baker Park, where it joins the Canoe Canal. Much of the Q Street Ditch follows an historic drainage pattern that ultimately drained into the Willamette River, near Goodpasture Island. Portions of the ditch are riprapped and culverted (Site S13). Portions within this site have a thin riparian strip. The vegetation along the water's edge and the bank provides some food, cover, and escape for some songbird, waterfowl, reptile, and small mammal species.					
Site	Listed LWI	Acres	WHA Score	WHA Source	Area Map#
<b>S14-Guy Lee</b>	No	2.4	35	Ester Lev, 1990	6
<b>Description:</b>					
Guy Lee is a small Springfield park adjacent to Guy Lee school. The site is primarily a disturbed open grassland and has a small remnant riparian strip within a lower swale area. Water is present during portions of the growing season. Oregon ash and willow are the dominant overstory vegetation with an understory of snowberry and Himalayan blackberry. This small remnant forested area provides habitat for some songbird and small mammal species; however, low interspersed value may limit wildlife use.					
Site	Listed LWI	Acres	WHA Score	WHA Source	Area Map#
<b>S17-Maple Island Slough</b>	No	347.1	67	Ester Lev, 1990	5, 11
<b>Description:</b>					
Site S17 is a good representation of a Willamette Valley riparian corridor vegetated with mostly native plant species. Structural diversity, and quantity and density of vegetation are high. Oregon ash, red alder, and bigleaf maple are the dominant tree species. Red osier dogwood, snowberry, rose and Oregon hazel are the dominant shrub species. The site provides feeding, roosting, and nesting habitat for a variety of bird, mammal, and herptile species. Connection to the McKenzie River on both ends of the site enhance the interspersed value and wildlife use of this site.					
Site	Listed LWI	Acres	WHA Score	WHA Source	Area Map#
<b>S18-SCS Channel #6</b>	Yes	13.3	22-23	Ester Lev, 1990	6
<b>Description:</b>					
This site is similar to the many small, riparian remnants and longer, intermittent channels that					

are scattered throughout the metropolitan area. The steep banked ditches are generally four to eight feet wide. Reed canarygrass, rush, spikerush, and soft stem bulrush are common emergent plants within the waterways. Young willow and black cottonwood have begun to establish along the top of the banks. This and other metropolitan channels remain connected to the greater hydrological system, although the channels themselves may have become intermittent due to piping under streets and through portions of some neighborhoods.

Site	Listed LWI	Acres	WHA Score	WHA Source	Area Map#
<b>S20-Irving Slough North</b>	Yes	19.6	67	Ester Lev, 1990	11

**Description:**

Site 20 is a good representation of a Willamette Valley riparian corridor vegetated with mostly native plant species. Structural diversity, quantity, and density of vegetation is high, with some interspersed snags. Black cottonwood, Oregon ash, red alder, and bigleaf maple are the dominant tree species with some western red cedar. The site provides feeding, roosting, and nesting habitat for a variety of bird, mammal, and herptile species. Proximity to the McKenzie River and other upland sites (e.g., Vitus Butte, Site S11) enhance the interspersed value and wildlife use of this site.

Site	Listed LWI	Acres	WHA Score	WHA Source	Area Map#
<b>S21-South Irving Slough and Pond</b>	Yes	13.7	47	Ester Lev, 1990	11

**Description:**

This site is composed of a small pond and riparian channel with some aquatic plant growth. Vegetation around the pond is sparse in some areas with a few pockets of black cottonwood, willow, and Himalayan blackberry. The banks of the pond are eroding. The adjacent riparian channel has steep banks and is vegetated primarily by exotic (introduced) plant species. The riparian channel connects to a high quality riparian channel and adjacent upland forest enhancing its interspersed value.

Site	Listed LWI	Acres	WHA Score	WHA Source	Area Map#
<b>S22-Jasper Road Slough</b>	Yes	44.8	67	Ester Lev, 1990	9

**Description:**

Site S22 is south of Jasper Road and north of the Middle Fork Willamette River. The site is a remnant of a once more widespread system of riparian corridors throughout the metropolitan area. It also connects with site S03, the Springfield Mill Race, and is influenced by the Middle Fork of the Willamette River. Existing vegetation provides wildlife habitat value. Great blue heron, osprey, and kingfisher are commonly observed. The banks are generally steep and vegetated with Himalayan blackberry as an understory with black cottonwood, willow, and bigleaf maple as the dominant overstory species. The water level varies seasonally. Interspersed value is moderate, due to proximity to other riparian corridors and uplands.

Site	Listed LWI	Acres	WHA Score	WHA Source	Area Map#
<b>S24-Gray Creek</b>	Yes	7.9	55	Ester Lev, 1990	12

**Description:**

Site S24 is in east Springfield, north of Highway 126 and south of the McKenzie River. It is a remnant of a once more widespread system of riparian corridors throughout the metropolitan area. Structural and vegetative diversity are limited; however, the existing vegetation does provide some wildlife habitat value. The banks are generally steep and vegetated with Himalayan blackberry as an understory with black cottonwood, willow, and bigleaf maple as the dominant overstory species. The water level varies seasonally. Interspersion value is moderate, due to proximity of other riparian corridors.

Site	Listed LWI	Acres	WHA Score	WHA Source	Area Map#
<b>E39-Glenwood Slough</b>	Yes	23.8	46-47	Ester Lev,	6, 7

**Description:**

Site E39 consists of several sloughs, wetlands, and riparian strips near or adjacent to Interstate 5 and the Southern Pacific Railroad tracks in the Glenwood area. Vegetation includes willows (*Salix* spp.), black cottonwood (*Populus trichocarpa*), sedge (*Carex* spp.), rush (*Juncus* spp.), cattails (*Typha latifolia*), and reed canarygrass (*Phalaris arundinacea*). Interspersion with other natural areas is limited by I-5 and other adjacent roads, but the site's proximity to the Willamette River may increase the number of wildlife species in the area. The Division of State Lands has determined that a portion of this site is a regulated wetland.

Site	Listed LWI	Acres	WHA Score	WHA Source	Area Map#
<b>WA/WB Willamette River</b>	Yes	628.2	Natural: 72-74, Urban: 64-66	Ester Lev,	

**Description:**

The Willamette is a major river system and it is habitat for spring Chinook salmon, which is listed as threatened under the federal ESA. The riparian vegetation along the Willamette includes black cottonwood, Oregon ash, Pacific willow (*Salix lasiandra*), willow (*Salix* spp.), creek dogwood, red alder, white alder, and bigleaf maple. Reed canarygrass, rush species (*Juncus* spp., *Scirpus* spp.) and sedge species (*Carex* spp.) occur along the waterline. Belted kingfisher, great blue heron, green-backed heron, and osprey are commonly seen fishing and perching along the River. Swallows and warbler species frequent the riparian edge in spring and summer. Shorebirds, beaver, nutria, turtles and reptile species utilize the water's edge and downed trees. The river functions as a migration route and travel corridor for many wildlife species. The Willamette River in Eugene and Springfield harbors a diverse fish community, including: cutthroat trout, rainbow trout, mountain whitefish, spring chinook salmon, chiselmouth, mountain sucker, largescale sucker, redbelt shiner, sculpin, northern pikeminnow, peamouth, sand roller, dace, largemouth bass, smallmouth bass, and common carp (Chip Andrus, Waterworks Consulting, 2000, prepared for the City of Eugene Public Wastewater Division).



## Appendix B Springfield Local Wetland Inventory Report

### Springfield Wetland Site Descriptions

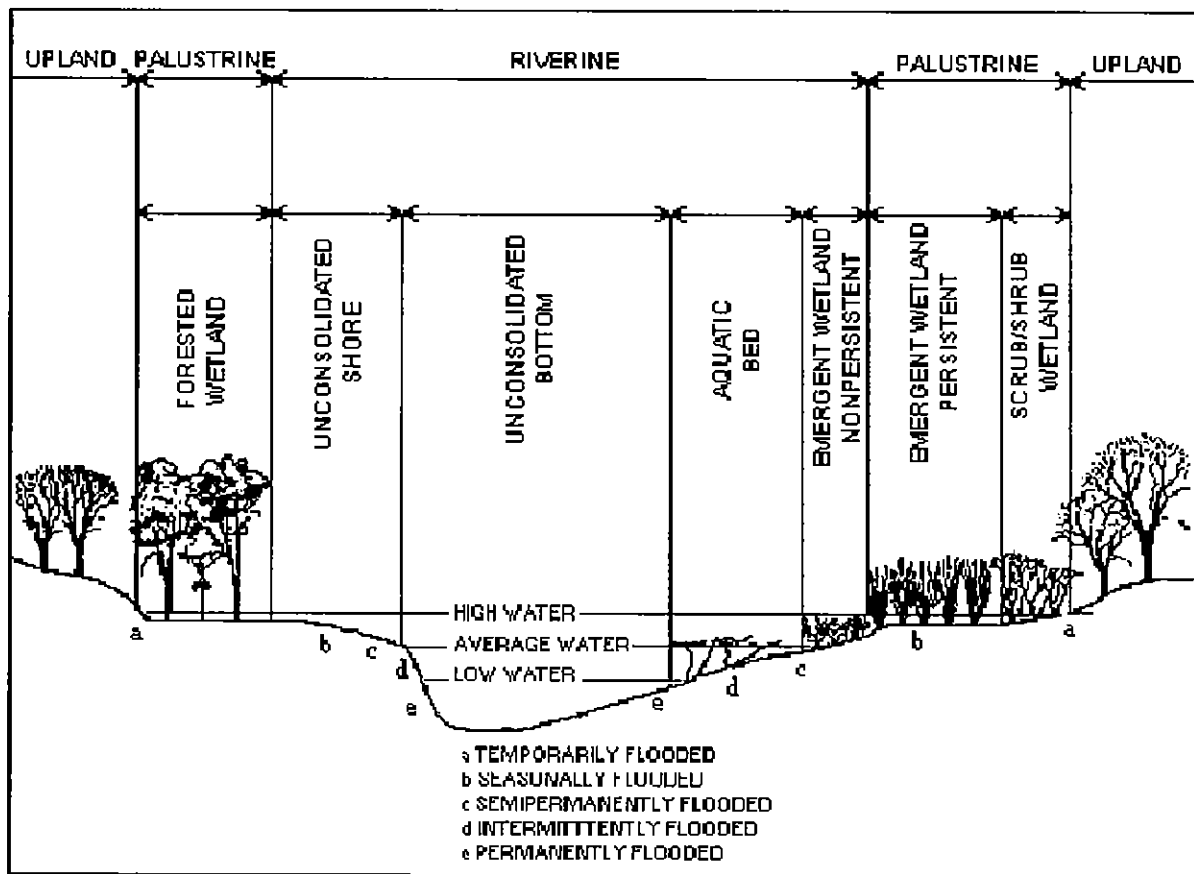
David Evans and Associates ecologists conducted field investigations on June 10, 11, 12, 22, and 23, 1992; on May 22 and 23, 1993, and again on April 24 and 25, 1996. Data from 209 data plots were analyzed and resulted in the identification of 58 jurisdictional wetlands within the study area (Figure 2). The wetland determination was based on the presence of dominant hydrophytic vegetation, hydric soil indicators, and evidence of positive wetland hydrology. A site number was assigned to each location. Those site numbers beginning with the letter "M" drain to the McKenzie River. Those beginning with "W," drain to the Willamette River.

The wetland classification or type is described as a three-letter descriptor that is used by the US Fish and Wildlife Service to define the wetland system and class. The three-letter descriptors describing wetlands found in Springfield are defined below.

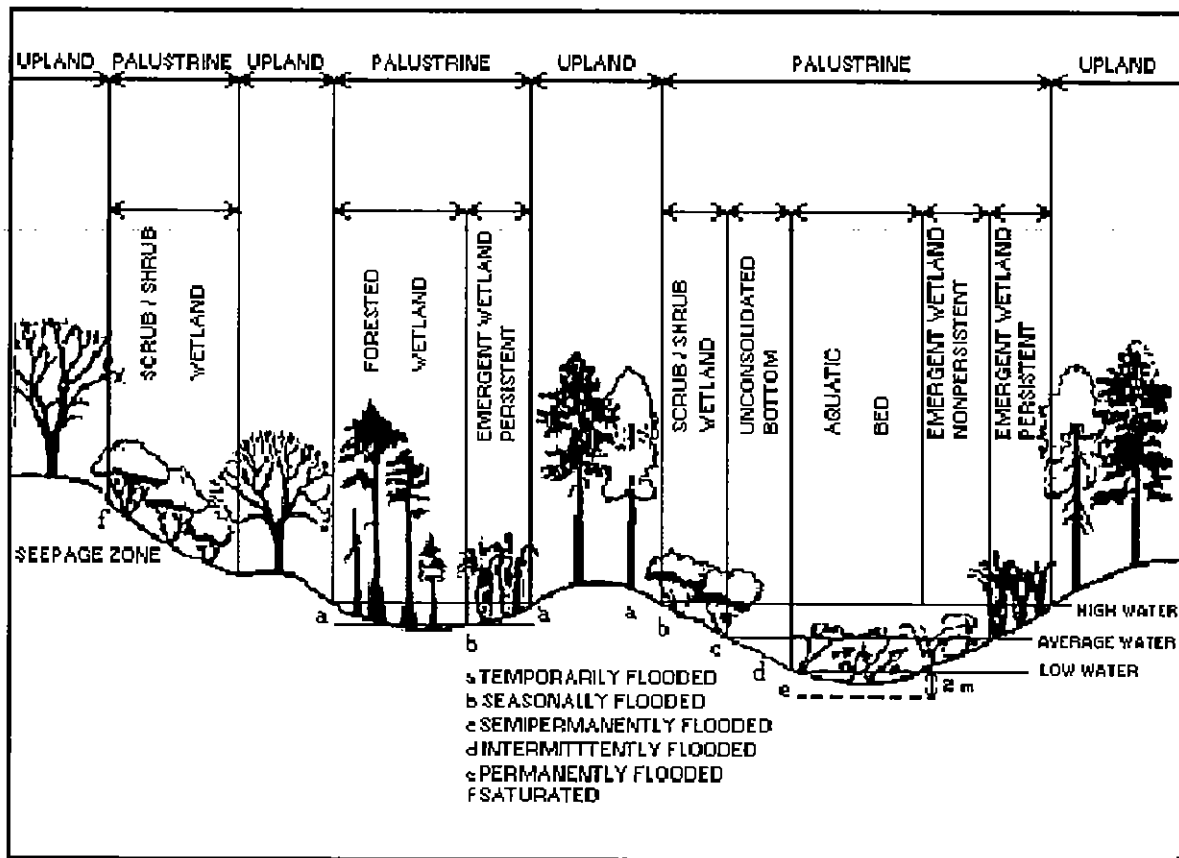
	<b>System</b>	<b>Class</b>		<b>Descriptor</b>
<b>R</b>	Riverine wetlands are found along rivers and streams and channels, naturally or artificially created, which periodically or continuously contains moving water, or which forms a connecting link between two bodies of standing water.	<b>IN</b> termittent	The stream or channel contains flowing water for only part of the year. When the water is not flowing, it may remain in isolated pools or surface water may be absent.	<b>RIN</b>
		<b>Lower Perennial</b>	Lower Perennial.— The gradient is low and water velocity is slow. Some water flows throughout the year. The substrate consists mainly of sand and mud.	<b>RLP</b>
<b>P</b>	<b>Palustrine.</b> All non-tidal wetlands dominated by trees, shrubs, and persistent emergent vegetation. These wetlands may be isolated or connected wet areas and include marshes, swamps, and bogs.	<b>FO</b> rested Wetland	Wetlands dominated by trees greater than twenty feet in height (e.g., red maple, ash, spruce).	<b>RFO</b>
		<b>Scrub-Shrub</b>	Wetlands dominated by shrubs and tree saplings less than twenty feet in	<b>PSS</b>

			height (e.g., buttonbush, alders and red maple saplings).	
		<b>EMergent</b>	Wetlands dominated by erect, rooted herbaceous hydrophytes.	<b>PEM</b>
		<b>Open Water</b>	Wetlands associated with a pond or open stream.	<b>POW</b>

### Riverine Wetland System and Classes



## Palustrine Wetland System and Classes



In 1999, Pacific Habitat Services applied the Oregon Freshwater Wetland Assessment Methodology to the Springfield Wetland Inventory to determine which wetland sites are “significant” under state criteria. In June 2003, Pacific Habitat Services updated the 1999 OFWAM report to include newly identified wetlands and a complex of wetlands in Glenwood that came into Springfield’s UGB with the jurisdictional transfer of Glenwood from Eugene in 1999.

### Springfield Wetland Site Descriptions

Site: <b>M1</b>	Type: RLP	Acres: 4.94	OFWAM: Does Not Meet Significance Criteria
<b>Description:</b> Wetland M1 is 4.94 acres and classified as riverine lower perennial (RLP). The creek is a tributary of the Cedar Creek located on the north end of the UGB continuing outside of the study area. Hydrology was directly observed and soils were dark in color and contained many stones. Overstory dominant species include big leaf maple ( <i>Acer macrophyllum</i> ). The understory dominant species was trailing blackberry ( <i>Rubus ursinus</i> ) and common snowberry ( <i>Symphoricarpos albus</i> ). Herbaceous dominant species include willow herb ( <i>Epilobium</i> sp.)			

and a meadow-rue ( <i>Thalictrum</i> sp.). Wetland/upland boundary delineations were made by topographic and vegetation characteristics consistent with top-of-bank (TOB) limits for this waterway.					
Site: <b>M2 A, B, C</b>	Type: PEM	Acres: 17.65	OFWAM: Does Not Meet Significance Criteria		
<b>Description:</b> Wetland M2 is 17.65 acres and classified as a palustrine emergent wetland (PEM). The wetlands are located on industrial lands (Weyerhaeuser Company paper mill) and were formed as a result of past artificial diking for industrial sludge settlement ponds. Ponds have been recently drained (1991) and the dikes broken. No specific hydrology was present. Soils have been saturated with concentrated industrial sludge and were indeterminate as hydric soils. No overstory or understory was present. The herbaceous layer was dominated by beard-grass ( <i>Polygomon monspeliensis</i> ), pearly-everlasting ( <i>Anaphalis margaritacea</i> ), field mint ( <i>Mentha arvensis</i> ), common dandelion ( <i>Taraxacum officinale</i> ) and speedwell ( <i>Veronica</i> sp.). Wetland/upland boundaries were primarily delineated by topographic and vegetative differences.					
Site: <b>M3</b>	Type: PFO, PEM	Acres: 2.70	OFWAM: Does Not Meet Significance Criteria		
<b>Description:</b> Wetland M3 is 2.70 acres and classified partially as palustrine forested (PFO) and partially as PEM. The wetland is at the foot of Potato Hill on the north side. Hydrology was directly observed in 1993. Soils were dark in color with mottles. The overstory consisted of Oregon ash ( <i>Fraxinus latifolia</i> ) and black cottonwood ( <i>Populus trichocarpa</i> ). No understory was present. In PEM areas, herbaceous dominant species included velvet-grass ( <i>Holcus lanatus</i> ), creeping buttercup ( <i>Ranunculus repens</i> ), tall fescue ( <i>Festuca arundinacea</i> ), red fescue ( <i>F. rubra</i> ) and meadow foxtail ( <i>Alopecurus pratensis</i> ). Wetland/upland boundaries were determined where the vegetation changed and there were no indicators of hydrology.					
Site: <b>M4</b>	Type: PEM	Acres: 5.02	OFWAM: Special Interest for Protection		
<b>Description:</b> Wetland M4 is 5.02 acres and classified as PEM. The site is an abandoned drive-in theater and was highly disturbed from past agricultural uses and grading for the drive-in operation. The surrounding area has recently been mowed for fire control. The site was drained to the south and west by deep drainage ditches. The wetland is roundish in shape and located in the southwest corner of the site. Sparse Oregon ash and big leaf maple trees were scattered throughout the site. The herbaceous layer is dominated by tufted hair-grass ( <i>Deschampsia cespitosa</i> ), tall fescue, bulrush ( <i>Scirpus</i> sp.), camas ( <i>Camassia quamash</i> ), creeping buttercup and gumweed ( <i>Grindelia integrifolia</i> ). Four individual plants of rare Bradshaw's lomatium					

(*Lomatium bradshawii*) were observed on this site. Soils are dark in color with mottling and some surface staining indicating the seasonal presence of surface water in depressions. Hydrology was directly observed in May, 1993. Wetland/upland boundaries were determined where the vegetation changed and there were no indicators of hydrology.

Site: <b>M5</b>	Type: PFO, PSS PEM	Acres: 9.00	OFWAM: Locally Significant Wetlands		
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**Description:**  
Wetland M5 is 9.00 acres and classified as PFO, palustrine scrub-shrub (PSS) and PEM. The wetland is located at the foot of Potato Hill (south of Main Street and north of Potato Hill). Hydrology was directly observed in May, 1993. Soils were dark in color with mottles. Overstory dominant species include Oregon ash and black cottonwood. Understory dominants include Himalayan blackberry (*Rubus discolor*), rose (*Rosa* sp.) and Douglas' spirea (*Spiraea douglasii*). Dominant ground cover species included tuftedhair-grass, big-leafed lupine (*Lupinus polyphyllus*), red fescue, meadow foxtail, soft rush, creeping buttercup and sedge (*Carex* sp.). Wetland/upland boundaries were determined where the vegetation changed and there were no indicators of hydrology.

Site: <b>M6</b>	Type: PEM, PSS	Acres: 4.10	OFWAM: Does Not Meet Significance Criteria		
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**Description:**  
Wetland M6 is 4.10 acres and classified as PEM/PSS. There are several wetlands in this abandoned lot that were grouped together because of the closeness to each other and the highly disturbed history of this site. The wetlands are located in a disturbed field that contains the southern most section of the Q-Street Canal (an artificial canal) that runs through the center of the property in a north/south direction. This site has been disturbed from past agricultural and industrial uses. Direct hydrology was observed in the canal. Hydrology was assumed to be present in the small isolated wetland pockets based on hydrologic indicators, soils and vegetation. Soils are dark in color and contained a lot of bark (from an historic mill and log deck) and rocks (from fill). A small forested upland is located on the northeast corner the property. A scrub-shrub habitat area is located on the west side in a filled log pond. The dominant species included willow, Oregon ash, Himalayan blackberry, common snowberry, Douglas' spirea, red elderberry (*Sambucus racemosa*), meadow foxtail, velvet-grass, sedge species (*Carex* sp.), field mint, tufted hair-grass and Scouler's popcorn flower (*Plagiobothrys scouleri*). Wetland boundaries were determined using the methodology for disturbed sites. Wetland/upland boundaries were determined where the vegetation changed and there were no indicators of hydrology.

Site: <b>M7</b>	Type: PEM	Acres: 0.2	OFWAM: Does Not Meet Significance Criteria		
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<b>Description:</b>					
Wetland M7 is 0.2 acre and classified as PEM. The wetland is located east of Baldy View Lane. Hydrology was assumed based on hydrologic indicators, soils and vegetation. Soils were not sampled. A trace of soft rush ( <i>Juncus effusus</i> ) was observed growing in the wetland. This wetland is a small isolated depression in the middle of a mint field. This is an agricultural wetland.					
Site: <b>M8</b>	Type: PSS	Acres: 0.21	OFWAM: Does Not Meet Significance Criteria		
<b>Description:</b>					
Wetland M8 is 0.21 acre, determined through off-site methods and classified as PSS. The wetland is located on the west side of South 57th Street, north of Daisy Lane. Wetland boundaries were determined through use of black and white and infrared aerial photo interpretation.					
Site: <b>M10</b>	Type: RIN	Acres: 2.72	OFWAM: Does Not Meet Significance Criteria		
<b>Description:</b>					
Wetland M10 is 2.72 acres, determined partially through on-site methods and through off-site methods and is classified as riverine intermittent (RIN). The wetland is located near the Springfield Memorial Cemetery. Where off-site methods were used, wetland boundaries were determined through use of black and white and infrared aerial photo interpretation.					
Site: <b>M11</b>	Type: POW	Acres: 1.01	OFWAM: Does Not Meet Significance Criteria		
<b>Description:</b>					
Wetland M11 is 1.01 acre, determined through off-site methods and classified as palustrine open water (POW). The wetland is located on the south side of Hayden Bridge Road. Wetland boundaries were determined through use of black and white and infrared aerial photo interpretation.					
Site: <b>M12</b>	Type: PEM	Acres: 1.22	OFWAM: Does Not Meet Significance Criteria		
<b>Description:</b>					
Wetland M12 is 1.22 acres and classified as PEM. The wetland is an artificial canal located between residential subdivisions on the east and rural agricultural land on the west. Hydrology was directly observed in the canal. Soils were dark in color with mottles. There was no overstory or understory present. Ground dominant species included an unidentified mowed grass. Wetland/upland boundaries were determined where the vegetation changed and there were no indicators of hydrology.					

Site: <b>M14</b>	Type: PEM, PFO	Acres: 33.45	OFWAM: Locally Significant Wetlands		
<b>Description:</b> Wetland M14 is 33.45 acres and classified as PEM/PFO. The wetland is located on the east end of Springfield's UGB, just north of Main Street. The site is been historically used as a pasture for cattle and sheep. Hydrology was directly observed in an excavated drainage that traverses the wetland. Property owners stated that there is a flow control device somewhere upstream that controls the amount of water flowing through the drainage. Direct hydrology was observed in the canal and the palustrine areas of the wetland in May, 1993. Soils were dark in color with mottles. Overstory dominant species included Oregon ash, black cottonwood and cultivated apple ( <i>Pyrus malus</i> ). Understory dominant species include Douglas spirea ( <i>Spiraea douglasii</i> ) and baldhip rose ( <i>Rosa gymnocarpa</i> ). Ground cover dominant species included meadow foxtail, red fescue, creeping buttercup, soft rush, velvet-grass and birds-foot trefoil ( <i>Lotus corniculatus</i> ). Wetland/upland boundaries were determined where the vegetation changed and there were no indicators of hydrology.					
Site: <b>M15</b>	Type: PEM	Acres: 6.36	OFWAM: Does Not Meet Significance Criteria		
<b>Description:</b> Wetland M15 is 6.36 acres and classified as PEM. The site is in a grazed pasture. No understory or overstory were present. Herbaceous dominant species include tapered rush ( <i>Juncus acuminatus</i> ) and tall fescue. Soils were dark in color with mottles. Hydrology was assumed based on hydrologic indicators, soils, and vegetation. Wetland/upland boundaries were determined where the vegetation changed and there were no indicators of hydrology.					
Site: <b>M16 A, B, C, D, E</b>	Type: PFO, POW, RLP, RLP PEM	Acres: 13.96	OFWAM : Locally Significant Wetlands (A, B, C)		
<b>Description:</b> Wetland M16 is 13.96 acres and classified as PFO/POW/RLP/PEM. This wetland is called Irving Slough. The overstory in the forested areas was dominated by Oregon ash, black cottonwood and big leaf maple. The understory dominant species included trailing blackberry, Himalayan blackberry and willow. Ground cover dominant species included reed canarygrass ( <i>Phalaris arundinacea</i> ), common plantain ( <i>Plantago major</i> ), soft rush and meadow foxtail. Soils were dark in color and mottled. Hydrology was observed in May, 1993. The majority of the drainage has been excavated to create a well-defined channel and the limits in these areas are the top of the bank. The natural flow of this drainage has been altered: the area drains to					

the west from tax lot 20 1 and from tax lot 400 it drains to the southeast. Wetland/upland boundaries were determined where the vegetation changed and there were no indicators of hydrology.					
Site: <b>M17</b>	Type: PEM	Acres: 3.15	OFWAM: Does Not Meet Significance Criteria		
<b>Description:</b> Wetland M17 is 3.15 acres and classified as PEM. The wetland is located west of an abandoned drive-in theater. The wetland is elongate in shape and has a drainage ditch that has been excavated diagonally through the area and drains into a culvert on the north end. Some fill has been placed on the site. No dominant overstory or understory was present. The ground layer was dominated by tufted hair-grass, red fescue, common horsetail, creeping buttercup, bentgrass ( <i>Agrostis</i> sp.), Scouler's popcorn flower and meadow foxtail. Soils were dark in color with mottles. Hydrology was directly observed in May, 1993. Wetland/upland boundaries were determined where the vegetation changed and there were no indicators of hydrology.					
Site: <b>M18</b>	Type: POW, PSS	Acres: 40.72	OFWAM: Does Not Meet Significance Criteria		
<b>Description:</b> Wetland M18 is 40.54 acres, determined through off-site methods and classified as POW/PSS. The wetland is located adjacent to the McKenzie River. Wetland boundaries were determined through use of black and white and infrared aerial photo interpretation. DSL has performed an on-site determination of this site.					
Site: <b>M19</b>	Type: PFO	Acres: 0.37	OFWAM: Does Not Meet Significance Criteria		
<b>Description:</b> Wetland M19 is .037 acre and classified as PFO. The wetland is located north of Main Street and west of a recently developed subdivision. Hydrology was assumed based on hydrologic indicators, soils and vegetation. Soils were dark in color. The overstory was dominated by Oregon ash. No understory was present. Ground cover included tall fescue, meadow foxtail and sedge ( <i>Carex</i> sp.). Wetland/upland boundaries were determined where the vegetation changed and there were no indicators of hydrology.					
Site: <b>M20</b>	Type: RLP	Acres: 0.52	OFWAM: Locally Significant Wetlands		
<b>Description:</b>					

Wetland M20 is 0.52 acres and classified as RLP. The wetland is located adjacent to Maple Island Slough, a tributary of the McKenzie River, on the northwest end of Springfield's UGB. The surrounding land was planted with mint (*Mentha* sp.) fields and filbert orchards. Direct hydrology was observed in the canal where on-site evaluation was conducted. Soils were dark in color with mottles. Willow and Himalayan blackberries lined the banks of the creek with reed canarygrass and velvet-grass dominating the bottom of the canal. Wetland limits are contained within the well-defined banks. Water has been impounded by roads. Where off-site determination was necessary on the western portion, wetland boundaries were determined through use of black and white and infrared aerial photo interpretation.

Site: <b>M21</b>	Type: PEM	Acres: 0.39	OFWAM: Does Not Meet Significance Criteria		
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**Description:**  
Wetland M21 is 0.39 acre and classified as PEM. The wetland is located in a former river bed. Specific hydrology was observed, soils were saturated at 3 inches subsurface and were very dark brown in color with faint mottles present. No overstory or understory was present. Ground layer dominant species included reed canarygrass and curly dock (*Rumex crispus*). Wetland/upland boundaries were determined where the vegetation changed and there were no indicators of hydrology.

Site: <b>M23</b>	Type: PEM	Acres: 0.19	OFWAM: Does Not Meet Significance Criteria		
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**Description:**  
Wetland M23 is 0.19 acre and classified as PEM. The site is located south of Olympic and west of 28th Avenue. This wetland is located behind the remaining foundation of a house. A few Oregon ash trees were in the area. No understory was observed on this site. The ground cover was dominated by bulrush (*Scirpus* sp.). Soils were dark in color and mottled. Hydrology was assumed based on hydrologic indicators, soils and vegetation. Wetland/upland boundaries were determined where the vegetation changed and there were no indicators of hydrology.

Site: <b>M24</b>	Type: PEM	Acres: 0.51	OFWAM: Does Not Meet Significance Criteria		
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**Description:**  
Wetland M24 is a 0.51 acre and classified as PEM. The wetland is located in an abandoned field north of the Mohawk shopping center grocery store. Hydrology was assumed based on indicators such as the presence of hydric soils and drainage scars. Soils were dark in color. Part of the wetland boundaries were determined on-site, part were determined off-site. A few Oregon ash lined the south end of the drainage and a trace of Scot's broom (*Cytisus scoparius*) was also observed. There was scarce ground cover, but the species observed included velvet-grass, meadow foxtail and soft rush. Wetland/upland boundaries were determined where the vegetation changed and there were no indicators of hydrology. Note that the determination

was done both on-site and off-site.					
Site: <b>M25</b>	Type: PEM	Acres: 24.00	OFWAM: Does Not Meet Significance Criteria		
<b>Description:</b> Wetland M25 is 24.00 acres and classified as PEM. This wetland is called Q Street ditch. This wetland is an artificially created wetland that runs along the south side of Q Street. Direct hydrology was observed. Soils were dark in color and contained several stones and rocks. A few big leaf maples, western crabapples, Douglas spirea and Himalayan blackberries are growing on the banks. Herbaceous dominant species include common cattail ( <i>Typha latifolia</i> ), field mint and reed canarygrass. Parts of the Q Street ditch are lined with cement or rip-rapped. The wetland is well contained within the banks.					
Site: <b>M26</b>	Type: PFO, PEM, PSS	Acres: 1.85	OFWAM: Locally Significant Wetlands		
<b>Description:</b> Wetland M26 is 1.85 acres and classified as PFO/PEM/PSS. The wetland is located mostly in a park. Hydrology was directly observed in May, 1993. Soils were dark in color. Dominant overstory species was Oregon ash. Understory dominant species include Douglas spirea, Indian plum ( <i>Oemleria cerasiformis</i> ) and rose ( <i>Rosa</i> sp.). Herbaceous dominants include reed canarygrass, soft rush, Dewey's sedge ( <i>Carex deweyana</i> ), cleavers ( <i>Galium aparine</i> ), common horsetail and Canada thistle. Wetland/upland boundaries were determined where the vegetation changed and there were no indicators of hydrology.					
Site: <b>M27</b>	Type: PEM, PFO	Acres: 8.28	OFWAM: Does Not Meet Significance Criteria		
<b>Description:</b> Wetland M27 is 8.28 acres and classified as PEM/PFO. The wetland is in a stream channel originating on the north side of Highway 126 on-ramp to Interstate 5 (I-5) and continues along the east side of I-5 to N. 2nd Street where it makes a 45 degree turn to the east. Direct hydrology was observed. Soils were dark in color. Overstory species were found only along Highway 126 and I-5 and include Oregon ash and willow. Douglas spirea was present in the understory. Herbaceous dominant species include reed canarygrass, common cattail, slough sedge, meadow foxtail and red fescue. The wetland limits were well contained within the banks. Wetland/upland boundary delineations were made by topographic and vegetation characteristics.					
Site: <b>M28</b>	Type: PEM	Acres: 1.51	OFWAM: Special Interest		

			for Protection (potential mitigation site)		
<b>Description:</b>					
Wetland M28 is 1.51 acres and classified as PEM. The wetland is the Corps of Engineers' wetland mitigation project for the Gateway Mall . Ponding was present in the ditch from commercial and highway runoff. No overstory or understory was present. Herbaceous dominants were Canada thistle, reed canarygrass, common cattail and velvet-grass. Wetland/upland boundary delineations were made by topographic and vegetation characteristics.					
Site: <b>M29</b>	Type: PFO, PEM	Acres: 1.08	OFWAM: Special Interest for Protection		
<b>Description:</b>					
Wetland M29 is 1.08 acres and classified as PFO/PEM. The wetland is located north of Booth Kelly Road. Run-off is impounded onto the site by Booth Kelly Road. Hydrology was directly observed and soils were dark in color. The overstory consisted of willows and Oregon ash and the understory was dominated by Himalayan blackberry. The ground was covered with red fescue. Wetland/upland boundaries were determined where the vegetation changed and there were no indicators of hydrology.					
Site: <b>M30</b>	Type: PFO, PEM, POW	Acres: 6.49	OFWAM: Does Not Meet Significance Criteria		
<b>Description:</b>					
Wetland M30 was originally mapped at 6.49 acres (currently mapped at 6.49 acres) and classified as PFO/PEM/POW. Upon a follow-up site visit by DSL in May 1993, the wetland vegetative community in the western part was observed by DSL staff to be broader than initially mapped. The new owner of the western portion of M30 did not grant permission for a site evaluation, thus final determination of the wetland boundaries has not been made in this area. The wetland is located west of Potato Hill. The wetland is predominantly forested on the east side and a pasture containing a ditch and farm pond is on the west side. Hydrology was directly observed in the farm pond and in the forested area by a spring on the hillside. Water coming out of the spring flows downhill into a forested wetland shelf. Soils were dark in color with mottles. Overstory dominant specie was Oregon ash. There was a sparse understory, but a thick ground cover of meadow foxtail, velvet-grass, red fescue, slough sedge and stinging nettle ( <i>Urtica dioica</i> ). An abundance of Camas ( <i>Camassia quamash</i> ) was also observed by DSL and City staff. Wetland/upland boundaries were determined where the vegetation changed and there were no indicators of hydrology.					

Site: <b>M31</b>	Type: POW	Acres: 8.06	OFWAM: Does Not Meet Significance Criteria		
<b>Description:</b> Wetland M31 is 8.06 acres and classified as POW. The wetland is located in industrial lands that abut the continuation of the Irving Slough. Hydrology was observed in the pond. Wetland boundaries were determined at the high water mark.					
Site: <b>M32</b>	Type: PEM	Acres: 3.39	OFWAM: Does Not Meet Significance Criteria		
<b>Description:</b> Wetland M32 is 3.39 acres and classified as PEM. The wetland is located west of North 31st Street. The wetland is a deeply incised ditch with sparse emergent vegetation. It was excavated to drain the agricultural fields. Wetland boundaries are contained within the well-defined banks. DSL and the Army Corps of Engineers (ACOE) have claimed that this is not a jurisdictional wetland.					
Site: <b>M33 A, B</b>	Type: POW, PSS, RLP	Acres: 119.56	OFWAM: Does Not Meet Significance Criteria		
<b>Description:</b> Wetland M33 is 139.83 acres and is classified as POW/PSS/RLP. The wetland is located south of Highway 126 and north of the Weyerhaeuser warehouse. This is a composite wetland that includes the Weyerhaeuser log ponds. These are well-incised ponds that are vegetated with blackberries and horsetail along the banks. The ponds are not considered wetlands, but are "other waters". They are connected to the McKenzie River via a slough. Only the slough qualifies as wetland. Wetland boundary determinations were made at the top-of-bank.					
Site: <b>M34</b>	Type: PFO	Acres: 0.08	OFWAM: Does Not Meet Significance Criteria		
<b>Description:</b> Wetland M34 is 0.08 acre and is classified as PFO. This small wetland is located northeast of Booth Kelly Road and is a small isolated ash grove in an abandoned lot located behind two residential subdivisions. Lawn debris from these subdivisions has been dumped onto the lot. The wetland is vegetated with Oregon ash, baldhip rose, camas and bentgrass. The wetland limits were determined where the vegetation changed and there were no indicators of hydrology.					
Site: <b>M35</b>	Type: PEM	Acres: 4.91	OFWAM: Does Not Meet		

			Significance Criteria		
<b>Description:</b>					
Wetland M35 is 4.91 acres and is classified as PEM. It is located at the foot of Potato Hill. Part of this wetland was determined on-site and part was determined off-site because property owner access was not granted. The majority of this wetland is part of residential backyards. This dominant vegetation includes Oregon ash, meadow foxtail, red fescue, creeping buttercup and field mint. Hydrology was directly observed and soils were a dark color with mottles. The wetland limits were determined where the vegetation changed and there were no longer indicators of hydrology.					
Site: <b>M36</b>	Type: PEM	Acres: 0.75	OFWAM: Does Not Meet Significance Criteria		
<b>Description:</b>					
Wetland M36 is 0.75 acre and is classified as PEM. It is located at the foot of Potato Hill. The majority of this wetland is part of residential backyards. Hydrology was directly observed. The wetland limits were determined where the vegetation changed and there were no longer indicators of hydrology.					
Site: <b>M37</b>	Type: PEM	Acres: 0.40	OFWAM: Does Not Meet Significance Criteria		
<b>Description:</b>					
Wetland M37 is 0.0acre and is classified as PEM. It is located on the east side of Potato Hill. This wetland is a drainage ditch in a pasture that empties into a culvert on the north end. Hydrology was directly observed. The wetland limits were determined where the vegetation changed and there were no longer indicators of hydrology.					
Site: <b>M38</b>	Type: PEM, PFO	Acres: 0.08	OFWAM: Does Not Meet Significance Criteria		
<b>Description:</b>					
Wetland M38 is 0.08 acre and is classified as PEM/PFO. It is located at the foot of Potato Hill. This wetland is between a residential subdivision on the west and a driveway on the east. A ditch as been excavated parallel to the driveway to collect runoff from Potato Hill and the bordering subdivision. The ditch is vegetated with black cottonwood, Oregon ash, Himalayan blackberry, reed canarygrass, red fescue and creeping buttercup. Hydrology was directly observed. The majority of this wetland is part of residential sideyards and the emergent areas are regularly mowed. The wetland limits were determined where the vegetation changed and there were no longer indicators of hydrology.					
Site: <b>M39</b>	Type: PEM	Acres: 1.90	OFWAM: Does Not Meet		

			Significance Criteria		
<b>Description:</b>					
Wetland M39 is 1.90 acres and is classified as PEM. It is located on the northeast quadrant of the Main Street and NE 69th Avenue intersection. This wetland is a braided drainage within a grass pasture/field that empties into culverts on NE 69th Avenue. Prior land use has created incised ditches which cross the site to lead additional flow into the roadside drainages. Standing water was directly observed in depressional areas or the incised drainages. The wetland limits were determined where the vegetation changed and there were no longer indicators of hydrology.					
Site: <b>M40</b>	Type: RLP	Acres: 16.51	OFWAM: Does Not Meet Significance Criteria		
<b>Description:</b>					
Wetland M40 is 16.51 acres and classified as RLP. This riverine system includes the main Cedar Creek course and associated drainages/braids. Most of the system has been channelized by adjacent agricultural and residential land use. Wetland boundaries were determined onsite where the vegetation changed and there were no longer indicators of hydrology. Wetland limits are TOB.					
<b>Willamette Basin Wetlands</b>					
Site: <b>W1 A, B</b>	Type: RLP, PEM	Acres: 9.60	OFWAM: Does Not Meet Significance Criteria		
<b>Description:</b>					
Wetland W1 is 9.60 acres, determined through off-site methods and classified as RLP/PEM. This mostly riverine system includes the lower reach of the Mill Race and includes a small, isolated wetland adjacent to the channel. Wetland boundaries were determined through use of black and white and infrared aerial photo interpretation and are limited to TOB.					
Site: <b>W2</b>	Type: PEM	Acres: 0.90	OFWAM: Special Interest for Protection		
<b>Description:</b>					
Wetland W2 is 0.90 acres and classified as PEM. The site is a large pasture which contains a ephemeral wet area under moderate grazing pressure and has been partially filled. No understory or overstory was present. Herbaceous dominant species include field mint and meadow foxtail. Soils were dark in color and mottled. Hydrology was directly observed. The wetland limits were determined where the vegetation changed and there were no longer indicators of hydrology.					

Site: <b>W3</b>	Type: PFO, PEM, POW	Acres: 16.47	OFWAM: Does Not Meet Significance Criteria		
<p><b>Description:</b></p> <p>Wetland W3 is 16.47 acres and classified as PFO/PEM/POW. The wetland is known as Jasper Slough. Approximately 1.0 acre of the slough is actually located within the UGB. The overstory is dominated by Oregon ash and willow. The understory dominants include evergreen blackberry (<i>Rubus laciniatus</i>) and Douglas spirea. Herbaceous dominant species include Oregon iris (<i>Iris tenax</i>) reed canarygrass, duckweed (<i>Lemna minor</i>) and bittersweet nightshade (<i>Solanum dulcamara</i>). Soils were dark in color with mottles. Hydrology was assumed based on hydrologic indicators, soils and vegetation. Sections of the slough have been dewatered, while others are naturally perennially wet. Wetland/upland boundary delineations were made by topographic characteristics where the vegetation changed and where there were no longer indicators of hydrology.</p>					
Site: <b>W4 A, B</b>	Type: PFO, PEM	Acres: 0.97	OFWAM : Locally Significant Wetlands (A)		
<p><b>Description:</b></p> <p>Wetland W4 is 0.97 acre and classified as PFO/PEM. The site is adjacent to the Middle Fork Willamette River in the southern end of Dorris Ranch. The overstory is dominated by black cottonwood. The understory dominant species was evergreen blackberry. Herbaceous dominants include reed canarygrass, slough sedge and spike rush. Soils were dark in color with mottles. Hydrology was assumed based on hydrologic indicators, soils and vegetation. The wetland limits were determined where the vegetation changed and there were no longer indicators of hydrology.</p>					
Site: <b>W5</b>	Type: POW, PFO, PEM	Acres: 5.70	OFWAM: Does Not Meet Significance Criteria		
<p><b>Description:</b></p> <p>Wetland W5 is 5.70 acres and classified as POW/PFO/PEM. The site is located east of Harbor Drive and south of Dorris Street on the Dorris Ranch. The overstory is dominated by red-osier dogwood and Oregon ash. The understory dominant species include common snowberry and willow. Herbaceous dominant species include American speedwell (<i>Veronica americana</i>), Dewey's sedge, cow parsnip (<i>Heracleum lanatum</i>), bittersweet nightshade and Pacific water-parsley. Soils were dark in color with mottles. This wetland contains a pond connected to a forested wetland corridor that is isolated from the Willamette River by development. Hydrology was directly observed in the pond and hydrology was reconfirmed in the forested</p>					

area in May 1993. The wetland limits were determined where the vegetation changed and there were no longer indicators of hydrology.					
Site: <b>W8</b>	Type: POW	Acres: 1.22	OFWAM: Does Not Meet Significance Criteria		
<b>Description:</b> Wetland W8 is 1.22 acres, determined through off-site methods and classified as POW. The wetland is located along the Mill Race. Wetland boundaries were determined through use of black and white and infrared aerial photo interpretation.					
Site: <b>W9</b>	Type: PEM	Acres: 0.22	OFWAM: Does Not Meet Significance Criteria		
<b>Description:</b> Wetland W9 is 0.22 acre and classified as PEM. The site is a pasture that has been partially filled. The overstory is dominated by black hawthorn ( <i>Crataegus douglasii</i> ). The dominant understory species is evergreen blackberry. The herbaceous dominant species is spreading bentgrass, common cattail and dotted smartweed ( <i>Polygonum punctatum</i> ). Soils were dark in color and gleyed. Hydrology was assumed based on hydrologic indicators, soils and vegetation. The wetland limits were determined where the vegetation changed and there were no longer indicators of hydrology.					
Site: <b>W10</b>	Type: PSS	Acres: 2.25	OFWAM: Does Not Meet Significance Criteria		
<b>Description:</b> Wetland W10 is 2.25 acres and classified as PSS. The wetland is the Mill Race and connects with the Willamette River. This section of the Mill Race has been heavily disturbed from development along both sides. Some sections of the banks have been rip-rapped. Overstory dominant species include black cottonwood and willow. Himalayan blackberry and reed canarygrass line the banks of the slough. The soils were dark brown and saturated. Standing water was observed in the Mill Race. Very well-defined banks. Wetland limits are well-contained within the banks.					
Site: <b>W11</b>	Type: PFO	Acres: 0.67	OFWAM: Does Not Meet Significance Criteria		
<b>Description:</b> Wetland W11 is 0.67 acres and classified as PFO. Undisturbed forested park setting.					
Site: <b>W12</b>	Type: PFO	Acres: 1.42	OFWAM: Locally Significant		

Wetlands					
<b>Description:</b> Wetland W12 is 1.42 acres and classified as PFO. This wetland is located in Island Park in a relatively undisturbed, forested area adjacent to the McKenzie River. Overstory dominant species is big leaf maple. Sword fern occurs in the understory along the forested western portion of the banks. The herbaceous layer is dominated by slough sedge. The soils were dark with mottles and saturated. The wetland limits were determined where the vegetation changed and there were no longer indicators of hydrology.					
Site: <b>W13</b>	Type: PFO	Acres: 2.24	OFWAM: Does Not Meet Significance Criteria		
<b>Description:</b> Wetland W13 is 2.24 acres and classified as PFO. This wetland is the Patterson Slough which is located in a relatively undisturbed area adjacent to the Willamette River. Hydrology was directly observed. The soils here were dark in color and saturated. Overstory dominant species include big leaf maple and black cottonwood. Trailing blackberry and common snowberry dominate the understory along the forested the banks. The herbaceous layer is dominated by meadow-rue. The wetland limits were determined where the vegetation changed and there were no longer indicators of hydrology.					
Site: <b>W14</b>	Type: PEM	Acres: 0.97	OFWAM: Does Not Meet Significance Criteria		
<b>Description:</b> Wetland W14 is 0.97 acres and classified as PEM. The wetland is located west of Prescott Lane, in a highly disturbed field that was formally used for agricultural purposes. The wetland is dominated by the following: Douglas spirea, Himalayan blackberry, rose, trailing blackberry, tall fescue, meadow foxtail, bluegrass species, reed canarygrass, velvet-grass and cleavers. Soils were dark in color with mottles. Hydrology was directly observed in May 1993. The wetland limits were determined where the vegetation changed and there were no longer indicators of hydrology.					
Site: <b>W15</b>	Type: PFO	Acres: 0.79	OFWAM: Does Not Meet Significance Criteria		
<b>Description:</b> Wetland W15 is 0.79 acre and classified as PFO. This is an isolated pocket in an undisturbed riparian swale along the Willamette River. Overstory included red alder ( <i>Alnus rubra</i> ) and black cottonwood. The understory is dominated by trailing blackberry. The dominant ground cover included slough sedge and velvet-grass. The wetland limits were determined where the vegetation changed and there were no longer indicators of hydrology.					

Site: <b>W16</b>	Type: PFO	Acres: 1.46	OFWAM: Locally Significant Wetlands		
<b>Description:</b> Wetland W16 is 1.46 acre and classified as PFO. This is a seasonal forested drainage north of Dorris Ranch, that runs along property boundaries downhill to the Willamette River. Part of the wetland limits were determined on-site and part were determined off-site using infra-red aerial photographs. The dominant vegetation along the swale was Oregon ash, rose, camas, meadow foxtail, and red fescue. The wetland limits were determined at the boundary of the relatively incised swale where the vegetation changed and there were no longer indicators of hydrology.					
Site: <b>W17</b>	Type: RLP	Acres: 8.35	OFWAM: Does Not Meet Significance Criteria		
<b>Description:</b> Wetland W17 is 8.35 acres and classified as RLP. This is an extensive riparian/wetland slough (Jasper Slough) drainage connecting the Mill Race to the Willamette River. The dominant vegetation along the wetland/riparian corridor was black cottonwood, Oregon ash, Sitka willow, Pacific willow, hazelnut, Douglas spirea, snowberry, Himalayan blackberry, common clover, Kentucky bluegrass, velvet-grass, meadow foxtail and tall fescue. The wetland limits were generally determined where the vegetation changed and there were no longer indicators of hydrology. In disturbed areas, a TOB determination was made where either filling or agricultural land use has encroached and incised the braided slough channels.					
Site: <b>W18 (A-D)</b>	Type: PEM, PFO	Acres: 145.15	OFWAM: Locally Significant Wetlands (A)		
<b>Description:</b> Wetland W18 (A-D) is 145.15 acres and classified as PEM/PFO. This is a large complex of wetlands located between hillside drainages and minor topographical folds in the Natron area, southeast of Springfield. All drainages flow in a generally southerly course into the Willamette River via culverts or as groundwater beneath the Jasper-Lowell Hwy. Dominant vegetation consisted of Oregon ash, black cottonwood, Kentucky bluegrass, crested dogtail, common plantain, Indian plum, Siberian candyflower, piggy-back plant, tall fescue, sweet vernal grass, meadow foxtail, suckling clover and white clover. Wetland limits were determined onsite where the vegetation changed and there were no longer hydrological indicator					
Site: <b>W19</b>	Type: POW,	Acres:	OFWAM: Locally		

	PFO	41.65	Significant Wetland		
<b>Description:</b>					
Wetland W19 is 41.65 acres and classified as POW/PFO. The wetlands were determined through on- and off-site methods. The wetlands are adjacent to the Springfield sheriff's pistol range and the portion of the Mill Race that has been widened to create a log pond for a mill. Overstory dominant species --- Understory dominant was ---. Herbaceous dominants were ---- -). Soils were dark in color with mottles. Hydrology was indicated by the dominance of hydrophytic vegetation and presence of surface water in depressions. The wetland limits were determined where the vegetation changed and there were no longer indicators of hydrology and through use of black and white and infrared aerial photo interpretation and are limited to TOB.					
Site: <b>W20</b>	Type: PSS, PAB	Acres: 3.39	OFWAM: Locally Significant Wetland		
<b>Description:</b>					
Wetland W20 is 3.39 acres and classified as PSS/PAB. The wetland is adjacent to Glenwood Slough and the railroad tracks. Overstory dominant species include Oregon ash, Oregon white oak ( <i>Quercus garryana</i> ) and big leaf maple. Understory dominant was willow ( <i>Salix</i> sp.). Herbaceous dominants were yellow flag iris ( <i>Iris pseudoacorus</i> ), spreading rush ( <i>Juncus patens</i> ) and marsh horsetail ( <i>Equisetum arvense</i> ). Soils were dark in color with mottles. Seasonal hydrology was indicated by the dominance of hydrophytic vegetation and presence of surface water in depressions. The wetland limits were determined where the vegetation changed and there were no longer indicators of hydrology.					

The tables below summarize the size and classification of the wetland areas within Springfield's Urban Growth Boundary.

#### McKenzie River Basin Wetlands

Site Number	OFWAM Significance	Acres	USFWS Classification(s)
M1		4.94	RLP
M2		3.12	PEM
M3		2.73	PEM/PFO
M4	Locally Significant Wetlands Special Interest for Protection	5.02	PEM
M5	Locally Significant Wetlands	9.13	PFO/PSS/PEM
M6		4.05	PEM/PSS
M7		0.2	PEM
M8*		0.2	PSS
M10*		2.72	RIN
M11*		1.01	POW
M12		1.22	PEM

Site Number	OFWAM Significance	Acres	USFWS Classification(s)
M14	Locally Significant Wetlands	33.45	PEM/PFO
M15		6.41	PEM
M16	Locally Significant Wetlands	8.44	PFO/POW/RLP/PEM
M17		3.15	PEM
M18*		40.72	POW/PSS
M19		0.37	PFO
M20	Locally Significant Wetlands	0.52	RLP
M21		0.39	PEM
M22		0.1	PEM
M23		0.19	PEM
M24		0.51	PEM
M25		24.0	PEM
M26	Locally Significant Wetlands	1.85	PFO/PEM/PSS
M27		8.28	PEM/PFO
M28	Special Interest for Protection-Mitigation Site	1.51	PEM
M29	Locally Significant Wetlands Special Interest for Protection	1.08	PFO/PEM
M30		6.49	PFO/PEM/POW
M31		8.06	POW
M32		3.39	PEM
M33		13.75	POW/PSS/RLP
M34		0.8	PFO
M35		4.91	PEM
M36		0.75	PEM
M37		0.4	PEM
M38		0.08	PEM/PFO
M39*		1.88	PEM
M40		16.51	RLP
		222.33	

### Willamette River Basin Wetlands

Site Number	OFWAM Significance	Acres	USFWS Classification
W1*		4.14	RLP
W2	Locally Significant Wetlands, Special Interest for Protection	0.90	PEM
W3		1.27	PFO/PEM/POW
W4	Locally Significant Wetlands	0.97	PFO/PEM
W5		5.6	POW/PFO/PEM
W6		5.63	PFO
W7*		36.02	POW
W8*		1.22	POW
W9		0.22	PEM
W11		0.67	PSS
W12	Locally Significant Wetlands	1.42	PFO
W10		2.25	PSS

<b>Site Number</b>	<b>OFWAM Significance</b>	<b>Acres</b>	<b>USFWS Classification</b>
W13		2.24	PFO
W14		0.97	PEM
W15		0.79	PFO
W16	Locally Significant Wetlands	1.46	PFO
W17		17.21	RLP
W18 A-C	Locally Significant Wetlands	131.99	PEM/PFO
		214.97	

**Wildlife Habitat Inventory Methodology**

**Eugene-Springfield Metropolitan Natural Resources Study**

Compiled by Esther Lev, 1988  
Data forms updated by Eric Wold, City of Eugene, April 2001

This wildlife habitat inventory methodology can be divided into two steps:

- Site Selection
- Data Collection and Numerical Rating System

### ***SITE SELECTION***

The general location of all wetland/pond, riparian corridor and upland areas to be inventoried were mapped at a scale of 1"=2000. Several sources of information were used to determine site selection. These information sources include:

- The 1"=2000 scale vegetative cover type map from the Metropolitan Plan Natural Assets and Constraints Working Paper
- U.S. Fish and Wildlife Service National Wetlands Inventory
- Aerial photography
- Local experts in wildlife biology, hydrology and landscape architecture
- Storm drainage plans
- Other locally-generated natural resource-related documents
- Community input from neighborhood and special interest groups

The biologists who conducted the inventory briefly visited each site and further refined the map before actually applying the methodology.

### ***DATA COLLECTION AND NUMERICAL RATING SYSTEM***

The following wildlife habitat data collection and numerical rating system is a modification of one that was originally developed for use in the City of Beaverton in 1983 as part of their statewide planning Goal 5 update. It was designed by a technical advisory team consisting of staff from the City of Beaverton, Portland Audubon Society, EPA, Corps of Engineers, U.S. Fish and Wildlife Service, Oregon Department of Fish and Wildlife and the Wetlands Conservancy. Since that time, it has been used in Washington County, Gresham and in the entire Portland metropolitan area, including the Willamette Greenway. It is currently being considered for use in Tualatin, Tigard and Lake Oswego.

Each time this methodology has been used, it has been slightly modified and refined to address the specific needs of local jurisdictions and DLCDC. Considering the degree of detail that LCDC requires and time, money and state-of-the-art constraints, a broad spectrum of professional biologists agree that this methodology works the best, allowing for revisions and changes.

The following is a discussion of that methodology as it was applied in the Eugene-Springfield metropolitan area. The methodology involved identifying and evaluating parameters that make sites good or potentially good wildlife habitat areas. There are two parts to the methodology:

- A narrative description of the site
- A numerical rating of various wildlife habitat parameters

**Narrative Description**

A narrative description of the site, including weather, topography, vegetation, wildlife habitat function, human use and management potential, were completed at each site using a standard inventory form (see Figure 1).

**Numerical Rating**

The numerical rating system (Figure 2) reviewed each wetland, pond, river, creek, riparian area and upland in terms of its potential for wildlife. The system is based on the fact that all wildlife has three basic requirements for survival: food, water and cover.

Each site was evaluated in terms of relative quantity, quality, diversity and seasonality of the components that appear at the site. Also considered were the degree and permanence of physical and human disturbance, proximity to other water-related and upland areas, and unique features including wildlife, flora and rarity of habitat.

This rating system was meant to assess the relative values of water areas and upland areas. It was not intended to provide a comprehensive analysis of each site. Information derived from the narrative descriptions and rating sheets should be used in tandem with an emphasis placed on the narrative descriptions.

***DISCUSSION OF THE RATING SHEET***

The form is divided into three parts. The first presents general information about the site to aid in identification. Included here are the Unit No., Location, Sq. Ft., Score and Comments.

Unit No.	A space is provided for the observer to label each site with an individual identification Number.
Location	Space to briefly describe the site location
Sq. Ft.	The approximate square footage could be noted here. This was not used for this inventory.
Score:	The cumulative score after the rating sheet is filled out is noted here. The scoring is done while in the field, trying to rate as many sites as possible per day
Comments	This space is used for additional remarks on the reasoning behind specific numeric ratings or for potential of the site or rehabilitation, etc.

The second part consists of the water, food and cover values (referred to as components). Each of these components is further divided into a number of aspects:

## Water

Four aspects of the water regime on a site were included on the rating form: Quantity and Seasonality, Quality, Proximity to Cover and Diversity. All of these factors play an important role in the site's significance to wildlife.

It is also important to note that the relative value of these aspects compared to the other components (food and cover) were higher. The total number of possible points from the water component was 30, while the highest totals for food and cover were 20 points each. The reason for this weighting of the relative value of the water component was that wetlands and riparian zones are of critical importance to all wildlife habitat species and the only place where some species can survive and reproduce. Therefore, it is possible that a site with water only and relatively few other components would rank higher than an upland site with the same food and cover values.

Seasonality: This aspect refers to the amount of water available on site and its seasonality. Seasonal water sources were given a value of 4; perennial water sources (available year-round) were given a value of 8 because year-round water supply is significantly more important to wildlife.

Quality: Stagnant water sources were given a value of 0, seasonally flushed a value of 3, and continually flushed a value of 6. It was initially desired to have some value included reflecting the quality of the water on the site, However, actual water quality analysis were not feasible. Therefore, an indirect measure of quality, "flushing", was selected. In actuality, even stagnant water has some wildlife habitat value, but it was decided to assign stagnant water a value of 0, as seasonally flushed or continually flushed water has higher value for wildlife and because the presence of stagnant water indicates the presence of other factors which often result in lower wildlife values.

Proximity to Cover: Wildlife will use water more if it is close to vegetative cover. This allows escape from predators and protection from weather extremes. The closer and more dense the cover, the more important the water source to many species. Dense cover immediately adjacent to a water source gave the site a value of 8, nearby cover a value of 4, and no cover a value of 0.

Diversity: A site with a mixture of wetland, stream and open pond or lake has higher wildlife value than a site with only one of these features. The ranking ranged from a low of 2 (one water source only) to 8 (three or more water sources present). Only five sites received a value of 8. The vast majority had no source or only one, the Willamette River.

## ***Food***

Food is a basic requirement for any organism. Wildlife species cannot survive in one area for any appreciable period of time without food. The greater the variety and quantity of food, the greater the potential for serving the needs of more wildlife species. The three aspects included under food are Variety, Quantity and Seasonality, and Proximity to Cover.

Variety: The variety of food on a site was rated from 8 (high) to 0 (low).

Quantity: This aspect measures the amount of food and its availability. Sites having large quantities of food available received a value of 8, and sites with little or no food available received a value of 0.

Seasonality: This aspect measures the year-round availability of food. Sites which provide food year-round received a value of 4, and those sites providing limited food seasonally received a value of 2.

### *Cover*

The aspects of cover included here (structure, variety, nesting, escape and seasonality) attempt to describe the physical environment of the site from a number of perspectives that are important to wildlife.

Structural Diversity: What was looked for in this category was the vertical stratification of the vegetation on a site. That is, is there only one layer of vegetative cover (e.g., lawn or one layer of shrub, such as Himalayan blackberry) or are there two, three or more layers. The most diverse structural system in our area would be multi-layered, with a ground layer of herbaceous vegetation (grasses, wild flowers, etc.), a second layer consisting of shrubs (Himalayan blackberry, Snowberry, Oregon Grape, Sword Fern, etc.), perhaps another layer of taller plants (Red and Blue Elderberry, Indian plum, red Osier Dogwood), a short tree layer (Flowering Dogwood, Hazelnut, saplings of taller species), and finally the tall canopy layer (Douglas Fir, Western Hemlock, Big-Leaf Maple, Black Cottonwood, Oregon White Ash, Oregon White (Garry) Oak, etc.). The more layers present, the greater the surface area for feeding, traveling and breeding available to a wider diversity of wildlife species. Values range from 8 for high structural diversity to 0 for low or no structural diversity.

Variety: Within any one layer or when considering all layers, if structural diversity is high there will be more variety of cover. Variety of cover is important from cover, feeding and reproductive standpoints. The greater the variety of cover, the more important the habitat. For example, a forested wetland with a mixture of rushes, sedges, smartweed, spirea and willows will be a much more important wildlife habitat area than a wetland with a monoculture of reed canary-grass. Variety values ranged from 8 for high variety to 0 for no or low variety.

Seasonality: As with water and food, a habitat site will be less important to wildlife if that component is not present year-round. Regarding cover, this relates primarily to whether all of the vegetation is deciduous or evergreen. If there is some evergreen vegetation or if the deciduous vegetation retains some of its canopy, the site would receive a higher value. Vegetative cover available year-round received a value of 4, limited cover a value of 2, and seasonal coverage a value of 0.

The third part of the form includes values in addition to food, water and cover. The components examined include disturbance, interspersion and unique features:

## Disturbance

Disturbance is examined from two perspectives – physical and human.

Physical: This category was used to assign a higher value to those sites with little disturbance and to reflect the fact that the removal or disturbance of physical components (food, water, cover) is detrimental to wildlife. However, it is also recognized that such a disturbance could be relatively short-lived (e.g., the placement of a sewerline down a stream channel) while others are long-term or permanent. An undisturbed site received a maximum value of 4, with those sites with temporary physical disturbances receiving a value around 2, and those areas disturbed permanently or long-term a value of 0.

Human: Human and human-related (domestic animal) disturbances can be very detrimental to wildlife. Even though an area is highly disturbed from a physical perspective, it may receive little human use. A site could theoretically receive a 0 for low human disturbance. The potential value ranges from 4 for low human disturbance to 0 for high human disturbance.

## Interspersion

Habitats are important to one another in the sense that a number of different habitats adjacent to one another can provide an overall diversity of vegetative cover, food, and often water. Therefore, an isolated site surrounded by pavement, buildings, empty fields, etc., would receive a lower interspersion value than would be the case if the site were surrounded by other habitat types, such as wetlands (emergent, forested, shrub), upland forests, shrubbery areas or meadows. If the surrounding sites were similar in make-up or represented only one habitat type, the site would receive a lower interspersion value than one surrounded by a variety of habitat types. The interspersion ranged from 6 for high interspersion to 0 for low interspersion.

## Unique Features

This component is intended to take into account other factors which might make the site unique to plants, animals or humans. Aspects included were wildlife, flora, scenic quality, rarity of habitat and educational potential.

Wildlife and Flora: If there was a particular species of plant or wildlife which was sensitive or unique in some way, then the site would receive a value ranging from 10 to 4, depending on how unique it was. For example, a site with Wapato growing on it would receive a 4 since Wapato has been virtually eliminated from along the Willamette River in Portland due to flood plain alteration and wetland destruction. A site with a heron rookery would receive a 4 for a similar reason.

## Ranking the Sites

Each wetland/pond, riparian corridor and upland site received an overall value or score for wildlife habitat by adding up the points on the rating sheet.

## Wildlife Habitat Assessment Scoring Sheet

### Eugene-Springfield Metropolitan Natural Resources Study

Observer Name: \_\_\_\_\_ Date of Field Visit: \_\_\_\_\_

Site #: \_\_\_\_\_ Location: \_\_\_\_\_

Comments: \_\_\_\_\_

	Component	Range of Values	Score	Comments
WATER	Seasonality	Seasonal 4 _____ Perennial 8		
	Quality	Stagnant _____ Seasonally Flushed _____ Continually Flushed 0 _____ 3 _____ 6		
	Proximity to cover	None _____ Nearby _____ Immediately Adjacent 0 _____ 4 _____ 8		
	Diversity (streams, ponds, wetlands)	One present _____ Two present _____ Three present 2 _____ 4 _____ 8		
FOOD	Variety	Low _____ Medium _____ High 0 _____ 4 _____ 8		
	Quantity	Low _____ Limited _____ Year Round 0 _____ 4 _____ 8		
	Seasonality	None _____ Limited _____ Year Round 0 _____ 4 _____ 8		
COVER	Structural Diversity	Low _____ Medium _____ High 0 _____ 4 _____ 8		
	Variety	Low _____ Medium _____ High 0 _____ 4 _____ 8		
	Seasonality	Low _____ Medium _____ High 0 _____ 2 _____ 4		
DISTUR- BANCE	Physical	High _____ Medium _____ Low 0 _____ 2 _____ 4		
	Human	High _____ Medium _____ Low 0 _____ 2 _____ 4		
UNIQUE FEATURES	Wildlife	Not Unique _____ Somewhat Unique _____ Very Unique 0 _____ 2 _____ 4		
	Flora	Not Unique _____ Somewhat Unique _____ Very Unique 0 _____ 2 _____ 4		

	Rarity of Habitat Type	Not Rare 0 _____	Somewhat Rare 2 _____	Very Rare 4 _____		
	Interspersion	Low 0 _____	Medium 3 _____	High 6 _____		

**TOTAL SCORE:** \_\_\_\_\_

**Wildlife Habitat Assessment Narrative Sheet**  
Eugene-Springfield Metropolitan Natural Resources Study

Location: \_\_\_\_\_

Observer: \_\_\_\_\_

Date: \_\_\_\_\_

**Weather**

Precipitation (yes, no, type):

Wind:

Percent cloud cover:

Temperature:

**Physical Parameters**

General topography:

Degree and orientation of slope:

Water features (pond, lake, stream stagnant, etc.):

Percent of silt inundated by water:

Major structures, roads:

**Vegetation**

Description of vegetation types, including species list, communities, percent canopy closure (tree, shrub, herb), number and size of snags, seral stage, general health and vitality, percent open water/percent emergent vegetation at inundated areas:

## **Wildlife**

Species observed (herps, fish, birds, mammals):

Species not observed but known to be present, and sources of information:

General description of habitat function (food sources, roosting, perching, nesting, etc.):

## **Human Use**

List human uses and use by domestic animals, and proximity to residential area. Discuss compatibility and conflicts with natural resources and interspersions with other natural areas.

**Management/Potential**

A brief statement on enhancement, maintenance, or compatible uses and development:

**Additional Comments:**

Unique features, rare, threatened, or sensitive species:

## Assumptions Used For Economic Analysis

- Vacant lands were determined using Assessor's Property Class numbers: 100, 190, 200, 300, 340, 400, 700, and 740. The Assessor's property class codes provide information about whether a parcel is developed or vacant. The Assessor's estimated valuation of parcels of land and the improvements on those parcels also provides information about whether a property is developed or vacant. If the value of improvements on a parcel of land is "0," the land is considered vacant.
- Redevelopable lands were determined using the Assessor's land and improvement values for developed property. If Assessor's valuation of an improvement on a parcel of land is worth less than 25% of the value of the land itself, the land is considered a likely candidate for future redevelopment.
- Underutilized land was computed by identifying existing single family homes located on lots that are ½ acre or larger. Leaving ¼ acre for the existing home, it is assumed that in the future, land in excess of that could be subdivided and additional residential units built. The figures above show total acreage within the impact area and the acreage of the parcels associated with the resource sites.
- Developed properties were determined using the Assessor's property class numbers: 101, 106, 109, 121, 201, 301, 341, 401, 409, and 781.
- Potential dwelling units were computed using the assumption that single family residential will build out at 5 units per gross acre, and multi-family will build out at 12 units per gross acre.
- The employees per acre ratios for commercial and industrial zoning districts were derived from the Springfield Commercial Lands Study (pg. B-4) that was adopted in 2000. These ratios were used to estimate the number of employees (jobs) that might be located within the acreage within protected resource sites and their respective impact areas.

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The Springfield Natural Resources Study made extensive use of materials and analysis that was prepared by the City of Portland as part of its Healthy Portland Streams project that was published in 2001. In particular, background information describing riparian functions and research on the setbacks necessary to preserve riparian functions was included in this Study.

The Study also made extensive use of the analysis found in the “Medford Locally Significant Wetlands Conflicting Use and ESEE Analysis,” Revised Draft of October 31, 2003. The report was prepared for the City of Medford by Winterbrook Planning. The basic format of the ESEE analysis as well as the discussion of the generic ESEE impacts of development on resource areas was taken directly from the Medford study.

### Literature Cited

Allaby, Michael. 1996. *Basics of Environmental Science*. Routledge Publishing, New York.

Bayley, Peter B. 1991. The Flood Pulse Advantage and the Restoration of River-Floodplain Systems. *Regulated Rivers: Research and Management*, 6:75-86.

Beauchamp, D.A., M.F. Shepard, and G.B Pauley. 1983. Species Profiles: Life Histories and Environmental Requirements of Coastal Fishes and Invertebrates (Pacific Northwest) – Chinook Salmon. *U.S. Fish and Wildlife Service Biological Report 82(11.6)*. U.S. Army Corps of Engineers, TR EL-82-4. 21pp. Available online from the USGS National Wetlands Research Center at: <http://www.nwrc.gov/publications/specintro.html>.

Beechie, Timothy J. and Thomas H. Sibley. 1997. Relationship Between Channel Characteristics, Woody Debris, and Fish Habitat in Northwestern Washington Streams. *Transactions of the American Fisheries Society* 126:217-229.

Beschta, R. L. and J. Boone Kauffman. 2000. Restoration of Riparian Systems-Taking a Broader View. Pages 323-328 in P. J. Wigington and R. L. Beschta, eds. *Riparian Ecology and Management in Multi-Land Use Watersheds*. American Water Resources Association, Middleburg, Virginia.

Bilby, Robert E. and James W. Ward. 1989. Changes in Characteristics and Function of Woody Debris with Increasing Size of Streams in Western Washington. *Transactions of the American Fisheries Society* 118: 368-78.

Black, Peter E. *Watershed Hydrology*. Prentice Hall: Englewood Cliffs, New Jersey.

Bledsoe, B. P., and Watson, C. C. 2001. Effects of Urbanization on Channel Instability. *Journal of the American Water Resources Association* 37 (2): 255.

Booth, Derek B. 1991. “Urbanization and the natural drainage system – impacts, solutions, and progress.” *Northwest Environmental Journal* 7 (1): 93-118.

Brown T.G. and Hartman, G.F. 1988. Contribution of Seasonally Flooded Lands and Minor Tributaries to the Production of Coho Salmon in Carnation Creek, British Columbia. Department of Fisheries and Oceans, Fisheries Research Branch, Pacific Biological Station Nanaimo, British Columbia V9R 5K6, Canada.

Brown, G. W. and Krygier, J. T. 1970. Effects of Clear-cutting on Stream Temperature. *Water Resources Research* 6 (4):1133-1139.

Budd, William W., Paul L. Cohen, Paul R. Saunders, and Frederick R. Steiner. 1987. Stream Corridor Management in the Pacific Northwest: I. Determination of Stream Corridor Widths. *Environmental Management* 11(5): 587-97.

Castelle, A.J., A.W. Johnson, and C. Conolly. 1994. Wetland and Stream Buffer Size Requirements-A Review. *Journal of Environmental Quality* 23:878-82.

Cederholm, C.J. and Scarlett, W.J. 1982. Seasonal Immigrations of Juvenile Salmonids into Four Small Tributaries of the Clearwater River, Washington, 1977-1981. Pages 98-110 in E.L. Brannon and E. O. Salo, eds. *Proceedings of the Salmon and Trout Migratory Behavior Symposium*. University of Washington, School of Fisheries, Seattle, Washington.

City of Portland, Portland Parks and Recreation, and the Bureau of Planning. 1995. *Forest Park Natural Resources Management Plan*. Portland, Oregon.

Cummins, Kenneth C. 1974. Structure and function of stream ecosystems. *BioScience* 24: 631-641.

Dykaar, Bruce B, and Wigington, P. J. Jr. 2000. Floodplain Formation and Riparian Ecosystem Development on the Willamette River, Oregon, USA. *Environmental Management* 25 (1):82-104.

Erman, Don C., J. Denis Newbold, and Kenneth B. Roby. 1977. *Evaluation of Streamside Bufferstrips for Protecting Aquatic Organisms*. California Water Resources Center: Davis, California.

FEMAT. 1993. Forest Ecosystem Management: An Ecological, Economic, and Social Assessment. Interagency SEIS Team: Portland, Oregon.

Ferald, Alexander, Dixon Landers, and P.J. Wigington. 2000. Water Quality effects of hyporheic processing in a large river. Pages 167-172 in P. J. Wigington and R.L. Beschta, eds. *Riparian Ecology and Management in Multi-Land Use Watersheds*. American Water Resources Association, Middleburg, Virginia.

Fischer, R. A., C. O. Martin, and J. C. Fischenich. 2000. Improving Riparian Buffer Strips and Corridors for Water Quality and Wildlife. Pages 457-462 in P. J. Wigington and R. L. Beschta, eds. *Riparian Ecology and Management in Multi-Land Use Watersheds*. American Water Resources Association, Middleburg, Virginia.

- Frissell, Christopher A., W. J. Liss, R. K. Nawa and J. L. Ebersole. 1992. *Cumulative Effects of Land use on Salmon Habitat in Southwest Oregon Coastal Streams*. Ph.D. Thesis, Oregon State University.
- Gillilan, David M. and Brown Thomas C. 1997. *Instream Flow Protection: Seeking a Balance in Western Water Use*. Island Press: Washington, DC.
- Gregory, Stanley V. and Frederick J. Swanson, W. Arthur McKee, and Kenneth W. Cummins. 1991. An Ecosystem Perspective of Riparian Zones: Focus on Links between Land and Water. *BioScience* 41(8): 540-551.
- Hachmoller, Bernard, R. A. Matthews and D. F. Brakke. 1991. Effects of Riparian Community Structure, Sediment Size, and Water Quality on the Macroinvertebrate Communities in a Small, Suburban Stream. *Northwest Science* 65(3): 125-132.
- Heiler, G., Hein, T., Schiemer, F. and Bornette, G. 1995. Hydrological Connectivity and Pulses as the Central Aspects for the Integrity of a River-floodplain System. *Regulated Rivers* 11(3/4):351-361.
- Hickman, Terry, and Robert F. Raleigh. 1982. *Habitat Suitability Index Models: Cutthroat Trout*. Habitat Evaluation Procedures Group. Western Energy and Land Use Team. U.S. Fish and Wildlife Service. FWS/OBS-82/10.5. U.S. Department of Interior.
- Hicks, B.J., J.D. Hall, P.A. Bisson, and J. R. Sedell. 1991. Responses of Salmonids to Habitat Changes. In *Influences of Forest and Rangeland Management on Salmonid Fishes and Their Habitats*. *American Fisheries Society Special Publication* 19:483-518.
- Huggenberger, P., Hoehn, E., Beschta, R, and Woessner, W. 1998. Abiotic Aspects of Channels and Floodplains in Riparian Ecology. *Freshwater Biology* 40: 407.
- Hunter, Christopher J. 1991. *Better Trout Habitat: A Guide to Stream Restoration and Management*. Washington DC: Island Press.
- Imhof, J. G., R.J. Plank, F.M. Johnson, and L.C. Halyk. 1991. Watershed Urbanization and Managing Stream Habitat for Fish. *Transactions of the 56th Annual Wildlife & Natural Resources Conference*. March 17-22, 1991, Edmonton, Alberta. Published by the Wildlife Management Institute, Washington D.C.
- Johnson, Alan W. and Diane M. Ryba. 1992. *A Literature Review of Recommended Buffer Widths to Maintain Various Functions of Stream Riparian Areas*. KingCounty Surface Water Management Division: Washington.
- Junk, W.J., Bayley, P.B., Sparks, R.E. 1989. The Flood Pulse Concept in river-Floodplain Systems. *Canadian Special Publications in Fisheries and Aquatic Sciences* 106:110-127.

Kauffman, J. B. 2000. Comments on the City of Portland, Environmental Zoning Analysis, Technical Background Report.

Kauffman, J. B., M Mahrt, L. A. Mahrt, and W. D. Edge. 2001. Riparian Wildlife Communities and Habitats. In *Wildlife Habitats and Species Associations within Oregon and Washington: Building a Common Understanding for Management*. Oregon State University Press, Corvallis, OR. (In press).

Knutson, K. L. and V. L. Naef. 1997. *Management Recommendations for Washington's Priority Habitats: Riparian*. Washington Department of Fish and Wildlife. Olympia, Washington: 181.

Laufle, J.C.; G.B. Pauley; and M.F. Shepard. 1986. Species Profiles: Life Histories and Environmental Requirements of Coastal Fishes and Invertebrates (Pacific Northwest) – Coho Salmon. Prepared by U.S. Fish and Wildlife Service Biological report 82(11.48). U.S. Army Corps of Engineers, TR EL-82-4. 18pp. Available online from the USGS National Wetlands Research Center at:  
<http://www.nwrc.gov/publications/specintro.html>.

Leopold, Luna. 1968. *Hydrology for Urban Land Planning: A Guidebook on the Hydrologic Effects of Urban Land Use Planning*. US Department of the Interior, US Geological Survey, Geological Survey Circular 554, Washington, DC.

Malanson, G.P. 1993. *Riparian Landscapes: Cambridge Studies in Ecology*. Cambridge University Press, Cambridge.

May, C. W., E.B. Welch, R. R. Horner, J. R. Karr, and B.W. Mar. 1997. *Quality Indices for Urbanization Effects in Puget Sound Lowland Streams*. Washington Department of Ecology: Olympia, Washington.

May, C. W., and R. R. Horner. 2000. The Cumulative Impacts of Watershed Urbanization on Stream-Riparian Ecosystems. Pages 281-286 in P. J. Wigington and R. L. Beschta, eds. *Riparian Ecology and Management in Multi-Land Use Watersheds*. American Water Resources Association, Middleburg, Virginia.

Meffe, Gary K., C.R. Carroll, and Contributors. 1997. *Principles of Conservation Biology*, Second Edition. Sinauer Associates, Inc. Sunderland, MA.

Metro. 1997. Policy Analysis and Scientific Literature Review for Title 3 of the Urban Growth Management Functional Plan: Water Quality and floodplain Management Conservation. Metro: Portland, Oregon.

Metro. 1999. Development of Measures to Conserve, Protect, and Restore Riparian Corridors in the Metro Region: Streamside CPR, Preliminary Draft. Metro Growth Management Services: Portland, Oregon.

Morgan, Amy and Frank Hinojosa. 1999. *Winter Habitat Utilization by Juvenile Salmonids: a Literature Review*. Online publication, available at <<http://bulltrout.nwifc.wa.gov/TFW/reports/report5.htm>>. Northwest Indian Fisheries Commission, and Grays Harbor College.

Moyle, Peter B. and Ronald M. Yoshiyama. 1994. Protection of Aquatic Biodiversity in California: A Five-tiered Approach. *Fisheries*, 19(2):6-18.

Naiman, R. J., Beechie, T. J., Benda, L. E., Berg, D. R., Bisson, P. A., MacDonald, L.H., O'Conner, M. D., Olson, P. L., and Steel, E. A. 1992. Fundamental Elements of Ecologically Healthy Watersheds in the Pacific Northwest Coastal Ecoregion. In R. J. Naiman Eds, *Watershed Management: Balancing Sustainability and Environmental Change*. Springer-Verlang: New York

Naiman, R. J. and H. Décamps. 1997. The Ecology of Interfaces: Riparian Zones. *Annual. Rev. Ecol. Syst.* 28:621-658.

National Marine Fisheries Service, Pacific NW Region. 1999. *Factors Responsible for the Decline in Salmon Abundance and Distribution in the Pacific Northwest*. A table based on studies of rivers in Western Oregon and Northern California. Adapted with permission by Pacific States Marine Fisheries Commission from *Status and Future of Salmon of Western Oregon and Northern California: Overview of Findings and Options* by Botkin, Cummins, Dunne, Regier, Simpson, Sobel, and Talbot. For a copy send \$17 to The Center for the Study of the Environment, P.O. Box 6945, Santa Barbara, California.

National Marine Fisheries Service, Pacific NW Region. 1999a. *Endangered Species Act Status of West Coast Salmonids*. Online publication: <http://shoveler.wrc.noaa.gov/sites/nwnmfs/1salmon/salmesa/index.htm>, updated on September 9, 1999.

National Research Council (NRC) Committee on Protection and Management of Pacific Northwest Anadromous Salmonids. 1996. *Upstream: Salmon and Society in the Pacific Northwest*. Washington, D. C.: National Academy Press

Oregon Department of Fish and Wildlife (ODFW). 1999c. *Aquatic inventories Project Physical Habitat Surveys: Johnson Creek and Tributaries*. ODFW and City of Portland Bureau of Environmental Services; Portland, OR.

Oregon Division of State Lands. 1998. *Urban Riparian Inventory and Assessment Guide: A Tool for Oregon Land Use Planning*. Salem, Oregon.

Orsborn, J.F. and S.C. Ralph. 1994 *An Aquatic Resource Assessment of the Dungeness River System: Phase II - Physical Channel Analysis, Hydrology and Hydraulics and Phase III - Fisheries Habitat Survey*. Prepared for Jaemstown S'Klallam Tribe. Sequim, Washington.

Pauley, G.B., B.M. Bortz, and M.F. Shepard. 1986. *Species Profiles: Life Histories and Environmental Requirements of Coastal Fishes and Invertebrates (Pacific Northwest) - Steelhead Trout*. U.S. Fish and Wildlife Service. Biological Report 82(11.62). U.S. Army Corps of Engineers, TR EL-82-4. 24pp. Available online from the USGS National Wetlands Research Center at: <http://www.nwrc.gov/publications/specintro.html>.

Pauley, G.B., K.L Bowers, and G.L Thomas. 1988. *Species Profiles: Life Histories and Environmental Requirements of Coastal Fishes and Invertebrates (Pacific Northwest) -*

Chum Salmon. U.S. Fish and Wildlife Service Biological report 82(11.81) U.S. Army Corps of Engineers, TR EL-82-4. 17pp. Available online from the USGS National Wetlands Research Center at:  
<http://www.nwrc.gov/publications/specintro.html>.

Pauley, G.B., K. Oshima, K.L. Bowers, and G.L. Thomas. 1989. Species Profiles: Life Histories and Environmental Requirements of Coastal Fishes and Invertebrates (Pacific Northwest) – Sea-Run Cutthroat Trout. U.S. Fish and Wildlife Service Biological Report 82(11.86). U.S. Army Corps of Engineers, TR EL-82-4. 21pp. Available online from the USGS National Wetlands Research Center at: <http://www.nwrc.gov/publications/specintro.html>.

Pauley, G.B., R. Risher, and G.L. Thomas. 1989a. Species Profiles: Life Histories and Environmental Requirements of Coastal Fishes and Invertebrates (Pacific Northwest) – Sockeye Salmon. U.S. Fish and Wildlife Service Biological report 82(11.116). U.S. Army Corps of Engineers, TR EL-82-4. 22pp. Available online from the USGS National Wetlands Research Center at:  
<http://www.nwrc.gov/publications/specintro.html>.

Perry, David, and Michael P. Amaranthus. 1990. "The Plant-Soil Bootstrap: Microorganisms and Degraded Ecosystems." In, John J. Berger, ed. *Environmental Restoration: Science and Strategies for Restoring the Earth*. Washington, D. C.: Island Press.

Perry, David. 1994. *Forest Ecosystems*. Department of Forest Science and Cascade Center for Ecosystem Management. Oregon State University, Johns Hopkins University Press.

Peterson, N. P. 1980. The Role of Spring Ponds in the Winter Ecology and Natural Production of Coho Salmon (*Oncorhynchus kisutch*) on the Olympic Peninsula, Washington. Master's thesis. University of Washington, Seattle.

Peterson, N. P. and Reid, L.M. 1984. Wall-base Channels: Their Evolution, Distribution, and Use by Juvenile Coho Salmon in the Clearwater River, Washington. Pages 215-225 in J.M. Walton and D.B. Houston, eds. *Proceedings of the Olympic Wild Fish Conference*. Peninsula College, Fisheries Technology Program, Port Angeles, Washington.

Pollock, Michael M. and Paul M. Kennard. 1998. A Low-risk Strategy for Preserving Riparian Buffers Needed to Protect and Restore Salmonid Habitat in Forested Watersheds of Washington State: Version 1.1. 10,000 Years Institute: Bainbridge Island, Washington.

Raleigh, Robert F, William J. Miller, and Patrick C. Nelson. 1986. *Habitat Suitability Index Models and In-stream Flow Suitability Curve: Chinook Salmon*. National Ecology Center, Division of Wildlife and Contaminant Research, Fish and Wildlife Service, U.S. Department of Interior. Washington D.C. Biological Report 82(10.122).

Ralph, S. C., G.C. Poole, L.C. Conquest, and R.J. Naiman. 1994. Stream Channel Morphology and Woody Debris in Logged and Unlogged Basins of Western Washington. *Canadian Journal of Fisheries and Aquatic Science* 51:37-51.

Reisner, D. W. and T.C. Bjornn. 1979. Habitat Requirements of Anadromous Salmonids. Pages 1-54 in W. R. Meehan, ed. *Influence of Forest and Range Management on Anadromous Fish Habitat in Western North America*. U. S. Forest Service Gen. Tech. Report PNW-96. Pacific Northwest Forest and Range Experiment Station, Portland, Oregon.

Sauer, Leslie Jones, and Andropogon Associates. 1998. *The Once and Future Forest: A Guide to Forest Restoration Strategies*. Island Press.

Scarlett, W.J. and Cederholm, C.J. 1984. Juvenile Coho Salmon Fall-Winter Utilization of Two Small Tributaries of the Clearwater River, Jefferson County, Washington. Pages 227-242 in J.M. Walton and D.B. Houston, eds. *Proceedings of the Olympic Wild Fish Conference*. Peninsula college, Fisheries Technology Program, Port Angeles, Washington.

Schueler, Tom. 1995. *Site Planning for Urban Stream Protection*. Washington D. C., Metropolitan Washington Council of Governments and the Center for Watershed Protection.

Scott, J.B., C.R. Steward, and Q.J. Stober. 1986. "Effects of urban development on fish population dynamics in Kelsey Creek, Washington." Fisheries Research Institute, University of Washington. Seattle, Washington. *Transactions of the American Fisheries Society* 115:555-567.

Sedell, James R., Gordon H. Reeves, F. Richard Hauer, Jack A. Stanford, and Charles P. Hawkins. 1990. Role of Refugia in Recovery from Disturbances: Modern Fragmented and Disconnected River Systems. *Environmental Management* 14(5):711-724.

Sedell, James R., P. A. Bisson, F. J. Swanson, and S. V. Gregory. 1988. What We Know About Large Trees That Fall Into Streams and Rivers. In *From the Forest to the Sea: A Story of Felled Trees*. USDA Forest Service and U. S. Department of Interior, BLM. General technical Report PNW-GTR-229: 47-112. Portland, OR.

Shaw, David C. and Ken Bible. 1996. An Overview of Forest Canopy Ecosystem Functions with Reference to Urban and Riparian Systems. *Northwest Science*, 70. Special Issue, 1996.

Skidmore, Peter, Paula Cooper, and Karin Boyd. 1999. Methodology for Determining Meander Corridor Limits. Pages 421-424 in *Watershed Management to Protect Declining Species*, Proceedings of the 1999 Annual Water Resources Conference of the American Water Resources Association. Seattle, Washington.

Sparks, Richard E., Peter B. Bayley, Steven L. Kohler, and Lewis L. Osborne. 1990. Disturbance and Recovery of Large Floodplain Rivers. *Environmental*

*Management*, 14(5):699-709.

Spence, B. C., G.A. Lomnický, R.M. Hughes, and R.P. Novitzki. 1996. *An Ecosystem Approach to Salmonid Conservation*. TR-4501-96-6057. ManTech Environmental Research Services Corp., Corvallis, Oregon.

Stanford, J. A. 1998. Rivers in the Landscape: Introduction to the Special Issues on Riparian and Groundwater Ecology. *Freshwater Biology* 40: 402.

Swanson, F. J., S.V. Gregory, J. R. Sedell, and A.G. Campbell. 1982. Land-Water Interactions: The Riparian Zone. In Robert L. Edmunds, ed. *Analysis of Coniferous Forest Ecosystems in the Western United States*.

Tabacchi, E., Correl, D. L., Hauer, R., Pinay, G., Planty-Tabacchi, A., Wissmar, R.C. 1998. Development, Maintenance and Role of Riparian Vegetation in the River Landscape. *Freshwater Biology* 40:497.

Todd, Albert J. 2000. Making decisions about riparian buffer width. Pages 445-450 in P. J. Wigington and R. L. Beschta, eds. *Riparian Ecology and Management in Multi-Land Use Watersheds*. American Water Resources Association, Middleburg, Virginia.

Van Sickle, J. and Gregory, S. V. 1990. Modeling Inputs of Large Woody Debris to Streams from Falling Trees. *Can. J. For. Res.* 20; 1593-1601.

WORC. 1999. *Soils for Salmon: The Urban Environment*. A conference sponsored by the Washington Organic Recycling Council, Pacific Lutheran University, October 6, 1999. Abstract Prepared by J. Marx, A. Bary, S. Jackson, D. McDonald, H. Wescott.

## FINDINGS OF COMPLIANCE

### Procedural Requirements

The City of Springfield initiated this Plan amendment as allowed under Lane Code 12.210 (1) (b) (ii) and SDC Section 7.040 (1) (b). Because the request is city initiated, the timing of the request is not an issue.

Metro Plan amendments that are applicable outside the city limits require participation by the Lane County Board of Commissioners. The *Natural Resources Study* includes sites within the city limits as well as sites that are outside the city limits and within the Springfield Urban Growth Boundary (UGB). The Study also includes implementing policy that will be inserted into the Springfield Development Code.

Mailed Notice of the public hearings held by both jurisdictions were sent to property owners with resource sites on their land, as well as to residents within 300 ft. of the inventoried resource sites. Legal Notice of the public hearings were also published in widely circulated local papers, providing information about the legislative action and time, place and location of the hearings.

### Findings:

1. The City Planning Director initiated this amendment of the SDC to add subsections to Article 31—Minimum Development Standards and Site Plan Review Standards for the purpose of implementing a program for protection of riparian areas listed on the Springfield Inventory of Natural Resource Sites and locally significant wetlands on the Springfield Local Wetlands Inventory. Additional amendments to subsections of Articles 34 and 35 were included to apply the protection provisions described in Section 31.250 to land partitions and subdivisions.
2. The *Springfield Natural Resources Study* is the product of two periodic review work tasks (5 and 7) that will be submitted for acknowledgement to the Department of Land Conservation and Development (DLCD) when the Study has been adopted. The “Notice of Proposed Amendment” which is normally sent to the DLCD to alert them of proposed amendments does not apply to periodic review tasks.
3. Mailed notice of the public hearings before the City Planning Commission and the City Council hearings on October 18 and November 7, 2005 respectively were sent to affected property owners and residents within 300 feet of the wetland and riparian corridors proposed for protection.
4. A public workshop advertised in the mailed notice was held on October 13, 2005 between 5:00pm and 8:00pm in the Library Meeting Room at the Springfield City Hall. Staff was present to answer questions and to receive comments from the public.

5. On October 18, 2005, the Springfield Planning Commission held a public hearing on the *Springfield Natural Resources Study* and the implementing protection measures. After receiving the staff report, and considering the public testimony that was submitted, the Commission voted unanimously to recommend approval of the Study and implementation measures with the amendments recommended by staff.
6. Notice of the public hearing before the City Council on November 7, 2005 was published on October 21 in the Springfield News. The content of the notice complies with Section 14.030 (2) of the SDC for legislative actions.
7. On November 7, 2005, the City Council held a public hearing on the Study and implementing protection measures. After considering the planning commission recommendation, the public record, staff recommendations, and the testimony provided at the hearing, the City Council voted to adopt the Study and implementation measures.
8. Mailed notice of the public hearing before the Lane County Board of Commissioners on July 12, 2006 was sent to affected property owners in the urbanizable area of Springfield on June 21, 2006. The notice mailing included property within 300 feet of the wetland and riparian corridors proposed for protection.
9. Notice of the public hearing to consider adoption of the Study for application within the urbanizable area of Springfield conducted before the Lane County Board of Commissioners was published on June 20, 2006 in the Register Guard, newspaper of record for the Board.
10. On July 12, 2006 The Board of Commissioners held a public hearing on the implementation of the *Springfield Natural Resources Study* and SDC Development Regulation amendments for application within the urbanizable area of Springfield. After receiving the staff report, these findings, analysis of impacts, and consideration of the public testimony submitted at the hearing, the Board voted to adopt the Study and SDC amendments for application within the Springfield Urban Growth area.

**Conclusion:**

Procedural requirements described in Lane Code Chapter 14 and Article 8 and Article 14 of the SDC have been followed. Notice requirements established by DLCDC for periodic review work tasks and amendments to the Development Code have also been followed.

**Decision Criteria and Findings**

Lane Code Chapter 12 describes the criteria to be used in approving an amendment to the Metro Plan. In order to reach a decision, the Board of Commissioners must adopt findings which demonstrate that:

***(a) The amendment must be consistent with the relevant statewide planning goals adopted by the Land Conservation and Development Commission; and***

*(b) Adoption of the amendment must not make the Metro Plan internally inconsistent.*

## **Findings**

**Goal 1 – Citizen Involvement:** *“To develop a citizen involvement program that ensures the opportunity for citizens to be involved in all phases of the planning process.”*

11. The County and City have acknowledged provisions for citizen involvement that ensure the opportunity for citizens to be involved in all phases of the planning process and set out requirements for such involvement. The action taken did not amend the citizen involvement program. The process for adopting these amendments complied with Goal 1 since it complied with, and surpassed the requirements of, the citizen involvement provisions.

Lane Code and the City of Springfield Development Code implements Statewide Planning Goal 1 by requiring that notice of the proposed amendments be given and public hearings be held prior to adoption.

A public involvement plan for the Goal 5 process was reviewed and approved by the Joint Planning Commission Committee in May 2000. In June 2000, two public workshops were held to provide an overview of the Goal 5 process for Springfield, Eugene and Lane County within the Metro Plan boundary. In April 2001, a public workshop was held to review the draft inventory and significance criteria for Springfield, Eugene and Lane County within the Metro Plan boundary.

12. A Citizen Involvement Plan was approved by the Joint Planning Commission Committee on October 17, 2002. The plan called for review of the NR Study by local stakeholders and by the public in an open house session. Individual meetings were held with various stakeholder groups and agencies and a public workshop was held on October 13, 2005.
13. The proposed Springfield Inventory of Natural Resource Sites was the subject of a public hearing by the City Planning Commission on October 18, 2005. A hearing before the City Council was held on November 7, 2005. Mailed notice was sent to approximately 7,000 affected land owners and residents within 300 feet of the wetlands and riparian corridors that are included in the NR Study. The notice included an advertisement for the October 13, 2005 workshop.
14. A public hearing was held by the Lane County Board of Commissioners on July 12, 2006, after publishing a legal advertisement announcing the hearing and mailing notices to affected property owners and residents within 300 feet of the wetlands and riparian corridors within the urbanizable area of Springfield that are included in the NR Study. The legal ad and notice was sent out on June 21, 2006, twenty days prior to that hearing.

The process for adopting these amendments complies with Goal 1 since it complies with, and surpasses the requirements of the state’s citizen involvement provisions.

**Goal 2 – Land Use Planning:** *“To establish a land use planning process and policy framework as a basis for all decisions and actions related to use of land and to assure an adequate factual base for such decisions and actions.”* Land use decisions are to be made in accordance with a comprehensive plan and suitable "implementation ordinances" to put the plan's provisions into effect must be adopted.

15. The *Eugene-Springfield Metropolitan Area General Plan* (Metro Plan) is the acknowledged comprehensive plan that guides land use planning in Springfield. The Metro Plan was acknowledged by the State in 1982 to be in compliance with statewide planning goals. These findings and records show that there is an adequate factual base for decisions to be made concerning the proposed amendments. Goal 2 requires that plans be coordinated with the plans of affected governmental units and that opportunities be provided for review and comment by affected governmental units. To comply with the Goal 2 coordination requirement, the City coordinated the adoption of these amendments with all affected governmental units. Lane County participated in the decision as it applies within the urbanizable area of Springfield. Specifically, notice was mailed to all owners of property that would be affected by the proposed new land use regulations. There are no Goal 2 exceptions required for this ordinance.
16. In 1995, a periodic review work program was approved by the Land Conservation and Development Commission for the Eugene-Springfield Metropolitan area. Task #7 committed the cities to update and complete their Goal 5 planning responsibilities to protect riparian corridors and wildlife habitat. Task #5 committed the City of Springfield to complete a Wetlands Conservation Plan. The NR Study documents the analysis required under statewide Goal 5 for preparing a program for protecting riparian and wetland resources. The NR Study recommends an implementing ordinance to achieve that protection. The Board of Commissioners adopted the NR Study documents for application within the urban transition area of Springfield.

**Goal 3 – Agricultural Land:** *“To preserve and maintain agricultural lands.”*

17. This goal does not apply within adopted, acknowledged urban growth boundaries. The City of Springfield does not have any agricultural zoning districts. These amendments do not apply outside the urban growth boundary and, because of limitations on commercial and industrial development without full urban services, generally do not affect properties outside the city limits. All land in the City’s urban transition area carries City zoning. An exception to this goal was taken in 1982 when the comprehensive plan was acknowledged. The ordinance does not affect the area’s compliance with statewide Planning Goal 3.

**Goal 4 – Forest Land:** *“To conserve forest lands for forest uses.”*

18. This goal does not apply within adopted, acknowledged urban growth boundaries. The City of Springfield does not have any forest zoning districts. These amendments do not apply outside the urban growth boundary and, because of limitations on commercial and industrial development without full urban services, generally do not affect properties

outside the city limits. All land in the City's urban transition area carries City zoning. An exception to this goal was taken in 1982 when the comprehensive plan was acknowledged.

***Goal 5 – Open Spaces, Scenic and Historic Areas, and Natural Resources:*** *“To conserve open space and protect natural and scenic resources.” Goal 5 covers more than a dozen natural and cultural resources such as wildlife habitats and wetlands. It establishes a process for each resource to be inventoried and evaluated.*

19. In 1998, the City of Springfield adopted, and the Oregon Division of State Lands (DSL) acknowledged the Springfield Local Wetland Inventory (LWI). For purposes of the Goal 5 inventory, local governments are to apply specific criteria adopted by DSL to those wetland sites included on the LWI. DSL funded the application of the Oregon Freshwater Wetlands Methodology (OFWAM) to the Wetland Inventory and identified those wetland sites that qualified as locally significant wetlands. Identifying the locally significant wetlands completed the first step in the Goal 5 planning process for wetlands.
20. In 2004 the City of Springfield and Lane County adopted the Springfield Inventory of Natural Resource Sites (NR Inventory). The NR Inventory was the first step in the Goal 5 planning process.
21. The *Springfield Natural Resources Study* continues the Goal 5 planning process for both riparian and wetland areas identified on the NR Inventory and the Wetland Inventory. Many of the riparian and wetland sites overlap and are thus included on both inventories. Both the ESEE analysis and the development of a program for protecting riparian and wetland resources are combined in the NR Study. The combined approach coordinates the protections recommended for those resources that overlap. In many instances the statistical information for wetlands and riparian areas are broken out separately in order to include information specific to each resource type.

The Goal 5 Rule requires that local governments conduct an analysis of the economic, social, environmental, and energy (ESEE) consequences that could result from a decision to allow, limit, or prohibit a conflicting use. OAR 660-023-0040 (and OAR 660-023-0090(7) with respect to riparian corridors) describes the four steps to be followed in conducting an ESEE analysis. The NR Study includes the analysis and conclusions required by the process prescribed in the administrative rule. The rule states:

*“(1) Local governments shall develop a program to achieve Goal 5 for all significant resource sites based on an analysis of the economic, social, environmental, and energy (ESEE) consequences that could result from a decision to allow, limit, or prohibit a conflicting use. This rule describes four steps to be followed in conducting an ESEE analysis, as set out in detail in sections (2) through (5) of this rule. Local governments are not required to follow these steps sequentially, and some steps anticipate a return to a previous step. However, findings shall demonstrate that requirements under each of the steps have been met, regardless of the sequence followed by the local government. The ESEE analysis need not be lengthy or complex, but should enable*

reviewers to gain a clear understanding of the conflicts and the consequences to be expected. The steps in the standard ESEE process are as follows:

- (a) Identify conflicting uses;
- (b) Determine the impact area;
- (c) Analyze the ESEE consequences; and
- (d) Develop a program to achieve Goal 5.”

#### Identify Conflicting Uses

22. The NR Study documents the steps listed above and provides sufficient information to support a protection program for each resource site on the NR Inventory and Wetland Inventory. The “Conflicting Use Analysis” assesses the potential development conflicts that exist with each of the resource sites. An overall conflicting use analysis describes the common conflicts that residential, commercial and industrial land uses may have with wetland and/or riparian resources. The NR Study also provides a specific breakdown of the potential conflicting land uses that affect each specific site. (See Section 6.0 “Identifying Conflicting Uses” on page 31 and following of the *Springfield Natural Resources Study*.) The total acreage of conflicting uses by zoning type is shown on page 49 of the NR Study.

#### Determine the Impact Area

23. The NR Study establishes the foundation for recommending the 150-foot impact area that was used in the conflicting use analysis. (See Section 7.0 “Defining Impact Areas for Resource Sites” on page 42 and following of the *Springfield Natural Resources Study*.)

#### Analyze the ESEE Consequences

24. The ESEE analysis, like the conflicting use analysis, includes both an overall analysis and a site-specific analysis. The analysis considered the economic, social, environmental and energy consequences of prohibiting, limiting and allowing conflicting land uses to impact wetland and riparian resource sites. A general analysis of the ESEE impacts of conflicting uses is found in Section 8.0 of the *Springfield Natural Resources Study*, beginning on page 53. A site specific ESEE analysis is found in Section 9.0 beginning on page 111 of the Study.

#### Develop a program to achieve Goal 5

25. The NR Study concludes each site-specific analysis with a recommendation for protection. In each case, a recommendation to limit conflicting uses was chosen, based on the information developed by the ESEE analysis. A specific set of protection provisions are recommended in this Study for adoption as an implementing ordinance. The provisions are based on the model ordinance that is included in the Wetland Planning Guidebook published by the Oregon Department of State Lands. A summary of the

program to achieve Goal 5 for each site is found within the site-specific ESEE analysis (Section 9.0 beginning on page 111) of the NR Study.

26. The details of the program to achieve Goal 5 protection of Springfield's wetland and riparian resources are found on Section 10.0 "Program Decision and Program for Protection" beginning on page 263 of the *Springfield Natural Resources Study*. The protection measures and programs in the NR Study comply with Goal 5.

**Goal 6 – Air, Water and Land Resources Quality:** *"To maintain and improve the quality of the air, water, and land resources of the state."* This goal requires local comprehensive plans and implementing measures to be consistent with state and federal regulations aimed at protecting air, water and land from waste and process discharges from development.

27. Compliance with Statewide Planning Goal 5 processes for wetlands, and riparian corridors includes consideration of state and federal regulations for addressing clean air, clean water, safe drinking water, endangered species and other environmental policies. The ESEE analysis and recommended protections support and enhance provisions of the Springfield Development Code that address the requirements of state and federal regulations including the Clean Water Act, Endangered Species Act, the Magnuson-Stevens Fishery Conservation and Management Act, the Oregon Forest Practices Act, Oregon Endangered Species Rules, and the Oregon Wetlands Regulatory Program. These established state and federal policies for environmental protection provided the regulatory framework within which the NR Study was developed. Therefore, the ordinance is consistent with Goal 6.
28. The Springfield Development Code has already been amended to respond to National Pollutant Discharge Elimination System (NPDES) Phase II, the Clean Water Act, the Drinking Water Protection Act. These amendments included the adoption of the Water Quality Limited Waterways map and Storm Water Quality Management Program. The City is in the process of devising a response to the Endangered Species Act for listed species in our area.

**Goal 7 – Areas Subject to Natural Disasters and Hazards:** *"To protect life and property from natural disasters and hazards."* Goal 7 deals with development in places subject to natural hazards such as floods or landslides. It requires that jurisdictions apply "appropriate safeguards" (floodplain zoning, for example) when planning for development within these areas.

29. All sites within Springfield and the urban transition area that are subject to flooding, erosion, landslides, earthquakes, and weak foundation soils are inventoried through a variety of sources. This Study does not remove or exempt compliance with other Code standards that may apply to development.

**Goal 8 – Recreational Needs:** *"To satisfy the recreational needs of the citizens of the state and visitors and, where appropriate, to provide for the siting of necessary recreational facilities including destination resorts."* This goal calls for each community to evaluate its areas and facilities for recreation and develop plans to deal with the projected demand for them.

30. Willamalane Park and Recreation District is the entity responsible for park planning, development and maintenance in the urban transition area as well as the city limits. The NR Study used Willamalane's Park and Recreation Plan (March 2004) to inform the ESEE process and in particular the analysis of the social impacts of allowing conflicting uses to impact wetlands and riparian areas that were identified by the comprehensive plan as future park facilities. Some decisions to limit conflicting uses were based on the desire to preserve the ability of Willamalane to establish low impact recreational facilities near protected resource sites that were part of the Study. Therefore, this ordinance is consistent with Goal 8.

**Goal 9 – Economic Development:** *“To provide adequate opportunities throughout the state for a variety of economic activities vital to the health, welfare, and prosperity of Oregon’s citizens.”*

Goal 9 calls for diversification and improvement of the economy. It asks communities to inventory commercial and industrial lands, project future needs for such lands, and plan and zone enough land to meet those needs.

OAR 660-23-070 requires communities to conduct a buildable lands inventory that assesses the impact of protection provisions applied to sites on the inventory of buildable land. Where there is a demonstrable impact, the rule requires the City to make adjustments to recover the buildable land that is lost. Section 11.0 of the *Springfield Natural Resources Study* evaluates the impact of the Goal 5 protection program on the residential, commercial and industrial buildable lands inventories. Site specific impacts are provided in the site-specific ESEE analysis in Section 9.0 of the NR Study.

31. The recommended protection measures in the Study will affect the inventory of commercial and industrial lands. At the conclusion of each site-specific ESEE analysis, GIS mapping and analysis was used to estimate the amount of land that will be removed from the commercial and industrial lands inventories. The estimate was based on vacant commercial and industrially zoned lands. The amount of acreage protected from development by the protections recommended by the Study were subtracted from the surplus of buildable land cited in the *Springfield Commercial Lands Study* (2000) and the *Metropolitan Industrial Lands Special Study* (March 1991).
32. The Study indicated that about 11.56 acres will be removed from the commercial land supply. That supply is already estimated to be 158 acres short of the estimated demand for commercial land through 2015 within the City.
33. The Study estimates that about 71.40 acres will be removed from the industrial land supply by the proposed protection program. There will be a remaining surplus of between 1,583 and 2,105 acres of industrial land in the Eugene-Springfield Metro area after the protections are implemented.

The NR Study includes an assessment of the impact of the protection measures on the commercial and industrial lands. There is already a shortage of buildable commercial lands. The addition of 11.56 acres to the existing deficit is not significant. There is an

existing surplus of industrial land of not less than 1,583 acres. The reduction of that surplus by 71.4 acres is not significant. Therefore, the ordinance is consistent with Goal 9.

**Goal 10 – Housing:** *“To provide for the housing needs of the citizens of the state.”* This goal specifies that each city must plan for and accommodate needed housing types, including multifamily and manufactured housing.

OAR 660-23-070 requires communities to conduct a buildable lands inventory that assesses the impact of protection provisions applied to sites on the inventory of buildable land. Where the impact causes the inventories to be out of compliance with Goals 9, 10 and/or 14, the rule requires the City to make adjustments to recover the buildable land that is lost. Section 11.0 of the Springfield Natural Resources Study evaluates the impact of the Goal 5 protection program on the residential, commercial and industrial buildable lands inventories. Site specific impacts are provided in the site-specific ESEE analysis in Section 9.0 of the Study.

34. The recommended protections impact on the inventory of residential lands is not significant. The NR Study estimates that about 14.18 acres will be removed from the residential land supply. The May 2004 Residential Lands Monitoring Report estimated that at the end of 2003, 1,361 acres of buildable residential land remained in Springfield. The amount of land that will be removed from the residential inventory by this NR Study is less than 1% of the remaining buildable acreage. Therefore, the ordinance is consistent with Goal 10.

**Goal 11 – Public Facilities and Services:** *“To plan and develop a timely, orderly and efficient arrangement of public facilities and services to serve as a framework for urban and rural development.”* Goal 11 calls for efficient planning of public services such as sewers, water, law enforcement, and fire protection.

35. The Eugene-Springfield Metropolitan Public Services and Facilities Plan (PFSP) is a refinement plan of the Metro Plan that guides the provision of public infrastructure, including water, sewer, storm water management, and electricity. Some of the inventoried riparian and wetland resource sites are also public stormwater facilities (e.g. Q Street Ditch, SCS Channel #6, Gray Creek, Irving Slough, Millrace) listed in the PFSP. The recommended protection provisions preserve and support existing stormwater protections that are applied to riparian and wetland sites that are on the Water Quality Limited Watercourse list. In addition, wetlands and riparian areas that are not protected under the stormwater provisions will receive protection with the proposed code amendments.
36. The proposed protection measures allow for the development and maintenance of public infrastructure. As such the protection provisions will not have a negative affect on Goal 11 public facilities and services. Other public services such as police and fire protection will not be impacted by the protection provisions. Therefore, the proposed amendments are consistent with Goal 11.

**Goal 12 – Transportation:** *“To provide and encourage a safe, convenient and economic transportation system.”* The goal aims to provide "a safe, convenient and economic transportation system."

37. The protection provisions recommended by the NR Study do not directly impact TransPlan, the approved transportation system plan for the Eugene-Springfield Metro area. Development standards that may be approved in the future as part of a Low Impact Development Design Handbook recommended by the NR Study may have an impact on street design standards.
38. Adoption of the ordinance will not change the functional classification of any existing or planned transportation facilities. Nor will it change standards implementing a functional classification system. Further, it will not allow types or levels of land uses which would result in levels of travel or access which are consistent with the functional classification of a transportation facility or reduce the performance standards of any facility. Therefore, Goal 12 is not impacted by this ordinance.

**Goal 13 – Energy Conservation:** *“To conserve energy.”* Goal 13 states that "land and uses developed on the land shall be managed and controlled so as to maximize the conservation of all forms of energy, based upon sound economic principles."

39. The ESEE analysis considered the likely energy consequences of allowing conflicting uses to impact resource areas. Approval of the recommended protection measures will not have a direct impact on efforts to conserve energy. As such this goal is not applicable to evaluation of this Study.

**Goal 14 – Urbanization:** *“To provide for an orderly and efficient transition from rural to urban land use.”* This goal requires cities to estimate future growth and needs for land and then plan and zone enough land to meet those needs.

For resources within the City limits, this ordinance does not affect the transition from rural to urban land use. The study does apply to resources located on lands within the urban transition area, and these protection measures are designed to provide for a process that will consider environmental impacts when development of urban uses on these properties is proposed in the future.

40. The protection measures will not have a significant effect on the orderly and efficient transition from rural to urban land use. The effect on the inventory of buildable lands is minimal, in terms of acres lost, as discussed above under Goals 9 and 10. The findings of the NR Study indicate that the impact on residential and industrial lands will not exceed the available surplus. The supply of commercial lands is already insufficient to meet projected demands, and the findings of this study indicate that the protections will only slightly increase the existing shortage.

**Goal 15 – Willamette River Greenway:** *“To protect, conserve, enhance and maintain the natural, scenic, historical, agricultural, economic and recreational qualities of lands along the*

*Willamette River as the Willamette River Greenway.*” Goal 15 sets forth procedures for administering the 300 miles of greenway that protects the Willamette River.

41. That portion of the Willamette River that flows through the Springfield area is an inventoried resource site (site WA/WB). The Willamette is already protected under the provisions of Springfield’s Stormwater Quality Management Program and as such is not recommended for further protection by the Study. Adoption of the ordinance does not change the City’s existing standards for development with respect to the Willamette River Greenway. The Willamette River Greenway in the urban transition area is protected under the Safe Harbor provisions, which provide for analysis of impacts at the time of proposed development. Adoption of this study complies with Goal 15.

***Goals 16 through 19 – Estuarine Resources, Coastal Shorelands, Beaches and Dunes, and Ocean Resources.***

42. There are no coastal, ocean, estuarine, or beach and dune resources within the City’s jurisdiction. These goals do not apply to the Eugene-Springfield Metro Area.

**Conclusion**

The above findings demonstrate adoption of the Springfield Natural Resources Study and the recommended protection provisions to achieve Goal 5 compliance by the City Council and Board of Commissioners is in substantial conformance with Oregon’s Statewide Planning Goals.

***Criterion ‘b’ Adoption of the amendment must not make the Metro Plan internally inconsistent.***

**Findings**

43. The Metro Plan states that it was “developed in accordance with the statewide planning goals adopted by the State Land Conservation and Development Commission (LCDC) and published in April 1977, as amended through June 1997. The Metro Plan addresses each of the LCDC goals and contains objectives and provisions aimed at compliance with LCDC Goals” (Metro Plan, pg. I-6).
44. As part of its periodic review work program, approved by LCDC, the Eugene-Springfield area committed the metro area jurisdictions to completing a Natural Resources Study (NR Study) (Task 5) that is meant to comply with Goal 5 planning requirements. In addition, Springfield committed itself to completing a wetlands conservation plan (Task 7) as a separate periodic review task from the Natural Resources Study. Adoption of this ordinance completes these two work tasks for Springfield and Lane County.

ORS 197.175(2)(a) states that, “ each city and county in this state shall: (a) Prepare, adopt, amend and revise comprehensive plans in compliance with goals approved by the commission; (b) Enact land use regulations to implement their comprehensive plans.”

45. The NR Study was prepared in response to Statewide Planning Goal 5. The Study contains analysis that supports a program for protecting riparian and wetland resource sites in Springfield and the urban transition area as well as specific protection measures to be adopted into Springfield's Development Code to implement that decision.

ORS 197.628 (1) states: "It is the policy of the State of Oregon to require the periodic review of comprehensive plans and land use regulations in order to respond to changes in local, regional and state conditions to ensure that the plans and regulations remain in compliance with the statewide planning goals adopted pursuant to ORS 197.230, and to ensure that the plans and regulations make adequate provision for needed housing, employment, transportation and public facilities and services."

46. The NR Study combines two periodic review tasks (Nos. 5 and 7) that were approved by the Land Conservation and Development Commission in 1995 for the *Eugene-Springfield Metropolitan Area General Plan* (Metro Plan). The purpose of the tasks is to bring the Metro Plan into compliance with Statewide Planning Goal 5. The proposed protection measures included in the NR Study achieve Goal 5 compliance for local wetland and riparian resources in Springfield.
47. The *Springfield Natural Resources Study* and the protection program recommended in the Study, respond to and comply with the Goal 5 requirements set out in OAR 660-23-090 and 100 for wetlands and riparian resources.

Metro Plan Environmental Resources Element Policy 18: "*Local governments shall develop plans and programs which carefully manage development on hillsides and in water bodies, and restrict development in wetlands in order to protect the scenic quality, surface water and groundwater quality, forest values, vegetation, and wildlife values of those areas.*"

48. The *Springfield Natural Resources Study* sets forth a plan for protecting wetlands and riparian areas that is consistent with Statewide Planning Goal 5 and with Policy 18.

Metro Plan Environmental Resources Element Policy 19: "*Local governments shall develop policies and local controls for protection and management of wetland areas by completion of the next Metro Plan update.*"

49. The NR Study includes specific protection measures that are adopted into the Springfield Development Code. The Study and the implementing provisions complete Periodic Review Work Tasks #5 and #7, the last remaining tasks in the metro periodic review work program. Adoption of the NR Study and SDC regulations referenced in Lane Code Chapter 10 by the Board of Commissioners ensures application within the urban transition area of Springfield.

OAR 227.350 requires cities to provide notice to the Department of State Lands of any complete land use application for activities that are wholly or partially within areas identified as wetlands on the Statewide Wetlands Inventory:

50. The proposed protection measures require the City of Springfield to provide notice to the Department of State Lands and or the Corps of Engineers when a proposed development impacts any wetland on Springfield's Local Wetland Inventory. Development to urban levels requires annexation to the city.

Metro Plan Environmental Resources Element Policy 27: *"Local governments shall protect endangered and threatened plant and wildlife species, as recognized on a legally adopted statewide list, after notice and opportunity for public input."*

51. Appropriate protections for threatened and endangered species vary and require consultation with knowledgeable resources and agencies. The NR Study includes provisions that require consultation with the Oregon Department of Fish and Wildlife, the Oregon Department of State Lands and other Procedural requirements described in Article 8 and Article 14 of the SDC have been followed. Notice requirements established by DLCD for amending the Development Code have also been followed.

## **Conclusion**

The *Springfield Natural Resources Study* and the recommended protection measures are consistent with the Metro Plan. Based on these findings, the proposed *Springfield Natural Resources Study* fully meets the Metro Plan amendment criteria for consistency with the policies of the Metro Plan and is fully consistent with the applicable Statewide Planning Goals.