

**Oregon Department of State Lands  
Statewide Fee-In-Lieu Instrument Modification Proposal**

**Mitigation Plan for:  
Half Mile Lane Project**

**January 28, 2010**

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## I. Plan Overview

DSL proposes development of the Half Mile Lane Project to compensate for wetland and stream impacts within the Tualatin basin, a priority area under DSL's FIL program.

The project is located in the midst of a working farm owned since 2008 by George and Sara Kral. In addition to having the only Salmon-Safe certified nursery currently operating in Oregon, the Kral's are interested in restoring stream and wetland habitat on their property. A 28-acre field west of Half Mile Lane includes a ditched salmon-bearing stream with a partial fish barrier, drained hydric soils, and degraded wetlands. Site preparation of existing vegetation has begun and construction is planned for Summer 2010. Any remaining drain tiles will be disabled and the current ditched location of Roderick Creek will be filled. A new stream channel will be constructed to mimic historic conditions, and existing croplands will be graded to restore Roderick Creek's connection to its historic floodplain with associated wetlands.

The goals for the project area are:

- Reconstruct Roderick Creek to allow floodplain interaction;
- Allow fish passage through the project area and improve habitat for anadromous fish;
- Allow for the system to adapt to normal as well as episodic sediment loads;
- Maximize the area of seasonal wetlands that are typical of riverine flow-through systems in Oregon;
- Conserve the project area and surrounding buffers to facilitate long-term success of the project and protect the restored habitats from incompatible land uses.

The project is expected to generate 12.15 wetland credits in the Tualatin sub-basin using the current credit ratios in DSL rule, with the potential for an additional 3-5 wetland credits generated in future phases of restoration.

The project will simultaneously test a function-based accounting system developed by the Willamette Partnership's Counting on the Environment program (<http://www.willamettepartnership.org/>). This program has been developed over the last two years with the help of public, private, and non-profit stakeholders to develop a shared accounting system for quantifying impacts and benefits to ecosystem services for application to ecosystem markets. The Partnership has completed a test version for water temperature, wetlands, salmonid habitat, and upland prairie that is ready to apply to pilot projects over the next two years. Half Mile Lane is one of the pilot projects that will test three of these services, and is the only pilot site thus far that can result in real-world transactions. Therefore,

this project will test not only the ecosystem credit calculator, but also the sequence of developing, selling and buying ecosystem credits.

## **II. Site Information**

### **2.1 Location**

The Half Mile Lane Project is located in the rural Gales Creek area approximately 3 miles northwest of Forest Grove in Washington County. The project is at 01N 4W Section 21; Latitude 45.549, Longitude -123.186. The project area contains a portion of Roderick Creek, and is part of the Gales Creek watershed (Figures 1 and 2). Zoning is Exclusive Farm Use (EFU).

### **2.2 Service Area**

The service area for the project is the Tualatin watershed (fourth field hydrologic unit code 17090010, Figure 3). Information about the watershed is included in Exhibit A of the DSL Fee in Lieu Program Instrument.

There are no private mitigation banks currently approved for this service area. A prospectus for the Tualatin Valley Environmental Bank has been submitted to the Corps and DSL. This bank would be located along the Tualatin River floodplain southeast of, and lower in the watershed than the Half Mile Lane Project. The sponsors expect to generate a maximum of 49 wetland mitigation credits that will include palustrine emergent, palustrine scrub-shrub, and palustrine forested wetlands. HGM types expected are riverine flow-through, riverine impounding, and slope/flats. Based on the sponsor's plans to document baseline conditions in late spring 2010, and the Corps timeline for bank approval, the bank could become active around January 2011.

## **III. Site Selection Considerations**

The Half Mile Lane project site was selected for the following reasons:

1. Addresses needs identified in planning documents

The Tualatin River Watershed Council conducted a watershed assessment of the Gales Creek watershed in 1998 (Breuner, 1998). Major issues identified were sediment sources; low summer flows; stream channel modification (including drained wetlands, culverts, water diversions and ditches, and removal of large woody debris and riparian vegetation); and water quality problems (including sedimentation, high temperatures, low dissolved oxygen, and high fecal coliform levels).

In 2006, the Tualatin River Watershed Council more specifically identified limiting factors and prioritized restoration projects in the Gales Creek area (Swanson Hydrology and Geomorphology, 2006) with a focus on channel conditions. The

section of Roderick Creek that flows through the Half Mile Lane project area was assessed for channel condition (channel conditions, riparian conditions, water quality, water quantity, and habitat access) and rated as Not Properly Functioning (1.4 on a 5 point scale). Enhancing and restoring the riparian area and removing barriers to fish passage were identified as priority actions for this section of Roderick Creek.

The project includes priority habitats identified in the State Wildlife Conservation Strategy, is within one of The Nature Conservancy's mapped synthesis priorities, and Gales Creek is listed as critical habitat for winter steelhead. In sum, both the site and the surrounding watershed have been identified as some of the most important restoration priorities for the Willamette and Tualatin watersheds.

## 2. Technical Considerations

The project supports a FIL priority action within the Tualatin to “restore and enhance wetlands and floodplains, including emergent wetlands, scrub-shrub, wet prairie and riparian forest.” The project will address limiting conditions in the Tualatin watershed, including, “channelization of streams and disconnected floodplains, reduced riparian vegetation composition and extent . . . and water quality.” (FIL Program Instrument—Exhibit A). In its restored position on the landscape, Roderick Creek, a perennial stream, will be the primary source of water for most of the project through floodplain interaction.

The project site includes restoration, enhancement, and creation areas. Evidence of drained hydric soils and the presence of remnant wetlands are strong indicators that part of this site was formerly a wetland. The project area has been cultivated for years for nursery plants, corn, and most recently winter wheat and annual rye. Because of this, invasive plant species presence is manageable.

Restoration of the wetlands and riparian area around Roderick Creek complements surrounding efforts in the watershed. Clean Water Services is working with the Kral's to implement bank sloping and riparian vegetation planting along Gales Creek, and working with landowners up and downstream to restore instream flow to Gales Creek. The Tualatin River Watershed Council is working on alcove/side channel connection upstream on Gales Creek, and developing restoration concepts with the adjoining property owner to the southeast of the project.

## IV. Existing Conditions

### Historic and Current Land Use

The project site is part of a 60-acre property that is predominantly farmland, with riparian areas along Roderick and Gales Creeks (Figure 4). The site is located in

an agricultural valley and surrounded by farming and forestry, with a rock quarry located upslope to the west. It was converted to agricultural use prior to 1936, resulting in fill and conversion of wetlands to farmland and pasture, channelization of Roderick Creek in the southwest portion of the site, and degraded floodplain connectivity and riparian vegetation.

The current landowners are using upland areas east of Half Mile Lane for residential structures and a native plant nursery, with the west field currently planted in annual rye. The nursery has received Salmon Safe certification and utilizes best management practices according to the certification standards, including but not limited to use of herbicides and pesticides that are from a list of approved Salmon Safe chemicals. The nursery portion of the property will also be enrolled in NRCS' Environmental Quality Incentives Program.

#### 4.1 Hydrology

Roderick Creek originates to the west in private timberlands and flows along the edge of the upslope quarry operation, through remnant scrub-shrub and forested habitat. On the project site, the creek is channelized into a steep streambed that flows southeast across the middle of the field, with most of the excavated material sidecast to form a 10-foot wide berm on the west bank. Roderick Creek leaves the project area through a 43-inch corrugated metal culvert under a farm road. A second culvert just to the south accommodates overflow conditions. The crossing is considered a partial passage barrier. The creek flows to Gales Creek through a straightened channel that extends east along the south property boundary. This section of Roderick Creek is outside of the project area, but is included in Clean Water Services riparian planting project on Gales Creek.

Roderick Creek does not have a gage, but USGS Regional Flood Frequency Equations were calculated using Bateman Creek near Glenwood. After correcting for drainage area (drainage area ratio is ~1.07), Roderick Creek has an estimated 2-year discharge of 63 cfs, 5-year discharge at 92 cfs, a 25-year discharge of 141 cfs, and a 100-year flow at 187 cfs.

#### Soil Conditions

Figure 5 shows soils mapped at the site in the Washington County Soil Survey online version include Willamette silt loam, 3-7% slopes (unit 44B), the hydric Verboort silty clay loam (unit 42) along Roderick Creek, McBee silty clay loam (unit 30), and Woodburn silt loam, 0-3% slopes (unit 45A). Willamette and Woodburn soils may have hydric Dayton inclusions, and McBee soils may have hydric Cove and Wapato inclusions.

Soil sampling and mapping in the field (September 2008) have confirmed the presence of wetland soils within the former floodplain of Roderick Creek. This includes approximately 11.39 acres of farmed hydric soils, 0.84 acres of filled hydric soils, and additional acreage of marginal wetland soils (Figure 6). Nonhydric soils on the site had textures ranging from silt loam to silty clay loam.

#### 4.2 Vegetation

The pre-settlement vegetation class of the area was an Oak-Douglas fir community (Oregon Wetlands Explorer, <http://oregonexplorer.info/wetlands/>). The site has been used since before 1936 for corn, nursery plants and winter wheat. A few black Oregon ash trees and willow line the berm; however the berm is mostly dominated by reed canarygrass with Himalayan blackberry and teasel. A vegetation list was compiled from the delineation work in September 2008 and April 2009 (SWCA Environmental Consultants) and is included in the pre-project delineation (Attachment B).

#### 4.3 Wildlife Use

Roderick Creek is mapped as essential salmonid habitat, and critical habitat for steelhead (*Oncorhynchus mykiss*), which is federally listed as *Threatened*. A culvert at the downstream end of the project area restricts fish passage during some flows, however. The Wetland Explorer web site (<http://oregonexplorer.info/wetlands/orwap>) summarizes element occurrence information contained in the official database of the Oregon Natural Heritage Information Center (ORNHIC). There are no recorded occurrences of rare species at the project site and 2 occurrences within 1 mile. Within the Lower Gales Creek HUC6 (170900100203) there have been 6 occurrences of winter steelhead and 1 occurrence of northern pacific pond turtle.

#### 4.4 Stream Condition

Roderick Creek channel measures 1,300 linear feet (0.52 acres) within the project area. Stream banks average 4-5 feet tall with portions of the west bank approximately 10 feet in height. The channel bed is approximately 10 feet wide with the dominant substrate consisting of small gravels and generally lacking vegetation (SWCA 2009). There are no documented water quality limitations on Roderick Creek, although sediment delivery due to upstream geology and land use is known to be an issue. Water temperature may increase as the creek passes through the open agricultural field. Downstream, Gales Creek is water quality limited and has an approved total maximum daily load plan for temperature (summer), E. coli (all year), and phosphorus (June 1-September 30).

Baseline stream conditions of Roderick Creek were evaluated by Parametrix using the Counting on the Environment Salmon Credit Calculation Method and Shade-a-lator (attachment B). The Salmon Credit Calculation Method calculates scores for six ecological functions relevant to optimal habitat for the range of salmonid species. Based on the data collected for all the map units in this reach, Roderick Creek currently provides 8% of the ideal functions needed to support salmonids. Using this number, discounting for a partial fish barrier, and weight placed on anadromous support, habitat formation, channel diversity, and temperature regulation functions to address the limiting factors listed in the draft Upper Willamette River Recovery Plan, there are 317 weighted linear feet of salmon habitat in the project area. Shade-a-Lator is a model developed by the

Oregon Department of Environmental Quality that calculates thermal loads. Current riparian vegetation and channel structure deflects just over 240,000 kcal/day of the sun's energy from the stream within the project area.

#### 4.5 Existing Wetlands

A wetland delineation was performed on September 5 and 8, 2008 to map hydric soils, and on April 10, 2009 to document wetland hydrology and record vegetation (Attachment B). Three palustrine emergent-farmed wetland area totaling 1.99 acres were delineated (Figure 7).

- The wetland on the eastern side of the creek (0.72 ac.) was mostly bare, apparently due to water stress on the planted wheat crop, and is hydrologically isolated from Roderick Creek by an upland berm that lines the creek (SWCA 2009).
- The wetland to the west of Roderick Creek (0.52 ac.) drains to the creek and vegetation consisted of stressed wheat crop reed canarygrass, tall fescue, and toad rush.
- The wetland in the northwest portion of the site (0.75 acres) was dominated by reed canarygrass, with a forested community present off-site to the west. Two linear ditches run parallel to one another inside the wetland and contained 4 to 6 inches of stagnant water during the April 10, 2009 site visit. The ditches and apparent wetland conditions extend off-site to the north and west of the project area.

A functional assessment using the Oregon Rapid Wetland Assessment Protocol (ORWAP) (Adamus et al. 2009) was conducted by Paul Adamus and results are presented below (Table 1a and 1b).



Table 1a. Half Mile Lane ORWAP Scores.

	Relative Effectiveness of the Function	Relative Value of the Function
<b>SPECIFIC FUNCTIONS:</b>		
Water Storage & Delay (WS)	2.38	6.67
Sediment Retention & Stabilization (SR)	3.96	2.90
Phosphorus Retention (PR)	2.14	3.42
Nitrate Removal & Retention (NR)	4.08	4.33
Thermoregulation (T)	2.22	7.50
Carbon Sequestration (CS)	2.00	
Organic Matter Export (OE)	6.27	
Aquatic Invertebrate Habitat (INV)	3.20	6.84
Anadromous Fish Habitat (FA)*	4.83	10.00
Non-anadromous Fish Habitat (FR)*	2.44	6.67
Amphibian & Reptile Habitat (AM)	6.84	6.67
Waterbird Feeding Habitat (WBF)	3.97	2.33
Waterbird Nesting Habitat (WBN)	0.00	1.75
Songbird, Raptor, & Mammal Habitat (SBM)	5.34	2.33
Pollinator Habitat (POL)	4.80	4.17
Native Plant Diversity (PD)	1.73	3.53

Table 1b. Grouped Services Summary

	Group Scores (functions)	Group Scores (values)
<b>GROUPED SERVICES:</b>		
Hydrologic Function (WS)	2.38	6.67
Water Quality Support Group (WQ)	4.08	7.50
Fish Support Group (FISH)*	4.83	10.00
Aquatic Support Group (AQ)	6.84	6.67
Terrestrial Support Group (TERR)	5.34	4.17
Carbon Sequestration Function (CS)	2.00	
Public Use & Recognition (PU)		2.78
Provisioning Services (PS)		0.00

Table 1c. Other Attributes

Wetland Ecological Condition	4.45
Wetland Stressors	4.47

#### 4.6 Site Condition Summary

In summary, limiting conditions at the site are:

- 1) Roderick Creek has been confined into a straightened channel that no longer accesses its historic floodplain, and has little vegetation.
  - a. The habitat forming functions that promote channel diversification, energy dissipation, flow modulation, and variable depths are low.
  - b. Support for insects and invertebrates is reduced.
  - c. Anadromous fish support for foraging and cover is low.
- 2) Sediment inputs have likely increased over time due to:

- a. Channel straightening and loss of fan function, resulting in transport of sediment directly to Gales Creek
  - b. Upslope erosion likely from rock quarry and timber harvest
  - c. Loss of access to floodplain and alluvial fan which limits off-channel sediment deposition
- 3) Fish passage is partially blocked by a road crossing at the downstream end of the project area.
  - 4) Ditching of Roderick Creek and possible draining within the field itself has reduced the extent and functionality of wetlands.
  - 5) Farming has reduced microtopography and native plant diversity.

## V. Mitigation Work Plan

### 5.1 Boundaries

The project area is the field west of Half Mile Lane within the property boundaries, excluding an upland field in the southwest corner. A legal description of the project area appears as Exhibit A of the Conservation Easement Agreement (Attachment D). The easement designates a Conservation Zone that will contain waters of the U.S. and a buffer area, plus a 4.99-acre field Farm Zone along Half Mile Lane that may be utilized for limited farm use.

### 5.2 Design Factors

The work plan for the project is guided by the following factors:

- Anadromous fish habitat functionality should be maximized as the highest and best use of the project given its relative value at the site (Table 1a). Steelhead is a federally listed species and the project design should minimize fish stranding. Based on ORWAP scores the relative value of the site is also relatively high, but effectiveness is low, for Water Storage, Thermoregulation, Invertebrate Habitat, and Non-Anadromous Fish Habitat. The effectiveness of these functions should be improved if possible given site conditions, and where doing so would not diminish functionality for anadromous fish habitat.
- The project should respond to documented limiting factors in the Tualatin Basin watershed when these do not impede anadromous fish habitat functions. These include: 1) reduced summertime flows; 2) increased peak discharges; 3) channelization of streams and floodplain disconnection; 4) reduced riparian extent and diversity; 5) fragmented habitats; 6) degraded water quality (phosphorus, temperature, bacteria, and dissolved oxygen).
- The landowner requires approximately 10 acres of agricultural land on the field west of Half Mile Lane to sustain his native nursery business.
- DSL requires generation of wetland credits that can be used as mitigation under the in-lieu fee program. The project is a pilot under the Counting on

the Environment program for wetland, salmon and temperature credits and should be used to test this methodology to the extent possible.

- A main waterline owned by the City of Forest Grove runs through the field and excavation over the pipe should be avoided due to the pipe's age and condition.
- Fish passage should be restored at the site.
- The restored system should be able to respond to and effectively process sediment inputs.
- The design should minimize the use of structures that will require maintenance, or unsustainable delivery of water to the site.

### 5.3 Objectives

Based on the project goals and design factors the objectives of the project are:

- 1) The reconstructed stream channel retains appropriate grades and cross sections to achieve project goals.
- 2) The reconstructed Roderick Creek channel should have continuous flow in part of its bed all year long during years of normal precipitation.
- 3) Roderick Creek is hydrologically connected to its floodplain when flows are greater than 44.3 cfs.
- 4) Fish can pass into and out of the project area during the majority of flows.
- 5) During the wettest time of the year, at least 75% of surface water is in or connected to a flowing channel that leaves the site
- 6) During peak annual flow, the surface water that flows through the channel and floodplain encounters measurable resistance from fairly rigid vegetation or channel-clogging debris, and follows a fairly indirect path from entrance to exit.
- 7) Maximize wetland and stream acreage based on existing and perceived historic wetland condition:
  - a. The 2.51 acres of waterways delineated on the site have been hydrologically manipulated through ditching, construction of berms along the creek, and subsurface drainage. The natural/historical functions will be returned to 1.49 acres of these areas to result in a gain in resource function. This area therefore meets the federal definition of "rehabilitation" and the DSL definition of "enhancement".
  - b. Of the acreage in (a) above, 1.05 acres meets the DSL definition of "enhanced cropped wetland" because it is regularly plowed, seeded and harvested in order to produce a crop for market.
  - c. An additional 9.30 acres of the site contains hydric soils based on field investigations and is likely the historic flow path of Roderick Creek. The natural/historic physical, chemical, and biological characteristics of the site will be returned to this area, resulting in a gain in resource function and area. This area therefore meets the

federal definition of “re-establishment” and the DSL definition of “restoration.”

- d. Additional wetland acreage can be established in 1.92-acres of fringe areas that are currently upland. These areas do not have hydric soils, but do have soils with hydric inclusions and textures ranging from silt loam to silty clay loam. Physical, chemical, and biological characteristics should be possible based on the geomorphology and hydrology, and meet the federal definition of “establishment” and the DSL definition of “creation.”
- 8) The project is protected in perpetuity from inconsistent land uses and buffer areas are in place to help protect the functionality of the project.

#### 5.4 Permits

Permits will be secured prior to implementation and are expected to include:

- Individual removal-fill permit from DSL,
- Section 404 permit from the Army Corps of Engineers
- Endangered species act consultation or biological opinion from NOAA’s National Marine Fisheries Service,
- Washington County permits for grading, land use, and building, and
- DEQ 1200-C permit.

#### 5.5 Construction Schedule

Site preparation has begun for vegetation through spraying the reed canarygrass and blackberry, and burning the dead vegetation on the field perimeters and along the banks. Attachment A (Budget) includes the proposed planting schedule.

Construction of the project will occur in Summer 2010 to minimize repeat disturbance of the area. Because a large portion of the Roderick Creek floodplain and wetland restoration portion of the project occurs outside of the existing active channel, this portion will be constructed prior to making a hydrologic connection to Roderick Creek. This phasing approach reduces the amount of time that the channel will need to be dewatered and aquatic organisms will need to be relocated. This also holds true for the ditch, which conveys perennial flow along the northwestern portion of the project site. To construct the rest of the project, including making the connections between the constructed channel and the existing channel (up and downstream ends), the existing channel will need to be dewatered. A diversion will be installed within the creek upstream of the design reach to dewater the channel through the project site. A cofferdam will be constructed and water will be routed past the work area either via pumps or a temporary gravity pipe. At this time a diversion will also be installed to dewater the perennial ditch and a similar dewatering configuration used. Dewatering will occur long enough to construct the connections and fill the old channel, and then water can be released into the new channel. The new channel will be lined with gravels

harvested from the old channel, a nearby bank slope-back project, and brought in from off site if necessary. This will help protect the bed from scour the first winter.

#### 5.6 Proposed Design

Figures 8-11 show the 50% construction design. Because of concerns related to erosion, soil stability and overall site integrity, excavation at the site will be limited to that which is necessary to achieve design specifications. However, a certain amount of field fitting to achieve final grades will be done during construction.

A meandering stream channel will be graded primarily through the zone of Verboort hydric soil, along its historic flow path (based on remnant features on historic aerial photos). The channel will be notched at the center, with a typical base width of 6 feet up to ~12 feet wide near the top. This new channel is designed to carry bankfull events. The gradient of the restored Roderick Creek will vary through the project site. At the upstream end, the channel gradient will be 0.7% to match upstream conditions. Downstream of this transitional reach the gradient will be approximately 0.3%. This gradient was selected to encourage more frequent overbank flow and interaction of the Roderick Creek channel with its floodplain and wetland complex. At the downstream end of the project area a transitional reach will have a gradient of 1%. A steeper transitional reach is required to daylight to the existing bed elevation downstream of the Half Mile Lane crossing while maximizing channel and floodplain interactions upstream in the lower gradient reach. Grade control, consisting of channel spanning rock weirs, placed at grade with the bed, will be constructed at three locations along the transitional reach (upstream end of transitional reach, upstream of crossing, downstream of crossing). Bed material in the transitional reach will be sized appropriately to reflect the higher gradient conditions and address erosional concerns. The old channel will be filled and the majority incorporated into wetland habitat.

When discharge reaches ~44.3 cfs (1.2-year discharge), water will start to inundate the floodplain and may flow into the wetlands through spillways. There are eight primary spillways, each two feet wide at their middle and constructed of 18 inches of gravel/cobble. Outside of these spillways, the top of the bankfull channel will invert to a floodplain area surrounding the channel. The floodplain area will be graded at a 1 to 5% slope, with the outer edge approximately 1 foot above the top of the bankfull channel. From this edge, the intermediate floodplain will invert at a 5:1 to 10:1 slope into wetland areas. The wetland areas will typically have a base elevation of 0.7 feet above the bankfull channel invert.

Ungraded areas will serve to divide the wetlands into smaller sections in order to maximize the area of seasonal wetlands. The northern wetland (Wetland Area 1) will likely be perennial because it will be supported by local water from a spring-fed ditch that enters the project site from the north. Overflow from Wetland Area 1 will drain to Roderick Creek through a spillway, as well as feed into Wetland Area 2 through a low gradient, 2.5-foot wide rock-lined swale.

The system is designed to be dynamic and allow for a natural response to episodic bed load deposition through local aggradation and creation of new bed and bar forms as subsequent storms reinforce a modified channel meander pattern. Hummock structures will help keep base flow, within the intermediate floodplain. These hummocks are mounds of dirt incorporating a log with attached rootwad. Large wood will be placed along Roderick Creek and in the floodplain areas to encourage channel and floodplain complexity and habitat creation.

At the downstream end of the project, the existing culvert at the crossing of Roderick Creek at Half Mile Lane is planned to be replaced with a fully spanning bridge, similar to the ones shown in Figure 12. Using a variety of methods, the active channel width has been estimated at 12 feet. The span of the bridge will be approximately 20 feet, meeting the 1.5 times active channel width required to facilitate movement of fish, sediment, and debris through the structure. The channel bed, cross-section, and bed morphology have been designed to facilitate fish movement through the crossing, per ODFW and NOAA Fisheries guidelines. Grade control will be incorporated into the channel bed at the bridge crossing to protect the bridge and associated footings, and ensure that the channel does not incise and impede fish movement after construction.

#### 5.7 Vegetation Plan

The vegetation plan is outlined in Attachment C and includes site preparation, initial planting, and establishment of native perennials. The site will be one of the few in the vicinity that supports native wetland vegetation, including wet prairie species that have been displaced in the surrounding area by agriculture.

## **VI. Predicted Post-Project Conditions**

#### 6.1 Stream Condition

The stream will follow a meandering flow path of ~1,500 linear feet. Estimated shade from riparian vegetation is 50%-62%, resulting in a deflection of 304,795 kcal/day of the sun's energy. Anadromous fish will benefit from the improved fish passage, increased cover and foraging habitat, connectivity to off-channel areas, and decreased temperatures. Following restoration, the stream will provide 70% of the ideal functions needed to support salmonids, resulting in an estimated 1022 weighted linear feet of salmon habitat in the project area (Attachment B).

#### 6.2 Wetland Functions

ORWAP was used to predict post-project condition based on the conceptual design. For existing wetlands on site, there are negligible changes in the grouped services scores. Re-establishment areas have the largest gains since all functions started as zero. The largest functional gains are in nitrate removal

and retention (Water Quality group), anadromous fish habitat (Fish Support group), amphibian and reptile habitat (Aquatic Support Group), and pollinator habitat (Terrestrial Support Group) (Table 2).

### 6.3 Wildlife

The planned work will improve habitat for anadromous fish, including Coho, winter steelhead, and sea-run cutthroat. Salmonids will benefit from restored passage, habitat and improved water quality. Excavated floodplain and wetland areas will have irregular surfaces to provide off-channel habitat complexity and variability. Cool, perennial flow from the spring-fed ditch to the north will be directed to the Roderick Creek channel and provide a supply of cool water to rearing salmonids. The addition of large wood will provide fish off-channel cover from avian predators as well as habitat to support invertebrate prey items.

### 6.4 Buffer Areas

Two buffer zones border the wetlands and will help to maintain the quality of the wetland into the future. The first zone immediately bordering the wetland will be planted to scrub-shrub and forested habitat (Vegetation Plan, Attachment C) and will provide habitat support for amphibians, reptiles, and pollinators. Portions of this zone are likely to be seasonally inundated during higher flow events. This zone also helps protect the wetlands from surrounding agricultural uses. The agricultural area to the southwest is upland and has no restriction on use. The 4.99 agricultural area to the northeast, however, is the second buffer zone. This area is important to the overall project because it provides separation between the road and the wetland and can therefore help reduce noise, introduction of weeds, and runoff from the road itself. Since this zone is at a lower elevation and can receive flows during high runoff events, it could be incorporated into the project at a later date if the landowners need to retain this area for the native plant nursery changes. This area will therefore be placed under a conservation easement as a restricted farm use zone. Uses are restricted to the sustainable, nursery cultivation of Oregon native plants and associated cover crops in a rotation and management that complies with the Salmon Safe certification and best management practices. A list of proposed prohibited uses is outlined in the draft conservation easement as Attachment D.

Table 2. Gain in Wetland Grouped Services predicted using ORWAP

Grouped Services		2.51 Acres Rehabilitation			9.93 Acres Re-establishment
		Existing	Predicted	Net Gain	Gain
Hydrologic	Function	2.38	3.13	0.75	3.13
	Value	6.67	6.67	0.00	6.67
Water Quality Support	Function	4.08	5.17	1.09	5.17
	Value	7.50	7.50	0.00	7.50
Fish Support	Function	4.83	6.45	1.62	6.45

	<b>Value</b>	<b>10.00</b>	<b>10.00</b>	<b>0.00</b>	<b>10.00</b>
Aquatic Support	Function	6.84	7.32	0.48	7.32
	Value	6.67	6.67	0.00	6.67
Terrestrial Support	Function	5.34	6.41	1.07	6.41
	Value	4.17	4.42	0.25	4.42
Carbon Sequestration	Function	2.00	2.59	0.59	2.59
Public Use & Recognition	Value	2.78	2.78	0.00	2.78
Provisioning Services	Value	0.00	0.00	0.00	0.00

## VII. Budget

The complete budget for the project is outlined in Table 3, with detail included in Appendix B. The total cost of the project as budgeted is \$629,957.14. DSL is providing 100% of the funding.

DSL's funding of the project is provided through the Oregon Wetland Mitigation Bank Revolving Fund. These funds were collected as a wetland mitigation option under DSL's removal fill laws and the mitigation obligation tracked by drainage basin. In the Lower Willamette basin, where the Half Mile Lane project is located, DSL has more than fulfilled the mitigation obligation through other wetland projects and therefore no mitigation obligation exists; however these seed funds will be repaid as credits are sold and shown as a debit from the FIL Account.

Table 3. Half Mile Lane Budget Summary

<b>Phase/Item</b>	<b>Budget—Phase I and II summary</b>
Baseline delineation and functional assessment	\$6,927.14
Pre-Implementation	\$55,300.00
Easement Purchase	\$162,560.00
Contracted Services	\$185,420.00
Supplies/Materials	\$75,500.00
Post-Implementation Reporting	\$29,200.00
Endowment	\$115,000.00
<b>Total</b>	<b>\$629,957.14</b>



## **VIII. Monitoring Plan**

### **7.1 Monitoring Methods**

#### **7.1.1 As-built Report**

An as-built report will be submitted within 120 days of completing construction activities and will include a description of any changes that were made from the grading plan.

#### **7.1.2 Photo point or video monitoring**

Photo points and/or video monitoring will be used to provide an overview of habitat conditions, especially for hydrology conditions and broad level changes in habitat conditions. Points will be permanently monumented, and the GPS location and bearing of the photos taken recorded. Photopoints will be established at the following locations:

- At the stream within the upper 0.6% transition reach of Roderick Creek showing upstream and downstream conditions.
- At the stream within the within the middle 0.6% wetland reach of Roderick Creek showing upstream and downstream conditions.
- At the stream within the within the 1% transition reach (middle) of Roderick Creek showing upstream and downstream conditions.
- From the bridge to show the bridge and grade control structures (upstream and downstream) and Wetland Area 5.
- At the NW (top) of the wetland connection swale looking at the connection swale itself.
- From the NE buffer area at a sufficient elevation to provide a series of photos of Wetland Areas 1 and 2.
- From the SW field at sufficient elevation to provide a series of photos of Wetland Areas 3 and 4.

#### **7.1.3 Flows**

Certain objectives and performance standards require knowledge of the 1.2-yr and 10-yr recurrence interval at Roderick Creek. These flows have been calculated at 44 cfs and 112 cfs, respectively. For monitoring purposes, the correlated return intervals measured at two gages on Gales Creek will be used to determine when these flows have been exceeded. At Gales nr Forest Grove, (gage 14204500) the 1.2-year flow is 2,288 cfs, and the 10-year flow is 5,533. At Gales nr Gales (gage 14204000) the 1.2-year flows is 1,416 and the 10-year flow is 3,392.

#### **7.1.4 Functions and Values**

ORWAP questions and scores leading to improved function for anadromous fish for Half Mile Lane were reviewed for their measurability. Two parameters were

selected for monitoring: 1) Wet season surface water isolation (negatively correlated to function) and 2) Throughflow complexity.

A complete post-project function and values assessment will document the changes in wetland functions as a result of the project using the Oregon Rapid Wetland Assessment Protocol, Salmon Credit Calculator, and Shade-a-Lator. These assessments will be conducted by year 5 of the monitoring period.

#### 7.1.5 Wetland Acreage

A post-construction wetland delineation "lite" report will be submitted by year 5 of monitoring that represents a normal precipitation year to certify wetland acres achieving 1987 U.S. Army Corps of Engineers Wetlands Delineation Manual and Regional Supplements. Delineation "lite" will serve as an amendment to the pre-project delineation and will not repeat any of the background information contained therein. Paired plots will be located along all topographic boundary lines, plus additional plot pairs on any high points in the topography and areas where water enters or leaves the site at a higher or lower contour.

#### 7.1.6 Vegetation

Vegetation monitoring will be conducted during the summer beginning one growing season after grading work is complete and initial planting has been conducted. Monitoring will:

- (1) Stratify the project into habitat classes as outlined by the performance standards.
- (2) Measure cover by species for all vegetation and provide woody stem counts in forested habitats.
- (3) Measure the percent of the area without vegetation (substrate).
- (4) Summarize plant cover and stem counts as native/non-native/invasive.
- (5) Determine the mean value of cover standards with a confidence of 80% and a confidence interval of  $\pm 10$ .

Monitoring will be conducted according to DSL's Routine Monitoring Guidance for Vegetation (2009). Habitat classes in the wetland areas will be determined based on targeted vegetation type (herbaceous, shrub-dominated, forested). The riparian floodplain area and buffer habitat within the Conservation Area will be separate habitat classes for monitoring. Sampling plots will be randomly located using either systematic sampling or GPS, but will ensure coverage within the habitat class. Plots or transect starts will be permanently monumented. The number of plots to be collected in monitoring year 1 is shown in Table 4. Data collected from Year 1 will be evaluated to determine the number of samples necessary to evaluate the cover performance standards with a confidence level of 80% and an absolute confidence interval width of 10 (note this is not a percent of the mean). The correct sample size will be calculated for each habitat class. This number of samples will be collected in monitoring years 2-4. This number may be increased, however, if minimum data standards are not met. Year 4 data

will be re-evaluated again to determine the number of samples needed until project closure.

Table 4. Sample plot detail proposed for Year 1 of monitoring

Habitat/Vegetation Types	Plot size (m <sup>2</sup> )*	Number of Plots: Habitat class area Up to 2 acres	Number of Plots: Habitat class area >2 to 5 acres	Number of Plots: Habitat class area >5 acres
Herbaceous	1m <sup>2</sup>	10	20	30
Shrub-dominated and Forested	15 to 30-ft radius	5 (Plus 10 herbaceous plots)	10 (Plus 20 herbaceous plots)	15 (Plus 30 herbaceous plots)
Upland Buffer	15 to 30-ft radius	5	10	15

A plant species will be labeled as invasive if it appears on the current Oregon Department of Agriculture Noxious Weed list, plus known problem species including *Phalaris arundinacea*, *Mentha pulegium*, *Holcus lanatus*, *Anthoxanthum odoratum*. Non-native plants will be labeled as such if they are listed as non-native on the USDA Plants Database. Two known exceptions are *Alopecurus geniculatus*, which Oregon Flora Project calls native, so DSL will consider it native; and *Alisma plantago-aquatica*, which according to USDA plants database, is a European species that occurs in Alaska & Washington State, not Oregon. Because the USDA Plants database also lists *Alisma triviale* as native in Oregon and many other states, and also says *A. triviale* is a synonym of *A. plantago-aquatica*. DSL considers it most likely that Oregon plants are the native *Alisma triviale*.

Beginning in year 2 of monitoring, a non-native plant species may be considered invasive by the IRT if it comprises more than 15% cover in 10% or more of the sample plots, and increases in cover or frequency from the previous monitoring period. Plants that meet this definition may be considered invasive for all successive years of monitoring, as determined by the IRT.

The sample mean and confidence interval will be reported for each performance standard and compared to the threshold to determine if adaptive management is necessary or if the objective has been reached. Values for vegetation performance standards (excluding diversity and prevalence index standards) will be reported as Mean (CI<sub>x</sub> = Y<sub>1</sub>-Y<sub>2</sub>), where:

- CI = confidence interval
- x = 80% confidence level
- Y<sub>1</sub> = low estimate

- Y<sub>2</sub> = high estimate

## 7.2 Monitoring Schedule

Monitoring to demonstrate achievement of performance standards will take place for five years. If the fifth year monitoring report indicates that the project is not meeting its performance standards, the IRT may decide to extend the monitoring period. After year five, monitoring will focus on maintenance of functions as outlined in the long-term management plan with reports submitted by December 1 of each year until bank closure (Attachment E).

Table 5. Proposed Monitoring Schedule

Report	Requirements	Schedule (estimated)
As-Built Elevations	Final surveyed grades and a brief narrative describing any changes from the approved plan	120 days after grading completion
Year 1 report	Vegetation Monitoring	December 1, 2012
Year 2 report	-Walk-through survey -Channel Cross Sections and Longitudinal Profile	December 1, 2013
Year 3 report	-Vegetation Monitoring -Delineation "lite" <sup>1</sup> -Functions and Values Assessment <sup>1</sup>	December 1, 2014
Year 4 report	Vegetation Monitoring	December 1, 2015
Year 5 report	Vegetation Monitoring	December 1, 2016

<sup>1</sup>These requirements may be fulfilled any time during the monitoring period, but will be submitted no later than December 1, 2016. Delineation lite will be conducted according to the DSL's Removal Fill Guidelines.

## IX. Performance Standards

Performance standards for the project are driven by the goals and objectives for the project.

**Goal: Reconstruct Roderick Creek to allow floodplain interaction;**

**Goal: Allow for the system to adapt to normal as well as episodic sediment loads**

Objective 1—The reconstructed stream channel retains appropriate grades and cross sections to achieve project goals.

*Performance Standard 1.1— Elevations, as demonstrated in the as-built, are as outlined in the grading plan.*

*Performance Standard 1.2—A longitudinal profile will be surveyed to demonstrate that the upper transitional reach is <1.1%, the middle reach is <0.4%, and the lower transition reach is no greater than 0.6% grade. The survey will be completed in the third year following construction (2014), and may need to be repeated if headcutting is observed in the stream channel, or inspection of grade control features show evidence of elevation changes.*

*Performance Standard 1.3—Four cross sections will be surveyed to demonstrate that wetland areas are no more than 12" above the thalweg of the Roderick Creek. Surveys should be completed three years following construction and following flows greater than a 10-year discharge event, as determined using Gales Creek gages.*

Objective 2—The reconstructed Roderick Creek channel should have continuous longitudinal flow in part of its bed all throughout the year during years of normal precipitation.

*Performance Standard 2—Photo or video monitoring at established points will show that surface water is present in the stream channel during the summer, and is longitudinally continuous in the upstream and downstream direction, during years of normal precipitation.*

Objective 3—Roderick Creek is hydrologically connected to its floodplain when flows are greater than 44.3 cfs.

*Performance Standard 3—Photo or video monitoring during monitoring years 1, 3, and 5 will show that surface water is flowing through at least 5 of the spillways at flows greater than a 1.2-year event, as determined by Gales Creek gages.*

**Goal: Allow fish passage through the project area and improve habitat for anadromous fish**

Objective 4—Fish can pass into and out of the project area during the majority of flows.

*Performance Standard 4.1—The as-built demonstrates that the bridge structure meets fish passage criteria established by the National Marine Fisheries Service Northwest Region (February 2008) and Oregon Department of Fish and Wildlife (ORS 635-412-0035), unless alternative designs are approved by those agencies.*

*Performance Standard 4.2—Photo or video monitoring shows an absence of cutting, washing around, or erosion at the bridge structure.*

*Also see performance standards 1.1 and 1.2.*

Objective 5— During the wettest time of the year, at least 75% of surface water is in or connected to a flowing channel that leaves the site.

*Performance Standard 5—Visual estimates and photo or video documentation in monitoring years 1, 3, and 5 will demonstrate that at least 75% of surface water on the site is connected to the stream channel rather than isolated in pools.*

**Objective 6**—During peak annual flow, the surface water that flows through the channel and floodplain encounters measurable resistance from fairly rigid vegetation or channel-clogging debris, and follows a fairly indirect path from entrance to exit.

*Performance Standard 6—The as-built demonstrates that floodplain roughness structures and hummocks were constructed as shown in the approved designs, and vegetation in the riparian zone is planted as outlined in the planting plan.*

*Also see vegetation performance standards 7.4 and 7.6*

**Goal: Maximize the area of seasonal wetlands that are typical of riverine flow-through systems in Oregon.**

**Objective 7**—Restore or establish 12.71 acres of wetland habitat.

*Performance Standard 7.1—The project will have a minimum of 12.71 acres of riverine flow-through wetland by year 5, as determined by a delineation during spring of a year when precipitation has been near normal.*

*Performance Standard 7.2—In herbaceous wetlands and the understory of shrub-dominated and forested wetlands outside of the floodplain zone, the relative percent plant native cover, including bare substrate, is at least 40% in year 1 and at least 50% in years 3-5.*

*Performance Standard 7.3— In herbaceous wetlands, the relative invasive plant cover, including bare substrate, is no more than 10% in monitoring years 1, 3, 4, and 5. There may be up to an additional 10% relative cover of reed canary grass in herbaceous wetlands in each of these years. In the understory of shrub-dominated and forested wetlands, the relative invasive plant cover, including bare substrate, is no more than 30% in years 1, 3, 4 and 5.*

*Performance Standard 7.4—In shrub-dominated habitats, the cover of native shrubs is at least 10% by year 1, 20% by year 3, and 30% by year 5. Native species volunteering on the site may be included, dead plants will not count.*

*Performance Standard 7.5—In shrub-dominated habitats, the cover of invasive shrub species is no more than 10% in monitoring years 1, 3, 4, and 5.*

*Performance Standard 7.6—The density of live, native trees in forested habitats is at least 435 per acre, equivalent to 1 tree every 100ft<sup>2</sup> in monitoring years 1, 3, 4, and 5. Native species volunteering on the site may be included, dead plants do not count.*

*Performance Standard 7.7— No more than 5% of the live tree count should be comprised of invasive species in monitoring years 1, 3, 4, and 5.*

*Performance Standard 7.8-- By Year 3 and thereafter, there are at least 6 different native species. To qualify, a species must have at least 5% average cover, **and** occur in at least 10% of the plots sampled.*

*Performance Standard 7.9—The moisture index in herbaceous, shrub-dominated, and forested habitats is <3.0 in monitoring years 1, 3, 4, and 5.*

**Goal: Conserve the project area and surrounding buffers to facilitate long-term success of the project and protect the restored habitats from incompatible land uses.**

Objective 8— The project is protected in perpetuity from inconsistent land uses and buffer areas are in place to help protect the functionality of the project.

*Performance Standard 8.1— A conservation easement is recorded and a long-term management plan has been approved.*

*Performance Standard 8.2—In upland buffer areas within the Conservation Zone, relative native plant cover, including bare substrate, is at least 40% in year 1 and at least 50% in years 3-5.*

*Performance Standard 8.3—In upland buffer areas within the Conservation Zone, relative invasive plant cover, including bare substrate, is no more than 40% in year 1 and no more than 30% in years 3-5.*

## **X. Determination of Credits**

Credits for the Half Mile Lane project will be determined based on DSL's credit ratios. Half Mile Lane is also a pilot site for the Willamette Partnership's Counting on the Environment Program. This effort provides a mechanism for sites to achieve multiple credit services and calculates these credits based on functional lift. Acreage and scores are based on the 50% design figures included in this document.

### 10.1 Credit Ratios

DSL will use the mitigation ratios outlined by the Department of State Lands (OAR 141-085-0690(4)) as the first method to generate credits at Half Mile Lane. These areas are shown in Figure 13.

- Areas that meet the following conditions will have a 1:1 ratio [restoration]:
  1. Contain hydric soils based on on-site soil conditions; and
  2. Do not contain delineated wetlands; and
  3. Are within the area proposed to be stream or wetland.
- Areas that meet the following conditions will have a 1.5:1 ratio [creation]:
  1. Do not have hydric soils based on on-site soil conditions; and
  2. Are within the area proposed to be stream or wetland.
- Areas the meet the following conditions will have a 2:1 ratio [enhanced cropped wetland]:

1. Are currently delineated wetlands within areas that have been plowed, seeded and harvested in order to produce a crop for market; and
  2. Are within the area proposed to be stream or wetland.
- Areas that meet the following conditions will have a 3:1 ratio [enhancement]:
    1. Are currently delineated wetlands, but do not meet the definition of cropped wetland; and
    2. Are within the area proposed to be stream or wetland.
  - Areas that meet the following conditions will have a 10:1 ratio [non-agricultural buffers]:
    1. Are outside of the area proposed to be stream or wetland; and
    2. Are within the conservation zone of the proposed conservation easement area.
  - Areas that are within the conservation easement with restricted agricultural use will have a 20:1 ratio [agricultural use buffer].



Table 6. Credit Accounting for Half Mile Lane based on ratios

<b>Activity</b>	<b>Acreage</b>	<b>Mitigation Type</b>	<b>Ratio</b>	<b>Credit Acres</b>
Restoration	9.30	Restoration	1:1	9.30
Creation	1.92	Creation	1.5:1	1.28
Enhancement of farmed wetlands	1.09	Enhancement	2:1	0.55
Enhancement	0.40	Enhancement	3:1	0.13
Non-Agricultural Use Wetland Buffers	6.42	Buffer credit	10:1	0.64
Agricultural Use Buffer	4.99	Buffer credit	20:1	0.25
<b>Total Acres</b>	<b>24.12</b>		<b>Total Credits</b>	<b>12.15</b>

10.2. Option for Functional Accounting—Counting on the Environment  
 Half Mile Lane will serve as a pilot for the Counting on the Environment program. While wetland credits based on standard ratios will be used as the primary credit type (noted as “Wetland (ratio acres)”), three optional ecosystem credits will be available for sale: wetland functional acres, salmon credits, and temperature credits. Wetland functional acres will be available for the wetland, floodplain, and channel areas on the site plan (Areas 1 and 2 in Figure 14). Salmon and temperature credits are only available for the floodplain and channel areas as shown on the site plan (Area 1 in Figure 14).

Wetland functional acres are calculated by averaging five grouped function ORWAP scores (hydrologic, water quality, fish, habitat, aquatic habitat, and terrestrial habitat) and multiplying by acreage (Table 7). The purpose of the calculation is to turn functional scores into acre-credits, and will be completed on both the credit side and the debit side of transactions. The calculation may not be used to influence whether a functional match between an impact and the FIL site exists.

Levels of ecosystem improvements for each of these parameters have been projected based on the 50% project designs, and the anticipated conditions 20 years from construction. Baseline conditions are subtracted to determine the net change by function (Table 8).

Table 7. Calculating Wetland Functional Acres Using ORWAP pre- and post-restoration scores.

ORWAP Grouped Services	Baseline	Post-Restoration
Hydrologic	2.38	3.13
Water Quality Support	4.08	5.17
Fish Support	4.83	6.45
Aquatic Support	6.84	7.32
Terrestrial Support	5.34	6.41
Average 0 to 1 scale	0.47	0.57
Acres wetland	2.51	12.71
Functional Acres	1.18	7.24
Gross Credits	6.06	

Table 8. Credit by area when using multiple credit types

Credit Type	Area (Acres or Feet)	Post-Action	Baseline	Net Gain (Post - Baseline)
<i>Floodplain and Channel Areas</i>				
Wetland (Ratio Acres)	3.2 acres	See Table 6		2.83
Wetland (Functional Acres)	3.2 acres	See Table 7		1.53
Salmon (functional linear feet)	1300 feet	1022	317	705
Temperature (kcal/Day)	3.2 acres	304,795	240,410	64,384
<i>Wetland Area</i>				
Wetland (Ratio Acres)	9.51 acres	See Table 6		8.43
Wetland (Functional Acres)	9.51 acres	See Table 7		4.53
<i>Non-Agricultural Use Buffer</i>				
Wetland (Ratio Acres)	6.42 acres	See Table 6		0.64
<i>Agricultural Use Buffer</i>				
Wetland (Ratio Acres)	4.99 acres	See Table 6		0.25

### 10.3 Credit Release Schedule

<b>Year</b>	<b>Task to Complete</b>	<b>Credits Released</b>	<b>Cumulative Credits Released</b>
(2010)	Signed mitigation plan; site preparation started	15%	15%
(2010)	As built submitted; Performance Standards 1.1, 4.1, 6		15%
(2010)	Long-term management plan and endowment in place; Performance Standard 8.1	30%	45%
(2011)	Woody plants installed		
Year 1 (2012)	Vegetation surveys and photo points; Performance Standards 2, 3, 4.2, 5, 7.2, 7.3, 7.4-7.6, 7.9, 8.1-8.3	11%	56%
Year 2 (2013)	Longitudinal profile and cross sections; Performance Standards 1.2; 1.3; 4.2	11%	67%
Year 3 (2014)	Delineation, Functional Assessment, Vegetation surveys and photo points; Performance Standards 2, 3, 4.2, 5, 7.1-7.9, 8.2, 8.3	11%	78%
Year 4 (2015)	Vegetation surveys and photo points; Performance Standards 2, 4.2, 7.2, 7.3, 7.5-7.9, 8.2, 8.3	11%	89%
Year 5 (2016)	Vegetation surveys and photo points; Performance Standards 2, 3, 4.2, 5, 7.2-7.9, 8.2, 8.3	11%	100%

#### 10.4 Credit Sales

Credit sales using the various ecosystem services will follow Counting on the Environment's Pilot General Crediting Protocol. If one type of credit is sold, a percentage of other credit types available for that area will also be deducted from the ledger and not available for sale. For example, if 10% of the temperature credits are sold from the floodplain area, 10% of the possible wetland acres and salmon credits from the floodplain area will also be deducted and removed from possible sale. If 10% of the wetland credits are sold from the wetland area, 10% of the possible functional wetland acres will be deducted from the ledger. A fictional transaction and credit ledger is presented in Attachment F to demonstrate how credit transactions and pricing will work.

Under the Counting on the Environment's trading ratios, a buyer may be required to purchase additional credits to account for risk, accuracy in the methods, temporal loss, and to ensure environmental gains. Table 9 demonstrates how the ratio will be determined. Buyers will need to purchase, at minimum, an additional 50% of credits to cover the risk of natural disturbance to projects. Up to an additional 100% of credits may be required if the impact site is located in a priority area for salmon, wetlands, or water temperature; if any portion of the credits being purchased come from credits released by the Corps as "advance credits" due to the time loss. Advance credits are defined as those credits released prior to construction being completed. If the impact site is in a priority area and advance credits are being purchased, an additional 150% more credits must be purchased.

Priority areas are defined below. A map is included in Appendix G:

- Willamette Basin salmon credit priority areas are established by the National Marine Fisheries Service and include the genetic legacy and core populations in the Clackamas, North and South Santiam, McKenzie Rivers, and Middle Fork Willamette tributaries. There are no priority areas within the Tualatin Basin
- Wetlands priorities include areas identified in the Willamette Valley Synthesis Map or on sites where the average ORWAP value score over the five functional groups is greater than 0.5.
- Water temperature credit priorities include areas identified in the Willamette Valley Synthesis Map and areas identified within the Oregon Department of Environmental Quality's Internal Management Directive.

The cost of a wetland credit will be equal to the statewide average of mitigation credits available in the state, which is set annually and as of July 1, 2009 is \$83,000 per acre. The cost of functional wetland acre, salmon, or temperature credits will be based on the equivalent number of wetlands (ratio acres) sold .

Table 9. Counting on the Environment Trading Ratios

	No Time Loss	
Impact not in a Priority Area	+50%	+100%
Impact in a Priority Area	+100%	+150%

### 10.5 Potential for Changes in Credits

If the post-construction functional assessments and wetland delineation show that more credits have been achieved than those outlined above, DSL reserves the right to ask for additional credits to be released without amending other portions of this banking instrument. Foreseeable reasons this may occur are:

- Additional grading may be incorporated into the final design, or the delineation may show that additional wetland has been achieved with the current design. These areas are currently part of the non-agricultural buffer.
- An agreement may be reached with the City of Forest Grove regarding the Forest Grove waterline that runs through the eastern portion of the project area. Additional grading over the waterline may allow additional wetland areas to the east of the line. This area is currently part of the non-agricultural buffer.
- If the cost to replace the culvert at Half Mile Lane is prohibitive for the credits awarded, DSL reserves the right to negotiate additional credits or remove this design feature from the project and reduce salmon credits appropriately.
- Salmon credits for removing a fish passage barrier are possible based on the extent of upstream fish use (length of stream). However, this length would need to be protected (e.g. conservation easement). If a riparian easement is placed on Roderick Creek upstream of the project site, additional salmon credits could be achieved.

DSL will provide any required documentation for these credit changes, and may need to provide a revised credit release schedule. These changes would require approval of the Corps of Engineers, with oversight from the Interagency Review Team.

## XI. Adaptive Management Plan

Adaptive management is necessary when visual inspection and/or monitoring data suggest that the site is not meeting the performance standards outlined in Section IX, the filled channel appear to be conducting flow, fish passage is impeded in some way, or the channel changes and goals and objectives are not being met. Risks for the project include beaver activity that damage or remove vegetation and dam up connection swales between the floodplain and wetlands;

and a high flow event or beaver activity that results in the channel moving and becoming incorporated into the wetland (dispersed flows and lack of a defined channel).

If thresholds are not met for vegetation cover, reasons will be determined. Management activities may include additional planting and/or maintenance through watering, animal damage control, or control of competing vegetation. If invasive species cover thresholds are exceeded, maintenance may include manual cutting or pulling, weed cloth, mowing, scalping, herbicide, or biocontrols. This may be in combination with additional planting of native species.

If the ditched location of the Roderick Creek channel continues or begins to transport water, possible maintenance includes additional fill and compaction, flow barriers in the ditch, or digging additional connection channels perpendicular the ditch to allow this water to flow onto the landscape. If fish passage issues are suspected, DSL will consult with the Oregon Department of Fish and Wildlife for recommendations. If longitudinal profiles or cross-sections exceed the thresholds, additional data may be collected and reviewed, and recommendations made to the IRT. Grade control structures will be repaired if the grade exceeds 1% through the section.

Adaptive management strategies will be presented in annual reports to the Corps and IRT and include the need, proposed actions including the implementation timeline and funding necessary to complete the work, and any additional monitoring to determine success of the proposed activities. This information may be conveyed in annual monitoring reports, or through email/telephone communication to the Corps if the need is more immediate. DSL will maintain a contingency line item for Half Mile equal to 30% of the statewide average cost for in-lieu fee mitigation multiplied by the number of credits sold.

## **XII. Maintenance Plan**

Phase 2 of the budget (Attachment A) includes scheduled vegetation maintenance through 2013. This includes maintenance spot spraying, mowing, reseeding, and additional plantings as needed. Reed canarygrass is the species anticipated to require the most maintenance at the site. Some reed canarygrass will be removed during site construction. Tenacious populations may require landscape cloth and/or native vegetation planting to help outcompete this invasive species. Additional maintenance funds may come from the contingency funds or the long-term endowment if interest funds are available.

## **XIII. Site Protection and Long-term Management**

Site protection will be provided in perpetuity through a recorded conservation easement. This easement will be held by Clean Water Services (CWS), however

CWS has reserved the right to transfer the easement and endowment to an approved third party in the future after approval from DSL and the landowners (Wetlands Grant Agreement 2009). The conservation easement is provided as Attachment D and outlines allowable and prohibited uses. The draft long-term management plan (Attachment E) identifies responsibilities of CWS as the land steward. An endowment of \$115,000.00 will be provided to CWS upon approval of the long-term management plan and recording of the easement. This is based on an annual budget of \$5,750.00 and a capitalization rate of 4.5% as shown in Table 1 of Attachment E.

## **XIV. References**

- 33 CFR 332. Compensatory Mitigation for Losses of Aquatic Resources (FR V. 73 No. 70, April 10, 2008). Department of Defense, Department of the Army, Corps of Engineers. 33 CFR Parts 325 and 332.
- Adamus, P., J. Morlan, and K. Verble. 2009. Oregon Rapid Wetland Assessment Protocol (ORWAP): calculator spreadsheet, databases, and data forms. Oregon Dept. of State Lands, Salem, Oregon.
- Breuner, Nancy. 1998. Gales Creek Watershed Assessment Project. Resource Assistance for Rural Environments. Tualatin River Watershed Council.
- Department of State Lands. 2009. Routine Monitoring Guidance for Vegetation v. 1.0. September 23, 2009 Draft.
- Oregon Department of Fish and Wildlife. 2005. Oregon Conservation Strategy. Oregon Department of Fish and Wildlife, Salem, Oregon; pg. 147.
- Philip Williams and Associates. 1996. Half Mile Lane Development Flood Hazard Evaluation.
- SWCA Environmental Consultants. 2009. Gales Creek Half Mile Lane Site Wetland and Water Delineation Report. April 2009.
- Swanson Hydrology and Geomorphology. 2006. Lower Gales Creek Enhancement Planning Geomorphic Assessment—Technical Study. Tualatin River Watershed Council.
- USDA Forest Service. 2008. Half Mile Lane and Crowley Creek Restoration Projects Environmental Assessment (April 9, 2008).

## FIGURES

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IN WITNESS WHEREOF, the parties hereto have executed the Mitigation Plan for Half Mile Lane Project as a modification to the Oregon Department of State Lands In-Lieu Fee Program Instrument on the date herein below last written by the IRT Chair.

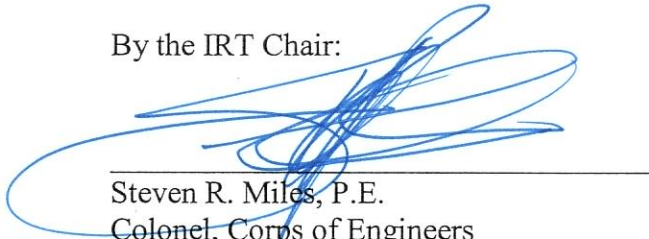


Louise Solliday, Director  
Oregon Department of State Lands

3/16/10  
Date

INTERAGENCY REVIEW TEAM

By the IRT Chair:



Steven R. Miles, P.E.  
Colonel, Corps of Engineers  
District Commander

30 March 2010.  
Date

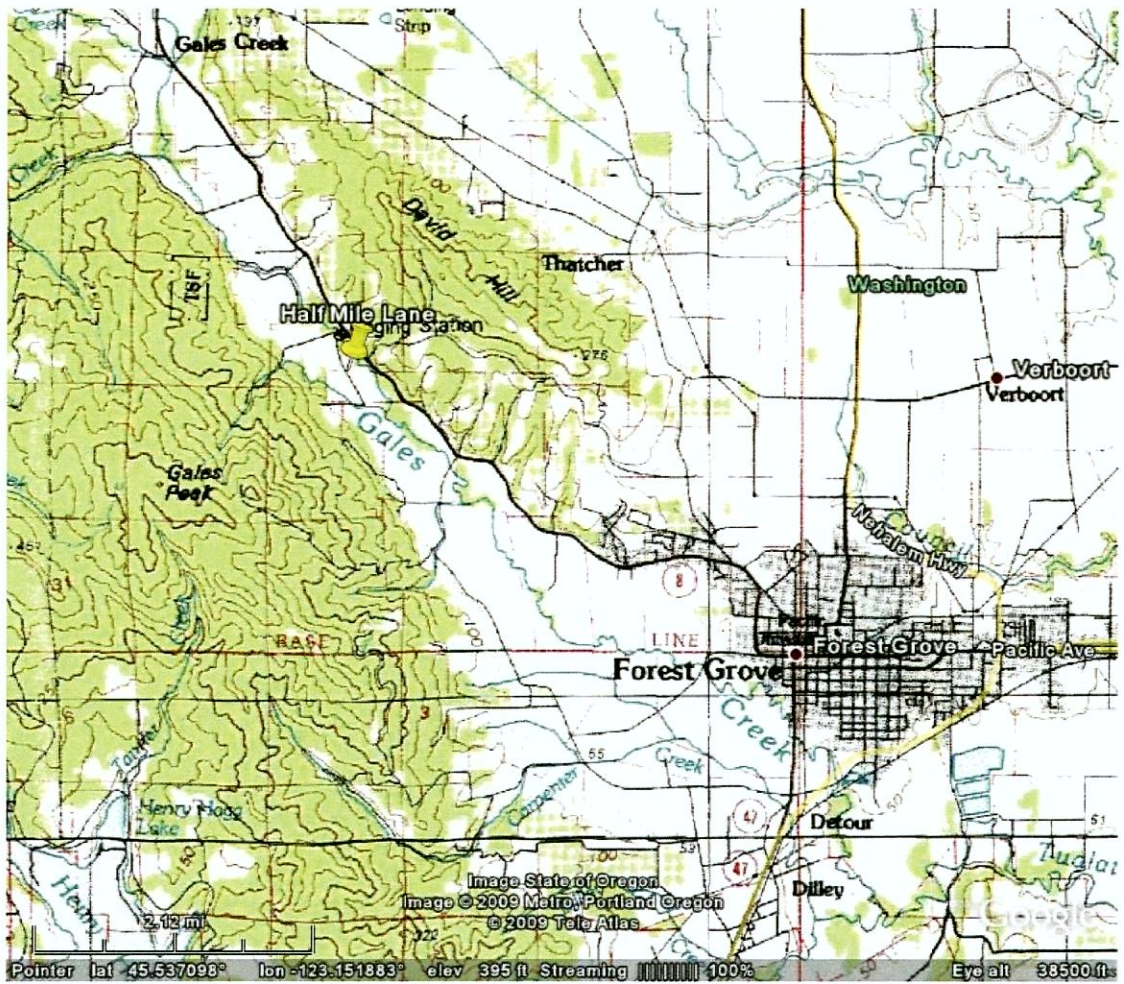


Figure 1. Project Vicinity Map

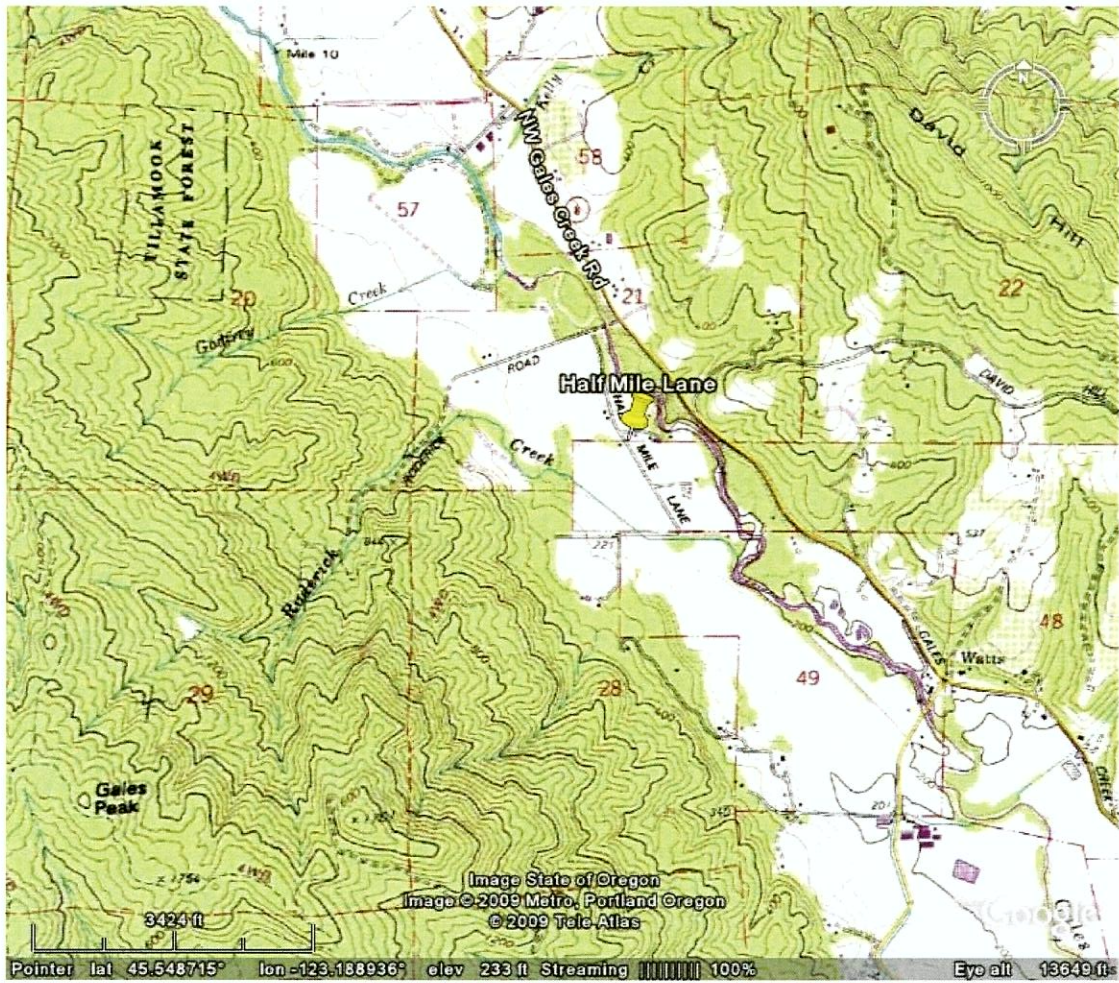
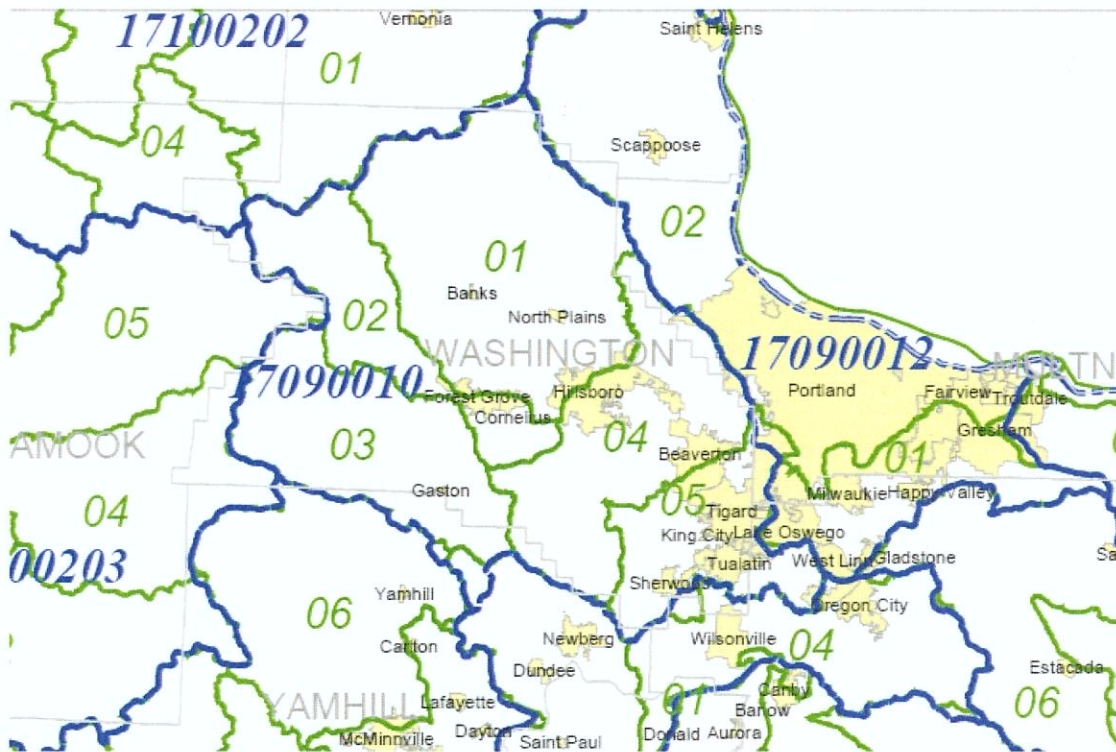


Figure 2. Site Location Topography



**Figure 3. Service Area**

The proposed service area is the Tualatin fourth field hydrologic unit (HUC 17090010)

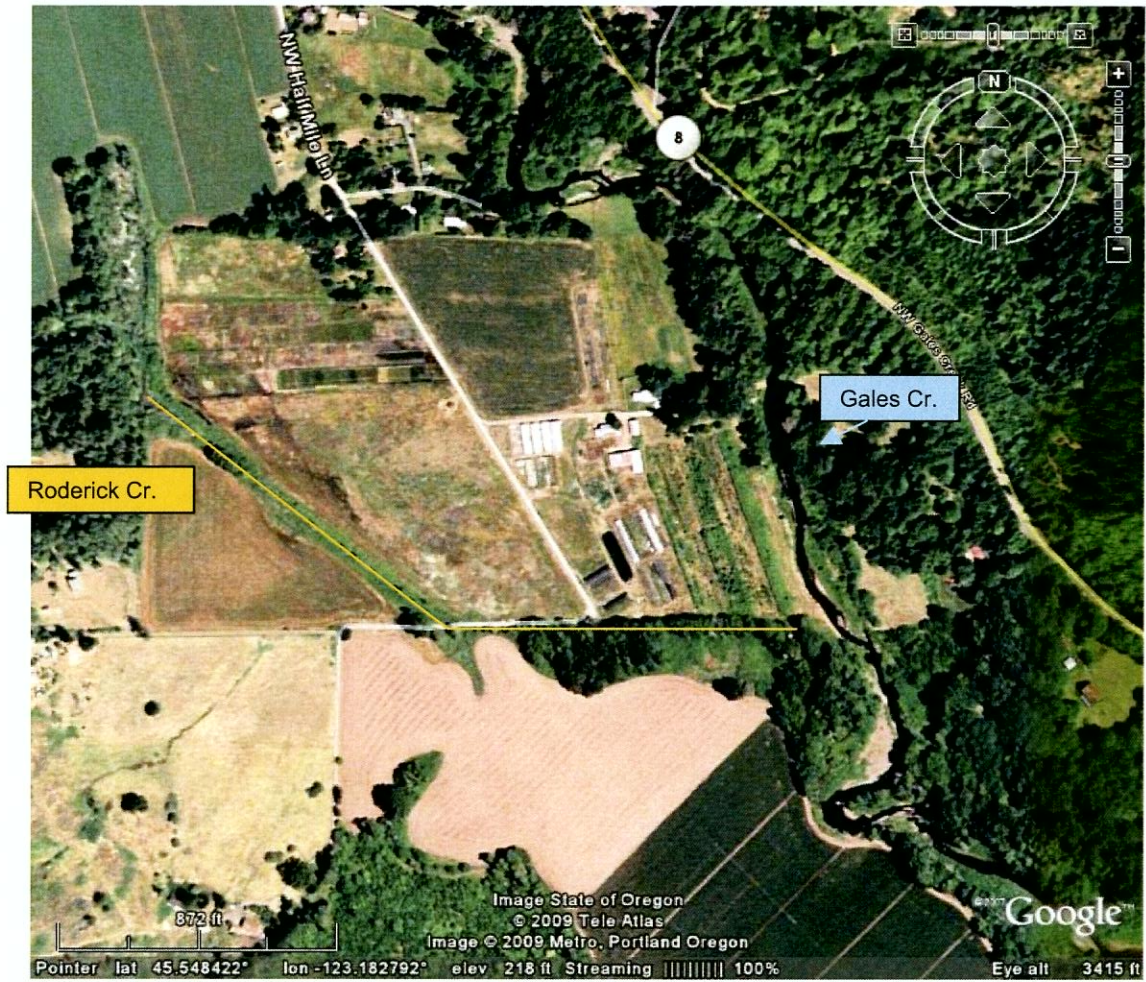


Figure 4. Current Conditions

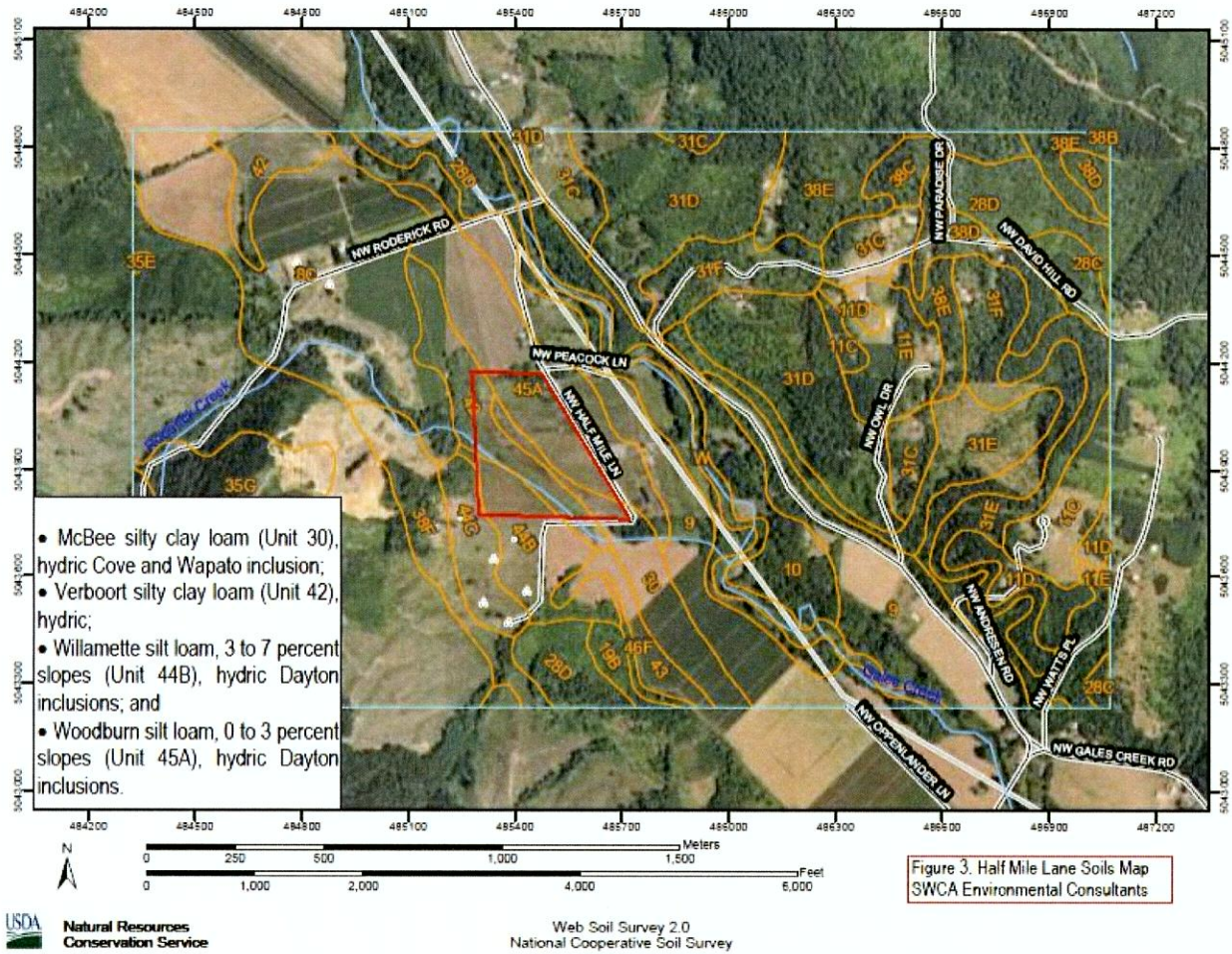


Figure 5. Mapped Soils on the Project Site (SWCA 2009)

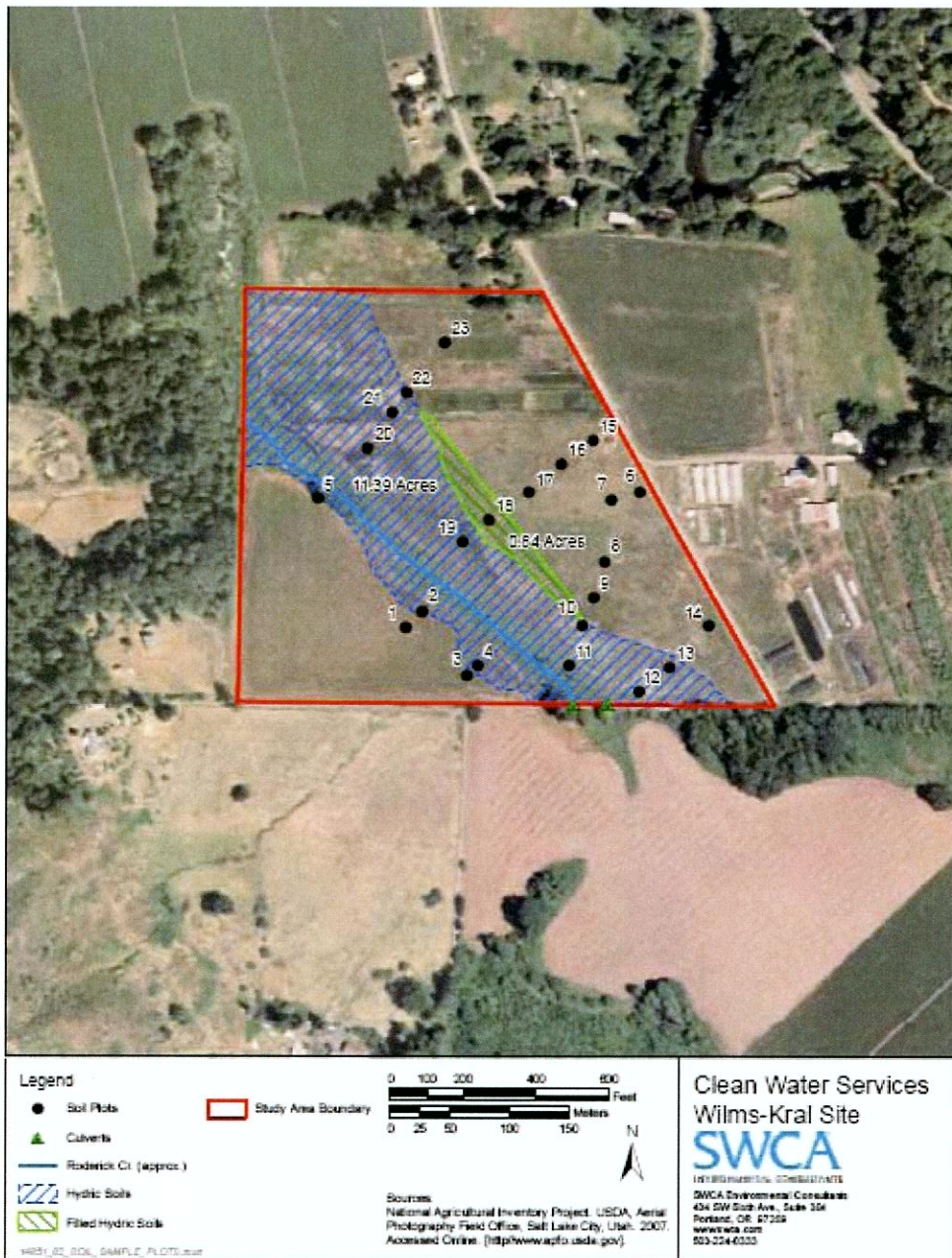


Figure 6. Hydric Soils on the Project Site

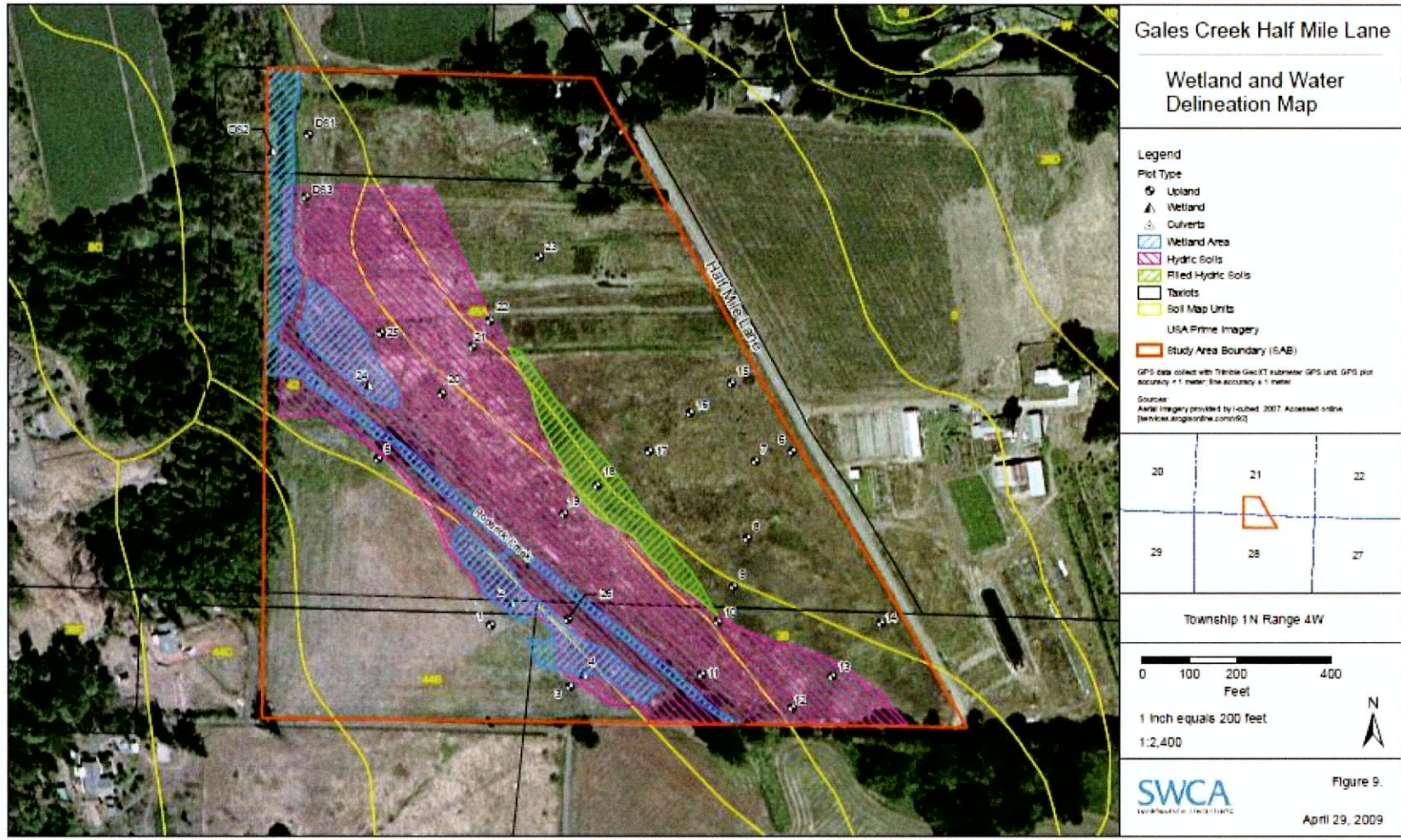


Figure 7. Delineated Wetlands and Waters (SWCA 2009)



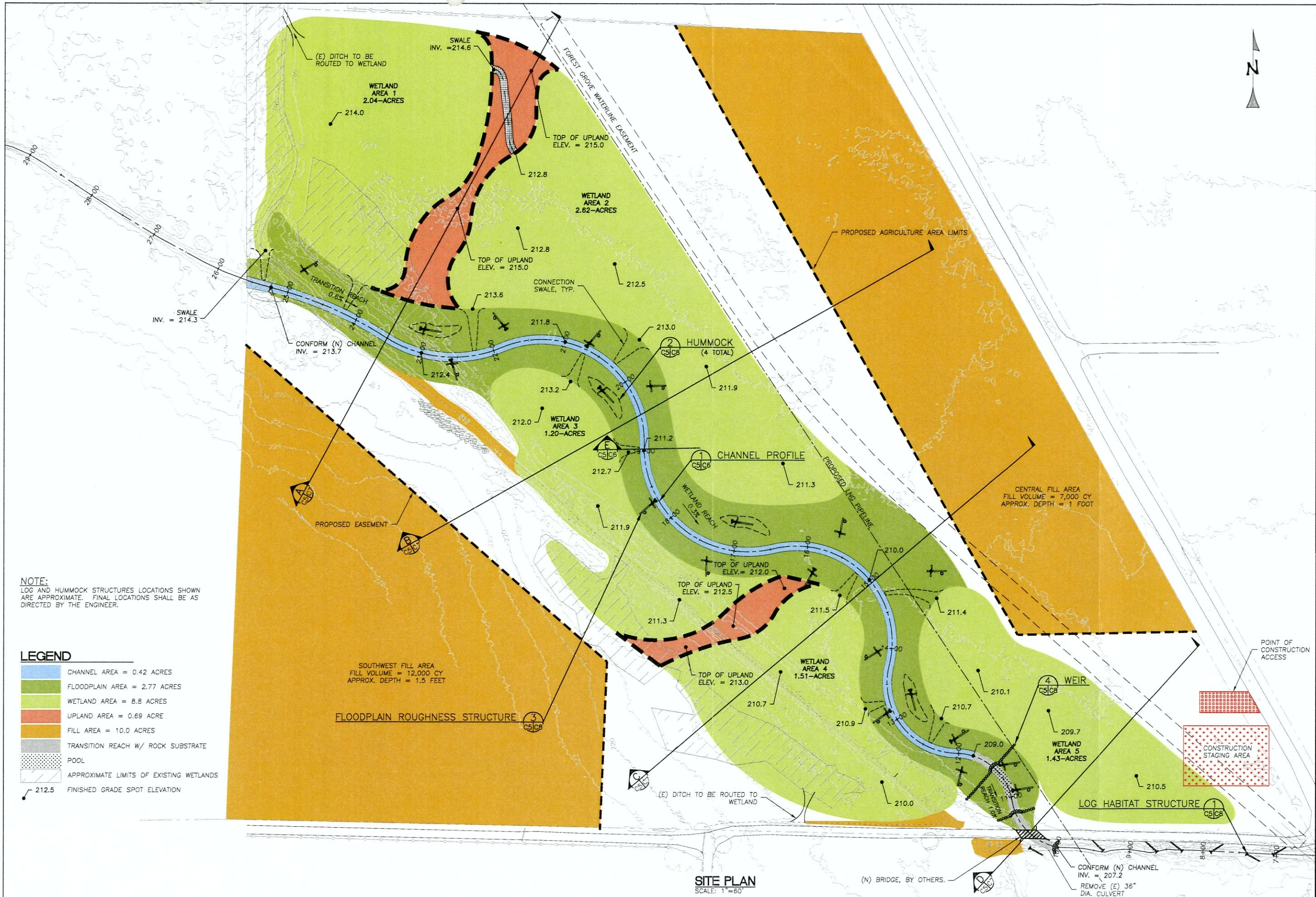
Figures 8 – 11: 50% Designs for Half Mile Lane from Waterways Consulting

Figure 8: Roderick Creek Site Plan (Drawing C5)

Figure 9: Roderick Creek Profile and Typical Section (Drawing C6)

Figure 10: Roderick Creek Sections (Drawing C7)

Figure 11: Roderick Creek Details (Drawing C8)



**NOTE:**  
 LOG AND HUMMOCK STRUCTURES LOCATIONS SHOWN ARE APPROXIMATE. FINAL LOCATIONS SHALL BE AS DIRECTED BY THE ENGINEER.

**LEGEND**

	CHANNEL AREA = 0.42 ACRES
	FLOODPLAIN AREA = 2.77 ACRES
	WETLAND AREA = 8.8 ACRES
	UPLAND AREA = 0.69 ACRE
	FILL AREA = 10.0 ACRES
	TRANSITION REACH W/ ROCK SUBSTRATE
	POOL
	APPROXIMATE LIMITS OF EXISTING WETLANDS
	212.5 FINISHED GRADE SPOT ELEVATION

SOUTHWEST FILL AREA  
 FILL VOLUME = 12,000 CY  
 APPROX. DEPTH = 1.5 FEET

CENTRAL FILL AREA  
 FILL VOLUME = 7,000 CY  
 APPROX. DEPTH = 1 FOOT

**SITE PLAN**  
 SCALE: 1"=60'

**PRELIMINARY**  
 NOT FOR CONSTRUCTION

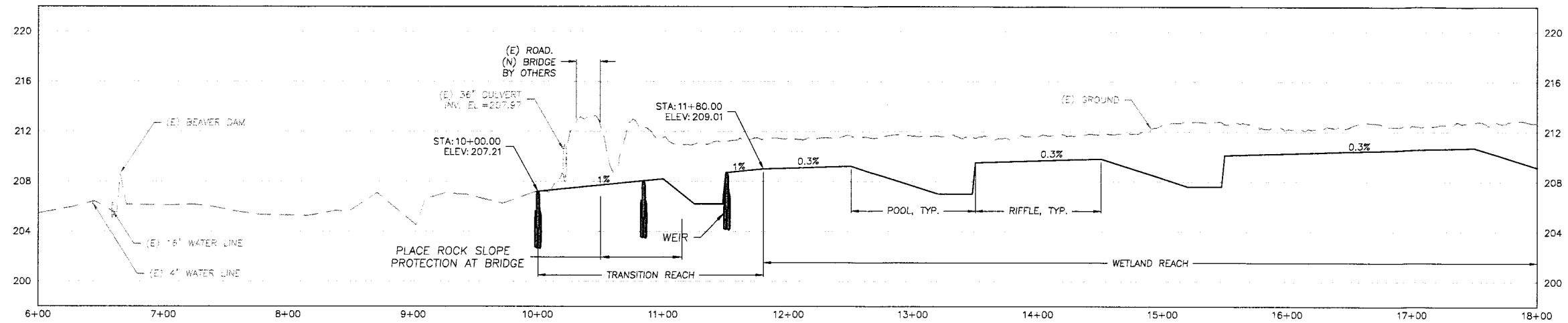
PREPARED AT THE REQUEST OF:  
**CLEAN WATER SERVICES**  
 2550 SW HILLSBORO HWY  
 HILLSBORO, OR 97123

**RODERICK CREEK AND GALES CREEK**  
 RESTORATION PLAN  
 PERMIT SUBMITTAL

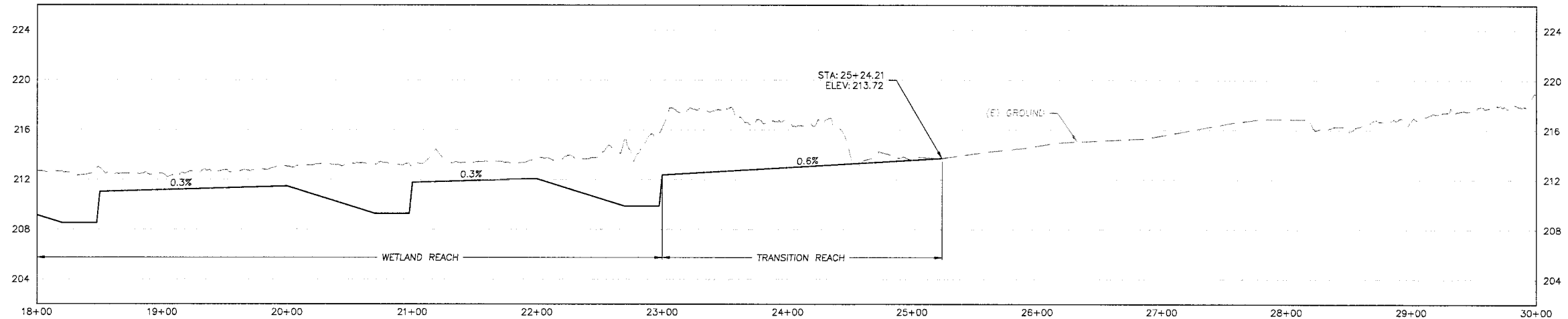
**KRAL PROPERTY**  
 RODERICK CREEK AND GALES CREEK  
 RESTORATION PLAN  
 PERMIT SUBMITTAL

DESIGNED BY: M.W.W.  
 DRAWN BY: B.M.S.  
 CHECKED BY: M.W.W.  
 DATE: 12/21/09  
 JOB NO.: 09-024

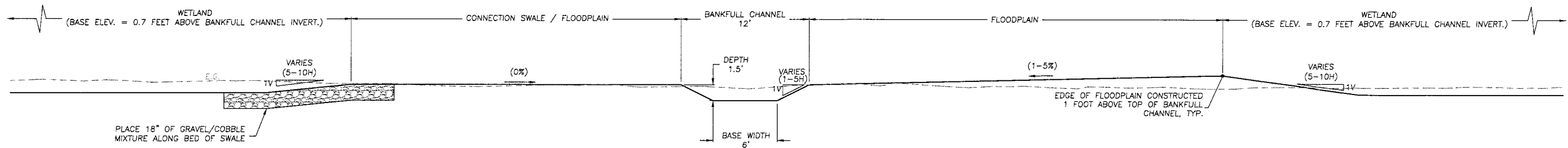
BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS.



**PROPOSED CHANNEL PROFILE**  
SCALE: H:1"=50'; V:1"=5'



**PROPOSED CHANNEL PROFILE**  
SCALE: H:1"=50'; V:1"=5'



**TYPICAL SECTION AT CONNECTION SWALE**  
SCALE: 1"=5'

**GRADING NOTE:**  
1. EXCAVATED FLOODPLAIN AND WETLAND AREAS TO BE FINISH GRADED WITH AN IRREGULAR SURFACE TO PROVIDE HABITAT COMPLEXITY AND VARIABILITY. GRADES SHALL VARY, BUT REMAIN WITHIN (+/-) 0.5 FEET OF THE GRADES SHOWN HEREON.

**PRELIMINARY**  
NOT FOR CONSTRUCTION

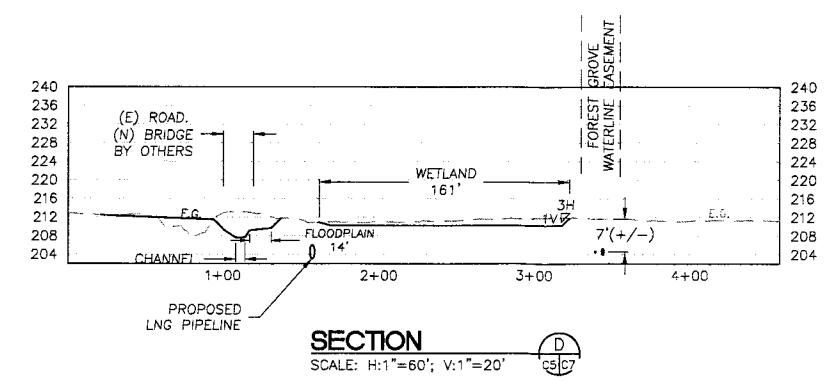
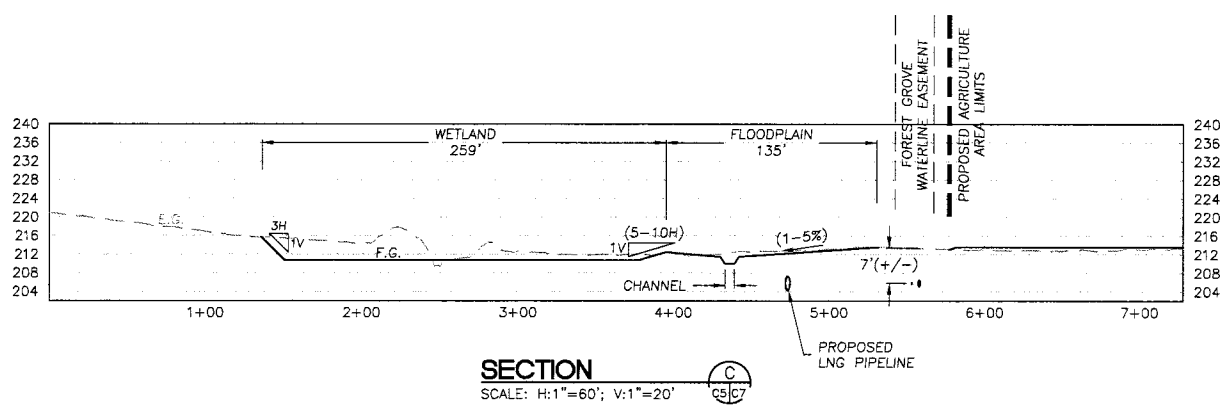
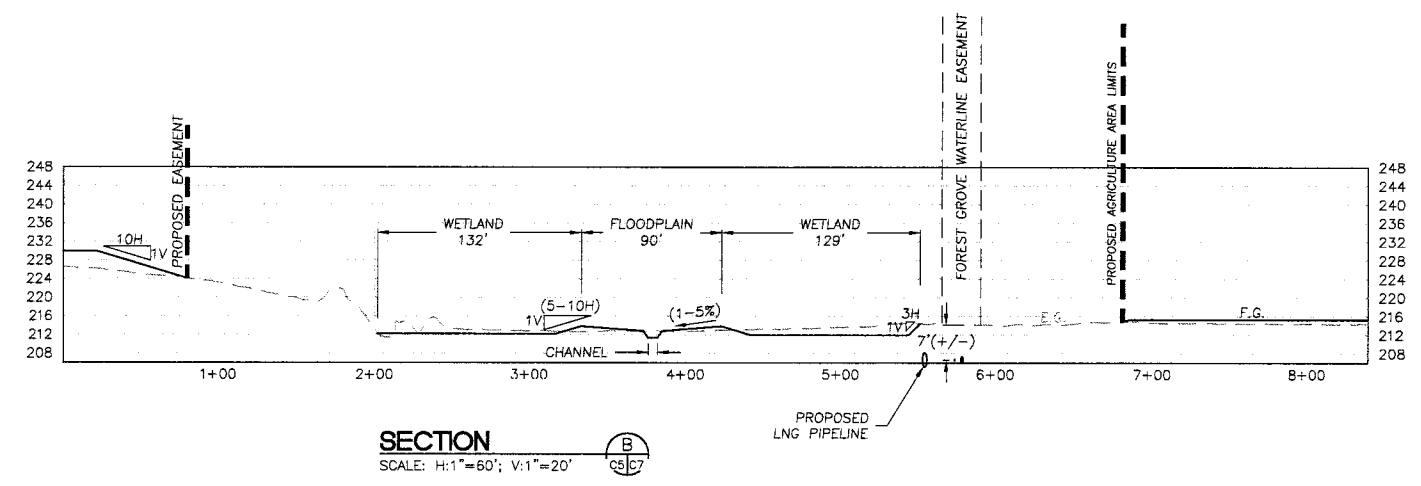
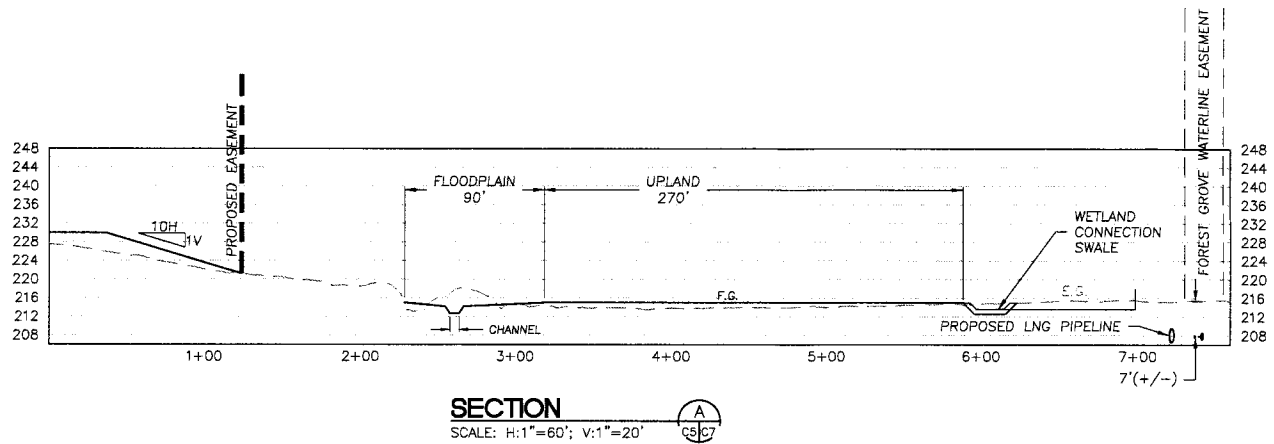
PREPARED AT THE REQUEST OF:  
**CLEAN WATER SERVICES**  
2550 SW HILLSBORO HWY  
HILLSBORO, OR 97123

**RODERICK CREEK AND GALES CREEK**  
PROFILE AND TYPICAL SECTION

**KRAL PROPERTY**  
RODERICK CREEK AND GALES CREEK  
RESTORATION PLAN  
PERMIT SUBMITTAL

DESIGNED BY: M.W.W.  
DRAWN BY: B.M.S.  
CHECKED BY: M.W.W.  
DATE: 12/21/09  
JOB NO.: 09-024

BAR IS ONE INCH ON ORIGINAL DRAWING, ADJUST SCALES FOR REDUCED PLOTS  
0 1"



**PRELIMINARY**  
NOT FOR CONSTRUCTION

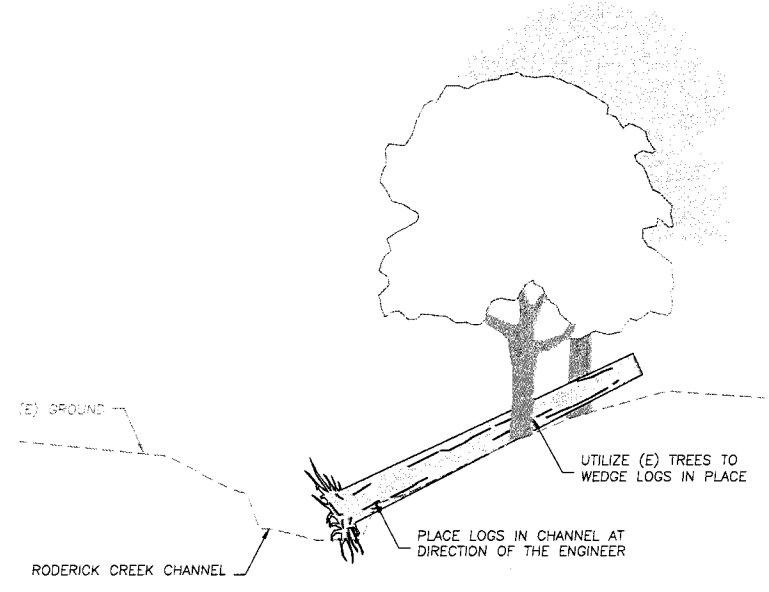
PREPARED AT THE REQUEST OF:  
**CLEAN WATER SERVICES**  
2550 SW HILLSBORO HWY  
HILLSBORO, OR 97123

**RODERICK CREEK SECTIONS**

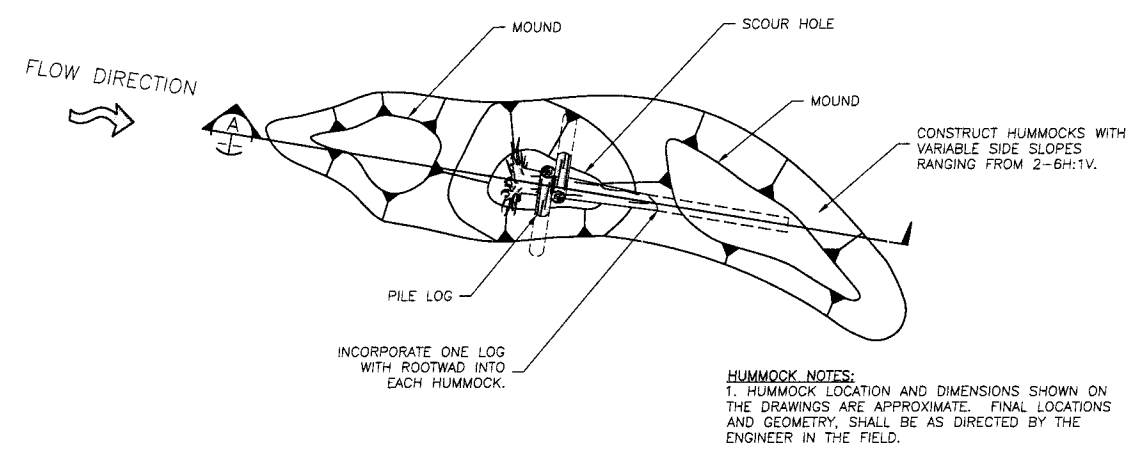
**KRAL PROPERTY  
RODERICK CREEK AND  
GALES CREEK  
RESTORATION PLAN  
PERMIT SUBMITTAL**

DESIGNED BY: M.W.W.  
DRAWN BY: B.M.S.  
CHECKED BY: M.W.W.  
DATE: 12/21/09  
JOB NO.: 09-024

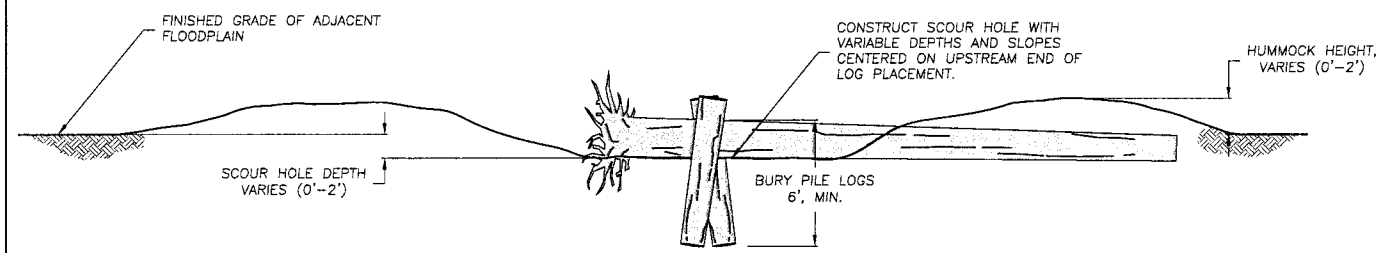
BAR IS ONE INCH ON ORIGINAL DRAWING, ADJUST SCALES FOR REDUCED PLOTS



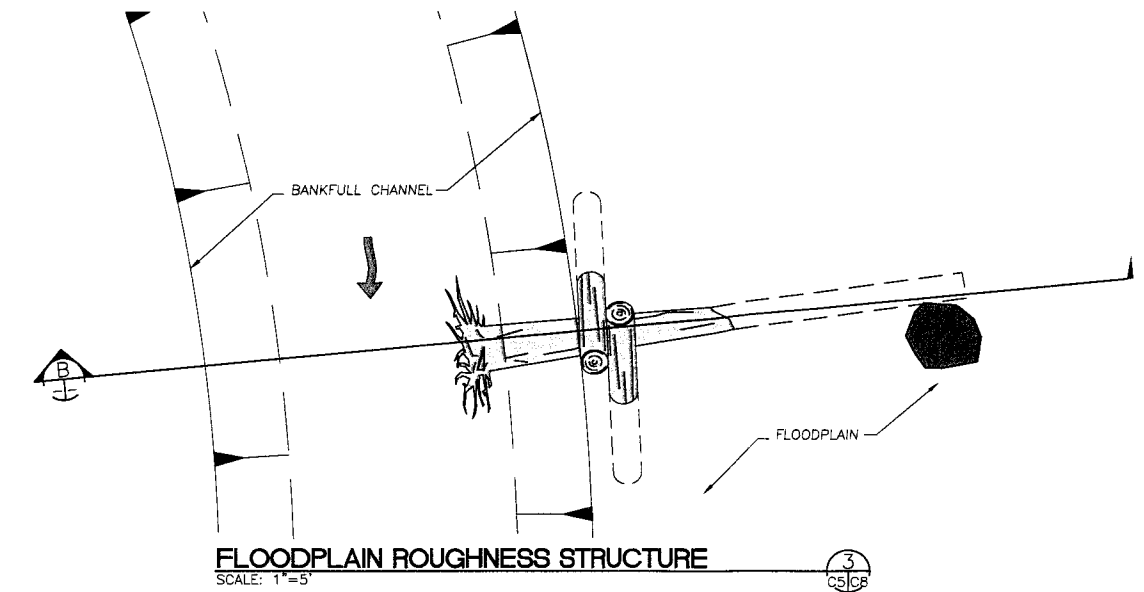
**LOG HABITAT STRUCTURE**  
SCALE: 1"=5'  
C2,CS|CB



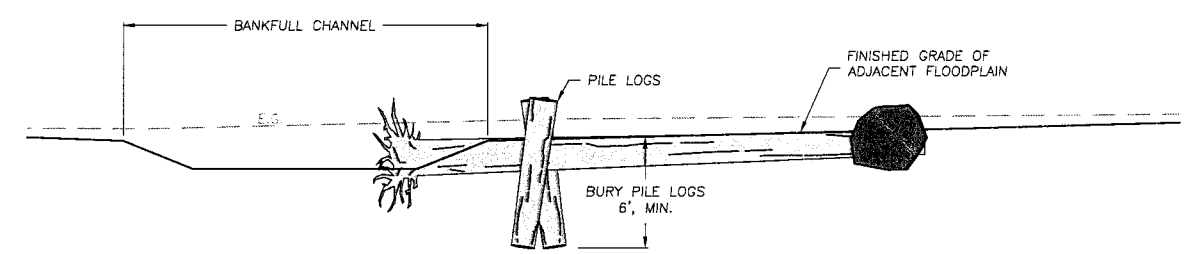
**HUMMOCK**  
SCALE: 1"=10'  
C2,CS|CB



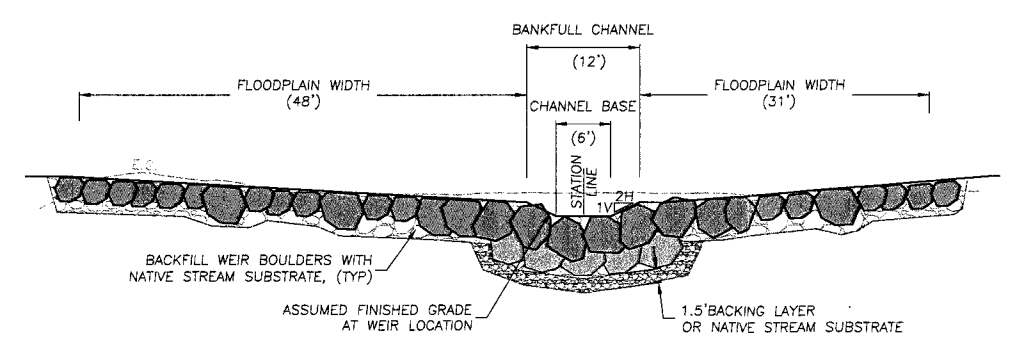
**HUMMOCK SECTION**  
SCALE: 1"=5'  
A



**FLOODPLAIN ROUGHNESS STRUCTURE**  
SCALE: 1"=5'  
C3,CS|CB



**FLOODPLAIN ROUGHNESS SECTION**  
SCALE: 1"=5'  
B



**TYPICAL ROUGHENED CHANNEL AT WEIR**  
SCALE: 1"=10'  
C4,CS|CB

**LOG STRUCTURE NOTES:**  
1. FINAL PLACEMENT AND LOCATIONS SHALL BE AT THE DIRECTION OF THE ENGINEER.  
2. BACKFILL LOG STRUCTURE EXCAVATIONS WITH NATIVE MATERIAL TO MATCH FINISHED GRADE.

**PRELIMINARY**  
**NOT FOR CONSTRUCTION**

PREPARED AT THE REQUEST OF:  
**CLEAN WATER SERVICES**  
2550 SW HILLSBORO HWY  
HILLSBORO, OR 97123

**RODERICK CREEK DETAILS**

**KRAL PROPERTY**  
**RODERICK CREEK AND GALES CREEK RESTORATION PLAN PERMIT SUBMITTAL**

DESIGNED BY: M.W.W.  
DRAWN BY: B.M.S.  
CHECKED BY: M.W.W.  
DATE: 12/21/09  
JOB NO.: 09-024

BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS

Figures 12-14. Sample Bridge Photos, Wetland Credit Areas, and Credit Zones  
from Clean Water Services

Figure 12: Sample Photos of a Modular Pre-Cast Concrete Bridge System

Figure 13: Wetland Credit Areas Using Ratios

Figure 14: Credit Zones Using Optional Functional Accounting

2008-01-24 AT 11:44 BY ALAN F:\351-2\DRAWINGS\UPF.V.DWG, PDF CREATED ON 2008-01-24 AT 11:44 BY ALAN DRAWING OPEN 6.00 HOURS F:\351-2\DRAWINGS\UPF.V.DWG, DWG CREATED ON 2008-01-24 AT 11:37 BY ALAN

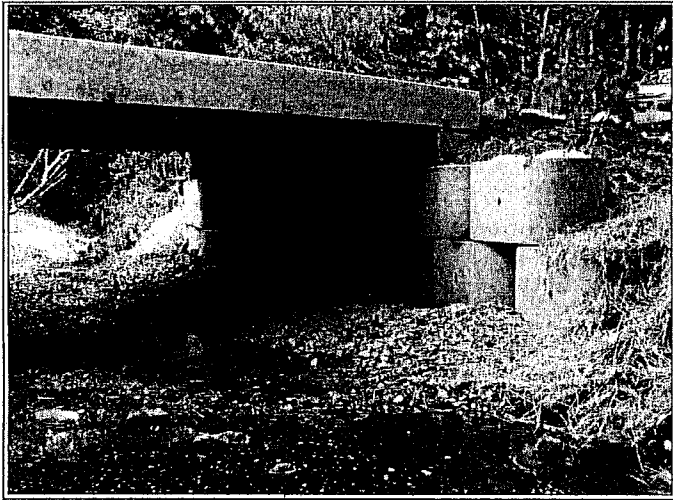


Photo # 1 East "Serpentine" Support Abutment Structure With Wingwalls Using Pacific Bridge "Standard" Abutment Units



Photo # 2 West "Square Corner" Support Abutment Without Wingwalls Using Pacific Bridge "Mono" Abutment Units With "Returns"

Bridge At Mt Scott Creek - Clackamas, Oregon

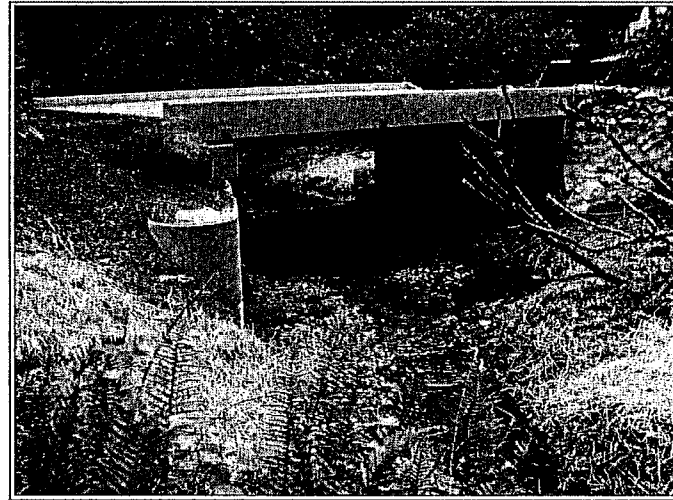


Photo # 3 View Of Bridge From Upstream Showing Restored Streambed

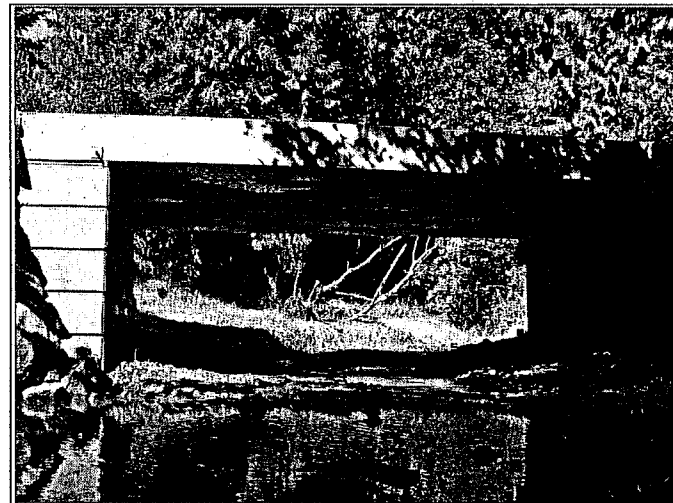
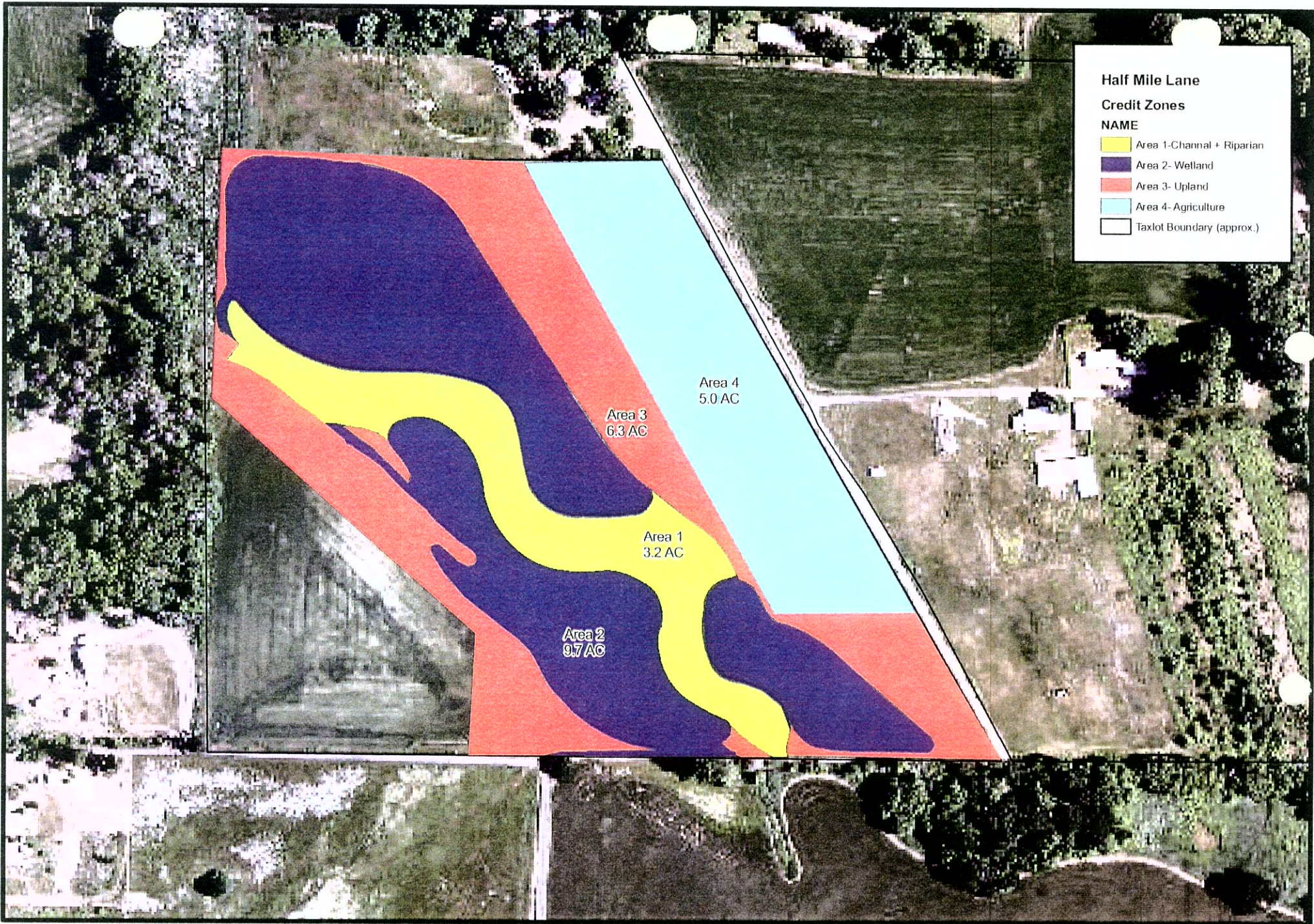


Photo # 4 View Of Bridge From Downstream Showing Restored Streambed






Bridge At Mt Scott Creek - Clackamas, Oregon



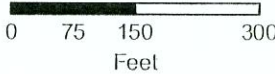
Project: Modular Precast Concrete Bridge Systems (General Information / Not For Construction)  
 Client: Pacific Bridge And Construction, Inc. P.O. Box 1711, Sandy, Oregon 97055 - 503-668-4798  
 Phone: 503-255-4482  
 Fax: 503-255-4485  
 Email: Engineers@S1mSys.com  
**STRUCTURAL SYSTEMS**  
 5515 N.E. 112th Avenue  
 Portland, Oregon 97220-2402  
**CONSULTING ENGINEERS, LLC**  
 Drawing Date: January 31, 2008 | Designer: Alan Gaylor | Drafter: Alan Gaylor | Project: 1351-21  
 Revision 0 Date: | Title: Private Driveway Bridge Across Mt Scott Creek - Photo Set #2  
 Drawing: A5



**Half Mile Lane**  
**Credit Zones**

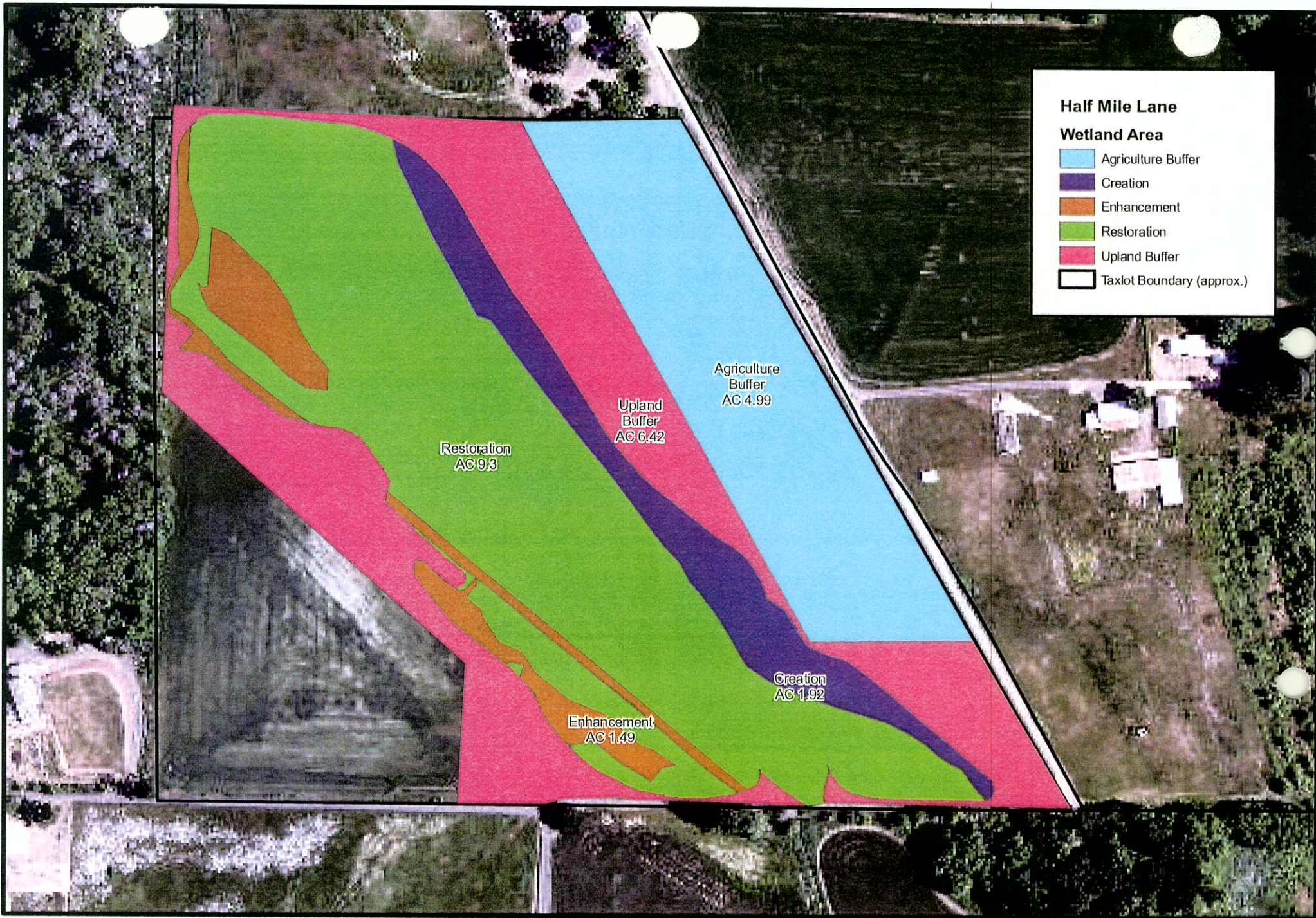
NAME	
	Area 1-Channel + Riparian
	Area 2- Wetland
	Area 3- Upland
	Area 4- Agriculture
	Taxlot Boundary (approx.)

Wetland Area



Not intended as definitive property description. All users of this information should perform a separate investigation of conditions before commencing any plan, design, construction, watershed enhancement activities, or other work. There are no warranties, expressed or implied, including the warranty of merchantability or fitness for a particular purpose, concerning this information.





**Half Mile Lane**

**Wetland Area**

- Agriculture Buffer
- Creation
- Enhancement
- Restoration
- Upland Buffer
- Taxlot Boundary (approx.)

Agriculture  
Buffer  
AC 4.99

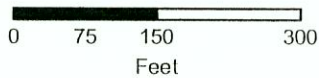
Upland  
Buffer  
AC 6.42

Restoration  
AC 9.3

Creation  
AC 1.92

Enhancement  
AC 1.49

Wetland Area



Not intended as definitive property description. All users of this information should perform a separate investigation of conditions before commencing any plan, design, construction, watershed enhancement activities, or other work. There are no warranties, expressed or implied, including the warranty of merchantability or fitness for a particular purpose, concerning this information.

## Attachment A—Project Budget

Department of State Lands  
FORM for BUDGET AMENDMENTS

Project Name\_ Half Mile Lane

Grant Budget Categories	Original Budget	Change #1	Change #2	Change #3	Revised Budget
Pre-Grant for Wetland Delineation	\$6,927.14	\$0.00	\$0.00	\$0.00	\$6,927.14
Pre-Implementation	\$55,300.00	\$0.00	\$0.00	\$0.00	\$55,300.00
Easement	\$109,850.00	\$52,710.00	\$0.00	\$0.00	\$162,560.00
Contracted Service	\$185,420.00	\$0.00	\$0.00	\$0.00	\$185,420.00
Supplies/Materials	\$75,550.00	\$0.00	\$0.00	\$0.00	\$75,550.00
Post Implementation Reporting	\$29,200.00	\$0.00	\$0.00	\$0.00	\$29,200.00
Endowment	\$115,000.00	\$0.00	\$0.00	\$0.00	\$115,000.00
	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
<b>GRANT TOTAL</b>	<b>\$577,247.14</b>	<b>\$52,710.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$629,957.14</b>

JUSTIFICATION FOR CHANGE: The cost for the conservation easement on 23.9 acres is \$500,000. The easement was originally budgeted based on 20 acres at \$4,500. DSL will provide an additional \$52,710 to the grantee to cover the additional cost.

Grantee Signature: DSL initiated change--signature not required Date: \_\_\_\_\_

DSL Project Manager Approval: \_\_\_\_\_ Date: \_\_\_\_\_

DSL Director/Assistant Director Approval: \_\_\_\_\_ Date: \_\_\_\_\_

- Grant Budget Categories / Original Budget:** Reproduce each budget category & budget amount exactly as they appear in Exhibit A of your approved Grant Agreement. All Budget Categories (original & proposed) must be shown, even when categories are adjusted to -0-.
- Change Columns:** Show proposed line item budget changes in Change column #1. (Only enter the amount of Increase or Decrease to each individual budget category). If, at a later date, you need to request an additional budget change, use Change #2 and #3 columns. When entering new numbers in any change column, DO NOT make changes to numbers entered in previous change columns. Enter decreases as a negative number - (Example: -150.00). Grant Total in Change #1, #2 & #3 columns should always be \$0.00.
- Grant Total columns:** Grant Total is automatically calculated in these columns. DO NOT enter any numbers in the Grant Total row. (The Original Budget Grant Total must equal the Revised Budget Grant Total).
- Revised Budget rows:** Totals are automatically calculated across columns for these rows. DO NOT enter any numbers in Revised Budget column.

Exhibit B

Half Mile Wetland Phase I - Initial Restoration and Establishment						
Apr 2009 to Nov 2011	Date	No. Units	Unit	Cost/ Unit	Acres	Total Cost
<b>PRE-IMPLEMENTATION</b>						
Wetland functional assessment & report - pre-treatment	Apr-09					\$1,300.00
Wetland design/permitting	Jul-09					\$40,000.00
Bridge design	Jul-09					\$10,000.00
CWS project management	Jul-09	40	hr	\$70.00		\$2,800.00
<b>PRE-IMPLEMENTATION TOTAL</b>						<b>\$54,100.00</b>
<b>EASEMENT</b>						
Survey	Aug-09				20	\$9,264.00
Legal description, legal review and recording	Sep-09				20	\$2,316.00
Easement purchase	Oct-09	1	ac	\$4,500.00	20	\$97,290.00
CWS project management	Aug-09	20	hr	\$70.00	20	\$980.00
<b>EASEMENT TOTAL</b>						<b>\$109,850.00</b>
<b>CONTRACTED SERVICES</b>						
<i>Wetland complex (20 ac)</i>						
Site prep perimeter spray	Apr-10	1	ac	\$150.00	4	\$600.00
Site prep perimeter mow	Jun-10	1	ac	\$300.00	4	\$1,200.00
Site prep perimeter spray	Jul-10	1	ac	\$150.00	4	\$600.00
Site prep perimeter spray	Aug-10	1	ac	\$150.00	4	\$600.00
Bridge or culvert purchase and installation	Aug-10					\$35,000.00
Earthwork, large wood and erosion control	Aug-10					\$78,500.00
Disc (2 treatments on part of field)	Sep-10	1	ac	\$50.00	20	\$1,000.00
Erosion control	Sep-10					\$5,000.00
Broadcast spray	Oct-10	1	ac	\$110.00	20	\$2,200.00
Seed spreading	Oct-10	1	ac	\$50.00	20	\$1,000.00
Harrow	Oct-10	1	ac	\$20.00	20	\$400.00
Herbaceous plugs and bulb installation	Oct-10	1000	ea	\$0.26	20	\$5,200.00
Oak/Wetland bare-root planting	Feb-11	50	ea	\$0.26	20	\$260.00
Oak/Wetland plant staking	Feb-11	50	ea	\$0.10	20	\$100.00
Perimeter bare-root planting	Feb-11	2000	ea	\$0.26	4	\$2,080.00
Maintenance spot spray	Mar-11	1	ac	\$175.00	20	\$3,500.00
Maintenance mow	May-11	1	ac	\$250.00	20	\$5,000.00
Optional maintenance spot spray	Jun-11	1	ac	\$175.00	20	\$3,500.00
Field maintenance broadcast spray	Oct-11	1	ac	\$110.00	20	\$2,200.00
Buffer maintenance spot spray	Oct-11	1	ac	\$175.00	4	\$700.00
CWS or Contractor project mangt.	Nov-11	40	hr	\$70.00		\$2,800.00
<b>Contracted Services Subtotal</b>						<b>\$151,440.00</b>
<b>SUPPLIES/MATERIALS</b>						
<i>Wetland complex (20 ac)</i>						
Native seed	Nov-10	22	lb	\$30.00	20	\$13,200.00
Herbaceous plugs and bulbs	Nov-10	1000	ea	\$0.50	20	\$10,000.00
Oak seedlings	Feb-11	50	ea	\$0.60	20	\$600.00
Bamboo stakes	Feb-11	50	ea	\$0.15	20	\$150.00
Bare-root trees and shrubs	Feb-10	2000	ea	\$0.60	4	\$4,800.00
<b>Supplies/Materials subtotal</b>						<b>\$28,750.00</b>
<b>POST IMPLEMENTATION REPORTING</b>						
Wetland delineation, assessment - post-treatment	Jul-11					\$10,000.00
Vegetation monitoring, reporting	Nov-11	1	yr	\$3,000.00		\$3,000.00
CWS project management	Nov-11	20	hr	\$70.00		\$1,400.00
<b>POST IMPLEMENTATION REPORTING TOTAL</b>						<b>\$14,400.00</b>
<b>PRE-IMPLEMENTATION</b>						<b>\$54,100.00</b>
<b>EASEMENT</b>						<b>\$109,850.00</b>
<b>CONTRACTED SERVICES</b>						<b>\$151,440.00</b>
<b>SUPPLIES/MATERIALS</b>						<b>\$28,750.00</b>
<b>POST IMPLEMENTATION REPORTING</b>						<b>\$14,400.00</b>
<b>TOTAL Phase I</b>						<b>\$358,540.00</b>

Exhibit B

Half Mile Wetland Phase II - Native perennial establishment						
Nov 2011 to Oct 2013	Date	No. Units	Unit	Cost/ Unit	Acres	Total Cost
<b>PRE-IMPLEMENTATION</b>						
Plan update	Apr-11					\$500.00
CWS project management	Apr-11	10	hr	\$70.00		\$700.00
<b>PRE-IMPLEMENTATION TOTAL</b>						<b>\$1,200.00</b>
<b>CONTRACTED SERVICES</b>						
<i>Wetland complex (20 ac)</i>						
Seed drilling	Oct-11	1	ac	\$50.00	20	\$1,000.00
Maintenance spot spray	Apr-12	1	ac	\$175.00	20	\$3,500.00
Maintenance spot spray	Jul-12	1	ac	\$175.00	20	\$3,500.00
Maintenance mow	Sep-12	1	ac	\$80.00	20	\$1,600.00
Herbaceous plugs and bulb installation	Oct-12	2200	ea	\$0.26	20	\$11,440.00
Bare-root planting	Feb-13	200	ea	\$0.26	20	\$1,040.00
Maintenance spot spray	Apr-13	1	ac	\$175.00	20	\$3,500.00
Maintenance spot spray	Jul-13	1	ac	\$175.00	20	\$3,500.00
Maintenance spot spray	Sep-13	1	ac	\$175.00	20	\$3,500.00
CWS or Contractor project mangt.	Oct-13	20	hr	\$70.00		\$1,400.00
<b>Contracted Services Subtotal</b>						<b>\$33,980.00</b>
<b>SUPPLIES/MATERIALS</b>						
<i>Wetland complex (20 ac)</i>						
Native seed	Oct-11	15	lb	\$60.00	20	\$18,000.00
Herbaceous plugs and bulbs	Oct-12	2200	ea	\$0.60	20	\$26,400.00
Bare-root trees and shrubs	Feb-13	200	ea	\$0.60	20	\$2,400.00
<b>Supplies/Materials Subtotal</b>						<b>\$46,800.00</b>
<b>POST IMPLEMENTATION REPORTING</b>						
Vegetation monitoring, reporting	Oct-15	4	yr	\$3,000.00		\$12,000.00
CWS project management	Nov-15	40	hr	\$70.00		\$2,800.00
<b>POST IMPLEMENTATION REPORTING TOTAL</b>						<b>\$14,800.00</b>
<b>PRE-IMPLEMENTATION</b>						<b>\$1,200.00</b>
<b>CONTRACTED SERVICES</b>						<b>\$33,980.00</b>
<b>SUPPLIES/MATERIALS</b>						<b>\$46,800.00</b>
<b>POST IMPLEMENTATION REPORTING</b>						<b>\$14,800.00</b>
<b>TOTAL Phase II</b>						<b>\$96,780.00</b>

*Attachment B—Wetland Delineation and Functional Assessment  
Summaries*

## Pre-Project Salmon Credit Calculation Data Summary

Project/site: Roderick Creek - Baseline

Site function performance = 48%  
 On-site stream lengths  
 Total length = 1300  
 Length above partial barrier = 1270  
 Length above full barrier = 0

### Alternative only

Distance from site to next upstream barrier/constraint (ft) = 0  
 Constraint/barrier type affecting this distance = None

### Site values

Salmon = 317.54  
 Temperature (kcal) = 240,410

### Site review

MU ID	Acre	Habitat type	Kcal [calculated]	Weighted functional score	Anadromous fish raw score	Cover	Foraging	Nesting/spawning	Connectivity	Insect/Invertebrate raw score	Cover	Nesting/spawning	Habitat formation raw score	Temperature regulation raw score	Spatial separation raw score	Variable velocity raw score	Channel diversity raw score
KS-002	0.0000	Perennial stream	1.9E+05	62%	52%	38%	16%	55%	100%	25%	14%	35%	15%	60%	53%	7%	48%
KS-003	0.0000	Perennial stream	2.1E+05	74%	62%	50%	26%	70%	100%	32%	18%	45%	26%	60%	63%	10%	58%
KS-004	0.0000	Perennial stream	2.1E+05	66%	62%	50%	26%	70%	100%	28%	16%	40%	21%	53%	58%	10%	48%
KS-005	0.0000	Perennial stream	2.1E+05	72%	61%	45%	22%	75%	100%	28%	16%	40%	24%	63%	60%	5%	58%
KS-006	0.0000	Perennial stream	2.4E+05	63%	59%	40%	22%	75%	100%	28%	16%	40%	15%	63%	43%	5%	45%
KS-007	0.0000	Perennial stream	2.6E+05	67%	59%	40%	22%	75%	100%	28%	16%	40%	21%	60%	53%	7%	50%
KS-008	0.0000	Perennial stream	2.4E+05	68%	59%	43%	24%	70%	100%	28%	16%	40%	24%	53%	58%	10%	53%
KS-009	0.0000	Perennial stream	3.2E+05	75%	67%	58%	36%	75%	100%	35%	30%	40%	24%	60%	58%	18%	55%
KS-010	0.0000	Perennial stream	2.0E+05	67%	58%	40%	22%	70%	100%	35%	20%	50%	21%	67%	45%	7%	48%
KS-011	0.0000	Perennial stream	3.3E+05	81%	68%	59%	37%	75%	100%	48%	46%	50%	24%	70%	65%	26%	53%

KS-012	0.0000	Ditch	54%	27%	1%	1%	4%	100%	35%	20%	50%	19%	67%	25%	5%	45%
KS-013	0.0000	Ditch	46%	26%	1%	1%	3%	100%	21%	12%	30%	11%	57%	25%	5%	40%
KS-014	0.0000	Ditch	46%	26%	1%	1%	3%	100%	21%	12%	30%	11%	57%	25%	5%	40%
K-002	0.0000	Riprap shoreline/bank	10%	0%	0%	0%			0%	0%	0%	0%	0%	60%	0%	
K-003	0.0000	Emergent wetland	13%	0%	0%	0%			15%	13%	17%	6%	0%	50%	3%	
K-004	0.0000	Berm	52%	100%	100%	100%			18%	30%	7%	0%	3%	60%	30%	
K-005	0.0000	Deciduous stand	60%	100%	100%	100%			24%	35%	13%	12%	20%	40%	30%	
K-006	0.0000	Berm	67%	100%	100%	100%			18%	30%	7%	0%	47%	60%	30%	
K-007	0.0000	Emergent wetland	29%	26%	10%	41%			9%	11%	7%	0%	26%	50%	10%	
K-008	0.0000	Deciduous stand	82%	100%	100%	100%			45%	53%	37%	46%	50%	40%	17%	
K-009	0.0000	Berm	53%	100%	100%	100%			18%	30%	7%	0%	5%	60%	30%	
K-010	0.0000	Row crops	8%	0%	0%	0%			9%	8%	10%	0%	0%	40%	0%	
K-011	0.0000	Emergent wetland	14%	3%	0%	5%			3%	3%	3%	0%	5%	65%	0%	
K-012	0.0000	Berm	52%	100%	100%	100%			18%	30%	7%	0%	3%	60%	30%	
K-013	0.0000	Emergent wetland	23%	11%	0%	23%			6%	5%	7%	25%	0%	50%	10%	
K-014	0.0000	Emergent wetland	20%	3%	0%	5%			3%	3%	3%	0%	23%	65%	0%	
K-015	0.0000	Row crops	13%	NA	NA	NA			NA	NA	NA	0%	NA	40%	0%	
KS-001	0.0000	Culvert	17%	18%	0%	0%	1%	70%	0%	0%	0%	0%	3%	28%	7%	20%
KS-015	0.0000	Culvert	32%	14%	1%	0%	2%	53%	21%	12%	30%	11%	27%	18%	0%	43%



## 50% Design Salmon Credit Calculations Data Summary

Project/site: Roderick Cr 50% Design

Site function performance = 70%  
 On-site stream lengths  
 Total length = 1470  
 Length above partial barrier = 0  
 Length above full barrier = 0

### Alternative only

Distance from site to next upstream barrier/constraint (ft) = 0  
 Constraint/barrier type affecting this distance = None

### Site values

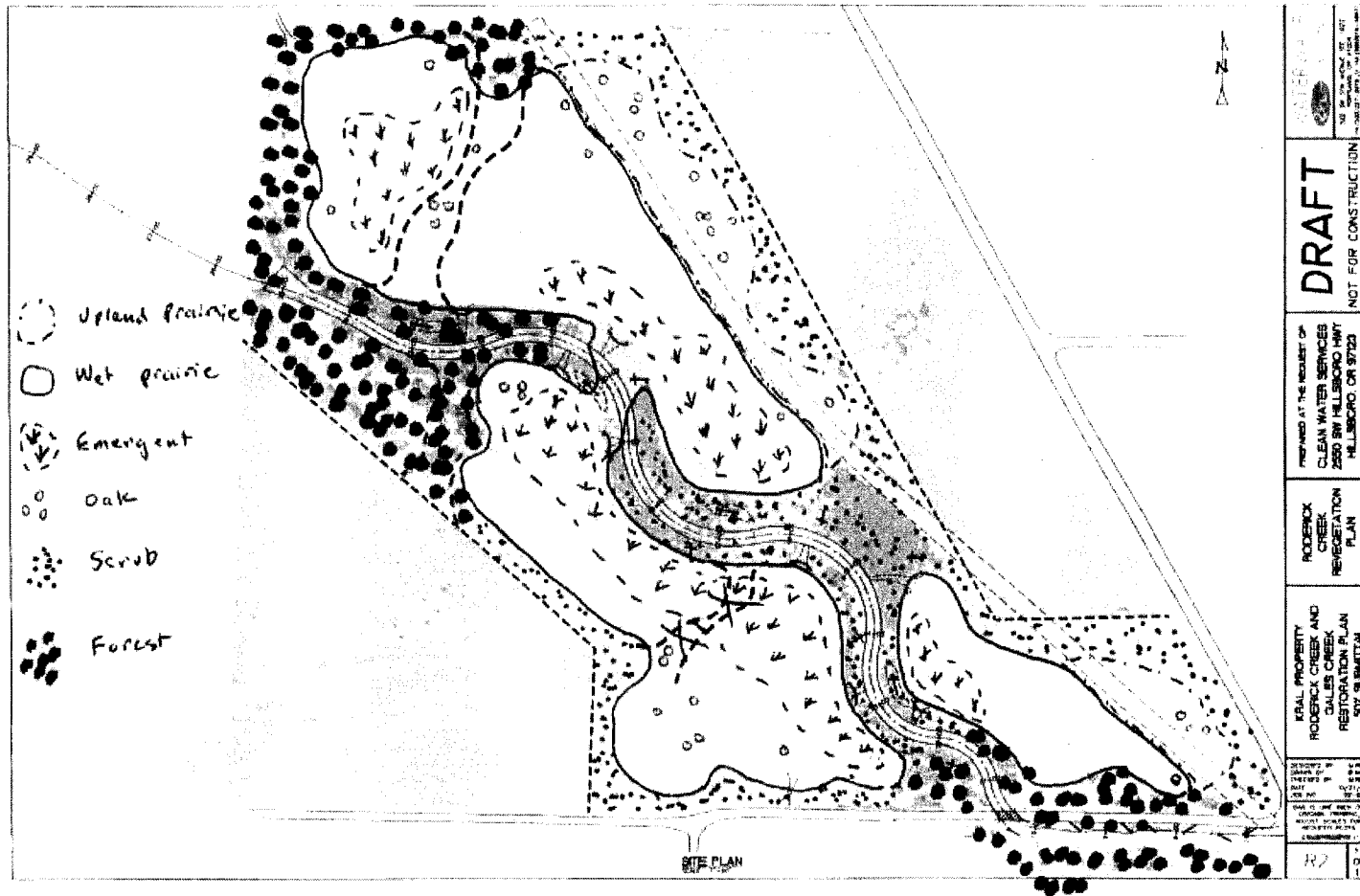
Salmon = 1022.67  
 Temperature (kcal) = 304,795

### Site review

MU ID	Acre	Habitat type	Kcal [calculated]	Weighted functional score	Anadromous fish raw score	Cover	Foraging	Nesting/spawning	Connectivity	Insect/Invertebrate raw score	Cover	Nesting/spawning	Habitat formation raw score	Temperature regulation raw score	Spatial separation raw score	Variability raw score	Channel diversity raw score
SS-001	0.0138	Perennial stream	1.8E+05	63%	59%	40%	22%	75%	100%	28%	16%	40%	20%	60%	43%	5%	43%
SS-002	0.0275	Perennial stream	3.6E+05	94%	66%	68%	38%	60%	100%	56%	32%	80%	65%	53%	83%	28%	63%
SS-003	0.0275	Perennial stream	3.5E+05	90%	63%	60%	32%	60%	100%	49%	28%	70%	60%	53%	83%	23%	63%
SS-004	0.0275	Perennial stream	3.3E+05	94%	66%	68%	38%	60%	100%	56%	32%	80%	65%	53%	83%	28%	63%
SS-005	0.0275	Perennial stream	3.6E+05	63%	59%	40%	22%	75%	100%	28%	16%	40%	20%	60%	43%	5%	43%
SS-006	0.0275	Perennial stream	3.6E+05	90%	63%	60%	32%	60%	100%	49%	28%	70%	60%	53%	83%	23%	63%
SS-007	0.0275	Perennial stream	3.1E+05	63%	59%	40%	22%	75%	100%	28%	16%	40%	20%	60%	43%	5%	43%
SS-008	0.0275	Perennial stream	3.5E+05	90%	63%	60%	32%	60%	100%	49%	28%	70%	60%	53%	83%	23%	63%
SS-009	0.0275	Perennial stream	3.6E+05	90%	63%	60%	32%	60%	100%	49%	28%	70%	60%	53%	83%	23%	63%
SS-010	0.0275	Perennial stream	3.5E+05	63%	59%	40%	22%	75%	100%	28%	16%	40%	20%	60%	43%	5%	43%

SS-011	0.0275	Perennial stream	3.5E+05	90%	63%	60%	32%	60%	100%	49%	28%	70%	60%	53%	83%	23%	63%
SS-012	0.0275	Perennial stream	3.1E+05	63%	59%	40%	22%	75%	100%	28%	16%	40%	20%	60%	43%	5%	43%
SS-013	0.0275	Perennial stream	2.8E+05	90%	63%	60%	32%	60%	100%	49%	28%	70%	60%	53%	83%	23%	63%
SS-014	0.0275	Perennial stream	2.8E+05	63%	59%	40%	22%	75%	100%	28%	16%	40%	20%	60%	43%	5%	43%
SS-015	0.0275	Perennial stream	3.3E+05	63%	59%	40%	22%	75%	100%	28%	16%	40%	20%	60%	43%	5%	43%
SS-016	0.0055	Perennial stream	8.8E+03	63%	59%	40%	22%	75%	100%	28%	16%	40%	20%	60%	43%	5%	43%
WET-1	2.0000	Wet prairie		45%	29%	40%	19%			41%	46%	37%	33%	18%	50%	18%	
WET-2	2.8700	Wet prairie		45%	29%	40%	19%			41%	46%	37%	33%	18%	50%	18%	
WET-3	1.3300	Wet prairie		45%	29%	40%	19%			41%	46%	37%	33%	18%	50%	18%	
WET-4	1.5800	Wet prairie		50%	29%	40%	19%			41%	46%	37%	33%	34%	50%	18%	
WET-5	1.4300	Wet prairie		45%	29%	40%	19%			41%	46%	37%	33%	18%	50%	18%	
SCRUB-EAST	1.6400	Scrub-shrub wetland		69%	54%	53%	55%			49%	68%	30%	52%	41%	50%	20%	
SCRUB-WEST	0.8600	Scrub-shrub wetland		69%	54%	53%	55%			49%	68%	30%	52%	41%	50%	20%	

# Attachment C—Vegetation Plan



**Half Mile Wetland  
and Riparian Restoration**

Seed List  
6-Feb-09

**Seed Phases I and II**

Upland Prairie 1 ac		HAB	lbs/ ac	Total Lbs	Seed App Phasing Alternatives	
					Alt 1 Phase	Alt 2 Phase
<i>Camassia leichtlinii</i>	Leichtlin's camas	up	1	1	1	1
<i>Clarkia Amoena</i>	Clarkia	up	1	1	1	2
<i>Collinsia grandiflora</i>	large-flowered collinsia	up	0.2	0.2	1	2
<i>Danthonia californica</i>	California oatgrass	up	4	4	1	1
<i>Eriophyllum lanatum</i>	Oregon sunshine	up	1	1	1	2
<i>Gillia capitata</i>	Blue field gillia	up	1	1	1	2
<i>Hordeum brachyantherum</i>	meadow barley	up	3	3	1	1
<i>Lupinus micranthus</i>	Small-head lupine	up	3	3	1	2
<i>Potentilla gracilis</i>	slender cinquefoil	up	1	1	1	2
<i>Prunella vulgaris</i>	Self-heal	up	3	3	1	2
<i>Sisyrinchium idahoense</i>	blue-eyed grass	up	0.5	0.5	1	2
<i>Solidago canadensis</i>	Canada goldenrod	up	0.5	0.5	1	2
Total lbs/ac			19.2			

**Wet Prairie**

6 ac

<i>Agrostis exarata</i>	spike bentgrass	wp	1	6	1	1
<i>Aster chilensis</i>	California aster	wp	0.25	1.5	1	2
<i>Boisduvalia densiflora</i>	dense spike primrose	wp	1	6	1	2
<i>Camassia quamash</i>	common camas	wp	1	6	1	1
<i>Carex densa</i>	dense sedge	wp	1	6	1	2

<i>Carex unilateralis</i>	one-sided sedge	wp	2	12	1	2
<i>Danthonia californica</i>	California oatgrass	wp	2	12	1	1
<i>Deschampsia caespitosa</i>	tufted hairgrass	wp	2	12	1	1
<i>Deschampsia elongata</i>	slender hairgrass	wp	1	6	1	1
<i>Eriophyllum lanatum</i>	Oregon sunshine	wp	1	6	1	2
<i>Grindelia integrifolia</i>	gumweed	wp	1	6	1	2
<i>Hordeum brachyantherum</i>	meadow barley	wp	2	12	1	2
<i>Juncus tenuis</i>	Slender rush	wp	0.2	1.2	1	1
<i>Lotus purshianus</i>	Spanish clover	wp	1	6	1	2
<i>Lupinus micranthus</i>	Small-head lupine	wp	2	12	1	2
<i>Lupinus polyphyllus</i>	many-leaved lupine	wp	1	6	1	2
<i>Plectritis congesta</i>	sea blush	wp	1	6	1	2
<i>Potentilla gracilis</i>	slender cinquefoil	wp	0.5	3	1	2
<i>Prunella vulgaris</i>	Self-heal	wp	1	6	1	2
<i>Rumex salicifolius</i>	Willow dock	wp	1	6	1	2
<i>Sidalcea nelsoniana</i>	Nelson's Checkermallow	wp	1	6	1	2
<i>Sisyrinchium idahoense</i>	blue-eyed grass	wp	0.5	3	1	2
<i>Solidago canadensis</i>	Canada goldenrod	wp	0.2	1.2	1	2
Total lbs/ac			24.65			

#### Palustrine Emergent

4 acres

19.2

<i>Agrostis exarata</i>	spike bentgrass	em	2	8	1	1
<i>Alisma plantago-aquatica</i>	water plantain	em	3	12	1	1
<i>Alopecurus geniculatus</i>	water foxtail	em	2	8	1	1
<i>Beckmannia syzigachne</i>	American sloughgrass	em	4	16	1	1
<i>Carex stipata</i>	sawbeak sedge	em	1	4	1	2
<i>Downingia elegans</i>	downingia	em	0.5	2	1	1
<i>Eleocharis ovata</i>	Annual spikerush	em	1	4	1	1
<i>Eleocharis palustris</i>	Common spikerush	em	1	4	1	2
<i>Eryngium petiolatum</i>	coyote thistle	em	1	4	1	2
<i>Juncus acuminatus</i>	tapertip rush	em	0.25	1	1	2

<i>Juncus ensifolius</i>	dagger-leaf rush	em	0.25	1	1	2
<i>Juncus oxymeris</i>		em	0.1	0.4	1	2
<i>Leersia oryzoides</i>	rice cut grass	em	1	4	1	2
<i>Plagiobothrys figuratus</i>	fragrant popcorn flower	em	1	4	1	1
<i>Ranunculus alismaefolius</i>	Water-plantain buttercup	em	0.5	2	1	2
<i>Scirpus microcarpus</i>	Small-fruit bulrush	em	1	4	1	2
<i>Scirpus validus</i>	Softstem bulrush	em	1	4	1	2
Total lbs/ac			20.6			

**Scrub**

7.5 ac

<i>Agrostis exarata</i>	spike bentgrass	scr	4	30	1	1
<i>Deschampsia caespitosa</i>	tufted hairgrass	scr	6	45	1	1
<i>Deschampsia elongata</i>	slender hairgrass	scr	6	45	1	1
Total lbs/ac			16			

**Forested Wetland/Riparian**

4.5 ac

<i>Agrostis exarata</i>	spike bentgrass	rip	4	18	1	1
<i>Deschampsia caespitosa</i>	tufted hairgrass	rip	5	22.5	1	1
<i>Deschampsia elongata</i>	slender hairgrass	rip	6	27	1	1
<i>Prunella vulgaris</i>	Self-heal	rip	1	4.5	1	2
<i>Tellima grandiflora</i>	Tellima	rip	0.5	2.25	2	2
Total lbs/ac			16.5			

**Plugs/Bulbs**

**Phase I**

No/ac Total

11 ac

<i>Camassia quamash</i>	common camas	wp	1000	11000		
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**Plugs/Bulbs**

**Phase II**

**Upland Prairie**

1 ac

<i>Brodiea elegans</i>	Elegant brodiea	up	100	100
<i>Brodiea hyacinthina</i>	Hyacinth brodiea	up	100	100
<i>Calochortus tolmiei</i>	Tolmie's mariposa	up	100	100
<i>Fritillaria lanceolata</i>	Checker lily	up	100	100
<i>Geranium oregonum</i>	Oregon geranium	up	600	600
<i>Iris tenax</i>	Orgon iris	up	500	500
<i>Potentilla glandulosa</i>	Sticky cinquefoil	up	100	100
<i>Sidalcea campestris</i>	Field checker-mallow	up	400	400
		plugs/ac	2000	

**Wet Prairie**

6 ac

<i>Carex densa</i>	Dense sedge	wp	100	600
<i>Carex obnupta</i>	Slough sedge	wp	100	600
<i>Carex unilateralis</i>	One-sided sedge	wp	200	1200
<i>Lomatium nudicalli</i>		wp	200	1200
<i>Perideridia oregona</i>		wp	200	1200
<i>Sidalcea nelsoniana</i>	Nelson's checkermallow	wp	300	1800
<i>Sisyrinchium angustifolium</i>	Blue-eyed grass	wp	500	3000
<i>Wyethia angustifolia</i>	Narrow-leaf wyethia	wp	400	2400
		plugs/ac	2000	

**Palustrine Emergent**

4 acres

<i>Sagittaria latifolia</i>	wapato	em	1000	4000
<i>Scirpus validus</i>	Softstem bulrush	em	1000	4000

plugs/ac | 2000

**Forested Wetland/Riparian**

4.5 ac

<i>Carex obnupta</i>	Slough sedge	rip	1000	4500
<i>Cinna latifolia</i>	Wood reed	rip	200	900
<i>Dicentra formosa</i>	Pacific Bleedingheart	rip	200	900
<i>Erythronium oregonum</i>	Giant fawnlily	rip	50	225
<i>Glyceria elata</i>	tall mannagrass	rip	150	675
<i>Oenanthe sarmentosa</i>	water-parsley	rip	100	450
<i>Scrophularia californica</i>	California figwort	rip	100	450
<i>Tolmiea menziesii</i>	Pig-a-back plant	rip	100	450
<i>Trillium chloropetalum</i>	Giant trillium	rip	100	450
			plugs/ac	2000

**Bare Root Trees and Shrubs**

No/ac.

**Scrub**

7.5 acres

<i>Salix scouleriana</i>	Scouler willow	scr	100
<i>Cornus stolonifera</i>	Red-twig dogwood	scr	300
<i>Crataegus douglasii</i>	Douglas hawthorn	scr	100
<i>Lonicera involucrata</i>	Black twinberry	scr	200
<i>Physocarpus capitatus</i>	Pacific ninebark	scr	200
<i>Pyrus diversiloba</i>	Oregon crabapple	scr	200
<i>Rosa pisocarpa</i>	Swamp rose	scr	500
<i>Salix piperi</i>	Piper willow	scr	100
<i>Salix sitchensis</i>	Sikka willow	scr	200
<i>Spiraea douglasii</i>	Douglas spiraea	scr	500
			2400

**Forested Wetland/Riparian**

4.5 acres

rip



<i>Abies grandis</i>	Grand fir	rip	200
<i>Alnus rubra</i>	Red alder	rip	100
<i>Amelanchier alnifolia</i>	Serviceberry	rip	100
<i>Cornus stolonifera</i>	Red-twig dogwood	rip	150
<i>Fraxinus latifolia</i>	Oregon ash	rip	150
<i>Gaultheria shallon</i>	Salal	rip	100
<i>Lonicera involucrata</i>	Black twinberry	rip	50
<i>Mahonia aquifolium</i>	Oregon grape	rip	100
<i>Mahonia nervosa</i>	Low Oregon grape	rip	100
<i>Oemleria cerasiformis</i>	Indian plum	rip	100
<i>Physocarpus capitatus</i>	Pacific ninebark	rip	100
<i>Prunus emarginata</i>	Bitter cherry	rip	50
<i>Pseudotsuga menziesii</i>	Douglas-fir	rip	300
<i>Rhamnus purshiana</i>	Cascara	rip	100
<i>Rubus spectabilis</i>	Salmonberry	rip	100
<i>Salix lasiandra</i>	Pacific willow	rip	50
<i>Sambucus racemosa</i>	Red elderberry	rip	100
<i>Spiraea douglasii</i>	Douglas spiraea	rip	50
<i>Symphoricarpos albus</i>	Snowberry	rip	200
<i>Thuja plicata</i>	Western redcedar	rip	200
			2400

**WETLAND DELINEATION / DETERMINATION REPORT COVER FORM**

This form must be included with any wetland delineation report submitted to the Department of State Lands for review and approval. A wetland delineation report submittal is not "complete" unless the fully completed and signed report cover form and the required fee are submitted. Attach the form to the front of an unbound report and submit to: Oregon Department of State Lands, 775 Summer Street NE, Suite 100, Salem, OR 97301-1279

Mail a copy of the completed form with payment of the required report review fee to: Oregon Department of State Lands, P.O. Box 4395, Unit 18, Portland, OR 97208-4395.

For new credit card payment option, see DSL web site.

<input checked="checked" type="checkbox"/> Applicant	<input type="checkbox"/> Owner Name, Firm and Address:	Business phone # 503-681-4435
<b>Bobby Cochran</b>		Mobile phone # (optional)
<b>Clean Water Services</b>		FAX # 503-681-3603
<b>2550 SW Hillsboro Highway</b>		E-mail: <u>bcochranb@cleanwaterservices.org</u>
<b>Hillsboro, OR 97123</b>		
<input type="checkbox"/> Authorized Legal Agent, Name and Address:		Business phone #
		FAX #
		Mobile phone #
		E-mail:

I either own the property described below or I have legal authority to allow access to the property. I authorize the Department to access the property for the purpose of confirming the information in the report, after prior notification to the primary contact.

Typed/Printed Name: **Bobby Cochran** Signature: \_\_\_\_\_

Date: \_\_\_\_\_ Special instructions regarding site access: \_\_\_\_\_

**Project and Site Information** (for latitude & longitude, use centroid of site or start & end points of linear project)

Project Name: <b>Gales Creek Half Mile Lane Site</b>	Latitude: <b>45.548572</b>	Longitude: <b>-123.1858138</b>
Proposed Use: <b>DSL Sponsored In-Lieu-Fee Program Site</b>	Tax Map # <b>1N 4 21</b>	
Project Street Address (or other descriptive location): <b>4036 NW Half Mile Lane and site to north</b>	Township <b>1N</b>	Range <b>4W</b> Section <b>21</b> <b>QQ</b>
	Tax Lot (s) <b>600 and west portion of 700</b>	
City: <b>Outside Forest Grove</b> County: <b>Washington</b>	Waterway: <b>Roderick Creek</b> River Mile: <b>Near confluence</b>	
	NWI Quad(s): <b>Gales Creek</b>	

**Wetland Delineation Information**

Wetland Consultant Name, Firm and Address: <b>C. Mirth Walker, PWS, CWD</b> <b>SWCA Environmental Consultants</b> <b>434 NW Sixth Avenue, Suite 304</b> <b>Portland, OR 97209-3652</b>	Phone # 503-224-0333, x. 250
	Mobile phone #
	FAX # 503-224-1851
	E-mail: <u>cmwalker@swca.com</u>
The information and conclusions on this form and in the attached report are true and correct to the best of my knowledge.	
Consultant Signature: _____	Date: _____

Primary Contact for report review and site access is  Consultant  Applicant/Owner  Authorized Agent

Wetland/Waters Present?  Yes  No      Study Area size **25.6 acres**      Total Wetland Acreage: 1.99 ac wet, 0.52 ac water

**Check Box Below if Applicable:**

**Fees:**

<input type="checkbox"/> R-F permit application submitted	<input type="checkbox"/> Fee payment submitted \$ _____
<input type="checkbox"/> Mitigation bank site	<input type="checkbox"/> Fee (\$100) for resubmittal of rejected report
<input type="checkbox"/> Wetland restoration/enhancement project (not mitigation)	Name of Payor: _____
<input type="checkbox"/> Industrial Land Certification Program Site	
<b>Other Information:</b>	Y      N
Has previous delineation/application been made on parcel?	<input type="checkbox"/> <input checked="checked" type="checkbox"/> If known, previous DSL # _____
Does LWI, if any, show wetland or waters on parcel?	<input type="checkbox"/> <input checked="checked" type="checkbox"/>

**For Office Use Only**

DSL Reviewer: _____	Fee Paid Date: ____ / ____ / ____	DSL WD # _____
Date Delineation Received: ____ / ____ / ____	DSL Project # _____	DSL Site # _____
Scanned: <input type="checkbox"/> Final Scan: <input type="checkbox"/>	DSL WN # _____	DSL App. # _____



**Gales Creek Half Mile Lane Site  
Wetland and Water Delineation Report  
Washington County, Oregon  
T1N, R4W, Section 21, Portion of Tax Lot 700 and 600**

*Prepared for:*

**Clean Water Services**  
2550 SW Hillsboro Highway  
Hillsboro, Oregon 97123  
503-681-4460, Fax 503-681-3603

*Prepared by:*

**SWCA Environmental Consultants**  
434 NW Sixth Ave., Suite 304  
Portland, OR 97209-3652  
503-224-0333, Fax 503-224-1851

April 2009  
SWCA Project # 15440



**Gales Creek Half Mile Lane Site  
Wetland and Water Delineation Report  
Washington County, Oregon  
T1N, R4W, Section 21, Portion of Tax Lot 700 and 600**

*Prepared for:*

**Clean Water Services**  
2550 SW Hillsboro Highway  
Hillsboro, Oregon 97123  
503-681-4460, Fax 503-681-3603

*Prepared by:*

**SWCA Environmental Consultants**  
434 NW Sixth Ave., Suite 304  
Portland, OR 97209-3652  
503-224-0333, Fax 503-224-1851

**April 2009  
SWCA Project # 15440**

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## Introduction

At the request of Clean Water Services (CWS), SWCA Environmental Consultants conducted a wetland delineation on the western portion of tax lot 700, located at 4036 Half Mile Lane, and tax lot 600 (immediately north of tax lot 700) outside Forest Grove, Washington County, Oregon (Figure 1, Appendix A). The 25.6 acre study area includes the portion of tax lot 700 located west of Half Mile Lane (approximately 21.75 acres in size) and tax lot 600 (approximately 3.85 acres in size, based on the tax lot map) on tax map 1N 4 21 (Figure 2, Appendix A).

### **A) Landscape Setting and Land Use:** OAR141-090-0035(7)(a)

The study area on tax lot 700 is undeveloped and consists of an actively managed wheat crop located in a valley (Photo 1). A rural residential home exists in the northeast portion of tax lot 600 with fenced pasture dominated by a grazed non-native facultative grass community to the west.

Roderick Creek, a perennial tributary to the Gales Creek, flows southeasterly through the southern portion of the study area (Photo 2). Gales Creek is located within 500 feet off-site to the east.

The western portion of the study area slopes east towards Roderick Creek.

The surrounding land use consists of agricultural fields and rural residential. The Sunset Rock Parkin Quarry exists on the hillslope northwest of the site. The forested hillslope to the west has been partially logged. The site is actively plowed, planted and sprayed.

### **B) Site Alterations:** OAR141-090-0035 (7)(c)

Based on historic aerial photograph interpretation, agricultural practices have occurred on the site for many decades. Based aerial photography provided by the Portland District U.S. Army Corps of Engineers, agricultural land use has occurred on the site dating back to 1936, which may have affected the presence, location and geographic boundaries of wetlands present on the site. On-site Roderick Creek is ditched in the oldest aerial photo. Historic aerial photographs are included in Appendix B; aerial photographs of the site are not available on the Portland Maps website.

A City of Forest Grove drinking water supply pipeline crosses the field east of Roderick Creek in a north-south direction.

### **C) Precipitation Data and Analysis:** OAR141-090-0035 (7)(i)

The closest WETS station to the project site is the Forest Grove Station. Average annual rainfall according to the WETS table for Forest Grove Station is 46.09 inches. Daily precipitation and water year to date information was acquired from the U.S Department of Interior Bureau of Reclamation AgriMet System Forest Grove, Oregon Weather Station 2.5NNE. Precipitation data are shown below and data tables are included in Appendix C.

**Precipitation Data**

Field Date	Observed Rainfall on Field Date (in.) <sup>1</sup>	Observed Rainfall Two Weeks Prior to Field Date (in.) <sup>1</sup>	Percent of Normal Rainfall for the Water Year to Date <sup>2</sup>
September 5, 2008	0	0.47	92%
September 8, 2008	0	0.09	92%
April 10, 2009	0.05	1.00	67%
April 29, 2009	0.01	0.77	67%

Data Sources: <sup>1</sup>Observed precipitation data obtained from the Agrimet weather station in Forest Grove, Oregon  
<sup>2</sup> Percent normal determined from WETS Forest Grove Station

According to the WETS table, precipitation for the three months prior to the September 5, 2008 site visit was 52% of average in June 2008; 2% of average in July 2008; and 127% of average in August 2008.

According to the WETS table, precipitation for the three months prior to the April 10, 2009 site visit was 85% of average in January, 2009; 30% of average in February, 2009; and 75% of average in March 2009.

Rainfall received in January, 2009 was below average but within the normal range according to the WETS table. Rainfall received in February, 2009 was 2.03 inches below the WETS less than normal range and rainfall received in March, 2009 was below average but within the normal range. We concluded that the climatic conditions were below average but within the normal range on our April 10 and 29, 2009 field investigations.

**D) Methods:** OAR141-090-0035 (7)(d-e), (g-h), (16)(a-b), (f), (d) or (g), (17), & (19-20)

The methodology used for determining the presence of wetlands and delineating wetland boundaries followed the routine wetland determination methodology and plant community approach of the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory, 1987) and the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual for the Western Mountains, Valleys, and Coast Region* (2008) used by both the Corps and the Oregon Department of State Lands (DSL). Soils, vegetation, and indicators of hydrology were recorded at 29 sample plot locations to document site conditions (Appendix D).

Plots 6 through 23 (eastern side of Roderick Creek) were dug using a backhoe to assess soil conditions below gravelly fill material reported to be overburden material from the nearby Sunset Rock Parkin Quarry. The spoils were deposited approximately 10 years ago while a former property owner was using the site as a container nursery.

The first two site visits were conducted by C. Mirth Walker, PWS, CWD and Greg Swenson, PWS on September 5 and 8, 2008 to map where hydric soils occur were on the site and to document the textures of both hydric and non-hydric soils in order to determine how suitable the site was for wetland enhancement, restoration, and/or creation. Wetlands were not delineated during the site visits in September because it was not the optimal time to confirm the presence or absence of wetland hydrology.

A follow up site visit was conducted by C. Mirth Walker and Stacey Reed on April 10, 2009 to document wetland hydrology during the wetter portion of the early growing season and to delineate the wetland boundaries. Hydrology of selected plots documented in the Fall of 2008 were rechecked for the presence of

Wetland conditions were determined by the presence of hydric soils and wetland hydrology indicators during the April 10, 2009 site visit. The wetland boundary was defined by a slight topographic increase to the adjacent uplands along with the lack of wetland hydrology indicators on April 10, 2009 (Photo 6).

#### Uplands

Uplands were generally dominated by a weedy field consisting of Queen Anne's lace, prickly lettuce, velvet grass, thistle, colonial bentgrass or by wheat. Most upland plots lacked hydric soil indicators (Upland plots with hydric soils include Plots 11, 12, 19, 20, 21, 25, ds-1 and ds-3). All upland plots lacked wetland hydrology indicators.

#### Wetlands, north tax lot 600

Approximately 0.75 acre of palustrine emergent (PEM) wetland was delineated in the northwestern portion of the site. The wetland was dominated by reed canarygrass, with a forested community present off-site to the west (Photo 8) including several Oregon ash snags. Surface soils were low chroma (chroma of 2) and displayed common distinct redoximorphic features with oxidization along living roots (documented at plot ds-2). Two linear ditches parallel to one another were delineated on-site inside the wetland. The eastern ditch flows southerly and joins Roderick Creek on-site (as shown on the Wetland Delineation map, Figure 7). Both ditches contained approximately 4 to 6 inch deep stagnant water during the April 10, 2009 site visit. The ditches extend off-site to the north and wetland conditions appear to extend off-site to the north and to the west. This area was determined to be wetland based on having a hydrophytic dominated vegetation community, hydric soils and wetland hydrology indicators.

The wetland boundary to the east was documented by the lack of wetland hydrology indicators (as documented at upland plot ds-1 and ds-3; Photo 9). The east top of bank associated with the eastern ditch defined the eastern wetland boundary (Photo 10).

#### Waters

Roderick Creek enters the study area from the northwest and flows in a southeasterly direction through tax lot 700 (approximately 1300 linear feet and 0.52 acre within the study area). It leaves the site via a 43-inch corrugated metal culvert under a farm road along the southern property boundary. A second culvert is present to the south to accommodate overflow conditions. The creek joins Gales Creek through a ditch that extends east to the south of the property. On-site, the creek lacks sinuosity with on average ditched 4-5 foot tall banks and an approximate average 10 foot wide bed (Photo 7) with portions of the right bank at approximately 10 feet in height. The channel bed generally lacked vegetation with dominant substrate consisting of small gravels. Approximately 6 inch+ deep flow was observed in the channel during the September 2008 site visits and approximately 8 inches+ during the April 10, 2009 site visit. On-site the channel contains regular repeating sequences of riffle and deeper pool complexes. A green plastic pipe was observed extending from approximately 3 feet above the water on the right bank, upstream of the wetland located west of the creek, with flow draining into the creek during the April 29, 2009 site visit.

The ordinary high water mark associated with on-site portions of Roderick Creek was defined by an elevational increase to the adjacent upland berm along with a change in the soil texture from depositional gravels in the channel bed to upland silt loam soils. No fish were observed within on-site portions of the channel during our site visits.



wetland hydrology on April 10, 2009, as follows: Plots 3, 4, 5, 11, 12, 19, and 20. New plots 24 - 26 were also documented.

Additional data were documented on April 29, 2009. Plots on the north tax lot were labeled ds-1 - ds-3.

The dominant plant community at plots 1, 3, 5, 24, 25 and 26 consisted of a wheat crop (*Triticum aestivum*, NOL) as sampled on April 10, 2009 and were considered to be atypical of natural conditions. Atypical vegetation conditions were indicated by NA in the remarks section of applicable wetland determination data sheets.

The following soil units were mapped within the study area according to the NRCS Washington County Area Soil Survey map (Figure 3; Appendix A):

- McBee silty clay loam (Unit 30), somewhat poorly drained, hydric Cove and Wapato inclusion;
- Verboort silty clay loam (Unit 42), poorly drained, hydric;
- Willamette silt loam, 3 to 7 percent slopes (Unit 44B), moderately well drained, hydric Dayton inclusions; and
- Woodburn silt loam, 0 to 3 percent slopes (Unit 45A), moderately well drained, hydric Dayton inclusions.

Representative ground level site photographs are included in Appendix E. A list of vegetation observed on-site is included in Appendix F. References cited are included in Appendix G. A list of soil texture class abbreviations (as used in the wetland determination data sheets) is included in Appendix H.

**E) Description of All Wetlands and Other Non-Wetland Waters:** OAR141-090-0035 (2), (7)(b), & (17)

**Wetlands, tax lot 700**

Two palustrine emergent farmed (PEMf) wetlands (0.52 and 0.72 acre) totaling approximately 1.24 acres were delineated on the east and west side of Roderick Creek, respectively. Wetlands delineated on the western side of Roderick Creek drain into the creek. Wetlands on the eastern side are hydrologically cut off by an upland berm that lines the creek.

Vegetation outside of the wetland area on the western side of the creek had been plowed and planted to wheat and the eastern side of the creek was a weedy field during the September 2008 site visits. Soils and vegetation on both sides of the creek had been recently plowed and planted prior to the April 10, 2009 site visit. Yellow crop stress on wheat crop planted in the wetland on the western side of the creek was observed during the April 10, 2009 site visit (Photo 3). Reed canarygrass, tall fescue and toad rush was observed in wetland on the western side of the creek in the non-agriculturally maintained areas (Photo 4). Soils in the wetland area delineated on the east side of the creek were mostly bare, apparently due to water stress on the planted wheat crop.

Soils documented in wetland plots met Redox Dark Surface (F6) hydric soil indicator. Gley and depleted matrix surface profiles were also documented in the wetland on the eastern side of the creek (plot 24). Scattered shallow ponding ranging from 1 to ½-inch deep was observed in both wetlands during the April 10, 2009 site visit. A larger pool of up to 4-inch deep ponding was observed in the lowest elevational portions of the wetland on the eastern side of the creek (Photo 5).

Approximately 10 foot wide upland berms line the on-site portions of the creek. A few black Oregon ash trees and willow line the western side of the berm; however the berm was mostly dominated by reed canarygrass with Himalayan blackberry and teasel. A list of vegetation noted within and along the creek is included in Appendix F.

A ditch excavated in wetland on the tax lot to the north drains to Roderick Creek, joining two main channels of the creek as it enters the tax lot to the south. The two channels may form an island in the creek.

**F) Deviation from LWI or NWI:** OAR141-090-0035 (16)(e)

Roderick Creek is mapped as a ditched palustrine emergent wetland with a seasonal water regime (PEMCx) on the Gales Creek, Oregon National Wetland Inventory (NWI) map (Figure 4, Appendix A). The project area is located outside of the City of Forest Grove and was not included on its Local Wetlands Inventory (LWI) map. Washington County mapped significant natural resources on the site including Water Areas and Wetlands, which include the 100 year flood plain (Figure 5, Appendix A). The site is not mapped within the 100 year flood plain on the FEMA Flood Insurance Rate Map shown on Community Panel Numbers 410238 0291B and 0300B, effective September 30, 1982 (Figures 6a and 6b).

**G) Mapping Method:** OAR141-090-0035 (7)(f), (11), (12), (13), (18), & (22)

The 29 sample plots and on-site wetland boundaries were recorded using a hand-held Trimble GeoXT GPS unit with sub-meter accuracy. This information was transferred to an electronic map file using ArcView GIS software, as shown on Figure 7. The aerial photo for the delineation map is dated 2007.

**H) Additional Information:** OAR141-090-0035 (6)(c), (16)(c), & (21)

Wetlands delineated within our study area and Roderick Creek are likely to be considered jurisdictional by the Oregon Department of State Lands and the U.S. Army Corps of Engineers.

**I) Results and Conclusions:** OAR141-090-0035 (7)(j)

A total of approximately 1.99 acres of palustrine emergent wetlands were delineated in three separate areas within the study area. Roderick Creek (0.52 acre, 1300 LF) flows south through the site and leaves via a culvert under a gravel farm road in the southern portion of the study area. Wetland conditions extend north and west of the study area.

**J) Disclaimer:** OAR141-090-0035 (7)(k)

This report documents the investigation, best professional judgment and conclusions of the investigators. It is correct and complete to the best of our knowledge. It should be considered a Preliminary Jurisdictional Determination of wetlands and other waters and used at your own risk unless it has been reviewed and approved in writing by the Oregon Department of State Lands in accordance with OAR 141-090-0005 through 141-090-0055.

K) List of Preparers

*C. Mirth Walker*



C. Mirth Walker, CWD, PWS  
Senior Wetland Scientist

*Stacey Reed*

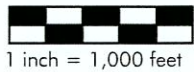
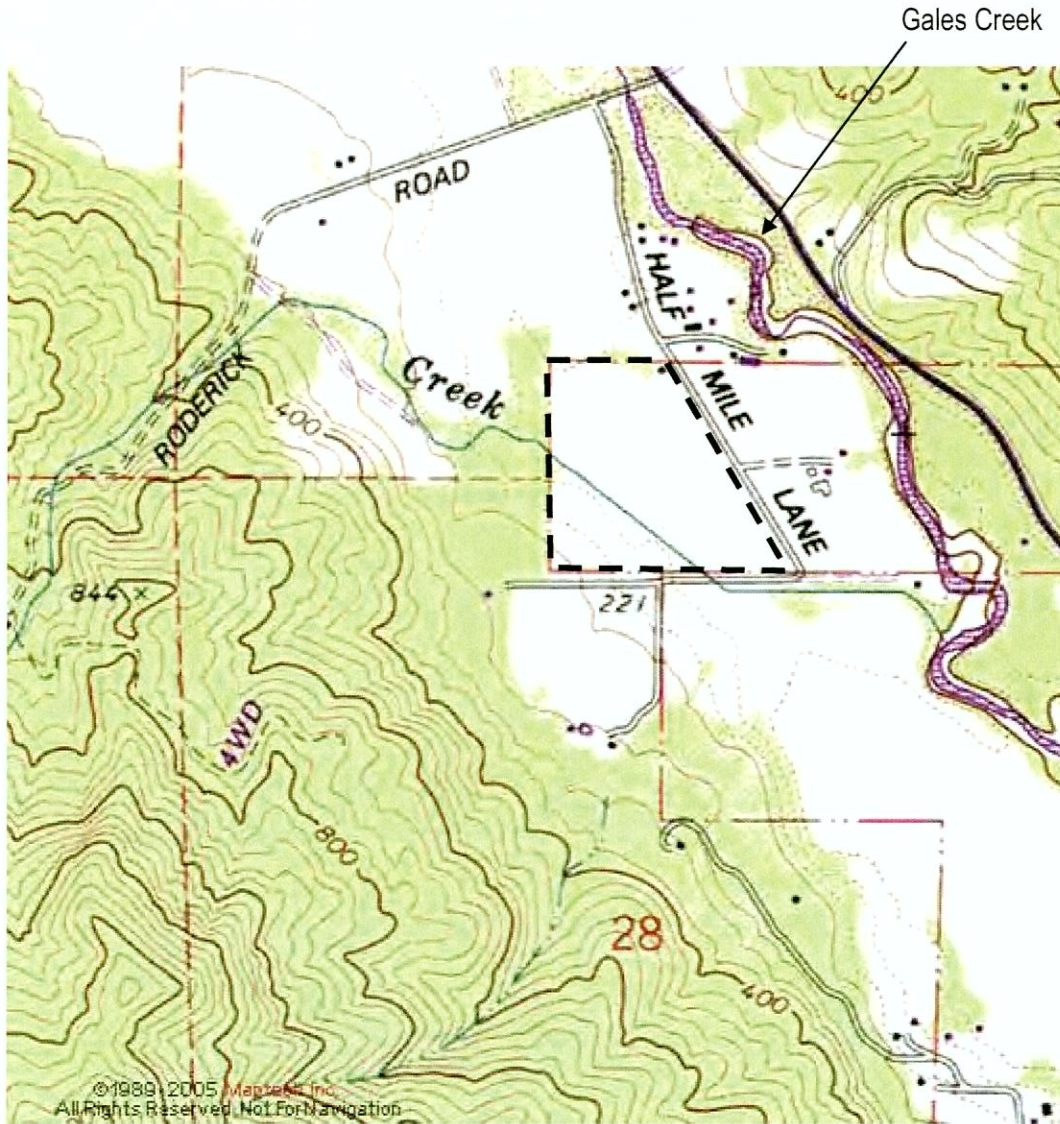
Stacey Reed  
Wetland Scientist

P:\15000\15440\_HalfMileLane\Wetland Report.doc

## **Appendices**

- Appendix A: Maps**
- Appendix B: Aerial Photographs**
- Appendix C: Precipitation Data**
- Appendix D: Wetland Determination Data Forms**
- Appendix E: Ground Level Site Photographs**
- Appendix F: Vegetation Table**
- Appendix G: References**
- Appendix H: Soil Texture Class Abbreviations**

## Appendix A: Maps



Legend



--- Study Area Boundary

Source: USGS. 1979, photorevised 1992. Gales Creek, Oregon 7.5' topographic quadrangle. Downloaded from <http://mapserver.mytopo.com/homepage/>

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434 NW Sixth Avenue, Suite 304  
Portland, Oregon 97209-3652  
Tel 503.224.0333 Fax 503.224.1851

**GALES CREEK HALF MILE LANE  
WETLAND AND WATER DELINEATION**

**SITE LOCATION MAP**

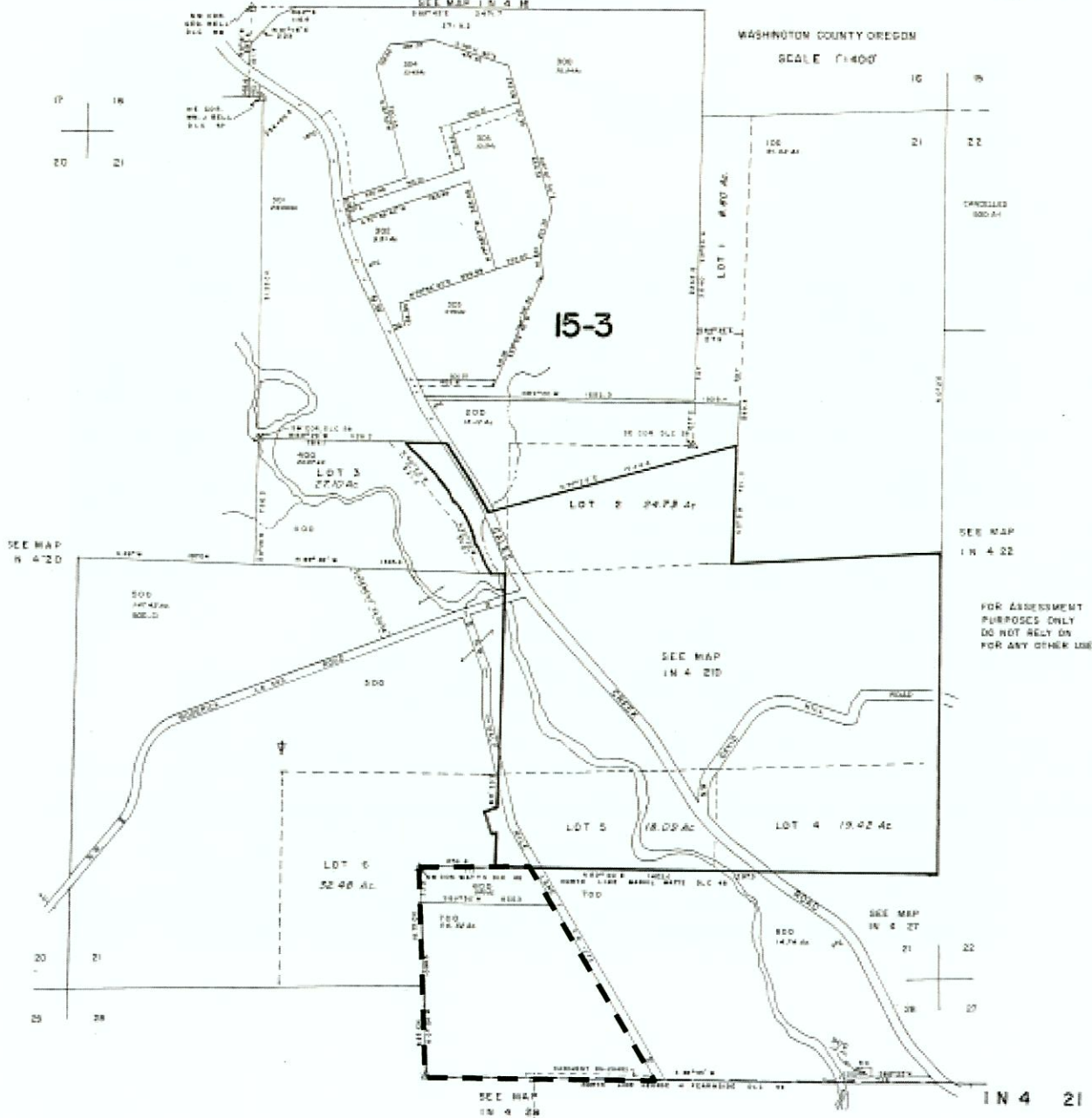
Project 15440

April 2009

Figure 1

SECTION 21 T1N R4W W.M.

1N 4 21



Legend

No Scale

--- Study Area Boundary

Source: www.ormap.org.



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**GALES CREEK HALF MILE LANE  
WETLAND AND WATER DELINEATION**

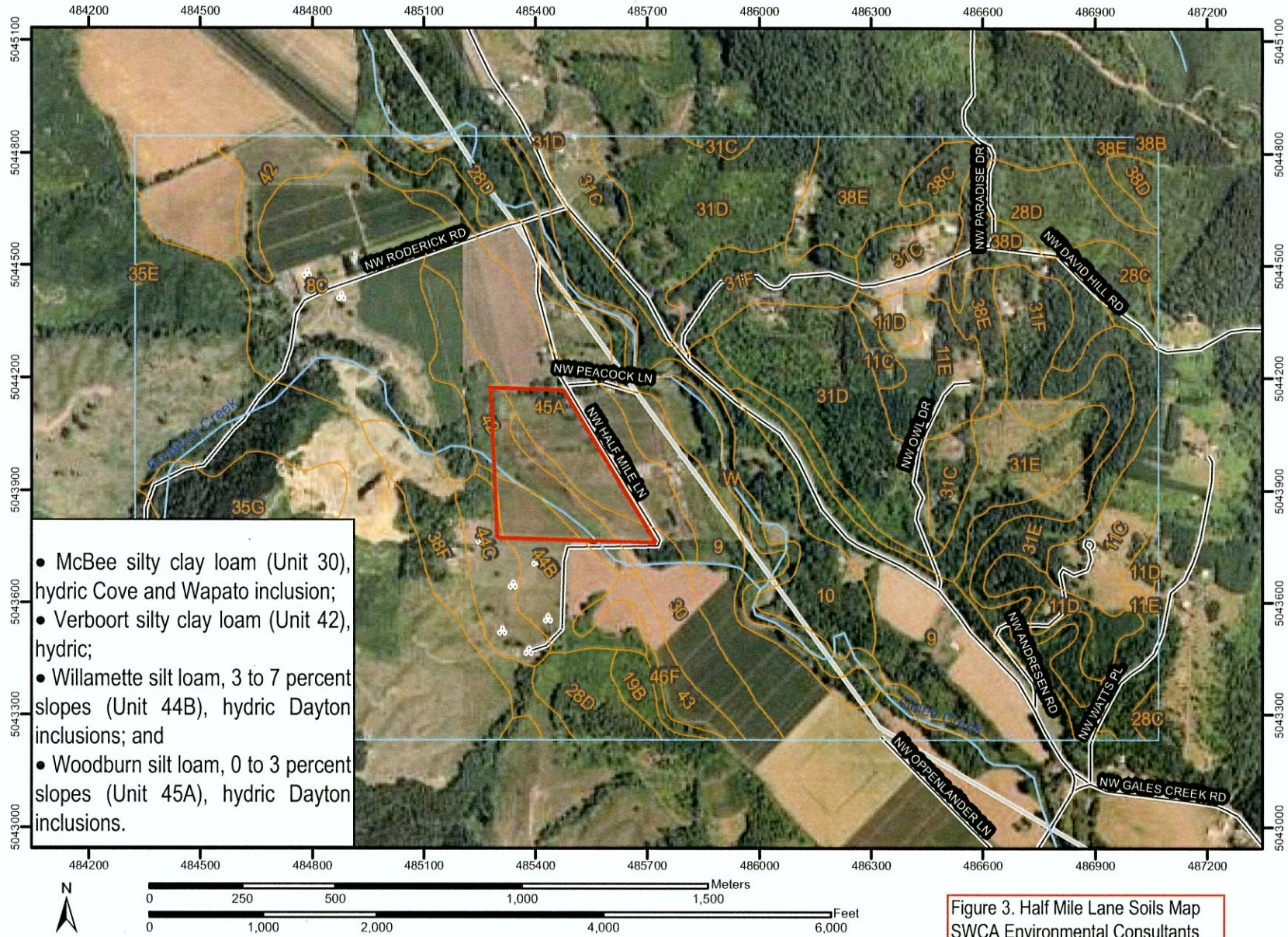
**TAX LOT MAP 1N 4 21**

Project 15440

April 2009

Figure 2

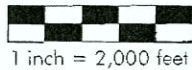
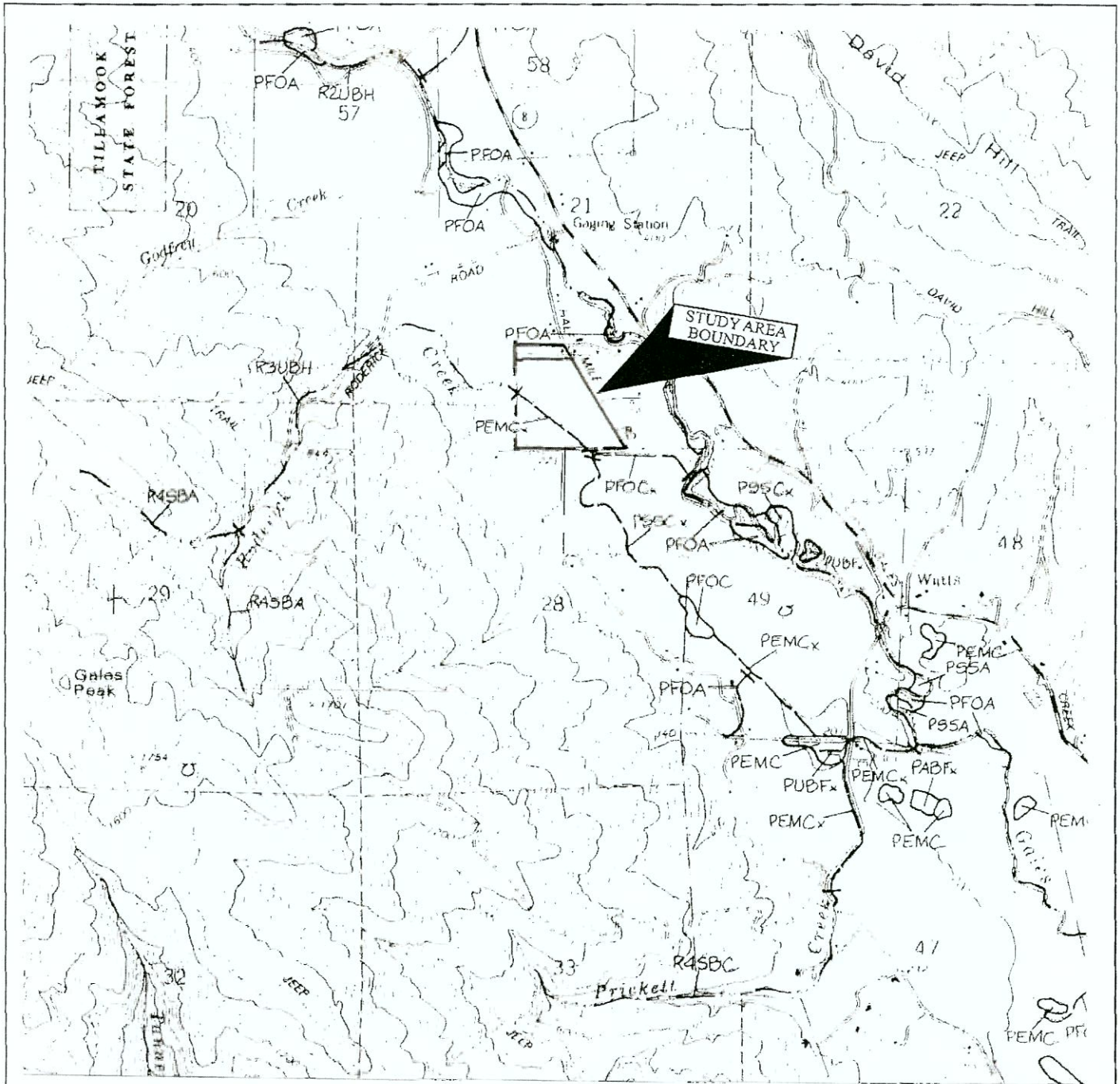
Soil Map—Washington County, Oregon



- McBee silty clay loam (Unit 30), hydric Cove and Wapato inclusion;
- Verboort silty clay loam (Unit 42), hydric;
- Willamette silt loam, 3 to 7 percent slopes (Unit 44B), hydric Dayton inclusions; and
- Woodburn silt loam, 0 to 3 percent slopes (Unit 45A), hydric Dayton inclusions.

Figure 3. Half Mile Lane Soils Map  
SWCA Environmental Consultants





Legend



Wetland Legend

PEMCx: Palustrine Emergent Seasonally Flooded Wetland, ditched

Source: US Fish and Wildlife Service. 1992. Gales Creek, Oregon NWI quadrangle. CIR 7/82 1:58,000.

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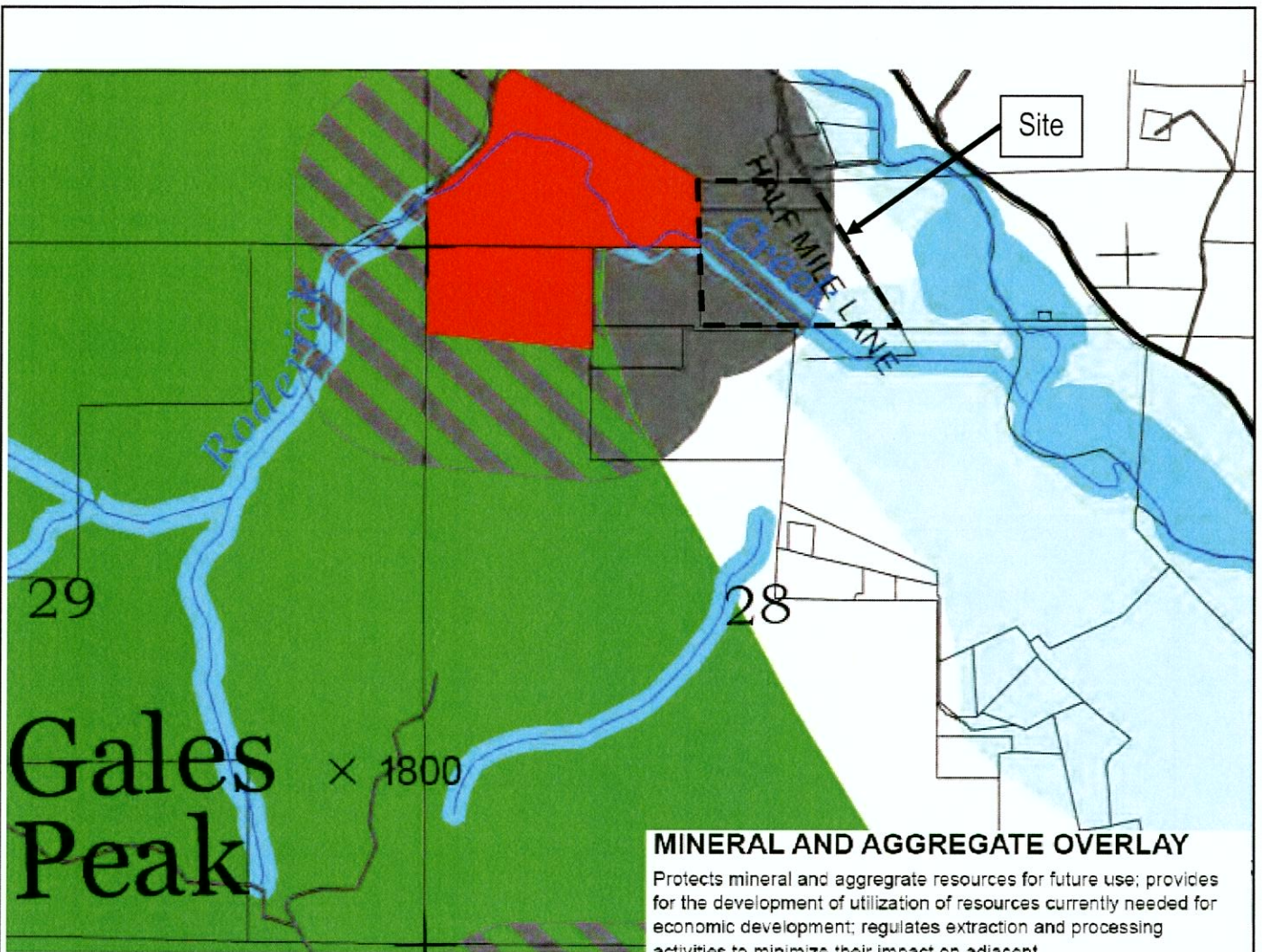
**GALES CREEK HALF MILE LANE  
WETLAND AND WATER DELINEATION**

**NATIONAL WETLAND INVENTORY MAP**

Project 15440

April 2009


Figure 4




**MINERAL AND AGGREGATE OVERLAY**

Protects mineral and aggregate resources for future use; provides for the development of utilization of resources currently needed for economic development; regulates extraction and processing activities to minimize their impact on adjacent

**WATER AREAS AND WETLANDS**

 100 Year flood plain, drainage hazard areas and ponds, except those already developed.

**WATER AREAS, WETLANDS & FISH AND WILDLIFE HABITAT**

 Water areas and wetlands that are also fish and wildlife habitat.

 **DISTRICT A**

Applied only to sites upon which extraction, processing and stockpiling activities are currently undertaken and to sites which may be utilized for such activities in the future. Provides regulations which minimize impacts of resource extraction and processing on adjacent land use.

 **DISTRICT B**


Applied to land within one thousand feet of District A boundaries. Regulates the establishment of new noise sensitive uses which may be affected by mineral and aggregate extraction activities. Intended to reduce conflicting land uses and ensure that future extraction of minerals and aggregate will not be precluded by other development.



No Scale

Legend



 Study Area Boundary

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**GALES CREEK HALF MILE LANE  
WETLAND AND WATER DELINEATION**

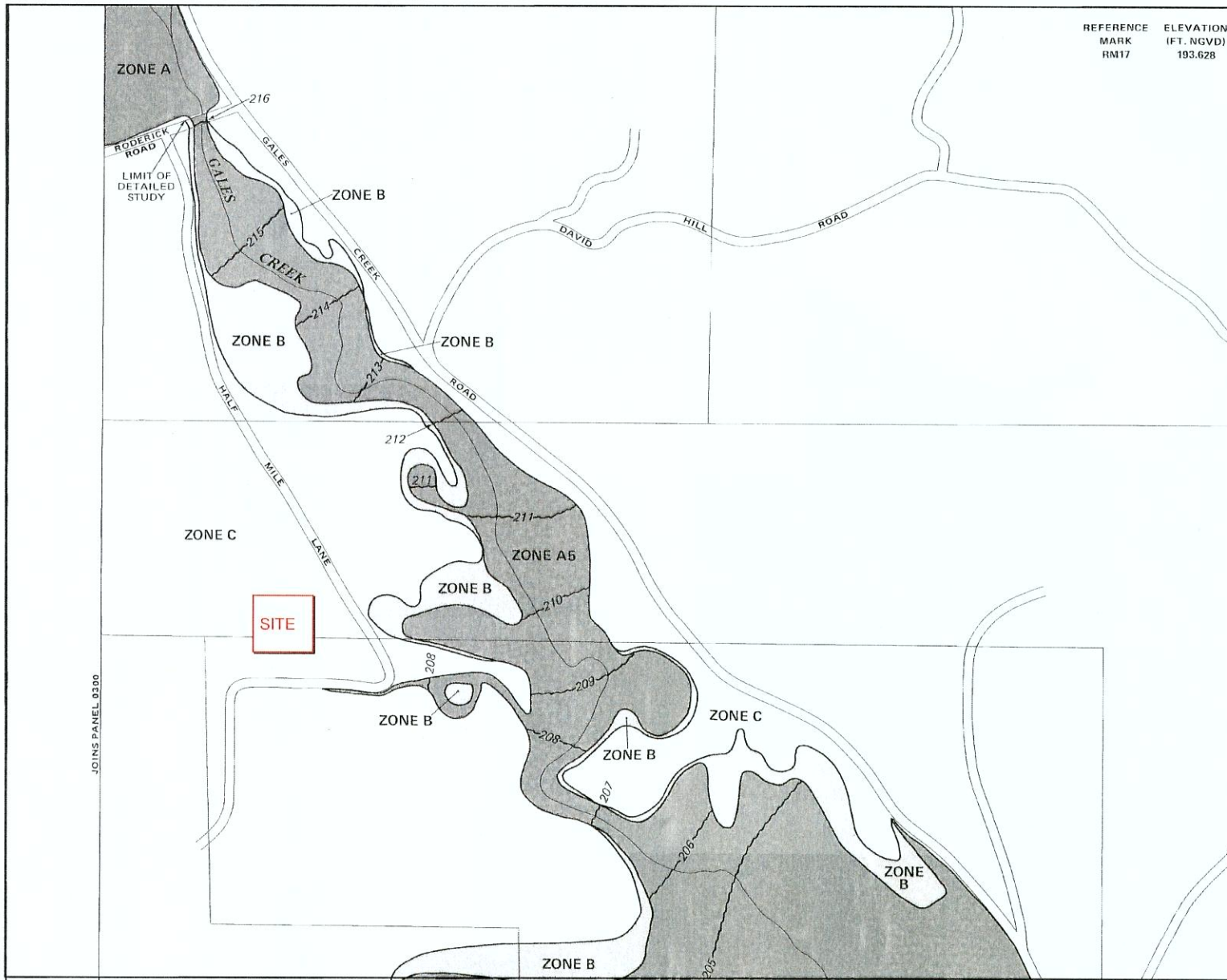
**WASHINGTON COUNTY  
SIGNIFICANT NATURAL RESOURCE MAP**

Project 15440

April 2009

Figure 5

Source:  
<http://www.co.washington.or.us/deptmts/lut/planni ng/docs/mrp/mrp.htm> Map 7



REFERENCE MARK RM17 ELEVATION (FT. NGVD) 193.628



APPROXIMATE SCALE  
500 0 500 FEET

JOINS PANEL 0200

**NATIONAL FLOOD INSURANCE PROGRAM**

**FIRM  
FLOOD INSURANCE RATE MAP**

**WASHINGTON COUNTY,  
OREGON  
(UNINCORPORATED AREAS)**

**PANEL 291 OF 575  
(SEE MAP INDEX FOR PANELS NOT PRINTED)**

Figure 6a. FEMA Map for the Gales Creek Half Mile Lane Site

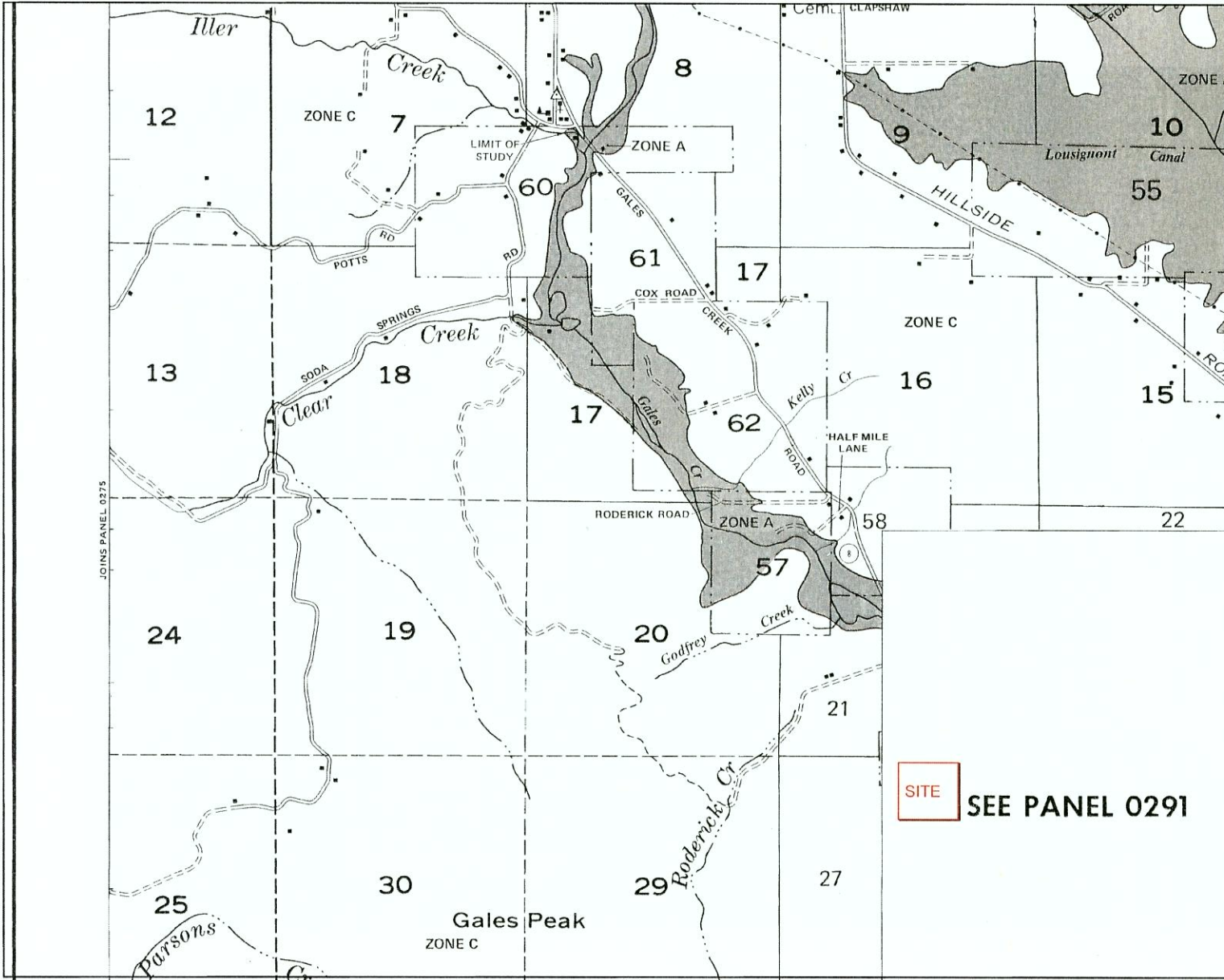
**COMMUNITY-PANEL NUMBER  
410238 0291 B**

**EFFECTIVE DATE:  
SEPTEMBER 30, 1982**



Federal Emergency Management Agency

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JOINS PANEL 0275



APPROXIMATE SCALE  
 2000 0 2000 FEET

**NATIONAL FLOOD INSURANCE PROGRAM**

**FIRM  
 FLOOD INSURANCE RATE MAP**

**WASHINGTON COUNTY,  
 OREGON  
 (UNINCORPORATED AREAS)**

**PANEL 300 OF 575  
 (SEE MAP INDEX FOR PANELS NOT PRINTED)**

Figure 6b. FEMA Map  
 northwest of the Gales  
 Creek Half Mile Lane Site

**COMMUNITY-PANEL NUMBER  
 410238 0300 B**

**EFFECTIVE DATE:  
 SEPTEMBER 30, 1982**



Federal Emergency Management Agency

**SITE  
 SEE PANEL 0291**

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# Gales Creek Half Mile Lane

## Wetland Delineation Map

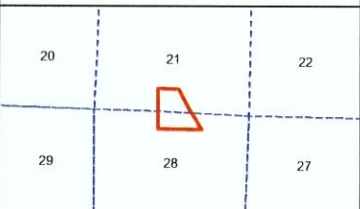
### Legend

#### Plot Type

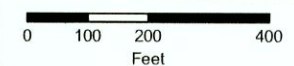
- Upland
  - ▲ Wetland
  - △ Culverts
  - ▨ Wetland Area
  - Taxlots
  - Soil Map Units
  - ▭ Study Area Boundary (SAB)
- USA Prime Imagery

GPS data collect with Trimble GeoXT submeter GPS unit. GPS plot accuracy < 1 meter; line accuracy ± 1 meter.

Sources:  
Aerial imagery provided by i-cubed. 2007. Accessed online. (services.arcgisonline.com/v92)



Township 1N Range 4W

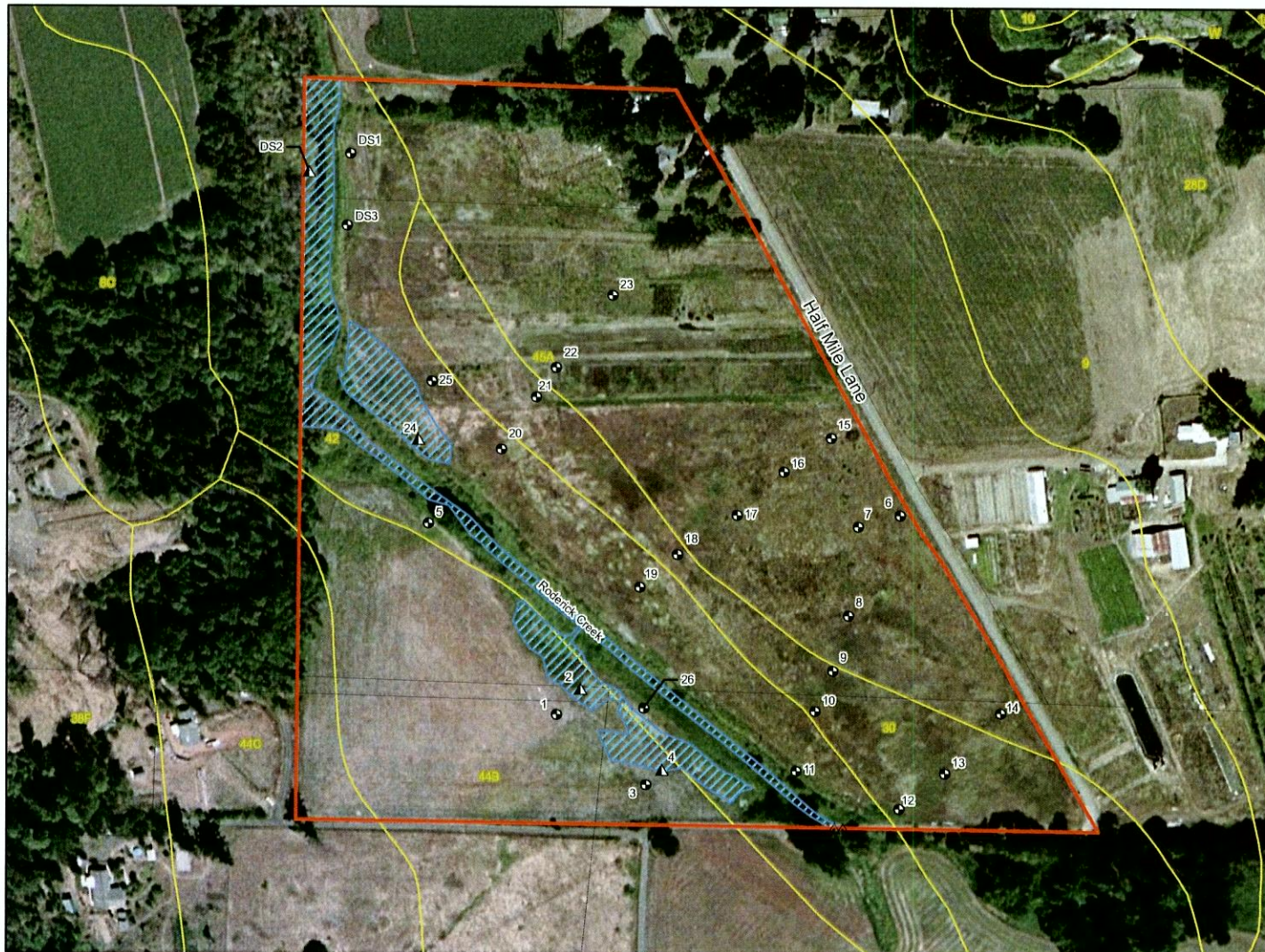


1 inch equals 200 feet  
1:2,400



**SWCA**  
ENVIRONMENTAL CONSULTANTS

Figure 7.  
April 29, 2009



# Gales Creek Half Mile Lane

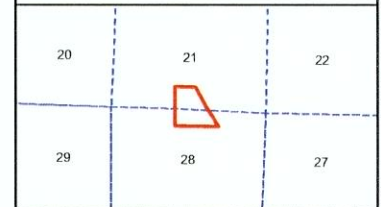
## Wetland Delineation Map

### Legend

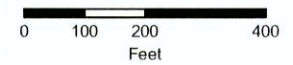
- Plot Type
- Upland
  - ▲ Wetland
  - △ Culverts
  - ▨ Wetland Area
  - Taxlots
  - ▭ Study Area Boundary (SAB)

GPS data collect with Trimble GeoXT submeter GPS unit. GPS plot accuracy < 1 meter, line accuracy ± 1 meter

Sources:  
Tax lots provided by Metro



Township 1N Range 4W



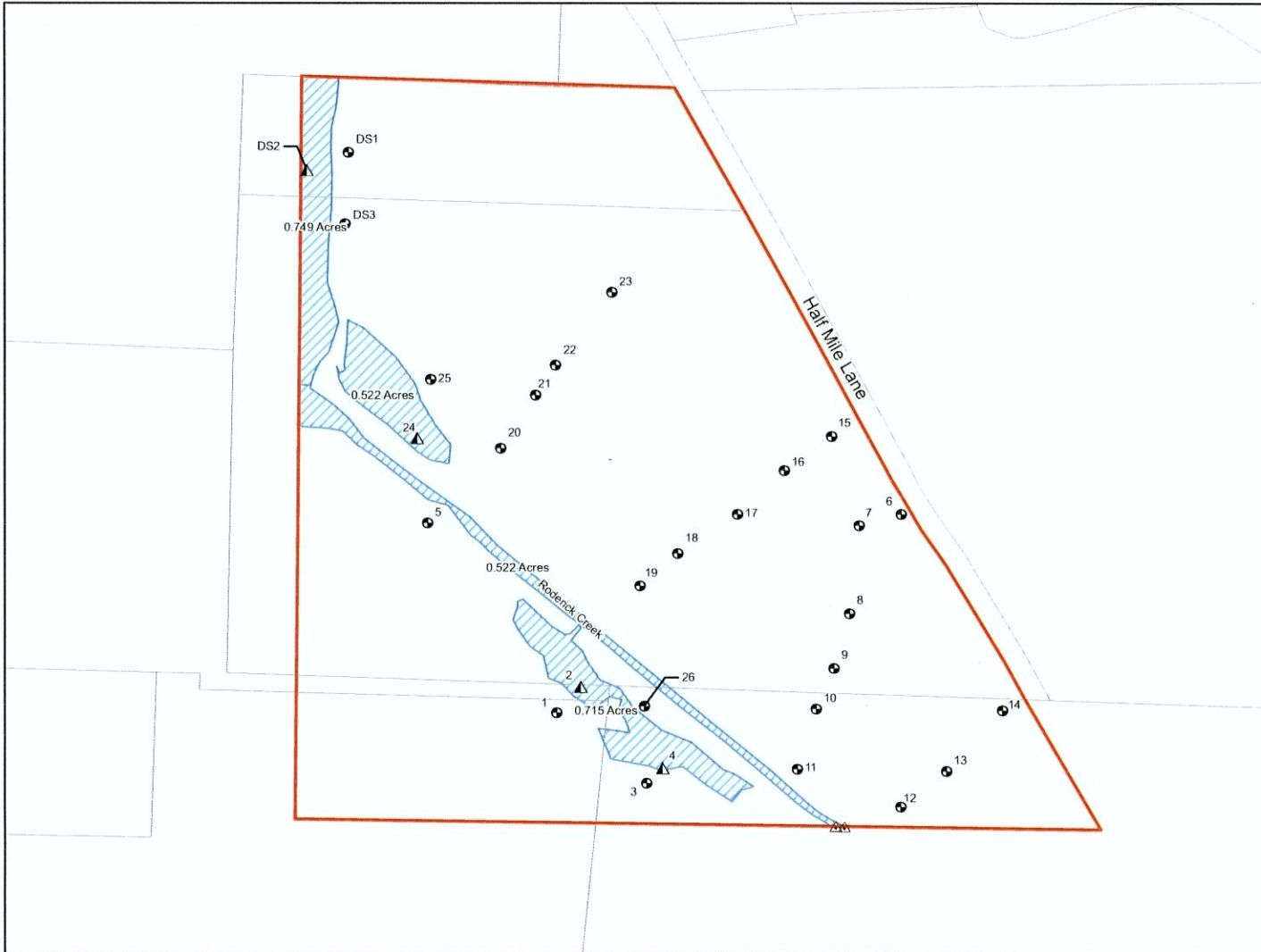
1 inch equals 200 feet  
1:2,400

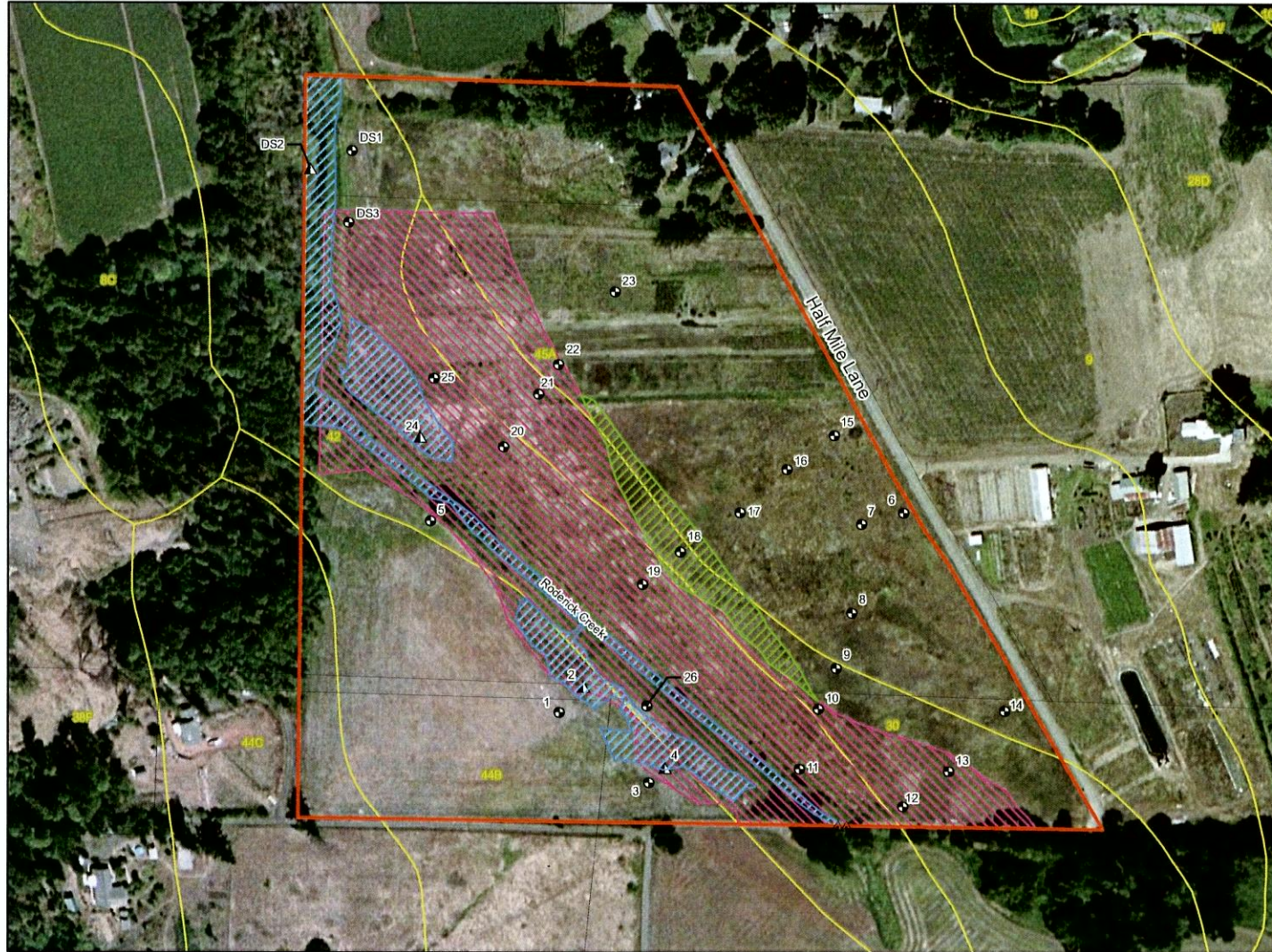


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Figure 8.

April 29, 2009





Gales Creek Half Mile Lane

Wetland and Water Delineation Map

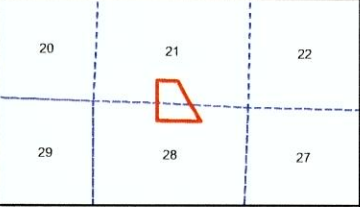
Legend

Plot Type

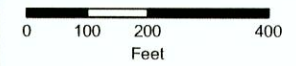
- Upland
- ▲ Wetland
- △ Culverts
- ▨ Wetland Area
- ▩ Hydric Soils
- ▧ Filled Hydric Soils
- Taxlots
- Soil Map Units
- USA Prime Imagery
- ▭ Study Area Boundary (SAB)

GPS data collect with Trimble GeoXT submeter GPS unit. GPS plot accuracy < 1 meter; line accuracy ± 1 meter.

Sources:  
Aerial imagery provided by i-cubed, 2007. Accessed online [services.arcgisonline.com/v92]



Township 1N Range 4W



1 inch equals 200 feet  
1:2,400



Figure 9.

April 29, 2009

## Appendix B: Aerial Photographs



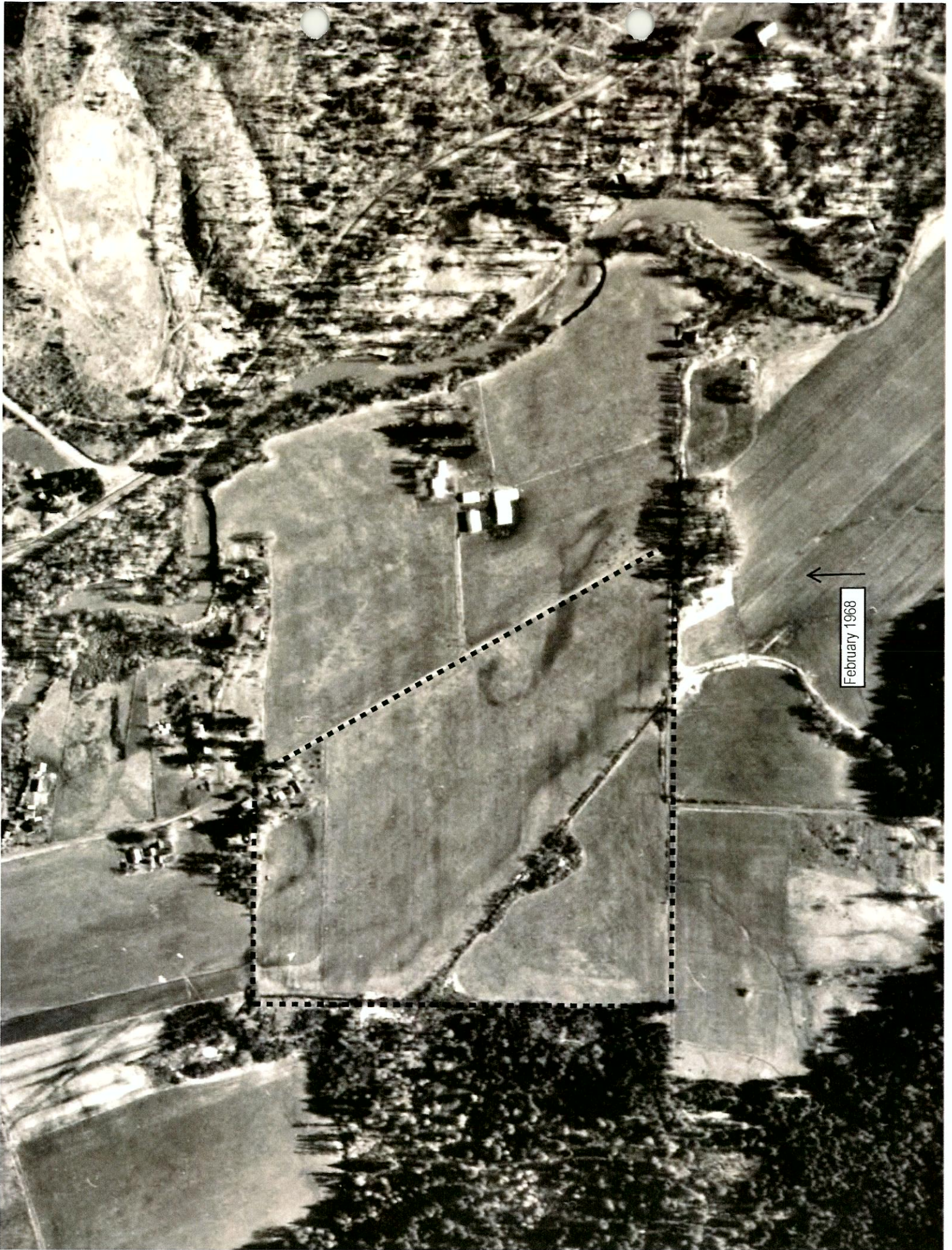


June 2004



June 1989





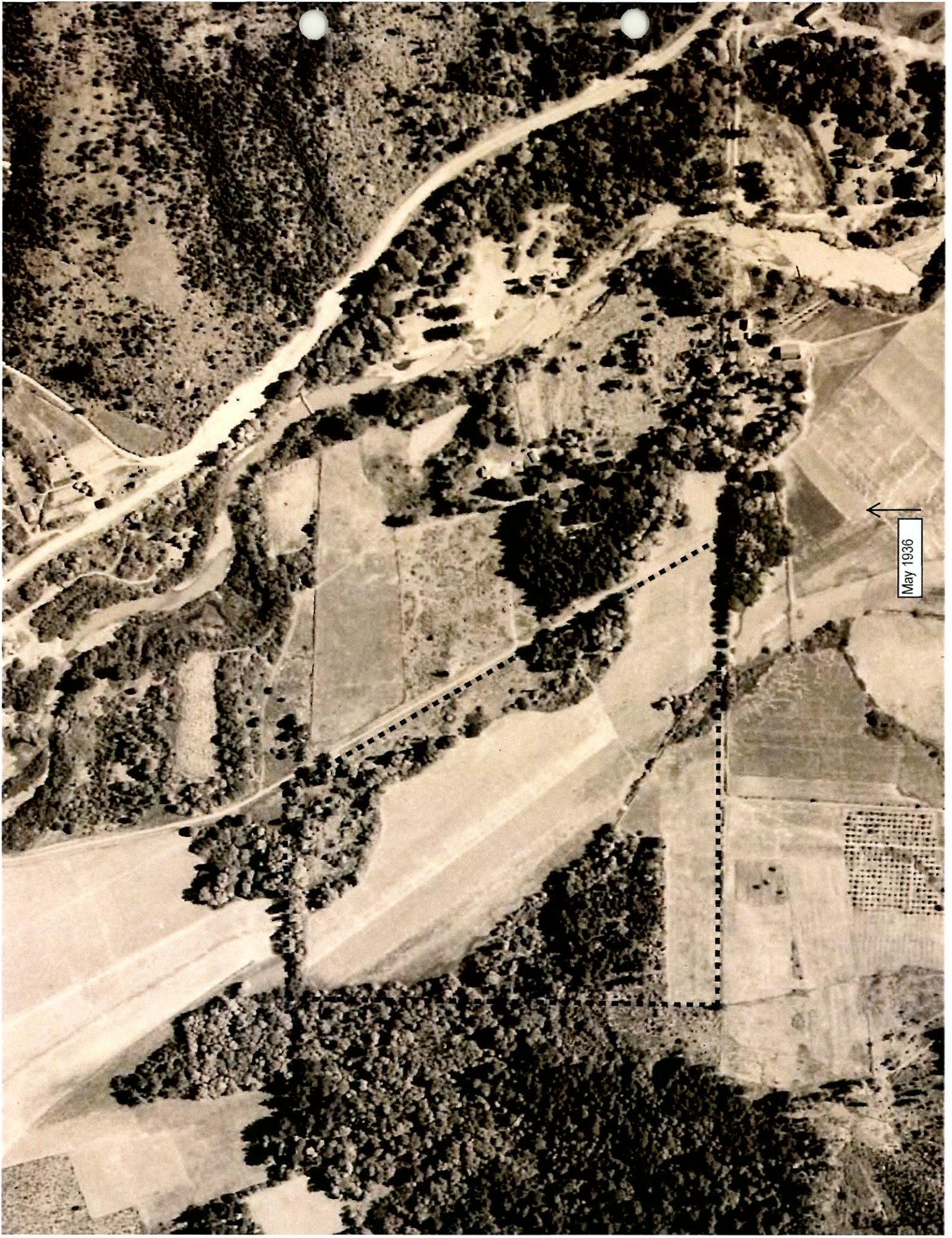
February 1968



August 1963



May 1944



May 1936

## **Appendix C: Precipitation Data**



-----  
WETS Station : FOREST GROVE, OR2997                      Creation Date: 09/09/2002  
Latitude: 4532              Longitude: 12306                      Elevation: 00180  
State FIPS/County(FIPS): 41067                      County Name: Washington  
Start yr. - 1971      End yr. - 2000  
-----

Month	Temperature (Degrees F.)			Precipitation (Inches)				
	avg daily max	avg daily min	avg	avg	30% chance will have		avg # of days w/.1 or more	avg total snow fall
					less than	more than		
January	46.0	32.6	39.3	7.09	4.57	8.53	13	1.2
February	50.7	34.4	42.6	6.21	3.94	7.49	12	1.3
March	56.5	37.1	46.8	4.91	3.53	5.79	12	0.2
April	61.8	39.7	50.8	3.04	1.93	3.67	8	0.0
May	68.8	44.8	56.8	2.04	1.17	2.49	6	0.0
June	74.6	49.5	62.0	1.49	0.94	1.79	3	0.0
July	82.0	53.5	67.8	0.53	0.20	0.65	1	0.0
August	82.9	52.9	67.9	0.76	0.23	0.95	2	0.0

September	77.1	48.3	62.7	1.55	0.61	1.93	4	0.0
October	65.0	41.0	53.0	3.19	1.76	3.89	7	0.2
November	52.2	37.1	44.7	7.47	4.86	8.98	14	0.7
December	45.7	33.1	39.4	7.83	5.18	9.38	13	1.2
-----	-----	-----	-----	-----	-----	-----	-----	-----
Annual	-----	-----	-----	-----	38.90	50.87	--	-----
-----	-----	-----	-----	-----	-----	-----	-----	-----
Average	63.6	42.0	52.8	-----	-----	-----	--	-----
-----	-----	-----	-----	-----	-----	-----	-----	-----
Total	-----	-----	-----	46.09	-----	-----	95	4.8
-----	-----	-----	-----	-----	-----	-----	-----	-----

GROWING SEASON DATES

Probability	Temperature		
	24 F or higher	28 F or higher	32 F or higher
	Beginning and Ending Dates Growing Season Length		
50 percent *	2/ 4 to 12/ 6 307 days	3/11 to 11/16 250 days	4/22 to 10/22 183 days
70 percent *	1/25 to 12/17 327 days	3/ 3 to 11/24 266 days	4/16 to 10/28 194 days

\* Percent chance of the growing season occurring between the Beginning and Ending dates.

total 1928-2002 prcp

Station : OR2997, FOREST GROVE  
----- Unit = inches

yr	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	annl
28	7.51	1.88	10.04	6.04	0.47	0.78	0.22	0.00	0.99	2.18	6.17	8.64	44.92
29	3.51	0.80	2.40	4.02	0.87	2.05	0.09	0.24	0.19	0.86	0.53	10.55	26.11
30	4.23	6.93	1.65	2.93	2.77	0.84	0.02	0.03	2.02	1.28	3.46	3.07	29.23
31	7.43	3.79	M8.00	2.04	0.67	3.98	0.00	0.00	2.63	5.71	7.60	11.86	53.71
32	7.22	3.47	6.86	3.41	1.40	0.25	0.48	0.21	0.10	2.68	10.46	8.92	45.46
33	8.94	3.99	6.42	0.44	3.55	1.97	0.02	0.63	2.55	3.10	1.69	18.73	52.03
34	7.00	1.85	3.40	2.25	1.41	0.39	0.02	0.24	1.41	7.38	14.44	10.64	50.43
35	6.36	3.84	7.09	2.04	0.23	0.22	0.71	0.14	1.65	2.76	2.88	6.82	34.74
36	12.02	7.80	3.62	1.24	3.80	2.58	0.57	0.15	0.75	M0.33	0.40	9.46	42.72
37	5.27	8.18	4.48	6.99	1.63	3.41	0.08	0.89	1.68	1.62	12.00	15.26	61.49
38	5.96	8.20	10.49	1.78	0.50	0.06	0.29	0.28	1.42	4.08	4.91	M5.20	43.17
39	6.15	6.52	2.64	0.38	0.89	0.99	0.27	0.98	M0.06	2.26	1.99	M12.31	35.44
40	4.72	13.45	5.37	M2.74	2.28	0.05	1.05	0.08	3.36	4.79	4.98	6.59	49.46
41	8.21	2.08	2.17	2.27	3.82	1.19	0.05	1.79	2.63	2.42	5.75	11.82	44.20
42	5.08	4.81	2.26	1.97	2.59	1.51	0.97	0.33	0.01	2.68	14.18	11.17	47.56
43	5.90	4.82	7.28	2.85	1.43	2.19	0.32	1.36	0.06	M6.25	3.10	4.37	39.93
44	4.30	3.68	3.21	3.74	0.85	0.67	1.54	0.18	2.56	1.50	M5.30	2.60	30.13
45	4.68	M7.11	7.50	2.48	3.69	0.15	0.17	0.14	3.41	1.69	13.27	8.27	52.56
46	M7.86	7.35	5.68	1.41	1.55	M1.77	0.95	0.11	0.96	4.60	9.48	M7.24	48.96

47	5.55	M3.79	5.31	1.59	0.11	2.77	M0.62	0.95	0.98	M10.90	4.09	4.36	41.02
48	7.54	7.48	M4.28	M4.26	4.86	0.80	0.41	0.78	2.61	2.30	M8.39	10.38	54.09
49	1.54	10.78	3.34	0.40	3.17	0.25	0.64	0.07	0.63	2.22	M6.56	6.44	36.04
50	10.19	6.84	6.28	1.81	0.42	1.52	0.49	0.83	1.01	9.37	9.48	8.46	56.70
51	10.83	5.29	4.58	0.96	1.58	0.04	M0.09	0.43	2.47	5.50	8.50	8.37	48.64
52	6.64	M5.53	4.62	1.39	0.57	2.26	0.00	0.18	0.36	0.70	2.09	10.08	34.42
53	15.68	4.63	M5.00	2.48	2.90	1.23	0.06	1.43	M0.92	3.58	6.33	7.15	51.39
54	14.78	7.65	2.83	3.28	1.02	2.00	0.26	0.94	1.69	3.36	6.62	M6.23	50.66
55	4.10	4.00	4.67	4.07	M0.63	1.09	1.11	0.00	2.50	6.95	10.38	12.34	51.84
56	13.20	4.17	7.29	0.63	0.96	1.70	0.03	1.29	1.63	5.10	1.90	4.81	42.71
57	2.97	6.14	6.97	1.93	2.24	M1.25	0.08	0.42	0.65	M3.17	3.19	10.51	39.52
58	9.04	8.13	2.49	3.82	1.20	2.48	0.00	0.00	0.84	2.47	7.72	6.34	44.53
59	11.51	4.41	3.94	1.06	2.57	2.18	1.01	0.04	2.48	2.37	3.96	M4.59	40.12
60	5.47	6.26	5.96	4.00	3.80	0.40	0.00	0.91	0.38	3.88	10.63	3.45	45.14
61	6.57	11.16	8.61	2.96	2.00	0.16	0.40	0.41	0.61	5.38	5.21	7.34	50.81
62	1.38	4.14	5.31	4.20	2.27	0.46	0.04	1.75	1.91	6.00	11.28	3.08	41.82
63	2.07	4.33	6.50	3.62	2.37	1.73	0.96	1.99	1.12	3.34	6.54	4.95	39.52
64	14.75	0.77	4.32	1.07	0.89	1.34	0.55	0.36	1.33	1.29	9.44	13.01	49.12
65	7.89	2.01	0.58	1.99	1.20	0.69	0.32	0.89	0.00	1.88	7.84	9.19	34.48
66	8.32	2.47	7.93	0.45	1.19	1.32	0.97	0.54	1.69	3.85	6.99	11.21	46.93
67	10.02	1.93	5.66	2.83	0.79	0.91	0.00	0.02	0.88	5.67	3.16	6.78	38.65
68	8.31	8.57	5.07	1.26	3.17	1.92	0.19	4.02	2.94	5.63	7.29	12.69	61.06
69	8.98	3.92	1.01	2.07	1.58	1.59	0.01	0.00	2.22	5.25	3.37	10.63	40.63
70	14.04	5.12	2.83	2.70	1.02	0.36	0.05	0.04	1.12	3.80	6.37	13.59	51.04
71	8.72	4.72	8.21	3.71	1.01	1.58	0.23	0.64	2.80	3.04	7.92	10.88	53.46
72	8.90	5.09	7.18	4.22	1.05	0.67	0.26	0.26	3.04	0.62	4.78	10.93	47.00
73	5.41	2.36	3.29	1.37	1.49	1.28	0.06	0.86	2.72	3.50	15.97	12.35	50.66
74	10.19	6.68	7.85	2.92	1.40	0.76	1.18	0.10	0.05	1.56	7.50	8.12	48.31
75	9.85	6.79	4.79	1.53	1.80	0.44	0.42	1.63	0.00	7.23	6.30	7.23	48.01
76	6.86	7.31	5.37	2.27	1.29	0.75	0.60	2.27	0.76	0.99	2.14	M1.57	32.18
77	1.44	M3.08	4.74	0.39	M2.99	0.98	0.59	2.93	3.37	2.73	6.94	10.94	41.12
78	M7.16	5.80	2.31	4.49	2.55	M0.63	0.99	1.73	3.29	0.53	4.10	2.57	36.15
79	3.19	7.74	2.62	2.56	1.88	0.47	0.17	1.01	2.53	5.23	3.99	7.63	39.02
80	7.91	6.11	3.57	3.70	1.38	1.56	0.28	0.00	1.14	1.46	7.77	11.10	45.98
81	2.45	5.48	2.79	2.53	2.10	2.95	0.11	0.25	3.31	5.46	5.88	12.20	45.51
82	6.66	7.74	3.81	5.30	0.55	1.42	0.44	1.66	2.53	5.06	6.03	12.08	53.28
83	7.61	11.77	8.19	2.68	1.34	2.96	2.32	1.33	0.77	1.23	13.35	6.38	59.93
84	2.71	5.70	4.19	3.66	3.17	3.33	0.00	0.00	0.92	4.37	12.88	3.84	44.77
85	0.44	3.46	4.58	1.06	0.48	2.82	0.38	0.96	1.54	3.87	M3.54	2.30	25.43
86	7.97	6.77	3.71	1.51	1.84	0.49	0.75	0.00	3.40	3.26	7.64	5.78	43.12
87	8.36		8.05	1.73			1.14	0.36	0.26		4.50	10.86	35.26
88	8.21	1.46	3.67	2.06	2.46	2.18	0.07	0.01	0.81	0.14	M10.80	3.94	35.81
89	4.29	3.98	6.80	1.09	1.43	0.78	0.42	0.77	0.44	2.39	3.59	3.48	29.46
90	12.25	6.76	2.20	1.85	2.66	1.63	0.34	0.91	0.45	4.19	4.22	M2.74	40.20
91	3.35	4.26	4.73	6.67	2.26	1.41	0.27	0.38	0.27	1.50	5.10	4.19	34.39
92	6.39	3.73	1.18	4.73	0.04	0.80	0.45	0.41	1.41	2.63	5.17	7.98	34.92
93	5.46	0.80	M5.50	6.26	3.83	1.63	1.43	0.17	0.00	1.12	1.30	9.03	36.53
94	4.39	6.03	2.53	1.76	2.26	0.81	0.01	0.30	0.64	5.02	8.42	9.87	42.04
95	9.99	4.10	6.42	3.63	1.34	1.47	0.56	0.45	1.40	3.59	12.14	10.24	55.33
96	9.89	12.91	2.11	7.96	4.77	0.81	0.57	0.38	2.33	M4.84	7.34	17.01	70.92
97	8.62	2.34	M9.34	2.54	1.56	3.64	0.51	1.57	3.70	7.76	9.24	3.73	54.55
98	12.04	8.23	5.13	1.55	4.72	1.05	0.10	0.00	0.58	3.34	14.62	11.95	63.31
99	11.09	20.83	7.19	3.91	3.56	1.35	1.15	1.11	0.07	2.99	M18.12	9.08	80.45
010	0.77	8.08	5.12	1.69	M2.21	2.44	0.04	0.20	1.93	2.86	2.74	4.75	42.83
1M2	0.53	2.22	3.85	2.52	1.61	2.25	0.48	1.24	0.61	3.04	11.46	M10.90	42.71

2

Water Year to Date Precipitation Data for 2008 - April 29, 2009

Station FOGO - FOREST GROVE OREGON WEATHER STATION 2.5NNE Parameter PP - Precipitation, 24 Hour Total, Inches Report for Water Year 2008 Bureau of Reclamation AgriMet System Provisional Data, Subject to Change												
DAY	OCT 2007	NOV 2007	DEC 2007	JAN 2008	FEB 2008	MAR 2008	APR 2008	MAY 2008	JUN 2008	JUL 2008	AUG 2008	SEP 2008
1	0.13	0.00	0.61	0.00	0.32	0.05	0.00	0.00	0.00	0.00	0.00	0.00
2	0.27	0.00	3.14	0.45	0.56	0.00	0.00	0.01	0.13	0.00	0.00	0.00
3	0.18	0.00	2.62	0.38	0.00	0.03	0.00	0.05	0.48	0.00	0.00	0.00
4	0.11	0.00	0.06	0.91	0.01	0.01	0.12	0.01	0.00	0.00	0.00	0.00
5	0.00	0.00	0.23	0.56	0.26	0.00	0.11	0.00	0.02	0.01	0.00	0.00
6	0.03	0.01	0.36	0.48	0.75	0.00	0.08	0.00	0.03	0.00	0.00	0.00
7	0.08	0.01	0.10	0.14	0.47	0.48	0.06	0.00	0.02	0.00	0.00	0.00
8	0.01	0.00	0.00	1.03	0.16	0.07	0.18	0.00	0.00	0.00	0.00	0.00
9	0.02	0.14	0.03	0.53	0.01	0.00	0.24	0.00	0.01	0.00	0.11	0.00
10	0.10	0.15	0.04	0.46	0.00	0.07	0.01	0.00	0.09	0.00	0.00	0.00
11	0.01	0.07	0.00	0.18	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.00
12	0.02	0.37	0.01	0.47	0.03	0.11	0.00	0.00	0.00	0.00	0.00	0.00
13	0.00	0.00	0.00	0.00	0.02	0.80	0.08	0.03	0.00	0.00	0.00	0.00
14	0.00	0.01	0.09	0.21	0.00	0.44	0.07	0.00	0.00	0.00	0.00	0.00
15	0.15	0.10	0.16	0.04	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.00
16	0.09	0.67	0.10	0.01	0.00	0.07	0.03	0.00	0.00	0.00	0.00	0.00
17	0.26	0.42	0.46	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00
18	0.60	0.85	0.70	0.01	0.00	0.13	0.00	0.00	0.00	0.00	0.06	0.00
19	0.27	0.36	0.81	0.01	0.00	0.01	0.05	0.00	0.00	0.00	0.26	0.00
20	0.74	0.00	0.19	0.00	0.00	0.15	0.01	0.21	0.00	0.00	0.03	0.00
21	0.00	0.00	0.01	0.00	0.00	0.03	0.39	0.01	0.00	0.00	0.04	0.06
22	0.00	0.00	0.35	0.00	0.01	0.01	0.57	0.00	0.00	0.00	0.00	0.01
23	0.00	0.00	0.70	0.00	0.00	0.32	0.20	0.06	0.00	0.00	0.00	0.00

24	0.06	0.00	0.13	0.00	0.02	0.00	0.00	0.22	0.00	0.00	0.38	0.03
25	0.01	0.00	0.45	0.00	0.00	0.03	0.00	0.08	0.00	0.00	0.00	0.00
26	0.00	0.44	0.32	0.51	0.00	0.63	0.00	0.03	0.00	0.00	0.00	0.01
27	0.00	0.11	0.74	0.02	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00
28	0.00	0.47	0.21	0.08	0.00	0.28	0.03	0.00	0.00	0.00	0.00	0.00
29	0.00	0.33	0.11	0.78	0.08	0.13	0.21	0.00	0.00	0.00	0.00	0.00
30	0.00	0.00	0.28	0.76	---	0.04	0.01	0.00	0.00	0.00	0.00	0.00
31	0.00	---	0.01	0.79	---	0.00	---	0.00	---	0.00	0.09	---
<b>Total</b>	3.14	4.51	13.02	8.81	2.70	4.13	2.46	0.71	0.78	0.01	0.97	0.11
<b>Ave</b>	0.10	0.15	0.42	0.28	0.09	0.13	0.08	0.02	0.03	0.00	0.03	0.00
<b>Max</b>	0.74	0.85	3.14	1.03	0.75	0.80	0.57	0.22	0.48	0.01	0.38	0.06
<b>Min</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Station FOGO - FOREST GROVE OREGON WEATHER STATION 2.5NNE Parameter PP - Precipitation, 24 Hour Total, Inches Report for Water Year 2009 Bureau of Reclamation AgriMet System Provisional Data, Subject to Change												
DAY	OCT 2008	NOV 2008	DEC 2008	JAN 2009	FEB 2009	MAR 2009	APR 2009	MAY 2009	JUN 2009	JUL 2009	AUG 2009	SEP 2009
1	0.00	0.15	0.15	3.01	0.01	0.29	0.17	---	---	---	---	---
2	0.33	0.64	0.15	0.55	0.00	0.14	0.08	---	---	---	---	---
3	0.71	0.66	0.01	0.00	0.00	0.22	0.02	---	---	---	---	---
4	0.26	0.18	0.01	0.40	0.00	0.03	0.00	---	---	---	---	---
5	0.05	0.29	0.00	0.42	0.02	0.22	0.00	---	---	---	---	---
6	0.30	0.47	0.00	0.16	0.07	0.01	0.00	---	---	---	---	---
7	0.01	0.00	0.17	0.80	0.00	0.03	0.00	---	---	---	---	---
8	0.00	0.72	0.01	0.25	0.00	0.11	0.00	---	---	---	---	---
9	0.11	0.01	0.00	0.01	0.05	0.07	0.20	---	---	---	---	---
10	0.00	0.08	0.00	0.01	0.31	0.01	0.05	---	---	---	---	---
11	0.00	0.61	0.00	0.03	0.01	0.00	0.00	---	---	---	---	---
12	0.00	1.01	0.56	0.04	0.05	0.00	0.34	---	---	---	---	---
13	0.00	0.03	0.13	0.00	0.11	0.00	0.13	---	---	---	---	---
14	0.00	0.00	0.00	0.00	0.01	0.60	0.01	---	---	---	---	---
15	0.02	0.00	0.00	0.01	0.06	0.81	0.01	---	---	---	---	---
16	0.00	0.00	0.00	0.00	0.01	0.09	0.00	---	---	---	---	---
17	0.00	0.02	0.72	0.01	0.00	0.26	0.16	---	---	---	---	---
18	0.00	0.01	0.21	0.00	0.01	0.01	0.01	---	---	---	---	---

19	0.01	0.00	0.09	0.00	0.00	0.00	0.00	---	---	---	---	---
20	0.21	0.52	0.00	0.00	0.00	0.01	0.00	---	---	---	---	---
21	0.01	0.09	---	0.00	0.00	0.08	0.00	---	---	---	---	---
22	0.00	0.02	---	0.00	0.10	0.01	0.00	---	---	---	---	---
23	0.00	0.00	---	0.00	0.49	0.16	0.10	---	---	---	---	---
24	0.00	0.00	---	0.03	0.28	0.00	0.00	---	---	---	---	---
25	0.00	0.08	0.29	0.17	0.17	0.00	0.00	---	---	---	---	---
26	0.00	0.02	0.49	0.00	0.14	0.00	0.00	---	---	---	---	---
27	0.00	0.06	0.41	0.13	0.00	0.00	0.09	---	---	---	---	---
28	0.00	0.01	0.19	0.00	0.01	0.43	0.39	---	---	---	---	---
29	0.00	0.00	0.72	0.01	---	0.10	0.01	---	---	---	---	---
30	0.00	0.01	0.28	0.01	---	0.00	---	---	---	---	---	---
31	0.64	---	0.14	0.01	---	0.00	---	---	---	---	---	---
<b>Total</b>	2.66	5.69	4.73	6.06	1.91	3.69	1.77	---	---	---	---	---
<b>Ave</b>	0.09	0.19	0.18	0.20	0.07	0.12	0.06	---	---	---	---	---
<b>Max</b>	0.71	1.01	0.72	3.01	0.49	0.81	0.39	---	---	---	---	---
<b>Min</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	---	---	---	---	---

**Appendix D: Wetland Determination Data Forms**

**WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region**

Project/Site: Gales Creek Half Mile Lane City/County: Forest Grove, Washington Sampling Date: 9/5/2008  
 Applicant/Owner: Clean Water Services / George Kral State: Oregon Sampling Point: 1  
 Investigator(s): C. Mirth Walker and Greg Swenson Section, Township, Range: 21, T1N, R4W  
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none) Convex Slope (%): 5  
 Subregion (LRR): A, Northwest Forests and Coast Lat: 45.547739 Long: -123.1866536 Datum: NAD 1983  
 Soil Map Unit Name: (44B) Willamette silt loam, 3 to 7 percent slopes NWI classification: None  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No      (If no, explain in Remarks)  
 Are Vegetation X, Soil X, or Hydrology      significantly disturbed? Are "Normal Circumstances" present? Yes X No       
 Are Vegetation     , Soil     , or Hydrology      naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present?	Yes <u>NA</u>	No <u>NA</u>	<b>Is the Sampled Area within a Wetland?</b> Yes <u>    </u> No <u>X</u>
Hydric Soil Present?	Yes <u>    </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>    </u>	No <u>X</u>	
Remarks: <u>NA means Not Applicable (used on plowed and planted agricultural crop sites in reference to the vegetation Western side of Creek. Soils and vegetation plowed and planted (wheat).)</u>			

**VEGETATION**

Tree Stratum (Plot size: <u>30' r</u> )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
0% = Total Cover				Total Number of Dominant Species Across All Strata: <u>1</u> (B)
Sapling/Shrub Stratum (Plot size: <u>10' r</u> )				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0%</u> (A/B)
1. _____	_____	_____	_____	<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>0</u> x 2 = <u>0</u> FAC species <u>5</u> x 3 = <u>15</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>92</u> x 5 = <u>460</u> Column Totals: <u>97</u> (A) <u>475</u> (B) Prevalence Index = B/A = <u>4.90</u>
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
0% = Total Cover				
Herb Stratum (Plot size: <u>5' r</u> )				
1. <u>Triticum aestivum</u>	<u>90%</u>	<u>Yes</u>	<u>NOL</u>	<b>Hydrophytic Vegetation Indicators:</b> Dominance Test is >50% Prevalence Index is ≤ 3.0 <sup>1</sup> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) Wetland Non-Vascular Plants <sup>1</sup> Problematic Hydrophytic Vegetation <sup>h</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present.
2. <u>Festuca arundinacea</u>	<u>5%</u>	<u>No</u>	<u>FAC</u>	
3. <u>Convolvulus arvensis</u>	<u>2%</u>	<u>No</u>	<u>NOL</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
97% = Total Cover				
Woody Vine Stratum (Plot size: <u>10' r</u> )				
1. _____	_____	_____	_____	<b>Hydrophytic Vegetation Present?</b> Yes <u>NA</u> No <u>NA</u>
2. _____	_____	_____	_____	
0% = Total Cover				
% Bare Ground in Herb Stratum <u>3%</u>				
Remarks: <u>*identifies indicator status is tentative</u>				Entered by: <u>SAR</u> QC by: <u>CMW</u>



**SOIL**

Sampling Point: **1**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-11	10YR 4/4	100	None				sil	Ap
11-17	10YR 4/4	100	None				sicl	Bt
17-21	10YR 4/4	100	None				sic	Bt2
21-25+	10YR 4/4	100	7.5YR 4/6	5	C	M	sic	BC
			10YR 4/3	5	D	M		

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils <sup>3</sup> :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)( <b>except MLRA 1</b> )	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<sup>3</sup> Indicators of hydrophytic vegetation and
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	wetland hydrology must be present,
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	unless disturbed or problematic.

<b>Restrictive Layer (if present):</b>	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Type: <u>None</u>	
Depth (inches): _____	

Remarks: s = sand; si = silt; c = clay; l = loam or loamy; co = coarse; f = fine; vf = very fine; + = heavy (more clay); - = light (less clay)  
 Few Manganese concretions in 0-11 inch profile.

**HYDROLOGY**

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)( <b>except MLRA 1, 2, 4A, and 4B</b> )
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Water-Stained Leaves (B9)( <b>MLRA 1, 2, 4A, and 4B</b> )
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Raised Ant Mounds (D6) ( <b>LRR A</b> )
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Other (Explain in Remarks)

<b>Field Observations:</b>	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>&gt;25</u>	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>&gt;25</u> (includes capillary fringe)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: \_\_\_\_\_ Entered by: SAR QC by: CMW

**WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region**

Project/Site: Gales Creek Half Mile Lane City/County: Forest Grove, Washington Sampling Date: 9/5/2008  
 Applicant/Owner: Clean Water Services / George Kral State: Oregon Sampling Point: 2  
 Investigator(s): C. Mirth Walker and Greg Swenson Section, Township, Range: 21, T1N, R4W  
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none) Concave Slope (%): 2  
 Subregion (LRR): A, Northwest Forests and Coast Lat: 45.547873 Long: 123.1864853 Datum: NAD 1983  
 Soil Map Unit Name: (42) Verboort silty clay loam NWI classification: None  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present?  
 Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present?	Yes <u>X</u>	No _____	<b>Is the Sampled Area within a Wetland?</b> Yes <u>X</u> No _____
Hydric Soil Present?	Yes <u>X</u>	No _____	
Wetland Hydrology Present?	Yes <u>X</u>	No _____	
Remarks: North of plot 1.			

**VEGETATION**

Tree Stratum (Plot size: <u>30' r</u> )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)  Total Number of Dominant Species Across All Strata: <u>1</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
0% = Total Cover				
Sapling/Shrub Stratum (Plot size: <u>10' r</u> )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
0% = Total Cover				
Herb Stratum (Plot size: <u>5' r</u> )				
1. <u>Festuca arundinacea</u>	<u>80%</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Juncus bufonius</u>	<u>10%</u>	<u>No</u>	<u>FACW</u>	
3. <u>Agrostis alba</u>	<u>10%</u>	<u>No</u>	<u>FAC*</u>	
4. <u>Epilobium watsonii [ciliatum]</u>	<u>5%</u>	<u>No</u>	<u>FACW</u>	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
105% = Total Cover				
Woody Vine Stratum (Plot size: <u>10' r</u> )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
0% = Total Cover				
% Bare Ground in Herb Stratum <u>-5%</u>				
<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>15</u> x 2 = <u>30</u> FAC species <u>90</u> x 3 = <u>270</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>105</u> (A) <u>300</u> (B) Prevalence Index = B/A = <u>2.86</u>				
<b>Hydrophytic Vegetation Indicators:</b> X Dominance Test is >50% _____ Prevalence Index is ≤ 3.0 <sup>1</sup> _____ Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) _____ Wetland Non-Vascular Plants <sup>1</sup> _____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present.				
<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No _____				

Remarks: \*identifies indicator status is tentative Entered by: SAR QC by: CMW

**SOIL**

Sampling Point: **2**

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-8	7.5YR 2.5/2	100	7.5YR 3/4	5	C	M	sicl	Ap
8-17	7.5YR 2.5/2	100	7.5YR 3/4	10	C	M	sicl	A
17-27	7.5YR 2.5/2	100	7.5YR 3/4	25	C	M	sic	Bt
			10YR 3/1	15	D	M		
27-31+	7.5YR 3/2	100	7.5YR 3/4	25	C	M	c	BC
			10YR 3/1	35	D	M		

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils <sup>3</sup> :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)( <b>except MLRA 1</b> )	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)	<sup>3</sup> Indicators of hydrophytic vegetation and
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	wetland hydrology must be present,
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	unless disturbed or problematic.

<b>Restrictive Layer (if present):</b>	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Type: <u>None</u>	
Depth (inches): _____	

Remarks:

**HYDROLOGY**

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required: check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)( <b>except MLRA 1, 2, 4A, and 4B</b> )
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Water-Stained Leaves (B9)( <b>MLRA 1, 2, 4A, and 4B</b> )
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Stunted or Stressed Plants (D1) ( <b>LRR A</b> )
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input checked="" type="checkbox"/> Geomorphic Position (D2)
	<input type="checkbox"/> Shallow Aquitard (D3)
	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
	<input type="checkbox"/> Raised Ant Mounds (D6) ( <b>LRR A</b> )
	<input type="checkbox"/> Frost-Heave Hummocks (D7)

<b>Field Observations:</b>	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____	
Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): <u>&gt;31</u>	
Saturation Present? (includes capillary fringe) Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>27</u>	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Entered by: SAR QC by: CMW

**WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region**

Project/Site: Gales Creek Half Mile Lane City/County: Forest Grove, Washington Sampling Date: 9/5/2008  
 Applicant/Owner: Clean Water Services / George Kral State: Oregon Sampling Point: 3  
 Investigator(s): C. Mirth Walker and Greg Swenson Section, Township, Range: 21, T1N, R4W  
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none) Convex Slope (%): 4  
 Subregion (LRR): A, Northwest Forests and Coast Lat: 45.547397 Long: 123.1859851 Datum: NAD 1983  
 Soil Map Unit Name: Willamette silt loam, 3 to 7 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No        (If no, explain in Remarks)  
 Are Vegetation X, Soil X, or Hydrology        significantly disturbed? Are "Normal Circumstances" present?  
 Yes X No         
 Are Vegetation       , Soil       , or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present?	Yes <u>NA</u>	No <u>NA</u>	<b>Is the Sampled Area within a Wetland?</b>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>	

Remarks:  
 SW portion of site. Western side of Creek. Soils and vegetation plowed and planted (wheat).

**VEGETATION**

Tree Stratum (Plot size: <u>30' r</u> )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A)  Total Number of Dominant Species Across All Strata: <u>1</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0%</u> (A/B)	
1. _____	_____	_____	_____		<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>0</u> x 2 = <u>0</u> FAC species <u>0</u> x 3 = <u>0</u> FACU species <u>10</u> x 4 = <u>40</u> UPL species <u>110</u> x 5 = <u>550</u> Column Totals: <u>120</u> (A) <u>590</u> (B) Prevalence Index = B/A = <u>4.92</u>
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
0% = Total Cover					
Sapling/Shrub Stratum (Plot size: <u>10' r</u> )					
1. _____	_____	_____	_____	<b>Hydrophytic Vegetation Indicators:</b> Dominance Test is >50% Prevalence Index is ≤ 3.0 <sup>1</sup> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) Wetland Non-Vascular Plants <sup>1</sup> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present.	
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
0% = Total Cover					
Herb Stratum (Plot size: <u>5' r</u> )					
1. <u>Triticum aestivum</u>	90%	Yes	NOL		
2. <u>Convolvulus arvensis</u>	20%	No	NOL		
3. <u>Lactuca serriola</u>	10%	No	FACU		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
120% = Total Cover					
Woody Vine Stratum (Plot size: <u>10' r</u> )					
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
0% = Total Cover					
% Bare Ground in Herb Stratum <u>-20%</u>					

Remarks: \*identifies indicator status is tentative Entered by: SAR QC by: CMW

**SOIL**

Sampling Point: **3**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-10	7.5YR 3/2	100	None				sil+	Ap
10-18	7.5YR 3/3	100	7.5YR 2.5/3	1	C	M	sil	Bw1
18-27+	7.5YR 3/3	100	7.5YR 2.5/3	1	C	M	sil	Bw2

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)	Indicators for Problematic Hydric Soils <sup>3</sup> :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Hydrogen Sulfide (A4)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	
<input type="checkbox"/> Thick Dark Surface (A12)	<sup>3</sup> Indicators of hydrophytic vegetation and
<input type="checkbox"/> Sandy Mucky Mineral (S1)	wetland hydrology must be present,
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	unless disturbed or problematic.
<input type="checkbox"/> Sandy Redox (S5)	
<input type="checkbox"/> Stripped Matrix (S6)	
<input type="checkbox"/> Loamy Mucky Mineral (F1)(except MLRA 1)	
<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Redox Depressions (F8)	

<b>Restrictive Layer (if present):</b> Type: <u>None</u> Depth (inches): _____	Hydric Soil Present? Yes _____ No <b>X</b>
--	--

Remarks:

**HYDROLOGY**

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)(except MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Water-Stained Leaves (B9)(MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Aquatic Invertebrates (B13)	
<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	
<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	
<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	
<input type="checkbox"/> Other (Explain in Remarks)	

<b>Field Observations:</b> Surface Water Present? Yes _____ No <b>X</b> Depth (inches): _____ Water Table Present? Yes _____ No <b>X</b> Depth (inches): <u>&gt;27</u> Saturation Present? Yes _____ No <b>X</b> Depth (inches): <u>&gt;27</u> (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <b>X</b>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Hydrology re-check April 10, 2009 = slightly moist 0-20" bgs. Entered by: SAR QC by: CMW

**WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region**

Project/Site: Gales Creek Half Mile Lane City/County: Forest Grove, Washington Sampling Date: 9/5/2008  
 Applicant/Owner: Clean Water Services / George Kral State: Oregon Sampling Point: 4  
 Investigator(s): C. Mirth Walker and Greg Swenson Section, Township, Range: 21, T1N, R4W  
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none) Concave Slope (%): 2  
 Subregion (LRR): A, Northwest Forests and Coast Lat: 45.547476 Long: -123.1858736 Datum: NAD 1983  
 Soil Map Unit Name: Verboort silty clay loam (near Willamette silt loam) NWI classification: None  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No        (If no, explain in Remarks)  
 Are Vegetation       , Soil       , or Hydrology        significantly disturbed? Are "Normal Circumstances" present?  
 Yes X No         
 Are Vegetation       , Soil       , or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u> Hydric Soil Present? Yes <u>X</u> No <u>      </u> Wetland Hydrology Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b> Yes <u>X</u> No <u>      </u>
Remarks: Western side of Creek. Northeast of plot 3.	

**VEGETATION**

Tree Stratum (Plot size: <u>30' r</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)  Total Number of Dominant Species Across All Strata: <u>2</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
0% = Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>28</u> x 2 = <u>56</u> FAC species <u>50</u> x 3 = <u>150</u> FACU species <u>2</u> x 4 = <u>8</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>80</u> (A) <u>214</u> (B) Prevalence Index = B/A = <u>2.68</u>
0% = Total Cover				
<b>Sapling/Shrub Stratum (Plot size: <u>10' r</u>)</b>				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
0% = Total Cover				
<b>Herb Stratum (Plot size: <u>5' r</u>)</b>				
1. <u>Festuca arundinacea</u>	<u>50%</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>unknown species</u>	<u>20%</u>	<u>Yes</u>	<u>?</u>	
3. <u>Juncus bufonius</u>	<u>20%</u>	<u>Yes</u>	<u>FACW</u>	
4. <u>Plagiobothrys figuratus</u>	<u>5%</u>	<u>No</u>	<u>FACW</u>	
5. <u>Navarretia intertexta</u>	<u>3%</u>	<u>No</u>	<u>FACW</u>	
6. <u>Anthemis cotula</u>	<u>2%</u>	<u>No</u>	<u>FACU</u>	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
100% = Total Cover				
<b>Woody Vine Stratum (Plot size: <u>10' r</u>)</b>				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
0% = Total Cover				
% Bare Ground in Herb Stratum <u>0%</u>				
Remarks: *identifies indicator status is tentative				

Entered by: SAR QC by: CMW

**SOIL**

Sampling Point: **4**

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-9	7.5YR 3/2	100	7.5YR 3/4	10	C	M	sil	Ap
9-19	7.5YR 3/2	100	7.5YR 3/4	5	C	M	sil	A
19-25+	7.5YR 3/2	100	7.5YR 3/4	5	C	M	sicl	Bt

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils <sup>3</sup> :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)( <b>except MLRA 1</b> )	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	

<b>Restrictive Layer (if present):</b>	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Type: <u>None</u> Depth (inches): _____	

Remarks:

**HYDROLOGY**

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)( <b>except MLRA 1, 2, 4A, and 4B</b> )
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Water-Stained Leaves (B9)( <b>MLRA 1, 2, 4A, and 4B</b> )
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input checked="" type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Stunted or Stressed Plants (D1) ( <b>LRR A</b> )
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> _____	<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> _____	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> _____	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> _____	<input type="checkbox"/> Raised Ant Mounds (D6) ( <b>LRR A</b> )

<b>Field Observations:</b>	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____	
Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): <u>&gt;25</u>	
Saturation Present? (includes capillary fringe) Yes _____ No <input checked="" type="checkbox"/> Depth (inches): <u>&gt;25</u>	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Hydrology re-check on April 10, 2009 = saturation at 6" bgs; free water at 12" bgs. Sidewall seeps at 10" bgs. Entered by: SAR QC by: CMW

**WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region**

Project/Site: Gales Creek Half Mile Lane City/County: Forest Grove, Washington Sampling Date: 9/5/2008  
 Applicant/Owner: Clean Water Services / George Kral State: Oregon Sampling Point: 5  
 Investigator(s): C. Mirth Walker and Greg Swenson Section, Township, Range: 21, T1N, R4W  
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none) Convex Slope (%): 2  
 Subregion (LRR): A, Northwest Forests and Coast Lat: 45.548684 Long: -123.1876346 Datum: NAD 1983  
 Soil Map Unit Name: Willamette silt loam, 3 to 7 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks)  
 Are Vegetation X, Soil X, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present?  
 Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present?	Yes <u>NA</u>	No <u>NA</u>	<b>Is the Sampled Area within a Wetland?</b> Yes _____ No <u>X</u>
Hydric Soil Present?	Yes _____	No <u>X</u>	
Wetland Hydrology Present?	Yes _____	No <u>X</u>	
Remarks: Western side of Creek. Soils and vegetation plowed and planted (wheat).			

**VEGETATION**

Tree Stratum (Plot size: <u>30' r</u> )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b>	
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)	
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>2</u> (B)	
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50%</u> (A/B)	
4. _____	_____	_____	_____	<b>Prevalence Index worksheet:</b>	
5. _____	_____	_____	_____	Total % Cover of: _____ Multiply by: _____	
0% = Total Cover				OBL species	<u>0</u> x 1 = <u>0</u>
0% = Total Cover				FACW species	<u>0</u> x 2 = <u>0</u>
0% = Total Cover				FAC species	<u>20</u> x 3 = <u>60</u>
0% = Total Cover				FACU species	<u>0</u> x 4 = <u>0</u>
0% = Total Cover				UPL species	<u>80</u> x 5 = <u>400</u>
0% = Total Cover				Column Totals:	<u>100</u> (A) <u>460</u> (B)
0% = Total Cover				Prevalence Index = B/A = <u>4.60</u>	
0% = Total Cover				<b>Hydrophytic Vegetation Indicators:</b>	
0% = Total Cover				Dominance Test is >50%	
0% = Total Cover				Prevalence Index is ≤ 3.0 <sup>1</sup>	
0% = Total Cover				Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)	
0% = Total Cover				Wetland Non-Vascular Plants <sup>1</sup>	
0% = Total Cover				Problematic Hydrophytic Vegetation <sup>h</sup> (Explain)	
0% = Total Cover				<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present.	
0% = Total Cover				<b>Hydrophytic Vegetation Present?</b> Yes <u>NA</u> No <u>NA</u>	
0% = Total Cover				Remarks: *Identifies indicator status is tentative	
0% = Total Cover				Entered by: <u>SAR</u> QC by: <u>CMW</u>	



**SOIL**

Sampling Point: 5

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-10	7.5YR 3/2	100	None				sil	Ap
10-17	7.5YR 3/2	100	7.5YR 3/4	4	C	M	sil	A
17-24+	7.5YR 3/2	100	7.5YR 3/4	10	C	M	sil	BC
			7.5YR 4/6	5	C	M	sil	

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b>		<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)( <b>except MLRA 1</b> )	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<sup>3</sup> Indicators of hydrophytic vegetation and
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	wetland hydrology must be present,
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	unless disturbed or problematic.

<b>Restrictive Layer (if present):</b>	<b>Hydric Soil Present?</b> Yes _____ No <input checked="" type="checkbox"/>
Type: <u>None</u>	
Depth (inches): _____	

Remarks:  
Few Manganese concretions in 10-17 inch profile.

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b>	
<u>Primary Indicators (minimum of one required: check all that apply)</u>	<u>Secondary Indicators (2 or more required)</u>
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)( <b>except MLRA 1, 2, 4A, and 4B</b> )
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Water-Stained Leaves (B9)( <b>MLRA 1, 2, 4A, and 4B</b> )
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Stunted or Stressed Plants (D1) ( <b>LRR A</b> )
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Frost-Heave Hummocks (D7)

<b>Field Observations:</b>	<b>Wetland Hydrology Present?</b> Yes _____ No <input checked="" type="checkbox"/>
Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____	
Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): <u>&gt;24</u>	
Saturation Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): <u>&gt;24</u> (includes capillary fringe)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: \_\_\_\_\_ Entered by: SAR QC by: CMW

**WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region**

Project/Site: Gales Creek Half Mile Lane City/County: Forest Grove, Washington Sampling Date: 9/5/2008  
 Applicant/Owner: Clean Water Services / George Kral State: Oregon Sampling Point: 6  
 Investigator(s): C. Mirth Walker and Greg Swenson Section, Township, Range: 21, T1N, R4W  
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none) Convex Slope (%): 1  
 Subregion (LRR): A, Northwest Forests and Coast Lat: 45.548808 Long: -123.1842059 Datum: NAD 1983  
 Soil Map Unit Name: (45A) Woodburn silt loam, 0 to 3 percent slopes NWI classification: None  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No        (If no, explain in Remarks)  
 Are Vegetation       , Soil       , or Hydrology        significantly disturbed? Are "Normal Circumstances" present?  
 Yes X No         
 Are Vegetation       , Soil       , or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present?	Yes <u>      </u>	No <u>X</u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>      </u>	No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>			
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>			
Remarks: Eastern portion of site and east of creek.					

**VEGETATION**

Tree Stratum (Plot size: <u>30' r</u> )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b>	
1. _____	_____	_____	_____	Number of Dominant Species	
2. _____	_____	_____	_____	That Are OBL, FACW, or FAC: <u>0</u> (A)	
3. _____	_____	_____	_____	Total Number of Dominant	
4. _____	_____	_____	_____	Species Across All Strata: <u>3</u> (B)	
0% = Total Cover				Percent of Dominant Species	
Sapling/Shrub Stratum (Plot size: <u>10' r</u> )				That Are OBL, FACW, or FAC: <u>0%</u> (A/B)	
1. _____	_____	_____	_____	<b>Prevalence Index worksheet:</b>	
2. _____	_____	_____	_____	Total % Cover of: _____ Multiply by: _____	
3. _____	_____	_____	_____	OBL species <u>0</u> x 1 = <u>0</u>	
4. _____	_____	_____	_____	FACW species <u>0</u> x 2 = <u>0</u>	
5. _____	_____	_____	_____	FAC species <u>10</u> x 3 = <u>30</u>	
0% = Total Cover				FACU species <u>40</u> x 4 = <u>160</u>	
Herb Stratum (Plot size: <u>5' r</u> )				UPL species <u>20</u> x 5 = <u>100</u>	
1. <u>Cirsium arvense</u>	<u>20%</u>	<u>Yes</u>	<u>FACU</u>	Column Totals: <u>70</u> (A) <u>290</u> (B)	
2. <u>Epilobium paniculatum [brachycarpum]</u>	<u>20%</u>	<u>Yes</u>	<u>UPL</u>	Prevalence Index = B/A = <u>4.14</u>	
3. <u>Lactuca serriola</u>	<u>20%</u>	<u>Yes</u>	<u>FACU</u>	<b>Hydrophytic Vegetation Indicators:</b>	
4. <u>Equisetum arvense</u>	<u>10%</u>	<u>No</u>	<u>FAC</u>	Dominance Test is >50%	
5. _____	_____	_____	_____	Prevalence Index is ≤ 3.0 <sup>1</sup>	
6. _____	_____	_____	_____	Morphological Adaptations <sup>1</sup> (Provide supporting	
7. _____	_____	_____	_____	data in Remarks or on a separate sheet)	
8. _____	_____	_____	_____	Wetland Non-Vascular Plants <sup>1</sup>	
70% = Total Cover				Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)	
Woody Vine Stratum (Plot size: <u>10' r</u> )				<sup>1</sup> Indicators of hydric soil and wetland hydrology must	
1. _____	_____	_____	_____	be present.	
2. _____	_____	_____	_____	<b>Hydrophytic Vegetation</b>	
0% = Total Cover				Present? Yes <u>      </u> No <u>X</u>	
% Bare Ground in Herb Stratum <u>30%</u>				Entered by: <u>SAR</u> QC by: <u>CMW</u>	

Remarks: \*Identifies indicator status is tentative  
 Disturbed weedy fill.

**SOIL**

Sampling Point: **6**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-22	7.5YR 3/3	100	multi sands	15			Fill	w/ parent mat.
22-32	7.5YR 2.5/2	100	None				sicl	Ab (buried)
32-40	7.5YR 3/1	100	None				sic	Bt (argillic)
40-42+	7.5YR 3/1	100	7.5YR 3/4	10	C	M	c	BC

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)( <b>except MLRA 1</b> )	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)		
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)		<sup>3</sup> Indicators of hydrophytic vegetation and
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)		wetland hydrology must be present,
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)		unless disturbed or problematic.

<b>Restrictive Layer (if present):</b>	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Type: <u>None</u>	
Depth (inches): _____	

Remarks:  
Test pit dug by backhoe (Plots 6-23). Roots and intermixed plant material and root clods in fill layer.

**HYDROLOGY**

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required: check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)( <b>except MLRA 1, 2, 4A, and 4B</b> )
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Water-Stained Leaves (B9)( <b>MLRA 1, 2, 4A, and 4B</b> )
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Stunted or Stressed Plants (D1) ( <b>LRR A</b> )
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Frost-Heave Hummocks (D7)

<b>Field Observations:</b>	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>&gt;42</u>	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>&gt;42</u> (includes capillary fringe)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Entered by: SAR QC by: CMW

**WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region**

Project/Site: Gales Creek Half Mile Lane City/County: Forest Grove, Washington Sampling Date: 9/5/2008  
 Applicant/Owner: Clean Water Services / George Kral State: Oregon Sampling Point: 7  
 Investigator(s): C. Mirth Walker and Greg Swenson Section, Township, Range: 21, T1N, R4W  
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none) Convex Slope (%): 3  
 Subregion (LRR): A, Northwest Forests and Coast Lat: 45.548745 Long: -123.1845075 Datum: NAD 1983  
 Soil Map Unit Name: Woodburn silt loam, 0 to 3 percent slopes NWI classification: None  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No        (If no, explain in Remarks)  
 Are Vegetation       , Soil       , or Hydrology        significantly disturbed? Are "Normal Circumstances" present?  
 Yes X No         
 Are Vegetation       , Soil       , or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present?	Yes <u>      </u>	No <u>X</u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>      </u>	No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>			
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>			
Remarks: Eastern portion of site.					

**VEGETATION**

Tree Stratum (Plot size: <u>30' r</u> )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b>	
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A)	
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>3</u> (B)	
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0%</u> (A/B)	
4. _____	_____	_____	_____	<b>Prevalence Index worksheet:</b>	
0% = Total Cover				Total % Cover of: _____ Multiply by: _____	
Sapling/Shrub Stratum (Plot size: <u>10' r</u> )				OBL species <u>0</u> x 1 = <u>0</u>	
1. _____	_____	_____	_____	FACW species <u>0</u> x 2 = <u>0</u>	
2. _____	_____	_____	_____	FAC species <u>0</u> x 3 = <u>0</u>	
3. _____	_____	_____	_____	FACU species <u>40</u> x 4 = <u>160</u>	
4. _____	_____	_____	_____	UPL species <u>20</u> x 5 = <u>100</u>	
5. _____	_____	_____	_____	Column Totals: <u>60</u> (A) <u>260</u> (B)	
0% = Total Cover				Prevalence Index = B/A = <u>4.33</u>	
Herb Stratum (Plot size: <u>5' r</u> )				<b>Hydrophytic Vegetation Indicators:</b>	
1. <u>Lactuca serriola</u>	<u>20%</u>	<u>Yes</u>	<u>FACU</u>	___ Dominance Test is >50%	
2. <u>Daucus carota</u>	<u>20%</u>	<u>Yes</u>	<u>NOL</u>	___ Prevalence Index is ≤ 3.0 <sup>1</sup>	
3. <u>Hypochaeris radicata</u>	<u>20%</u>	<u>Yes</u>	<u>FACU*</u>	___ Morphological Adaptations <sup>2</sup> (Provide supporting data in Remarks or on a separate sheet)	
4. _____	_____	_____	_____	___ Wetland Non-Vascular Plants <sup>3</sup>	
5. _____	_____	_____	_____	___ Problematic Hydrophytic Vegetation <sup>4</sup> (Explain)	
6. _____	_____	_____	_____	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present.	
7. _____	_____	_____	_____	<b>Hydrophytic Vegetation</b>	
8. _____	_____	_____	_____	Present? Yes <u>      </u> No <u>X</u>	
60% = Total Cover					
Woody Vine Stratum (Plot size: <u>10' r</u> )					
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
0% = Total Cover					
% Bare Ground in Herb Stratum <u>40%</u>				Entered by: <u>SAR</u> QC by: <u>CMW</u>	
Remarks: *identifies indicator status is tentative Percent cover estimated in office.					

**SOIL**

Sampling Point: 7

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-25	7.5YR 4/4	80	None				sl	fill
	7.5YR 5/4	20	None					
25-32	7.5YR 2.5/2	100	None				sil	Ab
32-39+	7.5YR 2.5/2	100	None				sicl	Bt

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b>		<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)( <b>except MLRA 1</b> )	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<sup>3</sup> Indicators of hydrophytic vegetation and
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	wetland hydrology must be present,
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	unless disturbed or problematic.

<b>Restrictive Layer (if present):</b>	<b>Hydric Soil Present?</b> Yes _____ No <input checked="" type="checkbox"/>
Type: <u>None</u>	
Depth (inches): _____	

Remarks:  
Test pit dug by backhoe.

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b>	
<b>Primary Indicators (minimum of one required; check all that apply)</b>	<b>Secondary Indicators (2 or more required)</b>
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)( <b>except MLRA 1, 2, 4A, and 4B</b> )
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Water-Stained Leaves (B9)( <b>MLRA 1, 2, 4A, and 4B</b> )
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Raised Ant Mounds (D6) ( <b>LRR A</b> )
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Other (Explain in Remarks)	

<b>Field Observations:</b>	<b>Wetland Hydrology Present?</b> Yes _____ No <input checked="" type="checkbox"/>
Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____	
Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): <u>&gt;39</u>	
Saturation Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): <u>&gt;39</u> (includes capillary fringe)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Entered by: SAR QC by: CMW

**WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region**

Project/Site: Gales Creek Half Mile Lane City/County: Forest Grove, Washington Sampling Date: 9/5/2008  
 Applicant/Owner: Clean Water Services / George Kral State: Oregon Sampling Point: 8  
 Investigator(s): C. Mirth Walker and Greg Swenson Section, Township, Range: 21, T1N, R4W  
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 3  
 Subregion (LRR): A, Northwest Forests and Coast Lat: 45.548294 Long: -123.1845541 Datum: NAD 1983  
 Soil Map Unit Name: Woodburn silt loam, 0 to 3 percent slopes NWI classification: None  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present?  
 Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present?	Yes _____	No <u>X</u>	<b>Is the Sampled Area within a Wetland?</b>	Yes _____	No <u>X</u>
Hydric Soil Present?	Yes _____	No <u>X</u>			
Wetland Hydrology Present?	Yes _____	No <u>X</u>			
Remarks: SE portion of site.					

**VEGETATION**

Tree Stratum (Plot size: <u>30' r</u> )	Absolute % Cover	Dominant Species?	Indicator Status		
1. _____	_____	_____	_____	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)  Total Number of Dominant Species Across All Strata: <u>2</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50%</u> (A/B)	
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
0% = Total Cover					
<b>Sapling/Shrub Stratum (Plot size: <u>10' r</u>)</b>					
1. <u>Rubus discolor</u>	20%	Yes	FACU	<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>0</u> x 2 = <u>0</u> FAC species <u>80</u> x 3 = <u>240</u> FACU species <u>25</u> x 4 = <u>100</u> UPL species <u>15</u> x 5 = <u>75</u> Column Totals: <u>120</u> (A) <u>415</u> (B) Prevalence Index = B/A = <u>3.46</u>	
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
20% = Total Cover					
<b>Herb Stratum (Plot size: <u>5' r</u>)</b>					
1. <u>Holcus lanatus</u>	70%	Yes	FAC	<b>Hydrophytic Vegetation Indicators:</b> Dominance Test is >50% Prevalence Index is ≤ 3.0 <sup>1</sup> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) Wetland Non-Vascular Plants <sup>1</sup> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present.	
2. <u>Agrostis tenuis [capillaris]</u>	10%	No	FAC		
3. <u>Hypericum perforatum</u>	5%	No	NOL		
4. <u>Lactuca serriola</u>	5%	No	FACU		
5. <u>Chrysanthemum leucanthemum [Leucanthe]</u>	5%	No	NOL		
6. <u>Epilobium paniculatum [brachycarpum]</u>	5%	No	UPL		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
100% = Total Cover					
<b>Woody Vine Stratum (Plot size: <u>10' r</u>)</b>					
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
0% = Total Cover					
% Bare Ground in Herb Stratum <u>0%</u>					

Remarks: \*Identifies indicator status is tentative Entered by: SAR QC by: CMW

**SOIL**

Sampling Point: **8**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-13	7.5YR 3/2	100	None				sicl	Fill
13-20	7.5YR 2.5/2	100	None				c	Bt
20-40+	7.5YR 3/3	100	None				cl-	BC

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils <sup>3</sup> :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)( <b>except MLRA 1</b> )	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<sup>3</sup> Indicators of hydrophytic vegetation and
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	wetland hydrology must be present,
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	unless disturbed or problematic.

<b>Restrictive Layer (if present):</b>	<b>Hydric Soil Present?</b> Yes _____ No <b>X</b>
Type: <u>None</u>	
Depth (inches): _____	

Remarks:  
Test pit dug by backhoe.

**HYDROLOGY**

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)( <b>except MLRA 1, 2, 4A, and 4B</b> )
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Water-Stained Leaves (B9)( <b>MLRA 1, 2, 4A, and 4B</b> )
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Raised Ant Mounds (D6) ( <b>LRR A</b> )
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Other (Explain in Remarks)	

<b>Field Observations:</b>	<b>Wetland Hydrology Present?</b> Yes _____ No <b>X</b>
Surface Water Present? Yes _____ No <b>X</b> Depth (inches): _____	
Water Table Present? Yes _____ No <b>X</b> Depth (inches): <u>&gt;40</u>	
Saturation Present? Yes _____ No <b>X</b> Depth (inches): <u>&gt;40</u> (includes capillary fringe)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Entered by: SAR QC by: CMW

**WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region**

Project/Site: Gales Creek Half Mile Lane City/County: Forest Grove, Washington Sampling Date: 9/5/2008  
 Applicant/Owner: Clean Water Services / George Kral State: Oregon Sampling Point: 9  
 Investigator(s): C. Mirth Walker and Greg Swenson Section, Township, Range: 21, T1N, R4W  
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none) Convex Slope (%): 2  
 Subregion (LRR): A, Northwest Forests and Coast Lat: 45.548011 Long: -123.1846567 Datum: NAD 1983  
 Soil Map Unit Name: (30) McBee silty clay loam NWI classification: None  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present?	Yes _____	No <u>X</u>	<b>Is the Sampled Area within a Wetland?</b>	Yes _____	No <u>X</u>
Hydric Soil Present?	Yes _____	No <u>X</u>			
Wetland Hydrology Present?	Yes _____	No <u>X</u>			
Remarks: SE portion of site.					

**VEGETATION**

Tree Stratum (Plot size: <u>30' r</u> )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b>	
1. _____	_____	_____	_____	Number of Dominant Species	
2. _____	_____	_____	_____	That Are OBL, FACW, or FAC: <u>1</u> (A)	
3. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>3</u> (B)	
4. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33%</u> (A/B)	
0% = Total Cover				<b>Prevalence Index worksheet:</b>	
Sapling/Shrub Stratum (Plot size: <u>10' r</u> )				Total % Cover of: _____ Multiply by: _____	
1. <u>Rubus discolor</u>	5%	Yes	FACU	OBL species	<u>0</u> x 1 = <u>0</u>
2. _____	_____	_____	_____	FACW species	<u>0</u> x 2 = <u>0</u>
3. _____	_____	_____	_____	FAC species	<u>50</u> x 3 = <u>150</u>
4. _____	_____	_____	_____	FACU species	<u>55</u> x 4 = <u>220</u>
5. _____	_____	_____	_____	UPL species	<u>0</u> x 5 = <u>0</u>
5% = Total Cover				Column Totals:	<u>105</u> (A) <u>370</u> (B)
Herb Stratum (Plot size: <u>5' r</u> )				Prevalence Index = B/A = <u>3.52</u>	
1. <u>Holcus lanatus</u>	50%	Yes	FAC	<b>Hydrophytic Vegetation Indicators:</b>	
2. <u>Cirsium arvense</u>	50%	Yes	FACU	Dominance Test is >50%	
3. _____	_____	_____	_____	Prevalence Index is ≤ 3.0 <sup>1</sup>	
4. _____	_____	_____	_____	Morphological Adaptations <sup>2</sup> (Provide supporting data in Remarks or on a separate sheet)	
5. _____	_____	_____	_____	Wetland Non-Vascular Plants <sup>3</sup>	
6. _____	_____	_____	_____	Problematic Hydrophytic Vegetation <sup>4</sup> (Explain)	
7. _____	_____	_____	_____	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present.	
8. _____	_____	_____	_____	<b>Hydrophytic Vegetation Present?</b>	
100% = Total Cover				Yes _____ No <u>X</u>	
Woody Vine Stratum (Plot size: <u>10' r</u> )					
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
0% = Total Cover					
% Bare Ground in Herb Stratum <u>0%</u>					

Remarks: \*Identifies indicator status is tentative Entered by: SAR QC by: CMW



**SOIL**

Sampling Point: **9**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-12	7.5YR 3/2	100	None				sil+	fill
12-22	7.5YR 2.5/2	100	None				sicl	Ab
22-28	7.5YR 3/3	100	None				sicl	Bw
28-48+	7.5YR 3/3	100	7.5YR 4/6	10	C	M	sicl	BC

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils <sup>3</sup> :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)( <b>except MLRA 1</b> )	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	

<b>Restrictive Layer (if present):</b> Type: <u>None</u> Depth (inches): _____	Hydric Soil Present? Yes _____ No <b>X</b>
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Remarks:  
Test pit dug by backhoe.

**HYDROLOGY**

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required: check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)( <b>except MLRA 1, 2, 4A, and 4B</b> )
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Water-Stained Leaves (B9)( <b>MLRA 1, 2, 4A, and 4B</b> )
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Stunted or Stressed Plants (D1) ( <b>LRR A</b> )
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Frost-Heave Hummocks (D7)

<b>Field Observations:</b> Surface Water Present? Yes _____ No <b>X</b> Depth (inches): _____ Water Table Present? Yes _____ No <b>X</b> Depth (inches): <u>&gt;40</u> Saturation Present? Yes _____ No <b>X</b> Depth (inches): <u>&gt;40</u> (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <b>X</b>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: \_\_\_\_\_ Entered by: SAR QC by: CMW

**WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region**

Project/Site: Gales Creek Half Mile Lane City/County: Forest Grove, Washington Sampling Date: 9/5/2008  
 Applicant/Owner: Clean Water Services / George Kral State: Oregon Sampling Point: 10  
 Investigator(s): C. Mirth Walker and Greg Swenson Section, Township, Range: 21, T1N, R4W  
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none) Convex Slope (%): 2  
 Subregion (LRR): A, Northwest Forests and Coast Lat: 45.547803 Long: -123.1847728 Datum: NAD 1983  
 Soil Map Unit Name: McBee silty clay loam NWI classification: None  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present?  
 Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present?	Yes _____	No <u>X</u>	<b>Is the Sampled Area within a Wetland?</b>	Yes _____	No <u>X</u>
Hydric Soil Present?	Yes _____	No <u>X</u>			
Wetland Hydrology Present?	Yes _____	No <u>X</u>			
Remarks: SE portion of site. Northern side of creek.					

**VEGETATION**

Tree Stratum (Plot size: <u>30' r</u> )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b>	
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)	
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>5</u> (B)	
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>40%</u> (A/B)	
4. _____	_____	_____	_____	<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>0</u> x 2 = <u>0</u> FAC species <u>60</u> x 3 = <u>180</u> FACU species <u>40</u> x 4 = <u>160</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>100</u> (A) <u>340</u> (B) Prevalence Index = B/A = <u>3.40</u>	
0% = Total Cover					
<b>Sapling/Shrub Stratum (Plot size: <u>10' r</u>)</b>					
1. <u>Rubus discolor</u>	10%	Yes	FACU		
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
10% = Total Cover					
<b>Herb Stratum (Plot size: <u>5' r</u>)</b>					
1. <u>Cirsium arvense</u>	30%	Yes	FACU		
2. <u>Agrostis tenuis [capillaris]</u>	20%	Yes	FAC		
3. <u>Holcus lanatus</u>	20%	Yes	FAC		
4. <u>Agrostis stolonifera</u>	20%	Yes	FAC*		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
90% = Total Cover					
<b>Woody Vine Stratum (Plot size: <u>10' r</u>)</b>					
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
0% = Total Cover					
% Bare Ground in Herb Stratum <u>10%</u>					
Remarks: *identifies indicator status is tentative				Entered by: <u>SAR</u> QC by: <u>CMW</u>	

**Hydrophytic Vegetation Indicators:**  
 Dominance Test is >50%  
 Prevalence Index is ≤ 3.0<sup>1</sup>  
 Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)  
 Wetland Non-Vascular Plants<sup>1</sup>  
 Problematic Hydrophytic Vegetation<sup>h</sup> (Explain)  
<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes \_\_\_\_\_ No X

**SOIL**

Sampling Point: **10**

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-10	7.5YR 2.5/2	100	None				sic	A
10-24	7.5YR 2.5/2	100	7.5YR 4/4	10	C	M	sic	Bw
24-40	10YR 4/2	100	7.5YR 4/6	30	C	M	sic	BC

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils <sup>3</sup> :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)( <b>except MLRA 1</b> )	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<sup>3</sup> Indicators of hydrophytic vegetation and
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	wetland hydrology must be present,
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	unless disturbed or problematic.

<b>Restrictive Layer (if present):</b> Type: <u>None</u> Depth (inches): _____	Hydric Soil Present? Yes _____ No <b>X</b>
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Remarks:  
Test pit dug by backhoe.

**HYDROLOGY**

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)( <b>except MLRA 1, 2, 4A, and 4B</b> )
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Water-Stained Leaves (B9)( <b>MLRA 1, 2, 4A, and 4B</b> )
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Raised Ant Mounds (D6) ( <b>LRR A</b> )
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Other (Explain in Remarks)	

<b>Field Observations:</b> Surface Water Present? Yes _____ No <b>X</b> Depth (inches): _____ Water Table Present? Yes _____ No <b>X</b> Depth (inches): <u>&gt;40</u> Saturation Present? Yes _____ No <b>X</b> Depth (inches): <u>&gt;40</u> (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <b>X</b>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: \_\_\_\_\_ Entered by: SAR      QC by: CMW

**WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region**

Project/Site: Gales Creek Half Mile Lane City/County: Forest Grove, Washington Sampling Date: 9/5/2008  
 Applicant/Owner: Clean Water Services / George Kral State: Oregon Sampling Point: 11  
 Investigator(s): C. Mirth Walker and Greg Swenson Section, Township, Range: 21, T1N, R4W  
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none) Convex Slope (%): 1  
 Subregion (LRR): A, Northwest Forests and Coast Lat: 45.547496 Long: -123.1848947 Datum: NAD 1983  
 Soil Map Unit Name: Verboort silty clay loam NWI classification: None  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present?  
 Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present?	Yes _____	No <u>X</u>	<b>Is the Sampled Area within a Wetland?</b> Yes _____ No <u>X</u>
Hydric Soil Present?	Yes <u>X</u>	No _____	
Wetland Hydrology Present?	Yes _____	No <u>X</u>	
Remarks: SE portion of site. East of creek.			

**VEGETATION**

Tree Stratum (Plot size: <u>30' r</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)  Total Number of Dominant Species Across All Strata: <u>4</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>25%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
0% = Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>5</u> x 2 = <u>10</u> FAC species <u>20</u> x 3 = <u>60</u> FACU species <u>40</u> x 4 = <u>160</u> UPL species <u>30</u> x 5 = <u>150</u> Column Totals: <u>95</u> (A) <u>380</u> (B) Prevalence Index = B/A = <u>4.00</u>
Sapling/Shrub Stratum (Plot size: <u>10' r</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Rubus discolor</u>	<u>5%</u>	<u>Yes</u>	<u>FACU</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
5% = Total Cover				
Herb Stratum (Plot size: <u>5' r</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Daucus carota</u>	<u>30%</u>	<u>Yes</u>	<u>NOL</u>	
2. <u>Cirsium arvense</u>	<u>20%</u>	<u>Yes</u>	<u>FACU</u>	
3. <u>Equisetum arvense</u>	<u>20%</u>	<u>Yes</u>	<u>FAC</u>	
4. <u>Anthemis cotula</u>	<u>10%</u>	<u>No</u>	<u>FACU</u>	
5. <u>Rubus ursinus</u>	<u>5%</u>	<u>No</u>	<u>FACU</u>	
6. <u>Phalaris arundinacea</u>	<u>5%</u>	<u>No</u>	<u>FACW</u>	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
90% = Total Cover				
Woody Vine Stratum (Plot size: <u>10' r</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
0% = Total Cover				
% Bare Ground in Herb Stratum <u>10%</u>				
<b>Hydrophytic Vegetation Indicators:</b> Dominance Test is >50% _____ Prevalence Index is ≤ 3.0 <sup>1</sup> _____ Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) _____ Wetland Non-Vascular Plants <sup>1</sup> _____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) _____ <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present.				
<b>Hydrophytic Vegetation Present?</b> Yes _____ No <u>X</u>				
Remarks: *identifies indicator status is tentative Entered by: <u>SAR</u> QC by: <u>CMW</u>				

**SOIL**

Sampling Point: **11**

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-11	7.5YR 2.5/1	100	5YR 3/4	15	C	M	c	A
11-26	7.5YR 2.5/1	100	5YR 3/4	25	C	M	c	Bw
26-41	10YR 3/1	100	5YR 3/4	25	C	M	c	BC

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b>		<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)( <b>except MLRA 1</b> )	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)	<sup>3</sup> Indicators of hydrophytic vegetation and
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	wetland hydrology must be present,
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	unless disturbed or problematic.

<b>Restrictive Layer (if present):</b>	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Type: <u>None</u>	
Depth (inches): _____	

Remarks:  
Test pit dug by backhoe.

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b>	
<b>Primary Indicators (minimum of one required; check all that apply)</b>	<b>Secondary Indicators (2 or more required)</b>
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)( <b>except MLRA 1, 2, 4A, and 4B</b> )
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Water-Stained Leaves (B9)( <b>MLRA 1, 2, 4A, and 4B</b> )
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Stunted or Stressed Plants (D1) ( <b>LRR A</b> )
	<input type="checkbox"/> Raised Ant Mounds (D6) ( <b>LRR A</b> )
	<input type="checkbox"/> Other (Explain in Remarks)
	<input type="checkbox"/> Frost-Heave Hummocks (D7)

<b>Field Observations:</b>	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	
Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>41</u>	
Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>37</u>	
(includes capillary fringe)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Hydrology re-check on April 10, 2009 = slightly moist 0-16"bgs. Entered by: SAR QC by: CMW

**WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region**

Project/Site: Gales Creek Half Mile Lane City/County: Forest Grove, Washington Sampling Date: 9/5/2008  
 Applicant/Owner: Clean Water Services / George Kral State: Oregon Sampling Point: 12  
 Investigator(s): C. Mirth Walker and Greg Swenson Section, Township, Range: 21, T1N, R4W  
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none) None Slope (%): 1  
 Subregion (LRR): A, Northwest Forests and Coast Lat: 45.547321 Long: -123.1841389 Datum: NAD 1983  
 Soil Map Unit Name: McBee silty clay loam NWI classification: None  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No        (If no, explain in Remarks)  
 Are Vegetation       , Soil       , or Hydrology        significantly disturbed? Are "Normal Circumstances" present?  
 Yes X No         
 Are Vegetation       , Soil       , or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present?	Yes <u>      </u>	No <u>X</u>	<b>Is the Sampled Area within a Wetland?</b>
Hydric Soil Present?	Yes <u>X</u>	No <u>      </u>	
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>	
Remarks: SE portion of site.			

**VEGETATION**

Tree Stratum (Plot size: <u>30' r</u> )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
0% = Total Cover				Total Number of Dominant Species Across All Strata: <u>2</u> (B)
Sapling/Shrub Stratum (Plot size: <u>10' r</u> )				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50%</u> (A/B)
1. _____	_____	_____	_____	<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>30</u> x 2 = <u>60</u> FAC species <u>10</u> x 3 = <u>30</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>30</u> x 5 = <u>150</u> Column Totals: <u>70</u> (A) <u>240</u> (B) Prevalence Index = B/A = <u>3.43</u>
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
0% = Total Cover				
Herb Stratum (Plot size: <u>5' r</u> )				
1. <u>Phalaris arundinacea</u>	<u>30%</u>	<u>Yes</u>	<u>FACW</u>	<b>Hydrophytic Vegetation Indicators:</b> Dominance Test is >50% Prevalence Index is ≤ 3.0 <sup>1</sup> Morphological Adaptations <sup>‡</sup> (Provide supporting data in Remarks or on a separate sheet) Wetland Non-Vascular Plants <sup>‡</sup> Problematic Hydrophytic Vegetation <sup>h</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present.
2. <u>Daucus carota</u>	<u>30%</u>	<u>Yes</u>	<u>NOL</u>	
3. <u>Equisetum arvense</u>	<u>10%</u>	<u>No</u>	<u>FAC</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
70% = Total Cover				
Woody Vine Stratum (Plot size: <u>10' r</u> )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
0% = Total Cover				
% Bare Ground in Herb Stratum <u>30%</u>				
Remarks: *identifies indicator status is tentative				Entered by: <u>SAR</u> QC by: <u>CMW</u>

**SOIL**

Sampling Point: **12**

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-12	7.5YR 3/2	100	7.5YR 3/4	5	C	M	sicl	A
12-30	7.5YR 3/2	100	7.5YR 3/4	15	C	M	sicl	Bw
30-42	7.5YR 4/2	100	7.5YR 3/4	25	C	M	sil+	BC

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils <sup>3</sup> :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)( <b>except MLRA 1</b> )	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	

<b>Restrictive Layer (if present):</b>	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Type: <u>None</u> Depth (inches): _____	

Remarks:  
Test pit dug by backhoe.

**HYDROLOGY**

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required: check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)( <b>except MLRA 1, 2, 4A, and 4B</b> )
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Water-Stained Leaves (B9)( <b>MLRA 1, 2, 4A, and 4B</b> )
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Stunted or Stressed Plants (D1) ( <b>LRR A</b> )
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Frost-Heave Hummocks (D7)

<b>Field Observations:</b>	<b>Wetland Hydrology Present?</b> Yes _____ No <input checked="" type="checkbox"/>
Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____	
Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): <u>&gt;42</u>	
Saturation Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): <u>&gt;42</u> (includes capillary fringe)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Hydrology re-check on April 10, 2009 = moist 0-13" bgs. Entered by: SAR QC by: CMW

**WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region**

Project/Site: Gales Creek Half Mile Lane City/County: Forest Grove, Washington Sampling Date: 9/5/2008  
 Applicant/Owner: Clean Water Services / George Kral State: Oregon Sampling Point: 13  
 Investigator(s): C. Mirth Walker and Greg Swenson Section, Township, Range: 21, T1N, R4W  
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none) Convex Slope (%): 2  
 Subregion (LRR): A, Northwest Forests and Coast Lat: 45.547508 Long: -123.1838167 Datum: NAD 1983  
 Soil Map Unit Name: McBee silty clay loam NWI classification: None  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present?  
 Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present?	Yes _____	No <u>X</u>	<b>Is the Sampled Area within a Wetland?</b>	Yes _____	No <u>X</u>
Hydric Soil Present?	Yes _____	No <u>X</u>			
Wetland Hydrology Present?	Yes _____	No <u>X</u>			
Remarks: SE portion of site.					

**VEGETATION**

Tree Stratum (Plot size: <u>30' r</u> )	Absolute % Cover	Dominant Species?	Indicator Status		
1. _____	_____	_____	_____	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A)  Total Number of Dominant Species Across All Strata: <u>0</u> (B)	
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
0% = Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>0</u> x 2 = <u>0</u> FAC species <u>0</u> x 3 = <u>0</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>0</u> (A) <u>0</u> (B) Prevalence Index = B/A = _____	
<b>Sapling/Shrub Stratum (Plot size: <u>10' r</u>)</b>					
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____	<b>Hydrophytic Vegetation Indicators:</b> _____ Dominance Test is >50% _____ Prevalence Index is ≤ 3.0 <sup>1</sup> _____ Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) _____ Wetland Non-Vascular Plants <sup>1</sup> _____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present.	
0% = Total Cover					
<b>Herb Stratum (Plot size: <u>5' r</u>)</b>					
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____	<b>Hydrophytic Vegetation Present?</b> Yes _____ No <u>X</u>	
0% = Total Cover					
<b>Woody Vine Stratum (Plot size: <u>10' r</u>)</b>					
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
0% = Total Cover					
% Bare Ground in Herb Stratum <u>100%</u>					

Remarks: \*identifies indicator status is tentative Entered by: SAR QC by: CMW  
 Vegetation not recorded - weedy like others.



**SOIL**

Sampling Point: **13**

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-11	7.5YR 2.5/2	100	None				sic	A
11-32	7.5YR 2.5/2	100	7.5YR 3/3	1	C	M	sic	Bw
32-40	7.5YR 2.5/2	100	7.5YR 3/3	5	C	M	sicl	BC

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b>		<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)( <b>except MLRA 1</b> )	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<sup>3</sup> Indicators of hydrophytic vegetation and
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	wetland hydrology must be present,
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	unless disturbed or problematic.

<b>Restrictive Layer (if present):</b>	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Type: <u>None</u>	
Depth (inches): _____	

Remarks:

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b>	
<b>Primary Indicators (minimum of one required; check all that apply)</b>	<b>Secondary Indicators (2 or more required)</b>
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)( <b>except MLRA 1, 2, 4A, and 4B</b> )
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Water-Stained Leaves (B9)( <b>MLRA 1, 2, 4A, and 4B</b> )
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Stunted or Stressed Plants (D1) ( <b>LRR A</b> )
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Frost-Heave Hummocks (D7)

<b>Field Observations:</b>	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>&gt;40</u>	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>&gt;40</u> (includes capillary fringe)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Entered by: SAR QC by: CMW

**WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region**

Project/Site: Gales Creek Half Mile Lane City/County: Forest Grove, Washington Sampling Date: 9/5/2008  
 Applicant/Owner: Clean Water Services / George Kral State: Oregon Sampling Point: 14  
 Investigator(s): C. Mirth Walker and Greg Swenson Section, Township, Range: 21, T1N, R4W  
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): None Slope (%): 1  
 Subregion (LRR): A, Northwest Forests and Coast Lat: 45.547825 Long: -123.1834224 Datum: NAD 1983  
 Soil Map Unit Name: Woodburn silt loam, 0 to 3 percent slopes NWI classification: None  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present?  
 Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present?	Yes _____	No <u>X</u>	<b>Is the Sampled Area within a Wetland?</b>	Yes _____	No <u>X</u>
Hydric Soil Present?	Yes _____	No <u>X</u>			
Wetland Hydrology Present?	Yes _____	No <u>X</u>			
Remarks: SE portion of site.					

**VEGETATION**

Tree Stratum (Plot size: <u>30' r</u> )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b>	
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)	
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>4</u> (B)	
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>25%</u> (A/B)	
4. _____	_____	_____	_____	<b>Prevalence Index worksheet:</b>	
0% = Total Cover				Total % Cover of: _____ Multiply by: _____	
<b>Sapling/Shrub Stratum (Plot size: <u>10' r</u>)</b>				OBL species <u>0</u> x 1 = <u>0</u>	
1. <u>Rubus discolor</u>	5%	Yes	FACU	FACW species <u>0</u> x 2 = <u>0</u>	
2. _____	_____	_____	_____	FAC species <u>20</u> x 3 = <u>60</u>	
3. _____	_____	_____	_____	FACU species <u>35</u> x 4 = <u>140</u>	
4. _____	_____	_____	_____	UPL species <u>10</u> x 5 = <u>50</u>	
5. _____	_____	_____	_____	Column Totals: <u>65</u> (A) <u>250</u> (B)	
5% = Total Cover				Prevalence Index = B/A = <u>3.85</u>	
<b>Herb Stratum (Plot size: <u>5' r</u>)</b>				<b>Hydrophytic Vegetation Indicators:</b>	
1. <u>Lolium perenne</u>	20%	Yes	FACU	Dominance Test is >50%	
2. <u>Equisetum arvense</u>	20%	Yes	FAC	Prevalence Index is ≤ 3.0 <sup>1</sup>	
3. <u>Bromus species</u>	20%	Yes	FAC* to UPL	Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)	
4. <u>Epilobium paniculatum [brachycarpum]</u>	10%	No	UPL	Wetland Non-Vascular Plants <sup>1</sup>	
5. <u>Cirsium arvense</u>	10%	No	FACU	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)	
6. _____	_____	_____	_____	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present.	
7. _____	_____	_____	_____	<b>Hydrophytic Vegetation Present?</b>	
8. _____	_____	_____	_____	Yes _____ No <u>X</u>	
80% = Total Cover					
<b>Woody Vine Stratum (Plot size: <u>10' r</u>)</b>					
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
0% = Total Cover					
% Bare Ground in Herb Stratum <u>20%</u>					

Remarks: \*identifies indicator status is tentative Entered by: SAR QC by: CMW  
 Vegetation percentage estimated in office.

**SOIL**

Sampling Point: **14**

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-12	7.5YR 2.5/2	100	None				sicl	A
12-21	7.5YR 3/2	100	None				sicl+	Bw
21-37	7.5YR 3/3	100	7.5YR 4/4	10	C	M	sil	BC

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils <sup>3</sup> :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)( <b>except MLRA 1</b> )	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<sup>3</sup> Indicators of hydrophytic vegetation and
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	wetland hydrology must be present,
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	unless disturbed or problematic.

<b>Restrictive Layer (if present):</b> Type: <u>None</u> Depth (inches): _____	<b>Hydric Soil Present?</b> Yes _____ No <b>X</b>
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Remarks:  
Manganese concretions 21-37 inches bgs.

**HYDROLOGY**

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required: check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)( <b>except MLRA 1, 2, 4A, and 4B</b> )
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Water-Stained Leaves (B9)( <b>MLRA 1, 2, 4A, and 4B</b> )
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Raised Ant Mounds (D6) ( <b>LRR A</b> )
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Aquatic Invertebrates (B13)	
<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	
<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	
<input type="checkbox"/> Stunted or Stressed Plants (D1) ( <b>LRR A</b> )	
<input type="checkbox"/> Other (Explain in Remarks)	

<b>Field Observations:</b> Surface Water Present? Yes _____ No <b>X</b> Depth (inches): _____ Water Table Present? Yes _____ No <b>X</b> Depth (inches): <u>&gt;37</u> Saturation Present? Yes _____ No <b>X</b> Depth (inches): <u>&gt;37</u> (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes _____ No <b>X</b>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Entered by: SAR QC by: CMW

**WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region**

Project/Site: Gales Creek Half Mile Lane City/County: Forest Grove, Washington Sampling Date: 9/8/2008  
 Applicant/Owner: Clean Water Services / George Kral State: Oregon Sampling Point: 15  
 Investigator(s): C. Mirth Walker and Greg Swenson Section, Township, Range: 21, T1N, R4W  
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none) Convex Slope (%): 2  
 Subregion (LRR): A, Northwest Forests and Coast Lat: 45.549192 Long: -123.1847281 Datum: NAD 1983  
 Soil Map Unit Name: Woodburn silt loam, 3 to 7 percent slopes NWI classification: None  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No        (If no, explain in Remarks)  
 Are Vegetation       , Soil       , or Hydrology        significantly disturbed? Are "Normal Circumstances" present?  
 Yes X No         
 Are Vegetation       , Soil       , or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present?	Yes <u>      </u>	No <u>X</u>	<b>Is the Sampled Area within a Wetland?</b> Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>	
Remarks: NE portion of site.			

**VEGETATION**

Tree Stratum (Plot size: <u>30' r</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)  Total Number of Dominant Species Across All Strata: <u>2</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
0% = Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>0</u> x 2 = <u>0</u> FAC species <u>35</u> x 3 = <u>105</u> FACU species <u>5</u> x 4 = <u>20</u> UPL species <u>40</u> x 5 = <u>200</u> Column Totals: <u>80</u> (A) <u>325</u> (B) Prevalence Index = B/A = <u>4.06</u>
0% = Total Cover				
Sapling/Shrub Stratum (Plot size: <u>10' r</u> )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
0% = Total Cover				
Herb Stratum (Plot size: <u>5' r</u> )				
1. <u>Daucus carota</u>	<u>40%</u>	<u>Yes</u>	<u>NOL</u>	
2. <u>Agrostis tenuis [capillaris]</u>	<u>20%</u>	<u>Yes</u>	<u>FAC</u>	
3. <u>Trifolium repens</u>	<u>10%</u>	<u>No</u>	<u>FAC*</u>	
4. <u>Hypochaeris radicata</u>	<u>5%</u>	<u>No</u>	<u>FACU*</u>	
5. <u>Lotus corniculatus</u>	<u>5%</u>	<u>No</u>	<u>FAC</u>	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
80% = Total Cover				
Woody Vine Stratum (Plot size: <u>10' r</u> )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
0% = Total Cover				
% Bare Ground in Herb Stratum <u>20%</u>				
<b>Hydrophytic Vegetation Indicators:</b> Dominance Test is >50% Prevalence Index is ≤ 3.0 <sup>1</sup> Morphological Adaptations <sup>2</sup> (Provide supporting data in Remarks or on a separate sheet) Wetland Non-Vascular Plants <sup>3</sup> Problematic Hydrophytic Vegetation <sup>4</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present.				
<b>Hydrophytic Vegetation Present?</b> Yes <u>      </u> No <u>X</u>				
Remarks: *identifies indicator status is tentative				
Entered by: <u>SAR</u> QC by: <u>CMW</u>				

**SOIL**

Sampling Point: **15**

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-16	7.5YR 4/4	100	None				sil	fill
16-27	7.5YR 3/2	100	None				sil	Ab
27-35	7.5YR 3/2	100	None				sicl	Bt
35-48+	7.5YR 4/4	100	None				sil+	BC

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b>		<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)( <b>except MLRA 1</b> )	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)		
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)		<sup>3</sup> Indicators of hydrophytic vegetation and
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)		wetland hydrology must be present,
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)		unless disturbed or problematic.

<b>Restrictive Layer (if present):</b>	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Type: <u>None</u>	
Depth (inches): _____	

Remarks:  
3% angular rock fragments in 0-16 inch profile, and multicolored sandy parent material mixed throughout.

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b>	
<b>Primary Indicators (minimum of one required; check all that apply)</b>	<b>Secondary Indicators (2 or more required)</b>
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)( <b>except MLRA 1, 2, 4A, and 4B</b> )
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Water-Stained Leaves (B9)( <b>MLRA 1, 2, 4A, and 4B</b> )
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Stunted or Stressed Plants (D1) ( <b>LRR A</b> )
	<input type="checkbox"/> Raised Ant Mounds (D6) ( <b>LRR A</b> )
	<input type="checkbox"/> Other (Explain in Remarks)
	<input type="checkbox"/> Frost-Heave Hummocks (D7)

<b>Field Observations:</b>	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>&gt;48</u>	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>&gt;48</u> (includes capillary fringe)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: \_\_\_\_\_ Entered by: SAR QC by: CMW

**WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region**

Project/Site: Gales Creek Half Mile Lane City/County: Forest Grove, Washington Sampling Date: 9/8/2008  
 Applicant/Owner: Clean Water Services / George Kral State: Oregon Sampling Point: 16  
 Investigator(s): C. Mirth Walker and Greg Swenson Section, Township, Range: 21, T1N, R4W  
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none) Convex Slope (%): 2  
 Subregion (LRR): A, Northwest Forests and Coast Lat: 45.549012 Long: -123.1850617 Datum: NAD 1983  
 Soil Map Unit Name: Woodburn silt loam, 0 to 3 percent slopes NWI classification: None  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present?  
 Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present?	Yes _____	No <u>X</u>	<b>Is the Sampled Area within a Wetland?</b> Yes _____ No <u>X</u>
Hydric Soil Present?	Yes _____	No <u>X</u>	
Wetland Hydrology Present?	Yes _____	No <u>X</u>	
Remarks: NE portion of site.			

**VEGETATION**

Tree Stratum (Plot size: <u>30' r</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)  Total Number of Dominant Species Across All Strata: <u>4</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
0% = Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>0</u> x 2 = <u>0</u> FAC species <u>51</u> x 3 = <u>153</u> FACU species <u>40</u> x 4 = <u>160</u> UPL species <u>10</u> x 5 = <u>50</u> Column Totals: <u>101</u> (A) <u>363</u> (B) Prevalence Index = B/A = <u>3.59</u>
0% = Total Cover				
Sapling/Shrub Stratum (Plot size: <u>10' r</u> )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
0% = Total Cover				
Herb Stratum (Plot size: <u>5' r</u> )				
1. <u>Agrostis tenuis [capillaris]</u>	<u>30%</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Cirsium arvense</u>	<u>20%</u>	<u>Yes</u>	<u>FACU</u>	
3. <u>Holcus lanatus</u>	<u>20%</u>	<u>Yes</u>	<u>FAC</u>	
4. <u>Rumex acetosella</u>	<u>10%</u>	<u>Yes</u>	<u>FACU</u>	
5. <u>Lactuca serriola</u>	<u>10%</u>	<u>No</u>	<u>FACU</u>	
6. <u>Epilobium paniculatum [brachycarpum]</u>	<u>10%</u>	<u>No</u>	<u>UPL</u>	
7. <u>Parentucellia viscosa</u>	<u>1%</u>	<u>No</u>	<u>FAC</u>	
8. _____	_____	_____	_____	
101% = Total Cover				
Woody Vine Stratum (Plot size: <u>10' r</u> )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
0% = Total Cover				
% Bare Ground in Herb Stratum <u>0%</u>				
Remarks: *Identifies indicator status is tentative Entered by: <u>SAR</u> QC by: <u>CMW</u>				

**SOIL**

Sampling Point: **16**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-22	7.5YR 3/2	100	None				sicl	fill
22-30	7.5YR 3/2	100	None				sil+	Ab
30-43+	7.5YR 3/3	100	None				sil+	Bw

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils <sup>3</sup> :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)( <b>except MLRA 1</b> )	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<sup>3</sup> Indicators of hydrophytic vegetation and
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	wetland hydrology must be present,
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	unless disturbed or problematic.

<b>Restrictive Layer (if present):</b> Type: <u>None</u> Depth (inches): _____	Hydric Soil Present? Yes _____ No <b>X</b>
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Remarks:  
1% angular gravels in 0-22 inch profile; charcoal bits at 22 inches.

**HYDROLOGY**

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required: check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)( <b>except MLRA 1, 2, 4A, and 4B</b> )
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Water-Stained Leaves (B9)( <b>MLRA 1, 2, 4A, and 4B</b> )
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Raised Ant Mounds (D6) ( <b>LRR A</b> )
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Other (Explain in Remarks)	

<b>Field Observations:</b> Surface Water Present? Yes _____ No <b>X</b> Depth (inches): _____ Water Table Present? Yes _____ No <b>X</b> Depth (inches): <u>&gt;43</u> Saturation Present? Yes _____ No <b>X</b> Depth (inches): <u>&gt;43</u> (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <b>X</b>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: \_\_\_\_\_ Entered by: SAR      QC by: CMW

**WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region**

Project/Site: Gales Creek Half Mile Lane City/County: Forest Grove, Washington Sampling Date: 9/8/2008  
 Applicant/Owner: Clean Water Services / George Kral State: Oregon Sampling Point: 17  
 Investigator(s): C. Mirth Walker and Greg Swenson Section, Township, Range: 21, T1N, R4W  
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none) Convex Slope (%): 4  
 Subregion (LRR): A, Northwest Forests and Coast Lat: 45.54878 Long: -123.1853921 Datum: NAD 1983  
 Soil Map Unit Name: Woodburn silt loam, 0 to 3 percent slopes NWI classification: None  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present?  
 Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present?	Yes _____	No <u>X</u>	<b>Is the Sampled Area within a Wetland?</b> Yes _____ No <u>X</u>
Hydric Soil Present?	Yes _____	No <u>X</u>	
Wetland Hydrology Present?	Yes _____	No <u>X</u>	
Remarks: NE portion of site.			

**VEGETATION**

Tree Stratum (Plot size: <u>30' r</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)  Total Number of Dominant Species Across All Strata: <u>3</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
0% = Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>0</u> x 2 = <u>0</u> FAC species <u>21</u> x 3 = <u>63</u> FACU species <u>60</u> x 4 = <u>240</u> UPL species <u>10</u> x 5 = <u>50</u> Column Totals: <u>91</u> (A) <u>353</u> (B) Prevalence Index = B/A = <u>3.88</u>
Sapling/Shrub Stratum (Plot size: <u>10' r</u> )				
1. <u>Rubus discolor</u>	5%	Yes	FACU	
2. <u>Populus trichocarpa [balsamifera]</u>	1%	No	FAC	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6% = Total Cover				
Herb Stratum (Plot size: <u>5' r</u> )				
1. <u>Cirsium arvense</u>	40%	Yes	FACU	
2. <u>Holcus lanatus</u>	20%	Yes	FAC	
3. <u>Hypochaeris radicata</u>	10%	No	FACU*	
4. <u>Hypericum perforatum</u>	5%	No	NOL	
5. <u>Lactuca serriola</u>	5%	No	FACU	
6. <u>Epilobium paniculatum [brachycarpum]</u>	5%	No	UPL	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
85% = Total Cover				
Woody Vine Stratum (Plot size: <u>10' r</u> )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
0% = Total Cover				
% Bare Ground in Herb Stratum <u>15%</u>				
<b>Hydrophytic Vegetation Indicators:</b> Dominance Test is >50% _____ Prevalence Index is ≤ 3.0 <sup>1</sup> _____ Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) _____ Wetland Non-Vascular Plants <sup>1</sup> _____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) _____ <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present.				
<b>Hydrophytic Vegetation Present?</b> Yes _____ No <u>X</u>				
Remarks: *identifies indicator status is tentative Entered by: <u>SAR</u> QC by: <u>CMW</u>				



**SOIL**

Sampling Point: 17

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-19	7.5YR 4/6	100	None				sil	fill
19-31	7.5YR 3/2	100	None				sil	Ab
31-38	7.5YR 2.5/2	100	None				sicl	Bt
38-43+	7.5YR 2.5/2	100	7.5YR 3/3	1	C	M	sicl	BC

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils <sup>3</sup> :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)( <b>except MLRA 1</b> )	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<sup>3</sup> Indicators of hydrophytic vegetation and
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	wetland hydrology must be present,
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	unless disturbed or problematic.

<b>Restrictive Layer (if present):</b>	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Type: <u>None</u>	
Depth (inches): _____	

Remarks:  
1% rock fragments in 0-19 inch profile.

**HYDROLOGY**

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required: check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)( <b>except MLRA 1, 2, 4A, and 4B</b> )
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Water-Stained Leaves (B9)( <b>MLRA 1, 2, 4A, and 4B</b> )
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Stunted or Stressed Plants (D1) ( <b>LRR A</b> )
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Frost-Heave Hummocks (D7)

<b>Field Observations:</b>	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>&gt;43</u>	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>&gt;43</u> (includes capillary fringe)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: \_\_\_\_\_ Entered by: SAR QC by: CMW

**WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region**

Project/Site: Gales Creek Half Mile Lane City/County: Forest Grove, Washington Sampling Date: 9/8/2008  
 Applicant/Owner: Clean Water Services / George Kral State: Oregon Sampling Point: 18  
 Investigator(s): C. Mirth Walker and Greg Swenson Section, Township, Range: 21, T1N, R4W  
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none) None Slope (%): 4  
 Subregion (LRR): A, Northwest Forests and Coast Lat: 45.548572 Long: -123.1858138 Datum: NAD 1983  
 Soil Map Unit Name: McBee silty clay loam NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present?  
 Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present?	Yes _____	No <u>X</u>	<b>Is the Sampled Area within a Wetland?</b>	Yes _____	No <u>X</u>
Hydric Soil Present?	Yes _____	No <u>X</u>			
Wetland Hydrology Present?	Yes _____	No <u>X</u>			

Remarks:  
 Central portion of site; east of creek. Buried hydric soil.

**VEGETATION**

<u>Tree Stratum</u> (Plot size: <u>30' r</u> )	<u>Absolute % Cover</u>	<u>Dominant Species?</u>	<u>Indicator Status</u>	<b>Dominance Test worksheet:</b>	
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)	
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>2</u> (B)	
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50%</u> (A/B)	
4. _____	_____	_____	_____	<b>Prevalence Index worksheet:</b>	
0% = Total Cover				Total % Cover of: _____ Multiply by: _____	
<b>Sapling/Shrub Stratum</b> (Plot size: <u>10' r</u> )				OBL species <u>0</u> x 1 = <u>0</u>	
1. <u>Rubus discolor</u>	<u>5%</u>	<u>Yes</u>	<u>FACU</u>	FACW species <u>5</u> x 2 = <u>10</u>	
2. _____	_____	_____	_____	FAC species <u>60</u> x 3 = <u>180</u>	
3. _____	_____	_____	_____	FACU species <u>20</u> x 4 = <u>80</u>	
4. _____	_____	_____	_____	UPL species <u>20</u> x 5 = <u>100</u>	
5. _____	_____	_____	_____	Column Totals: <u>105</u> (A) <u>370</u> (B)	
5% = Total Cover				Prevalence Index = B/A = <u>3.52</u>	
<b>Herb Stratum</b> (Plot size: <u>5' r</u> )				<b>Hydrophytic Vegetation Indicators:</b>	
1. <u>Agrostis tenuis [capillaris]</u>	<u>50%</u>	<u>Yes</u>	<u>FAC</u>	Dominance Test is >50%	
2. <u>Convolvulus arvensis</u>	<u>10%</u>	<u>No</u>	<u>NOL</u>	Prevalence Index is ≤ 3.0 <sup>1</sup>	
3. <u>Hypericum perforatum</u>	<u>10%</u>	<u>No</u>	<u>NOL</u>	Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)	
4. <u>Lactuca serriola</u>	<u>10%</u>	<u>No</u>	<u>FACU</u>	Wetland Non-Vascular Plants <sup>1</sup>	
5. <u>Holcus lanatus</u>	<u>10%</u>	<u>No</u>	<u>FAC</u>	Problematic Hydrophytic Vegetation <sup>h</sup> (Explain)	
6. <u>Phalaris arundinacea</u>	<u>5%</u>	<u>No</u>	<u>FACW</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present.	
7. <u>Rumex acetosella</u>	<u>5%</u>	<u>No</u>	<u>FACU</u>	<b>Hydrophytic Vegetation Present?</b> Yes _____ No <u>X</u>	
8. _____	_____	_____	_____		
100% = Total Cover					
<b>Woody Vine Stratum</b> (Plot size: <u>10' r</u> )					
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
0% = Total Cover					
% Bare Ground in Herb Stratum <u>0%</u>					
Remarks: <u>*identifies indicator status is tentative</u>				Entered by: <u>SAR</u> QC by: <u>CMW</u>	

**SOIL**

Sampling Point: **18**

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-16	7.5YR 3/3	100	None				sicl	fill
16-28	7.5YR 3/1	100	7.5YR 4/6	5	C	M	sicl	Ab
28-36	7.5YR 3/1	100	7.5YR 4/6	15	C	M	sic	Bt
36-48+	7.5YR 3/1	100	7.5YR 4/6	20	C	M	sicl	BC
			5YR 3/4	20	C	M		

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils <sup>3</sup> :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)( <b>except MLRA 1</b> )	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<sup>3</sup> Indicators of hydrophytic vegetation and
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	wetland hydrology must be present,
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	unless disturbed or problematic.

<b>Restrictive Layer (if present):</b>	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Type: <u>None</u>	
Depth (inches): _____	

Remarks:  
Buried hydric soil.

**HYDROLOGY**

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)( <b>except MLRA 1, 2, 4A, and 4B</b> )
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Water-Stained Leaves (B9)( <b>MLRA 1, 2, 4A, and 4B</b> )
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Raised Ant Mounds (D6) ( <b>LRR A</b> )
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Other (Explain in Remarks)

<b>Field Observations:</b>	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>&gt;48</u>	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>&gt;48</u> (includes capillary fringe)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: \_\_\_\_\_ Entered by: SAR QC by: CMW

**WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region**

Project/Site: Gales Creek Half Mile Lane City/County: Forest Grove, Washington Sampling Date: 9/8/2008  
 Applicant/Owner: Clean Water Services / George Kral State: Oregon Sampling Point: 19  
 Investigator(s): C. Mirth Walker and Greg Swenson Section, Township, Range: 21, T1N, R4W  
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none) Concave Slope (%): 2  
 Subregion (LRR): A, Northwest Forests and Coast Lat: 45.548399 Long: -123.1860812 Datum: NAD 1983  
 Soil Map Unit Name: Verboort silty clay loam NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present?  
 Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present?	Yes <u>X</u>	No _____	<b>Is the Sampled Area within a Wetland?</b> Yes _____ No <u>X</u>
Hydric Soil Present?	Yes <u>X</u>	No _____	
Wetland Hydrology Present?	Yes _____	No <u>X</u>	
Remarks: Central portion of site. East of creek.			

**VEGETATION**

Tree Stratum (Plot size: <u>30' r</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)  Total Number of Dominant Species Across All Strata: <u>3</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
0% = Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species <u>20</u> x 1 = <u>20</u> FACW species <u>40</u> x 2 = <u>80</u> FAC species <u>20</u> x 3 = <u>60</u> FACU species <u>10</u> x 4 = <u>40</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>90</u> (A) <u>200</u> (B) Prevalence Index = B/A = <u>2.22</u>
Sapling/Shrub Stratum (Plot size: <u>10' r</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
0% = Total Cover				
Herb Stratum (Plot size: <u>5' r</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Alopecurus pratensis</u>	<u>40%</u>	<u>Yes</u>	<u>FACW</u>	
2. <u>Agropyron [Elytrigia] repens</u>	<u>20%</u>	<u>Yes</u>	<u>FAC</u>	
3. <u>Typha latifolia</u>	<u>20%</u>	<u>Yes</u>	<u>OBL</u>	
4. <u>Lactuca serriola</u>	<u>5%</u>	<u>No</u>	<u>FACU</u>	
5. <u>Anthemis cotula</u>	<u>5%</u>	<u>No</u>	<u>FACU</u>	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
90% = Total Cover				
Woody Vine Stratum (Plot size: <u>10' r</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
0% = Total Cover				
% Bare Ground in Herb Stratum <u>10%</u>				
<b>Hydrophytic Vegetation Indicators:</b> X Dominance Test is >50% _____ Prevalence Index is ≤ 3.0 <sup>1</sup> _____ Morphological Adaptation <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) _____ Wetland Non-Vascular Plants <sup>1</sup> _____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present.				
<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No _____				
Remarks: *identifies indicator status is tentative Entered by: <u>SAR</u> QC by: <u>CMW</u> <u>Typha latifolia</u> was dead and had been cut. Grass ID challenging due to short height (cut).				

**SOIL**

Sampling Point: **19**

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-5	7.5YR 3/2	100	None				sicl	fill
5-18	10YR 3/1	100	5YR 3/4	10	C	M	sic	Ab
18-26	10YR 3/1	100	5YR 3/4	20	C	M	sic	Bw
26-34	10YR 3/1	100	5YR 3/4	20	C	M	sic	BC w/ 15% s
34-44+	10YR 3/1	100	5YR 3/4	30	C	M	scl	C
			7.5YR 4/6	10				s parent material
			5YR 4/6	10				s parent material

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b>		<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)( <b>except MLRA 1</b> )	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)	<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	

<b>Restrictive Layer (if present):</b> Type: <u>None</u> Depth (inches): _____	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
--	---

Remarks:  
34-44 inch profile also had 20% 7.5YR 4/6 and 5YR 4/6 sandy parent material.

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b>	
<b>Primary Indicators (minimum of one required: check all that apply)</b>	<b>Secondary Indicators (2 or more required)</b>
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)( <b>except MLRA 1, 2, 4A, and 4B</b> )
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Water-Stained Leaves (B9)( <b>MLRA 1, 2, 4A, and 4B</b> )
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Stunted or Stressed Plants (D1) ( <b>LRR A</b> )
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Raised Ant Mounds (D6) ( <b>LRR A</b> )
	<input type="checkbox"/> Frost-Heave Hummocks (D7)

<b>Field Observations:</b>	<b>Wetland Hydrology Present?</b>
Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____	Yes _____ No <input checked="" type="checkbox"/>
Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): <u>&gt;44</u>	
Saturation Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): <u>&gt;44</u> (includes capillary fringe)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Hydrology re-check on April 10, 2009 = slightly moist 0-16" bgs. Entered by: SAR QC by: CMW

**WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region**

Project/Site: Gales Creek Half Mile Lane City/County: Forest Grove, Washington Sampling Date: 9/8/2008  
 Applicant/Owner: Clean Water Services / George Kral State: Oregon Sampling Point: 20  
 Investigator(s): C. Mirth Walker and Greg Swenson Section, Township, Range: 21, T1N, R4W  
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none) Convex Slope (%): 2  
 Subregion (LRR): A, Northwest Forests and Coast Lat: 45.549077 Long: -123.1871226 Datum: NAD 1983  
 Soil Map Unit Name: Verboort silty clay loam NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No        (If no, explain in Remarks)  
 Are Vegetation       , Soil       , or Hydrology        significantly disturbed? Are "Normal Circumstances" present?  
 Yes X No         
 Are Vegetation       , Soil       , or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>      </u>	No <u>X</u>
Hydric Soil Present?	Yes <u>X</u>	No <u>      </u>			
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>			

Remarks:  
 NW portion of site. East of creek.

**VEGETATION**

Tree Stratum (Plot size: <u>30' r</u> )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A)  Total Number of Dominant Species Across All Strata: <u>6</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>67%</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
0% = Total Cover				
Additional herbs (Plot size: <u>5' r</u> )				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species <u>10</u> x 1 = <u>10</u> FACW species <u>40</u> x 2 = <u>80</u> FAC species <u>15</u> x 3 = <u>45</u> FACU species <u>25</u> x 4 = <u>100</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>90</u> (A) <u>235</u> (B) Prevalence Index = B/A = <u>2.61</u>
1. <u>unknown species</u>	5%	No	?	
2. <u>Anthemis cotula</u>	3%	No	FACU	
3. <u>Trifolium pratense</u>	2%	No	FACU	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
10% = Total Cover				
Herb Stratum (Plot size: <u>5' r</u> )				<b>Hydrophytic Vegetation Indicators:</b> Dominance Test is >50% Prevalence Index is ≤ 3.0 <sup>1</sup> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) Wetland Non-Vascular Plants <sup>1</sup> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present.
1. <u>Phalaris arundinacea</u>	20%	Yes	FACW	
2. <u>Alopecurus pratensis</u>	20%	Yes	FACW	
3. <u>Typha latifolia</u>	10%	Yes	OBL	
4. <u>Lolium perenne</u>	10%	Yes	FACU	
5. <u>Holcus lanatus</u>	10%	Yes	FAC	
6. <u>Cirsium arvense</u>	10%	Yes	FACU	
7. <u>Carex species</u>	5%	No	OBL to NOL	
8. <u>Trifolium repens</u>	5%	No	FAC*	
90% = Total Cover				
Woody Vine Stratum (Plot size: <u>10' r</u> )				<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
0% = Total Cover				
% Bare Ground in Herb Stratum <u>0%</u>				

Remarks: \*identifies indicator status is tentative Entered by: SAR QC by: CMW  
 Herbs continued above. #7. Carex deweyana lookalike. Typha latifolia was dead. Vegetation on April 10, 2009 included 80% wheat, 5% Montia linearis (NOL), 5% Poa annua (FAC), 5% Daucus carota (NOL), and 1% Hypochaeris radicata (FACU\*).

**SOIL**

Sampling Point: **20**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features			Texture	Remarks	
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>			Loc <sup>2</sup>
0-11	7.5YR 2.5/1	100	7.5YR 3/4	15	C	M	sicl	Ap
11-20	7.5YR 2.5/1	100	7.5YR 4/6	15	C	M	sic	Bt1
20-36	7.5YR 2.5/1	100	7.5YR 4/6	25	C	M	sic	Bt2
			5YR 4/6	25	C	M		
36-43+	7.5YR 2.5/1	100	5YR 3/4	30	C	M	c	BC

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils <sup>3</sup> :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)( <b>except MLRA 1</b> )	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)	<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	

<b>Restrictive Layer (if present):</b>	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Type: <u>None</u>	
Depth (inches): _____	

Remarks:

**HYDROLOGY**

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)( <b>except MLRA 1, 2, 4A, and 4B</b> )
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Water-Stained Leaves (B9)( <b>MLRA 1, 2, 4A, and 4B</b> )
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Raised Ant Mounds (D6) ( <b>LRR A</b> )
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Other (Explain in Remarks)	

<b>Field Observations:</b>	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>&gt;43</u>	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>&gt;43</u> (includes capillary fringe)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Entered by: SAR QC by: CMW  
Hydrology re-check on April 10, 2009 = slightly moist 0-16" bgs. Hydrology re-check on April 29, 2009 = dry 0-19" bgs.

**WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region**

Project/Site: Gales Creek Half Mile Lane City/County: Forest Grove, Washington Sampling Date: 9/8/2008  
 Applicant/Owner: Clean Water Services / George Kral State: Oregon Sampling Point: 21  
 Investigator(s): C. Mirth Walker and Greg Swenson Section, Township, Range: 21, T1N, R4W  
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none) None Slope (%): 1  
 Subregion (LRR): A, Northwest Forests and Coast Lat: 45.549350 Long: -123.1868815 Datum: NAD 1983  
 Soil Map Unit Name: McBee silty clay loam NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No      (If no, explain in Remarks)

Are Vegetation     , Soil     , or Hydrology      significantly disturbed? Are "Normal Circumstances" present?  
 Yes X No     

Are Vegetation     , Soil     , or Hydrology      naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present?	Yes <u>    </u>	No <u>X</u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>    </u>	No <u>X</u>
Hydric Soil Present?	Yes <u>X</u>	No <u>    </u>			
Wetland Hydrology Present?	Yes <u>    </u>	No <u>X</u>			

Remarks:  
 NW portion of site. East of creek.

**VEGETATION**

Tree Stratum (Plot size: <u>30' r</u> )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)  Total Number of Dominant Species Across All Strata: <u>4</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>25%</u> (A/B)
1. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
2. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
3. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
4. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
0% = Total Cover				
Sapling/Shrub Stratum (Plot size: <u>10' r</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
2. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
3. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
4. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
5. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
0% = Total Cover				
Herb Stratum (Plot size: <u>5' r</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Daucus carota</u>	<u>20%</u>	<u>Yes</u>	<u>NOL</u>	
2. <u>Agrostis tenuis [capillaris]</u>	<u>20%</u>	<u>Yes</u>	<u>FAC</u>	
3. <u>Cirsium arvense</u>	<u>15%</u>	<u>Yes</u>	<u>FACU</u>	
4. <u>Hypochaeris radicata</u>	<u>15%</u>	<u>Yes</u>	<u>FACU*</u>	
5. <u>Holcus lanatus</u>	<u>10%</u>	<u>No</u>	<u>FAC</u>	
6. <u>Taraxacum officinale</u>	<u>5%</u>	<u>No</u>	<u>FACU</u>	
7. <u>Convolvulus arvensis</u>	<u>5%</u>	<u>No</u>	<u>NOL</u>	
8. <u>unknown species</u>	<u>5%</u>	<u>No</u>	<u>?</u>	
<u>95%</u> = Total Cover				
Woody Vine Stratum (Plot size: <u>10' r</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
2. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
0% = Total Cover				
% Bare Ground in Herb Stratum <u>5%</u>				

**Hydrophytic Vegetation Indicators:**  
 Dominance Test is >50%  
 Prevalence Index is ≤ 3.0<sup>1</sup>  
 Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)  
 Wetland Non-Vascular Plants<sup>1</sup>  
 Problematic Hydrophytic Vegetation<sup>h</sup> (Explain)  
<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes      No X

Remarks: \*identifies indicator status is tentative Entered by: SAR QC by: CMW



**SOIL**

Sampling Point: **21**

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-9	7.5YR 3/1	100	7.5YR 3/4	10	C	M	sil	Ap
9-21	7.5YR 3/2	100	5YR 3/4	20	C	M	sil+	Bw1
21-37	7.5YR 3/2	100	5YR 3/4	35	C	M	sicl	Bw2
37-40+	7.5YR 3/2	100	7.5YR 3/4	20	C	M	sic	BC

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b>		<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)( <b>except MLRA 1</b> )	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)	<sup>3</sup> Indicators of hydrophytic vegetation and
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	wetland hydrology must be present,
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	unless disturbed or problematic.

<b>Restrictive Layer (if present):</b>	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Type: <u>None</u>	
Depth (inches): _____	

Remarks:

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b>	
<b>Primary Indicators (minimum of one required; check all that apply)</b>	<b>Secondary Indicators (2 or more required)</b>
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)( <b>except MLRA 1, 2, 4A, and 4B</b> )
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Water-Stained Leaves (B9)( <b>MLRA 1, 2, 4A, and 4B</b> )
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
	<input type="checkbox"/> Stunted or Stressed Plants (D1) ( <b>LRR A</b> )
	<input type="checkbox"/> Other (Explain in Remarks)
	<input type="checkbox"/> Raised Ant Mounds (D6) ( <b>LRR A</b> )
	<input type="checkbox"/> Frost-Heave Hummocks (D7)

<b>Field Observations:</b>	<b>Wetland Hydrology Present?</b>
Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____	Yes _____ No <input checked="" type="checkbox"/>
Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): <u>&gt;40</u>	
Saturation Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): <u>&gt;40</u> (includes capillary fringe)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Entered by: SAR QC by: CMW

**WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region**

Project/Site: Gales Creek Half Mile Lane City/County: Forest Grove, Washington Sampling Date: 9/8/2008  
 Applicant/Owner: Clean Water Services / George Kral State: Oregon Sampling Point: 22  
 Investigator(s): C. Mirth Walker and Greg Swenson Section, Township, Range: 21, T1N, R4W  
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none) None Slope (%): 3  
 Subregion (LRR): A, Northwest Forests and Coast Lat: 45.549505 Long: -123.1867432 Datum: NAD 1983  
 Soil Map Unit Name: Woodburn silt loam NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present?  
 Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present?	Yes _____	No <u>X</u>	<b>Is the Sampled Area within a Wetland?</b>	Yes _____	No <u>X</u>
Hydric Soil Present?	Yes _____	No <u>X</u>			
Wetland Hydrology Present?	Yes _____	No <u>X</u>			
Remarks: NW portion of site. East of creek.					

**VEGETATION**

Tree Stratum (Plot size: <u>30' r</u> )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b>	
1. _____	_____	_____	_____	Number of Dominant Species	
2. _____	_____	_____	_____	That Are OBL, FACW, or FAC: <u>2</u> (A)	
3. _____	_____	_____	_____	Total Number of Dominant	
4. _____	_____	_____	_____	Species Across All Strata: <u>5</u> (B)	
0% = Total Cover				Percent of Dominant Species	
Sapling/Shrub Stratum (Plot size: <u>10' r</u> )				That Are OBL, FACW, or FAC: <u>40%</u> (A/B)	
1. <u>Rubus discolor</u>	<u>5%</u>	<u>Yes</u>	<u>FACU</u>	<b>Prevalence Index worksheet:</b>	
2. _____	_____	_____	_____	Total % Cover of: _____ Multiply by: _____	
3. _____	_____	_____	_____	OBL species	<u>0</u> x 1 = <u>0</u>
4. _____	_____	_____	_____	FACW species	<u>5</u> x 2 = <u>10</u>
5. _____	_____	_____	_____	FAC species	<u>45</u> x 3 = <u>135</u>
5% = Total Cover				FACU species	<u>45</u> x 4 = <u>180</u>
Herb Stratum (Plot size: <u>5' r</u> )				UPL species	<u>0</u> x 5 = <u>0</u>
1. <u>Agropyron [Elytrigia] repens</u>	<u>20%</u>	<u>Yes</u>	<u>FAC</u>	Column Totals:	<u>95</u> (A) <u>325</u> (B)
2. <u>Cirsium arvense</u>	<u>20%</u>	<u>Yes</u>	<u>FACU</u>	Prevalence Index = B/A = <u>3.42</u>	
3. <u>Hypochaeris radicata</u>	<u>20%</u>	<u>Yes</u>	<u>FACU*</u>	<b>Hydrophytic Vegetation Indicators:</b>	
4. <u>Agrostis tenuis [capillaris]</u>	<u>20%</u>	<u>Yes</u>	<u>FAC</u>	Dominance Test is >50%	
5. <u>Trifolium repens</u>	<u>5%</u>	<u>No</u>	<u>FAC*</u>	Prevalence Index is ≤3.0 <sup>1</sup>	
6. <u>unknown species</u>	<u>5%</u>	<u>No</u>	<u>?</u>	Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)	
7. <u>Phalaris arundinacea</u>	<u>5%</u>	<u>No</u>	<u>FACW</u>	Wetland Non-Vascular Plants <sup>1</sup>	
8. _____	_____	_____	_____	Problematic Hydrophytic Vegetation <sup>h</sup> (Explain)	
95% = Total Cover				<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present.	
Woody Vine Stratum (Plot size: <u>10' r</u> )				<b>Hydrophytic Vegetation</b>	
1. _____	_____	_____	_____	Present?	Yes _____ No <u>X</u>
2. _____	_____	_____	_____		
0% = Total Cover					
% Bare Ground in Herb Stratum <u>5%</u>					

Remarks: \*identifies indicator status is tentative Entered by: SAR QC by: CMW

**SOIL**

Sampling Point: **22**

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-11	7.5YR 2.5/2	100	None				sil+	Ap
11-16	7.5YR 2.5/2	100	7.5YR 3/4	10	C	M	sil+	Bw1
16-33	7.5YR 2.5/2	100	7.5YR 3/4	25	C	M	sicl	Bw2
33-43+	7.5YR 4/4	100	7.5YR 3/4	25	C	M	l	BC

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b>		<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)( <b>except MLRA 1</b> )	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<sup>3</sup> Indicators of hydrophytic vegetation and
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	wetland hydrology must be present,
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	unless disturbed or problematic.

<b>Restrictive Layer (if present):</b>	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Type: <u>None</u>	
Depth (inches): _____	

Remarks:

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b>	
<b>Primary Indicators (minimum of one required; check all that apply)</b>	<b>Secondary Indicators (2 or more required)</b>
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)( <b>except MLRA 1, 2, 4A, and 4B</b> )
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Water-Stained Leaves (B9)( <b>MLRA 1, 2, 4A, and 4B</b> )
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Stunted or Stressed Plants (D1) ( <b>LRR A</b> )
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)
	<input type="checkbox"/> Dry-Season Water Table (C2)
	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
	<input type="checkbox"/> Geomorphic Position (D2)
	<input type="checkbox"/> Shallow Aquitard (D3)
	<input type="checkbox"/> FAC-Neutral Test (D5)
	<input type="checkbox"/> Raised Ant Mounds (D6) ( <b>LRR A</b> )
	<input type="checkbox"/> Frost-Heave Hummocks (D7)

<b>Field Observations:</b>	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>&gt;43</u>	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>&gt;43</u> (includes capillary fringe)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: \_\_\_\_\_ Entered by: SAR QC by: CMW

**WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region**

Project/Site: Gales Creek Half Mile Lane City/County: Forest Grove, Washington Sampling Date: 9/8/2008  
 Applicant/Owner: Clean Water Services / George Kral State: Oregon Sampling Point: 23  
 Investigator(s): C. Mirth Walker and Greg Swenson Section, Township, Range: 21, T1N, R4W  
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none) None Slope (%): 3  
 Subregion (LRR): A, Northwest Forests and Coast Lat: 45.549884 Long: -123.1863525 Datum: NAD 1983  
 Soil Map Unit Name: Woodburn silt loam, 0-3% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present?  
 Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present?	Yes _____	No <u>X</u>	<b>Is the Sampled Area within a Wetland?</b>	Yes _____	No <u>X</u>
Hydric Soil Present?	Yes _____	No <u>X</u>			
Wetland Hydrology Present?	Yes _____	No <u>X</u>			
Remarks: NW portion of site. East of creek.					

**VEGETATION**

Tree Stratum (Plot size: <u>30' r</u> )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b>	
1. _____	_____	_____	_____	Number of Dominant Species	
2. _____	_____	_____	_____	That Are OBL, FACW, or FAC: <u>1</u> (A)	
3. _____	_____	_____	_____	Total Number of Dominant	
4. _____	_____	_____	_____	Species Across All Strata: <u>4</u> (B)	
0% = Total Cover				Percent of Dominant Species	
<b>Sapling/Shrub Stratum (Plot size: <u>10' r</u>)</b>				That Are OBL, FACW, or FAC: <u>25%</u> (A/B)	
1. <u>Populus trichocarpa [balsamifera]</u>	<u>3%</u>	<u>Yes</u>	<u>FAC</u>	<b>Prevalence Index worksheet:</b>	
2. <u>Rubus discolor</u>	<u>2%</u>	<u>Yes</u>	<u>FACU</u>	Total % Cover of: _____ Multiply by: _____	
3. _____	_____	_____	_____	OBL species	<u>0</u> x 1 = <u>0</u>
4. _____	_____	_____	_____	FACW species	<u>5</u> x 2 = <u>10</u>
5. _____	_____	_____	_____	FAC species	<u>13</u> x 3 = <u>39</u>
5% = Total Cover				FACU species	<u>77</u> x 4 = <u>308</u>
<b>Herb Stratum (Plot size: <u>5' r</u>)</b>				UPL species	<u>5</u> x 5 = <u>25</u>
1. <u>Trifolium pratense</u>	<u>30%</u>	<u>Yes</u>	<u>FACU</u>	Column Totals:	<u>100</u> (A) <u>382</u> (B)
2. <u>Cirsium arvense</u>	<u>30%</u>	<u>Yes</u>	<u>FACU</u>	Prevalence Index = B/A = <u>3.82</u>	
3. <u>Hypochaeris radicata</u>	<u>15%</u>	<u>No</u>	<u>FACU*</u>	<b>Hydrophytic Vegetation Indicators:</b>	
4. <u>Agrostis tenuis [capillaris]</u>	<u>10%</u>	<u>No</u>	<u>FAC</u>	Dominance Test is >50%	
5. <u>Phalaris arundinacea</u>	<u>5%</u>	<u>No</u>	<u>FACW</u>	Prevalence Index is ≤ 3.0 <sup>1</sup>	
6. <u>Daucus carota</u>	<u>5%</u>	<u>No</u>	<u>NOL</u>	Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)	
7. _____	_____	_____	_____	Wetland Non-Vascular Plants <sup>1</sup>	
8. _____	_____	_____	_____	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)	
95% = Total Cover				<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present.	
<b>Woody Vine Stratum (Plot size: <u>10' r</u>)</b>				<b>Hydrophytic Vegetation Present?</b>	
1. _____	_____	_____	_____	Yes _____	No <u>X</u>
2. _____	_____	_____	_____		
0% = Total Cover					
% Bare Ground in Herb Stratum <u>5%</u>				Entered by: <u>SAR</u> QC by: <u>CMW</u>	
Remarks: *identifies indicator status is tentative					

**SOIL**

Sampling Point: **23**

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-4	7.5YR 2.5/2	100	7.5YR 4/6	10	C	M	sil+	Ap
4-14	7.5YR 2.5/2	100	None				sil+	Ap2
14-24	7.5YR 2.5/2	100	7.5YR 3/4	5	C	M	sil+	Bw1
24-34	7.5YR 3/2	100	5YR 3/4	20	C	M	sil+	Bw2
34-43+	7.5YR 3/3	100	5YR 3/4	10	C	M	sil	BC

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b>		<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)( <b>except MLRA 1</b> )	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<sup>3</sup> Indicators of hydrophytic vegetation and
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	wetland hydrology must be present,
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	unless disturbed or problematic.

<b>Restrictive Layer (if present):</b>	<b>Hydric Soil Present?</b> Yes _____ No <b>X</b>
Type: <u>None</u>	
Depth (inches): _____	

Remarks:  
Compacted 0-4 inches - layer of fill; not a landform for hydric soils.

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b>	
<b>Primary Indicators (minimum of one required: check all that apply)</b>	<b>Secondary Indicators (2 or more required)</b>
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)( <b>except MLRA 1, 2, 4A, and 4B</b> )
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Water-Stained Leaves (B9)( <b>MLRA 1, 2, 4A, and 4B</b> )
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Stunted or Stressed Plants (D1) ( <b>LRR A</b> )
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Frost-Heave Hummocks (D7)

<b>Field Observations:</b>	<b>Wetland Hydrology Present?</b> Yes _____ No <b>X</b>
Surface Water Present? Yes _____ No <b>X</b> Depth (inches): _____	
Water Table Present? Yes _____ No <b>X</b> Depth (inches): <u>&gt;43</u>	
Saturation Present? Yes _____ No <b>X</b> Depth (inches): <u>&gt;43</u> (includes capillary fringe)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: \_\_\_\_\_ Entered by: SAR QC by: CMW

**WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region**

Project/Site: Gales Creek Half Mile Lane City/County: Forest Grove, Washington Sampling Date: 4/10/2009  
 Applicant/Owner: Clean Water Services / George Kral State: Oregon Sampling Point: 24  
 Investigator(s): C. Mirth Walker and Stacey Reed Section, Township, Range: 21, T1N, R4W  
 Landform (hillslope, terrace, etc.): Floodplain terrace Local relief (concave, convex, none) Concave Slope (%): 0  
 Subregion (LRR): A, Northwest Forests and Coast Lat: 45.549113 Long: -123.1877285 Datum: NAD 1983  
 Soil Map Unit Name: Verboort silty clay loam NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks)  
 Are Vegetation X, Soil X, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present?	Yes <u>NA</u>	No <u>NA</u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u>	No _____
Hydric Soil Present?	Yes <u>X</u>	No _____			
Wetland Hydrology Present?	Yes <u>X</u>	No _____			

Remarks:  
 NW portion of site. East of creek. Soils and vegetation plowed and planted (wheat).

**VEGETATION**

Tree Stratum (Plot size: <u>30' r</u> )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A)  Total Number of Dominant Species Across All Strata: <u>1</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0%</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
0% = Total Cover				
Sapling/Shrub Stratum (Plot size: <u>10' r</u> )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
0% = Total Cover				
Herb Stratum (Plot size: <u>5' r</u> )				
1. <u>Triticum aestivum</u>	<u>5%</u>	<u>Yes</u>	<u>NOL</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
5% = Total Cover				
Woody Vine Stratum (Plot size: <u>10' r</u> )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
0% = Total Cover				
% Bare Ground in Herb Stratum <u>95%</u>				

Remarks: \*identifies indicator status is tentative Entered by: SAR QC by: CMW  
 Bare from inundation.

**SOIL**

Sampling Point: **24**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-4	10YR 3/2	100	10YR 4/6	5	C	M	sicl	
4-8	N 4/1	100	None				sic	
8-14	10YR 4/1	100	7.5YR 3/4	15	C	M	sicl	
14-16	10YR 4/1	100	7.5YR 3/4	20	C	M	sic	
			10YR 4/6	10	C	M		

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils <sup>3</sup> :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)(except MLRA 1)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input checked="" type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)	<sup>3</sup> Indicators of hydrophytic vegetation and
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	wetland hydrology must be present,
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	unless disturbed or problematic.

<b>Restrictive Layer (if present):</b> Type: <u>None</u> Depth (inches): _____	Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Remarks:  
Few gravels on surface from quarry spoil.

**HYDROLOGY**

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)(except MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Water-Stained Leaves (B9)(MLRA 1, 2, 4A, and 4B)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input checked="" type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Frost-Heave Hummocks (D7)

<b>Field Observations:</b> Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>14</u> Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>11</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Recently inundated. Pounded to north. Entered by: SAR QC by: CMW

**WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region**

Project/Site: Gales Creek Half Mile Lane City/County: Forest Grove, Washington Sampling Date: 4/10/2009  
 Applicant/Owner: Clean Water Services / George Kral State: Oregon Sampling Point: 25  
 Investigator(s): C. Mirth Walker and Stacey Reed Section, Township, Range: 21, T1N, R4W  
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none) None Slope (%): 0  
 Subregion (LRR): A, Northwest Forests and Coast Lat: 45.549411 Long: -123.1876476 Datum: NAD 1983  
 Soil Map Unit Name: McBee silty clay loam NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks)  
 Are Vegetation X, Soil X, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present?	Yes <u>NA</u>	No <u>NA</u>	<b>Is the Sampled Area within a Wetland?</b> Yes _____ No <u>X</u>
Hydric Soil Present?	Yes <u>X</u>	No _____	
Wetland Hydrology Present?	Yes _____	No <u>X</u>	
Remarks: Northeast of plot 24. Soils and vegetation plowed and planted (wheat).			

**VEGETATION**

Tree Stratum (Plot size: <u>30' r</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A)  Total Number of Dominant Species Across All Strata: <u>1</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
0% = Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>0</u> x 2 = <u>0</u> FAC species <u>0</u> x 3 = <u>0</u> FACU species <u>5</u> x 4 = <u>20</u> UPL species <u>80</u> x 5 = <u>400</u> Column Totals: <u>85</u> (A) <u>420</u> (B) Prevalence Index = B/A = <u>4.94</u>
Sapling/Shrub Stratum (Plot size: <u>10' r</u> )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
0% = Total Cover				
Herb Stratum (Plot size: <u>5' r</u> )				
1. <u>Triticum aestivum</u>	<u>80%</u>	<u>Yes</u>	<u>NOL</u>	
2. <u>Cirsium arvense</u>	<u>5%</u>	<u>No</u>	<u>FACU</u>	
3. <u>Trifolium species</u>	<u>1%</u>	<u>No</u>	<u>FACW to UPL</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
86% = Total Cover				
Woody Vine Stratum (Plot size: <u>10' r</u> )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
0% = Total Cover				
% Bare Ground in Herb Stratum <u>14%</u>				
<b>Hydrophytic Vegetation Indicators:</b> _____ Dominance Test is >50% _____ Prevalence Index is ≤ 3.0 <sup>1</sup> _____ Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) _____ Wetland Non-Vascular Plants <sup>1</sup> _____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present.				
<b>Hydrophytic Vegetation Present?</b> Yes <u>NA</u> No <u>NA</u>				
Remarks: *identifies indicator status is tentative Entered by: <u>SAR</u> QC by: <u>CMW</u>				



**SOIL**

Sampling Point: **25**

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-11	10YR 3/2	100	7.5YR 3/4	5	C	M	sil	Ap
11-18	10YR 4/1	100	7.5YR 3/4	20	C	M	sil+	

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils <sup>3</sup> :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)( <b>except MLRA 1</b> )	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)	<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	

<b>Restrictive Layer (if present):</b>	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Type: <u>None</u>	
Depth (inches): _____	

Remarks:

**HYDROLOGY**

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)( <b>except MLRA 1, 2, 4A, and 4B</b> )
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Water-Stained Leaves (B9)( <b>MLRA 1, 2, 4A, and 4B</b> )
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Raised Ant Mounds (D6) ( <b>LRR A</b> )
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Other (Explain in Remarks)

<b>Field Observations:</b>	<b>Wetland Hydrology Present?</b>
Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____	Yes _____ No <input checked="" type="checkbox"/>
Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): <u>&gt;18</u>	
Saturation Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): <u>&gt;18</u> (includes capillary fringe)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: \_\_\_\_\_ Entered by: SAR QC by: CMW

## WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Gales Creek Half Mile Lane City/County: Forest Grove, Washington Sampling Date: 4/10/2009  
 Applicant/Owner: Clean Water Services / George Kral State: Oregon Sampling Point: 26  
 Investigator(s): C. Mirth Walker and Stacey Reed Section, Township, Range: 21, T1N, R4W  
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none) Convex Slope (%): 1  
 Subregion (LRR): A, Northwest Forests and Coast Lat: 45.544778 Long: -123.1860185 Datum: NAD 1983  
 Soil Map Unit Name: Verboort silty clay loam NWI classification: None  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No      (If no, explain in Remarks)  
 Are Vegetation X, Soil X, or Hydrology      significantly disturbed? Are "Normal Circumstances" present? Yes X No       
 Are Vegetation     , Soil     , or Hydrology      naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>NA</u>	No <u>NA</u>	<b>Is the Sampled Area within a Wetland?</b> Yes <u>    </u> No <u>X</u>
Hydric Soil Present?	Yes <u>    </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>    </u>	No <u>X</u>	
Remarks: Center of site. Southwest of creek. Soils and vegetation plowed and planted (wheat).			

### VEGETATION

Tree Stratum (Plot size: <u>30' r</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A)  Total Number of Dominant Species Across All Strata: <u>1</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
0% = Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>0</u> x 2 = <u>0</u> FAC species <u>0</u> x 3 = <u>0</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>80</u> x 5 = <u>400</u> Column Totals: <u>80</u> (A) <u>400</u> (B) Prevalence Index = B/A = <u>5.00</u>
Sapling/Shrub Stratum (Plot size: <u>10' r</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
0% = Total Cover				
Herb Stratum (Plot size: <u>5' r</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Triticum aestivum</u>	<u>80%</u>	<u>Yes</u>	<u>NOL</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
80% = Total Cover				
Woody Vine Stratum (Plot size: <u>10' r</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
0% = Total Cover				
% Bare Ground in Herb Stratum <u>20%</u>				
<b>Hydrophytic Vegetation Indicators:</b> Dominance Test is >50% Prevalence Index is ≤ 3.0 <sup>1</sup> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) Wetland Non-Vascular Plants <sup>1</sup> Problematic Hydrophytic Vegetation <sup>h</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present.				
<b>Hydrophytic Vegetation Present?</b> Yes <u>NA</u> No <u>NA</u>				
Remarks: *identifies indicator status is tentative				
Entered by: <u>SAR</u> QC by: <u>CMW</u>				

**SOIL**

Sampling Point: **26**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-10	10YR 3/2	100	10YR 3/4	2	C	M	sicl	Ap
10-16	10YR 3/2	100	7.5YR 3/4	5	C	M	sicl	
16-21+	7.5YR 3/3	100	10YR 3/4	5	C	M	sicl	

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils <sup>3</sup> :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)( <b>except MLRA 1</b> )	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<sup>3</sup> Indicators of hydrophytic vegetation and
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	wetland hydrology must be present,
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	unless disturbed or problematic.

<b>Restrictive Layer (if present):</b>	<b>Hydric Soil Present?</b> Yes _____ No <b>X</b>
Type: <u>None</u>	
Depth (inches): _____	

Remarks:

**HYDROLOGY**

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required: check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)( <b>except MLRA 1, 2, 4A, and 4B</b> )
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Water-Stained Leaves (B9)( <b>MLRA 1, 2, 4A, and 4B</b> )
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Stunted or Stressed Plants (D1) ( <b>LRR A</b> )
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Frost-Heave Hummocks (D7)

<b>Field Observations:</b>	<b>Wetland Hydrology Present?</b> Yes _____ No <b>X</b>
Surface Water Present? Yes _____ No <b>X</b> Depth (inches): _____	
Water Table Present? Yes _____ No <b>X</b> Depth (inches): <u>&gt;21</u>	
Saturation Present? Yes _____ No <b>X</b> Depth (inches): <u>&gt;21</u> (includes capillary fringe)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Entered by: SAR QC by: CMW

## WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Gales Creek Half Mile Lane City/County: Forest Grove, Washington Sampling Date: 4/10/2009  
 Applicant/Owner: Clean Water Services / George Kral State: Oregon Sampling Point: ds-1  
 Investigator(s): C. Mirth Walker and Stacey Reed Section, Township, Range: 21, T1N, R4W  
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none) None Slope (%): 1  
 Subregion (LRR): A, Northwest Forests and Coast Lat: 45.550554 Long: -123.1882965 Datum: NAD 1983  
 Soil Map Unit Name: Verboort silty clay loam NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks)

Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present?  
 Yes X No \_\_\_\_\_

Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No _____	<b>Is the Sampled Area within a Wetland?</b> Yes _____ No <u>X</u>
Hydric Soil Present?	Yes <u>X</u>	No _____	
Wetland Hydrology Present?	Yes _____	No <u>X</u>	
Remarks: Northern portion of study area.			

### VEGETATION

Tree Stratum (Plot size: <u>30' r</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)  Total Number of Dominant Species Across All Strata: <u>2</u> (B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
0% = Total Cover				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)  <b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species <u>25</u> x 1 = <u>25</u> FACW species <u>30</u> x 2 = <u>60</u> FAC species <u>15</u> x 3 = <u>45</u> FACU species <u>15</u> x 4 = <u>60</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>85</u> (A) <u>190</u> (B) Prevalence Index = B/A = <u>2.24</u>
Sapling/Shrub Stratum (Plot size: <u>10' r</u> )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
0% = Total Cover				
Herb Stratum (Plot size: <u>5' r</u> )				
1. <u>Alopecurus pratensis</u>	<u>20%</u>	<u>Yes</u>	<u>FACW</u>	
2. <u>Alopecurus geniculatus</u>	<u>20%</u>	<u>Yes</u>	<u>OBL</u>	
3. <u>Phalaris arundinacea</u>	<u>10%</u>	<u>No</u>	<u>FACW</u>	
4. <u>Poa species</u>	<u>10%</u>	<u>No</u>	<u>FAC ?</u>	
5. <u>Trifolium pratense</u>	<u>10%</u>	<u>No</u>	<u>FACU</u>	
6. <u>Scirpus microcarpus</u>	<u>5%</u>	<u>No</u>	<u>OBL</u>	
7. <u>Rumex crispus</u>	<u>5%</u>	<u>No</u>	<u>FAC</u>	
8. <u>Cirsium vulgare</u>	<u>5%</u>	<u>No</u>	<u>FACU</u>	
85% = Total Cover				
Woody Vine Stratum (Plot size: <u>10' r</u> )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
0% = Total Cover				
% Bare Ground in Herb Stratum <u>15%</u>				
Remarks: *identifies indicator status is tentative Entered by: <u>SAR</u> QC by: <u>CMW</u>				

**Hydrophytic Vegetation Indicators:**  
 Dominance Test is >50%  
 Prevalence Index is ≤ 3.0<sup>1</sup>  
 Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)  
 Wetland Non-Vascular Plants<sup>1</sup>  
 Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)  
<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes X No \_\_\_\_\_

**SOIL**

Sampling Point: **ds-1**

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-6	10YR 3/2	100	10YR 3/4	15	C	M	sil+	
6-13	10YR 3/2	100	7.5YR 3/3	15	C	M	sicl	
13-22	10YR 3/1	100	5YR 3/4	10	C	M	sicl	

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b>		<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)( <b>except MLRA 1</b> )	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)		
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)		<sup>3</sup> Indicators of hydrophytic vegetation and
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)		wetland hydrology must be present,
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)		unless disturbed or problematic.

<b>Restrictive Layer (if present):</b>	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Type: <u>None</u>	
Depth (inches): _____	

Remarks:

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b>	
<b>Primary Indicators (minimum of one required; check all that apply)</b>	<b>Secondary Indicators (2 or more required)</b>
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)( <b>except MLRA 1, 2, 4A, and 4B</b> )
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Water-Stained Leaves (B9)( <b>MLRA 1, 2, 4A, and 4B</b> )
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Raised Ant Mounds (D6) ( <b>LRR A</b> )
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Other (Explain in Remarks)

<b>Field Observations:</b>	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	
Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>21</u>	
Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>19</u> (includes capillary fringe)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Entered by: SAR QC by: CMW

**WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region**

Project/Site: Gales Creek Half Mile Lane City/County: Forest Grove, Washington Sampling Date: 4/10/2009  
 Applicant/Owner: Clean Water Services / George Kral State: Oregon Sampling Point: ds-2  
 Investigator(s): C. Mirth Walker and Stacey Reed Section, Township, Range: 21, T1N, R4W  
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none) Concave Slope (%): 1  
 Subregion (LRR): A, Northwest Forests and Coast Lat: 45.550458 Long: -123.1885952 Datum: NAD 1983  
 Soil Map Unit Name: Verboort silty clay loam NWI classification: None  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No        (If no, explain in Remarks)  
 Are Vegetation       , Soil       , or Hydrology        significantly disturbed? Are "Normal Circumstances" present?  
 Yes X No         
 Are Vegetation       , Soil       , or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b> Yes <u>X</u> No <u>      </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>      </u>	
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>	
Remarks: West of Plot ds-1.			

**VEGETATION**

Tree Stratum (Plot size: <u>30' r</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)  Total Number of Dominant Species Across All Strata: <u>1</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
0% = Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>100</u> x 2 = <u>200</u> FAC species <u>5</u> x 3 = <u>15</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>105</u> (A) <u>215</u> (B) Prevalence Index = B/A = <u>2.05</u>
Sapling/Shrub Stratum (Plot size: <u>10' r</u> )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
0% = Total Cover				
Herb Stratum (Plot size: <u>5' r</u> )				
1. <u>Phalaris arundinacea</u>	<u>100%</u>	<u>Yes</u>	<u>FACW</u>	
2. <u>Urtica dioica</u>	<u>5%</u>	<u>No</u>	<u>FAC</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
105% = Total Cover				
Woody Vine Stratum (Plot size: <u>10' r</u> )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
0% = Total Cover				
% Bare Ground in Herb Stratum <u>-5%</u>				
Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤ 3.0 <sup>1</sup> <input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Wetland Non-Vascular Plants <sup>1</sup> <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present.				
<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>				
Remarks: <u>*identifies indicator status is tentative</u> Entered by: <u>SAR</u> QC by: <u>CMW</u>				

**SOIL**

Sampling Point: **ds-2**

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-21	10YR 3/2	100	7.5YR 4/6	20	C	M	sicl	
21-24	10YR 3/1	100	7.5YR 3/4	15	C	M	sicl	

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils <sup>3</sup> :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)( <b>except MLRA 1</b> )	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)	<sup>3</sup> Indicators of hydrophytic vegetation and
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	wetland hydrology must be present,
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	unless disturbed or problematic.

<b>Restrictive Layer (if present):</b>	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Type: <u>None</u>	
Depth (inches): _____	

Remarks:  
Surface 5" very rooty (major portion of root zone).

**HYDROLOGY**

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)( <b>except MLRA 1, 2, 4A, and 4B</b> )
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Water-Stained Leaves (B9)( <b>MLRA 1, 2, 4A, and 4B</b> )
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Raised Ant Mounds (D6) ( <b>LRR A</b> )
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	
<input type="checkbox"/> Salt Crust (B11)	
<input type="checkbox"/> Aquatic Invertebrates (B13)	
<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	
<input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	
<input type="checkbox"/> Stunted or Stressed Plants (D1) ( <b>LRR A</b> )	
<input type="checkbox"/> Other (Explain in Remarks)	

<b>Field Observations:</b>	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____	
Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>&gt;24</u>	
Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>21</u>	
(includes capillary fringe)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: \_\_\_\_\_ Entered by: SAR QC by: CMW

**WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region**

Project/Site: Gales Creek Half Mile Lane City/County: Forest Grove, Washington Sampling Date: 4/29/2009  
 Applicant/Owner: Clean Water Services / George Kral State: Oregon Sampling Point: ds-3  
 Investigator(s): C. Mirth Walker and Stacey Reed Section, Township, Range: 21, T1N, R4W

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none) None Slope (%): 1

Subregion (LRR): A, Northwest Forests and Coast Lat: 45.550174 Long: -123.188299 Datum: NAD 1983

Soil Map Unit Name: Verboort silty clay loam NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No        (If no, explain in Remarks)

Are Vegetation       , Soil       , or Hydrology        significantly disturbed? Are "Normal Circumstances" present?  
 Yes X No       

Are Vegetation       , Soil       , or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>      </u>	No <u>X</u>
Hydric Soil Present?	Yes <u>X</u>	No <u>      </u>			
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>			

Remarks:  
 Northern portion of study area. South of plot ds-1.

**VEGETATION**

Tree Stratum (Plot size: <u>30' r</u> )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)  Total Number of Dominant Species Across All Strata: <u>2</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
0% = Total Cover				
Sapling/Shrub Stratum (Plot size: <u>10' r</u> )				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species <u>5</u> x 1 = <u>5</u> FACW species <u>70</u> x 2 = <u>140</u> FAC species <u>10</u> x 3 = <u>30</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>85</u> (A) <u>175</u> (B) Prevalence Index = B/A = <u>2.06</u>
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
0% = Total Cover				
Herb Stratum (Plot size: <u>5' r</u> )				
1. <u>Phalaris arundinacea</u>	<u>40%</u>	<u>Yes</u>	<u>FACW</u>	<b>Hydrophytic Vegetation Indicators:</b> X Dominance Test is >50% Prevalence Index is ≤ 3.0 <sup>1</sup> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) Wetland Non-Vascular Plants <sup>1</sup> Problematic Hydrophytic Vegetation <sup>h</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present.
2. <u>Juncus effusus</u>	<u>30%</u>	<u>Yes</u>	<u>FACW</u>	
3. <u>Holcus lanatus</u>	<u>10%</u>	<u>No</u>	<u>FAC</u>	
4. <u>Scirpus microcarpus</u>	<u>5%</u>	<u>No</u>	<u>OBL</u>	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
85% = Total Cover				
Woody Vine Stratum (Plot size: <u>10' r</u> )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
0% = Total Cover				
% Bare Ground in Herb Stratum <u>15%</u>				

Remarks: \*identifies indicator status is tentative Entered by: SAR QC by: CMW



**SOIL**

Sampling Point: **ds-3**

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-11	10YR 3/2	100	7.5YR 3/4	15	C	M	sicl	sl. moist
11-16	10YR 3/1	100	10YR 3/3	15	C	M	sicl	moist
16-23	10YR 3/1	100	7.5YR 3/3	10	C	M	sicl	moister w/ depth

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)( <b>except MLRA 1</b> )	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)		
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)		<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)		

<b>Restrictive Layer (if present):</b>	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Type: <u>None</u>	
Depth (inches): _____	

Remarks: \_\_\_\_\_

**HYDROLOGY**

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)( <b>except MLRA 1, 2, 4A, and 4B</b> )
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Water-Stained Leaves (B9)( <b>MLRA 1, 2, 4A, and 4B</b> )
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Stunted or Stressed Plants (D1) ( <b>LRR A</b> )
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Frost-Heave Hummocks (D7)

<b>Field Observations:</b>	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>&gt;23</u>	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>&gt;23</u> (includes capillary fringe)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: \_\_\_\_\_

Remarks: \_\_\_\_\_ Entered by: SAR QC by: CMW

## **Appendix E: Ground Level Site Photographs**

# Gales Creek Half Mile Lane

## Wetland Delineation Map

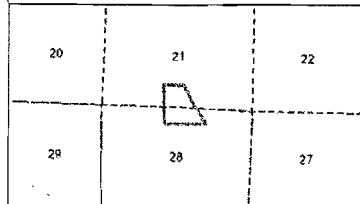
### Legend

#### Plot Type

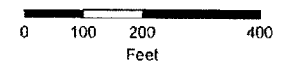
- Upland
- △ Wetland
- △ Culverts
- ▨ Wetland Area
- Taxlots
- ▭ Study Area Boundary (SAB)

GPS data collect with Trimble GeoXT submeter GPS unit. GPS plot accuracy < 1 meter; line accuracy ± 1 meter.

Sources:  
Tax lots provided by Metro.



Township 1N Range 4W



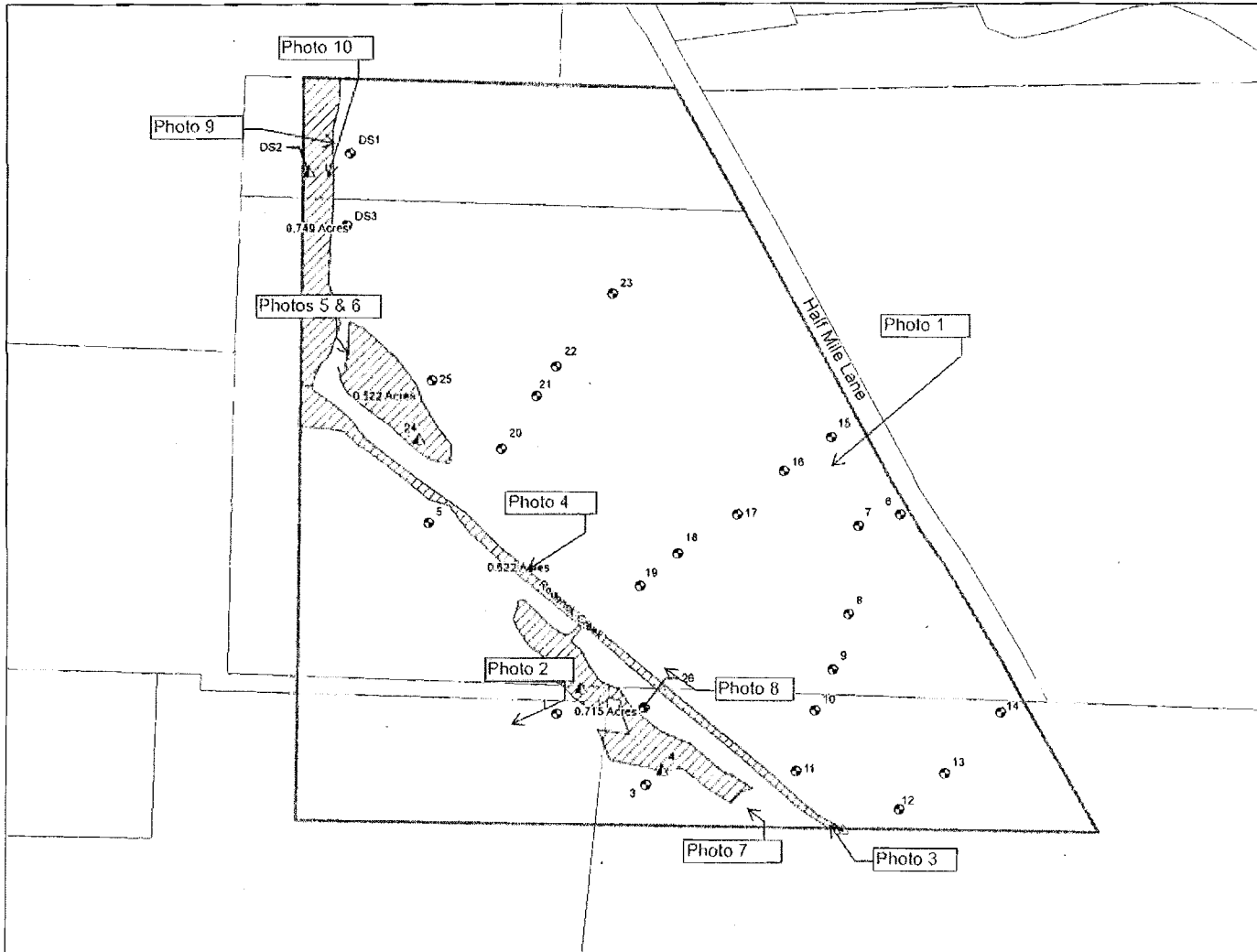
1 inch equals 200 feet

1:2,400



**SWCA**  
ENVIRONMENTAL CONSULTANTS

Figure 8.  
April 29, 2009



## Gales Creek Half Mile Lane Wetland and Water Delineation



Photo 1. View looking west of site from Half Mile Lane. Photo CMW 9/08/08



Photo 2. View looking west of site from wetland west of Roderick Creek. Photo CMW 9/05/08

**Gales Creek Half Mile Lane  
Wetland and Water Delineation**



Photo 3. View looking north of Roderick Creek from culvert under road at south end of site. Photo CMW 9/08/08



Photo 4. View looking west of creek outfall into right bank. Photo CMW 4/29/09

## Gales Creek Half Mile Lane Wetland and Water Delineation



Photo 5. View south of ponding in wetland delineated on eastern side of creek. Photo CMW 4/10/09



Photo 6. View south of ponding in wetland delineated on eastern side of creek. Crop stress visible in wheat. Photo CMW 4/29/09

**Gales Creek Half Mile Lane  
Wetland and Water Delineation**



Photo 7. View looking north of wetland delineated on western side of creek. Photo CMW 4/10/09



Photo 8. View looking northwest of channelized Roderick Creek. CMW 4/10/09

**Gales Creek Half Mile Lane  
Wetland and Water Delineation**



Photo 9. View looking east of vicinity of ds-1 in northern portion of study area. Photo CMW 4/10/09



Photo 10. View looking southwest of ditch / eastern wetland boundary in northern portion of study area. Photo CMW 4/10/09



**Appendix F: Vegetation Table**

**Gales Creek Half Mile Lane  
Vegetation List  
September 5 and 8, 2008 and April 10 and 29, 2009**

Common Name	Scientific Name	Wetland Indicator Status	Native / Introduced & Invasive / Noxious
<b>WETLAND VEGETATION WEST OF RODERICK CREEK, September 5 and 8, 2008</b>			
redtop	<i>Agrostis alba</i>	FAC*	introduced
mayweed chamomile	<i>Anthemis cotula</i>	FACU	introduced
Watson's [hairy] willow-herb	<i>Epilobium watsonii [ciliatum]</i>	FACW	native
tall fescue	<i>Festuca arundinacea</i>	FAC	introduced
toad rush	<i>Juncus bufonius</i>	FACW	native
needle-leaf navarretia	<i>Navarretia intertexta</i>	FACW	native
reed canarygrass	<i>Phalaris arundinacea</i>	FACW	<b>invasive</b>
fragrant popcorn-flower	<i>Plagiobothrys figuratus</i>	FACW	native
small-fruited bulrush	<i>Scirpus microcarpus</i>	OBL	native
<b>WEEDY UPLAND VEGETATION EAST OF RODERICK CREEK, September 5 and 8, 2008</b>			
quack grass	<i>Agropyron [Elytrigia] repens</i>	FAC	<b>noxious</b>
spreading bentgrass	<i>Agrostis stolonifera</i>	FAC*	native
colonial bentgrass	<i>Agrostis tenuis [capillaris]</i>	FAC	introduced
meadow foxtail	<i>Alopecurus pratensis</i>	FACW	introduced
mayweed chamomile	<i>Anthemis cotula</i>	FACU	introduced
brome	<i>Bromus species</i>	FAC* to UPL	-
Dewey's sedge	<i>Carex deweyana</i>	FACU*	native
oxeye daisy	<i>Chrysanthemum leucanthemum [Leucanthemum vulgare]</i>	NOL	introduced
Canada thistle	<i>Cirsium arvense</i>	FACU	<b>invasive</b>
field morning-glory	<i>Convolvulus arvensis</i>	NOL	<b>invasive</b>
Queen Anne's lace	<i>Daucus carota</i>	NOL	introduced
tall autumn willow-herb	<i>Epilobium paniculatum [brachycarpum]</i>	UPL	native
Watson's [hairy] willow-herb	<i>Epilobium watsonii [ciliatum]</i>	FACW	native
common horsetail	<i>Equisetum arvense</i>	FAC	native
tall fescue	<i>Festuca arundinacea</i>	FAC	introduced
common velvetgrass	<i>Holcus lanatus</i>	FAC	introduced
common St. John's-wort	<i>Hypericum perforatum</i>	NOL	<b>noxious</b>
spotted cats-ear	<i>Hypochaeris radicata</i>	FACU*	introduced
prickly lettuce	<i>Lactuca serriola</i>	FACU	introduced
birdsfoot-trefoil	<i>Lotus corniculatus</i>	FAC	introduced
perennial ryegrass	<i>Lolium perenne</i>	FACU	introduced
yellow parentucellia	<i>Parentucellia viscosa</i>	FAC	introduced
reed canarygrass	<i>Phalaris arundinacea</i>	FACW	<b>invasive</b>
sheep sorrel	<i>Rumex acetosella</i>	FACU	introduced
Pacific blackberry	<i>Rubus ursinus</i>	FACU	native
common dandelion	<i>Taraxacum officinale</i>	FACU	introduced
cultivated wheat	<i>Triticum aestivum</i>	NOL	introduced
clover	<i>Trifolium species</i>	FACW to UPL	-
white clover	<i>Trifolium repens</i>	FAC*	introduced
broad-leaf cattail (dead, P19 & 20)	<i>Typha latifolia</i>	OBL	native

**Gales Creek Half Mile Lane  
Vegetation List  
September 5 and 8, 2008 and April 10 and 29, 2009**

Common Name	Scientific Name	Wetland Indicator Status	Native / Introduced & Invasive / Noxious
<b>WETLAND VEGETATION WEST OF RODERICK CREEK, September 5 and 8, 2008</b>			
redtop	<i>Agrostis alba</i>	FAC*	introduced
mayweed chamomile	<i>Anthemis cotula</i>	FACU	introduced
Watson's [hairy] willow-herb	<i>Epilobium watsonii [ciliatum]</i>	FACW	native
tall fescue	<i>Festuca arundinacea</i>	FAC	introduced
toad rush	<i>Juncus bufonius</i>	FACW	native
needle-leaf navarretia	<i>Navarretia intertexta</i>	FACW	native
reed canarygrass	<i>Phalaris arundinacea</i>	FACW	<b>invasive</b>
fragrant popcorn-flower	<i>Plagiobothrys figuratus</i>	FACW	native
small-fruited bulrush	<i>Scirpus microcarpus</i>	OBL	native
<b>WEEDY UPLAND VEGETATION EAST OF RODERICK CREEK, September 5 and 8, 2008</b>			
quack grass	<i>Agropyron [Elytrigia] repens</i>	FAC	<b>noxious</b>
spreading bentgrass	<i>Agrostis stolonifera</i>	FAC*	native
colonial bentgrass	<i>Agrostis tenuis [capillaris]</i>	FAC	introduced
meadow foxtail	<i>Alopecurus pratensis</i>	FACW	introduced
mayweed chamomile	<i>Anthemis cotula</i>	FACU	introduced
brome	<i>Bromus species</i>	FAC* to UPL	-
Dewey's sedge	<i>Carex deweyana</i>	FACU*	native
oxeye daisy	<i>Chrysanthemum leucanthemum [Leucanthemum vulgare]</i>	NOL	introduced
Canada thistle	<i>Cirsium arvense</i>	FACU	<b>invasive</b>
field morning-glory	<i>Convolvulus arvensis</i>	NOL	<b>invasive</b>
Queen Anne's lace	<i>Daucus carota</i>	NOL	introduced
tall autumn willow-herb	<i>Epilobium paniculatum [brachycarpum]</i>	UPL	native
Watson's [hairy] willow-herb	<i>Epilobium watsonii [ciliatum]</i>	FACW	native
common horsetail	<i>Equisetum arvense</i>	FAC	native
tall fescue	<i>Festuca arundinacea</i>	FAC	introduced
common velvetgrass	<i>Holcus lanatus</i>	FAC	introduced
common St. John's-wort	<i>Hypericum perforatum</i>	NOL	<b>noxious</b>
spotted cats-ear	<i>Hypochaeris radicata</i>	FACU*	introduced
prickly lettuce	<i>Lactuca serriola</i>	FACU	introduced
birdsfoot-trefoil	<i>Lotus corniculatus</i>	FAC	introduced
perennial ryegrass	<i>Lolium perenne</i>	FACU	introduced
yellow parentucellia	<i>Parentucellia viscosa</i>	FAC	introduced
reed canarygrass	<i>Phalaris arundinacea</i>	FACW	<b>invasive</b>
sheep sorrel	<i>Rumex acetosella</i>	FACU	introduced
Pacific blackberry	<i>Rubus ursinus</i>	FACU	native
common dandelion	<i>Taraxacum officinale</i>	FACU	introduced
cultivated wheat	<i>Triticum aestivum</i>	NOL	introduced
clover	<i>Trifolium species</i>	FACW to UPL	-
white clover	<i>Trifolium repens</i>	FAC*	introduced
broad-leaf cattail (dead, P19 & 20)	<i>Typha latifolia</i>	OBL	native

Common Name	Scientific Name	Wetland Indicator Status	Native / Introduced & Invasive / Noxious
<b>UPLAND VEGETATION EAST OF RODERICK CREEK, April 10 and 29, 2009</b>			
Canada thistle	<i>Cirsium arvense</i>	FACU	<b>invasive</b>
Queen Anne's lace	<i>Daucus carota</i>	NOL	introduced
spotted cats-ear	<i>Hypochaeris radicata</i>	FACU*	introduced
bigleaf lupine	<i>Lupinus polyphyllus</i>	FAC	native
narrow-leaved montia	<i>Montia linearis</i>	NOL	native
annual bluegrass	<i>Poa annua</i>	FAC	introduced
wild radish	<i>Raphanus sativus</i>	NI (NO in Regions 0, 4, 5, 8)	introduced
curly dock	<i>Rumex crispus</i>	FAC	introduced
cultivated wheat	<i>Triticum aestivum</i>	NOL	introduced
<b>WETLAND VEGETATION EAST OF RODERICK CREEK, April 10 and 29, 2009</b>			
meadow foxtail	<i>Alopecurus pratensis</i>	FACW	introduced
water-starwort	<i>Callitriche species</i>	OBL (1 NI)	1 introduced, rest native
cultivated wheat	<i>Triticum aestivum</i>	NOL	introduced
<b>NORTH TAX LOT WETLAND, April 10 and 29, 2009</b>			
soft rush	<i>Juncus effusus</i>	FACW	native
reed canarygrass	<i>Phalaris arundinacea</i>	FACW	<b>invasive</b>
small-fruited bulrush	<i>Scirpus microcarpus</i>	OBL	native
stinging nettle	<i>Urtica dioica</i>	FAC	can be either dep. on ssp
<b>NORTH TAX LOT UPLAND, April 10 and 29, 2009</b>			
meadow foxtail	<i>Alopecurus pratensis</i>	FACW	introduced
water foxtail	<i>Alopecurus geniculatus</i>	OBL	native
reed canarygrass	<i>Phalaris arundinacea</i>	FACW	<b>invasive</b>
bluegrass	<i>Poa species</i>	FAC ?	-
red clover	<i>Trifolium pratense</i>	FACU	introduced
small-fruited bulrush	<i>Scirpus microcarpus</i>	OBL	native
curly dock	<i>Rumex crispus</i>	FAC	introduced
bull thistle	<i>Cirsium vulgare</i>	FACU	<b>invasive</b>
soft rush	<i>Juncus effusus</i>	FACW	native
common velvetgrass	<i>Holcus lanatus</i>	FAC	introduced
ryegrass	<i>Lolium species</i>	FACU	introduced
common dandelion	<i>Taraxacum officinale</i>	FACU	introduced
teasel	<i>Dipsacus sylvestris [fullosum ssp. syl]</i>	FAC	<b>invasive</b>
crane's-bill	<i>Geranium species</i>	FAC to NOL	-
<b>RODERICK CREEK VEGETATION (INCLUDING FRINGE)</b>			
big-leaf maple	<i>Acer macrophyllum</i>	FACU	native
water foxtail	<i>Alopecurus geniculatus</i>	OBL	native
red alder	<i>Alnus rubra</i>	FAC	native
water-starwort	<i>Callitriche species</i>	OBL (1 NI)	1 introduced, rest native
red-osier dogwood	<i>Cornus stolonifera [sericea]</i>	FACW	native
large barnyard grass	<i>Echinochloa crusgalli</i>	FACW	introduced
creeping spikerush	<i>Eleocharis palustris</i>	OBL	native
Watson's [hairy] willow-herb	<i>Epilobium watsonii [ciliatum]</i>	FACW	native
giant horsetail	<i>Equisetum telmateia</i>	FACW	native, noxious
Oregon ash	<i>Fraxinus latifolia</i>	FACW	native
mannagrass	<i>Glyceria species</i>	FACW/OBL	native
soft rush	<i>Juncus effusus</i>	FACW	native
Indian plum	<i>Oemleria cerasiformis</i>	FACU	native

Common Name	Scientific Name	Wetland Indicator Status	Native / Introduced & Invasive / Noxious
reed canarygrass	<i>Phalaris arundinacea</i>	FACW	invasive
Pacific ninebark	<i>Physocarpus capitatus</i>	FACW	native
Himalayan blackberry	<i>Rubus discolor</i>	FACU	invasive
evergreen blackberry	<i>Rubus laciniatus</i>	FACU	invasive
Pacific willow	<i>Salix lasiandra [lucida var. lasiandra]</i>	FACW	native
Sitka willow	<i>Salix sitchensis</i>	FACW	native
small-fruited bulrush	<i>Scirpus microcarpus</i>	OBL	native
bittersweet nightshade	<i>Solanum dulcamara</i>	FAC	invasive
snowberry	<i>Symphoricarpos albus</i>	FACU	native
broad-leaf cattail	<i>Typha latifolia</i>	OBL	native
American speedwell	<i>Veronica americana</i>	OBL	native

An asterisk (\*) following a Regional Indicator identifies tentative assignments based on limited information from which to determine the indicator status.

A question mark (?) following a National Indicator denotes a tentative assignment based on the botanical literature and not confirmed by regional review.

A question mark (?) preceded by a space indicates our default assumption that the plant is FAC.

[Synonymy] per Reed 1988 and per Kartesz 1994; see also USDA Plants Database

<http://plants.usda.gov/>

Wetland Indicator Status per Reed 1988 and 1993 supplement (see also USDA Plants Database)

Native per Hitchcock & Cronquist 1973

Invasive status per Clean Water Services (2007)

Noxious per ODA (2007) and Washington State NWCB (2006)

WETLAND INDICATOR STATUS	
OBL	<b>Obligate Wetland</b> - Plants that occur almost always in wetlands (estimated probability >99%) under natural conditions, but which may also rarely occur in non-wetlands (<1% probability). Examples: broadleaf cattail, skunk cabbage
FACW	<b>Facultative Wetland</b> - Plants that usually occur in wetlands (estimated probability 67%-99%), but also occur in non-wetlands an estimated 1%-33% of the time. Examples: Oregon ash, red-osier dogwood
FAC	<b>Facultative</b> - Plants that are equally likely to occur in wetlands or non-wetlands (estimated probability 34%-66%). Examples: red alder, salmonberry
FACU	<b>Facultative Upland</b> - Plants that usually occur in non-wetlands (estimated probability 67-99%), but occasionally are found in wetlands (estimated probability 1%-33%). Examples: bigleaf maple, Himalayan blackberry
UPL	<b>Upland</b> - Plants that almost always occur in non-wetlands (<1% probability of occurring in wetlands).
NOL	<b>Not Listed</b> - Plants that are not on the list; assumed to be UPL but may not have occurred in the region when indicators were assigned.
NI	<b>No Indicator</b> (insufficient information available or plant is widely tolerant).
NO	<b>No Occurrence</b> - The species does not occur in the region.

**National Indicators** reflect the range of estimated probabilities (expressed as a frequency of occurrence) of a species occurring in wetlands versus non-wetland across the entire distribution of the species. A frequency, for example, of 67%-99% (Facultative Wetland) means that 67%-99% of sample plots containing the species randomly selected across the range of the species would be wetland. When two indicators are given, they reflect the range from the lowest to the highest frequency of occurrence in wetlands across the regions in which the species is found. A positive (+) or negative (-) sign was used with the Facultative Indicator categories to more specifically define the regional frequency of occurrence in wetlands. The + sign indicates a frequency toward the higher end of the category (more frequently found in wetlands), and a - sign indicates a frequency toward the lower end of the category (less frequently found in wetlands). The Regional Supplements to the 1987 Corps Wetland Delineation Manual have removed the significance of the + and - signs and these have been deleted.

**Regional Indicators** express the estimated probability (likelihood) of a species occurring in wetlands versus non-wetlands in the region. Regional Indicators reflect the unanimous agreement of the Regional Interagency Review Panel. The Northwest Region is Region 9, California is Region 0, and the Intermountain Region is Region 8.

The wetland indicator categories should not be equated to degrees of wetness. Many obligate wetland species occur in permanently or semi-permanently flooded wetlands, but a number of obligates also occur in and some are restricted to wetlands which are only temporarily or seasonally flooded. The facultative upland species include a diverse collection of plants, which range from weedy species adapted to exist in a number of environmentally stressful or disturbed sites (including wetlands), to species in which a portion of the gene pool (an ecotype) always occurs in wetlands. Both the weedy and ecotype representatives of the facultative upland category occur in seasonally and semi-permanently flooded wetlands.

## **Appendix G: References**

- Department of State Lands. 2008. Administrative Rules for Wetland Delineation Report Requirements and for Jurisdictional Determinations for the Purpose of Regulating Fill and Removal Within Waters of this State. Adopted January 1, 2008.
- Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-1. U.S. Army Engineer Waterways Experiment Station, Vicksburg, Miss.
- GretagMacbeth. 2000 revised washable edition. Munsell® Soil Color Charts. New Windsor, NY.
- Hitchcock, C.L. and A. Cronquist. 1973. Flora of the Pacific Northwest. University of Washington Press, Seattle.
- Reed, P.B., Jr. 1988. National List of Plant Species that Occur in Wetlands: Northwest (Region 9). U.S. Fish and Wildlife Service Biological Report No. 88 (26.9).
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- Tax lot map: [www.ormap.org](http://www.ormap.org)
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- USDA NRCS. 2009. The PLANTS Database. National Plant Data Center, Baton Rouge, LA 70874-4490 USA. <http://www.plants.usda.gov/>
- USDA NRCS. 2009. Hydric Soils in Washington County Area, Oregon. <http://www.or.nrcs.usda.gov/technical/soil/hydric.html>
- USDA SCS. 1999. Soil Survey of Washington County Area, Oregon. United States Department of Agriculture, Natural Resources Conservation Service in cooperation with the Forest Service and the Oregon Agricultural Experiment Station. Sheet 23.  
Official soil survey descriptions: <http://soils.usda.gov/technical/classification/osd/index.html>  
Online soil survey: <http://websoilsurvey.nrcs.usda.gov/app/>  
Suggested citation: Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available online at <http://websoilsurvey.nrcs.usda.gov/> accessed September 2008. Soil Survey Area Data: Version 6, July 30, 2008. Aerial images photographed 5/7/1994 and 6/28/1994.
- U.S. Department of Interior. Bureau of Reclamation. Pacific Northwest Cooperative Agricultural Weather Network (Agrimet), Forest Grove Weather Station. <http://www.usbr.gov/pn/agrimet/index.html>
- U.S. Fish and Wildlife Service. 1992. Gales Creek, Oregon. 7.5' National Wetlands Inventory map. Color infrared aerial photography flown 7/82 at 1:58,000.
- U.S. Geological Service. 1979. Photorevised 1992. Gales Creek, Oregon 7.5' topographic quadrangle. CIR 7/82 1:58,000. Downloaded from <http://mapserver.mytopo.com/>.



## **Appendix H: Soil Texture Class Abbreviations**

<b>Soil Texture Class or Subclass</b>	<b>Conventional Code</b>	<b>NASIS* Code</b>
Coarse Sand	cos	COS
Sand	s	S
Fine Sand	fs	FS
Very Fine Sand	vfs	VFS
Loamy Coarse Sand	lcos	LCOS
Loamy Sand	ls	LS
Loamy Fine Sand	lfs	LFS
Loamy Very fine Sand	lvfs	LVFS
Coarse Sandy Loam	cosl	COSL
Sandy Loam	sl	SL
Fine Sandy Loam	fsl	FSL
Very Fine Sandy Loam	vfsl	VFSL
Loam	l	L
Silt Loam	sil	SIL
Silt	si	SI
Sandy Clay Loam	scl	SCL
Clay Loam	cl	CL
Silty Clay Loam	sicl	SICL
Sandy Clay	sc	SC
Silty Clay	sic	SIC
Clay	c	C

\*National Soil Information System; <http://nasis.usda.gov/intro/>

Attachment D—Conservation Easement



After recording, return to:  
Bobby Cochran  
Watershed Management Department  
Clean Water Services  
2550 SW Hillsboro Hwy  
Hillsboro, OR 97123



01438417200901103430280282  
I, Richard Hobernicht, Director of Assessment and  
Taxation and Ex-Officio County Clerk for Washington  
County, Oregon, do hereby certify that the within  
instrument of writing was received and recorded in the  
book of records of said county.  
Richard Hobernicht, Director of Assessment and  
Taxation, Ex-Officio County Clerk



**COPY**

**CONSERVATION EASEMENT AGREEMENT**

THIS CONSERVATION EASEMENT AGREEMENT (Agreement) is made this 22 day of December, 2009, between George and Sara H. Kral (Owner), and Clean Water Services (District).

**RECITALS**

- A. **Owner.** Owner is the sole owner in fee simple of certain real property in Washington County, Oregon, more particularly described in attached Exhibit A (property legal description) (Property). Owner desires to place a conservation easement over a portion of the Property legally described in attached Exhibit B (legal description of protected property) (Protected Property) and shown in attached Exhibit C (Conservation Easement Map). For purposes of this Easement, the Protected Property is divided into a Conservation Zone and Farm Zone as shown in Exhibit C. Exhibits A, B and C are incorporated herein by this reference.
- B. **Clean Water Services.** District is an ORS 451 county service district responsible for managing the surface water system in the urban portions of the Tualatin River Basin and is subject to the Clean Water Act and the Endangered Species Act.
- C. **Oregon Department of State Lands (DSL).** DSL is an agency of the State of Oregon that has funded the purchase of this Easement in the amount of \$160,000 and an endowment of \$115,000 with a grant to District from the Wetland Mitigation Bank Revolving Fund, a statutory account with uses outlined in ORS 196.650. DSL is a third-party beneficiary of certain rights under this Easement.
- D. **Conservation Values.** Owner has agreed to grant District a conservation easement over the Protected Property. The Protected Property has certain natural, scenic and open space qualities of significance, including but not limited to:

LAWYERS TITLE INS. CORP. 09-012883  
Commercial Services 11687407

- Floodplain and riparian area abutting Gales Creek, an important tributary to the Tualatin River for fish habitat and water quality, with potential for fish habitat restoration.
- Historic off-channel wetland area that has been farmed, but has potential for wetland restoration.
- Riparian forest with potential for revegetation.

Collectively, these natural, scenic, and open space qualities of the Protected Property, as well as the purposes described below in Paragraph E, comprise its “**Conservation Values.**” The Conservation Values are not likely to be adversely affected to any substantial extent by the continued use of the Protected Property as described above or as authorized below or by the use, maintenance, or replacement of those structures and improvements that presently exist on the Protected Property or that are authorized below.

E. **Conservation Purposes.** The purpose of this Easement is to preserve and protect in perpetuity the Conservation Values of the Protected Property by confining the development, management and use of the Protected Property to activities that are consistent with the preservation of the Conservation Values, by prohibiting activities that significantly impair or interfere with these Conservation Values, and by providing for remedies in the event of any violation of this Easement. Furthermore, the Conservation Purposes of this Easement are for:

- “The protection of a relatively natural habitat of fish, wildlife, or plants, or similar ecosystem”, and as defined in IRC § 170(h)(4)(A)(ii) .
- “The preservation of certain open space (including farmland and forest land) where such preservation is (I) for the scenic enjoyment of the general public, or (II) pursuant to a clearly delineated federal, state, or local governmental conservation policy, and will yield a significant public benefit,” as defined in IRC § 170(h)(4)(A)(iii) and as further defined in Section F below.
- The protection of wetland, fish habitat, water quality, and other forms of compensatory mitigation.

F. **Conservation Policy.** Preservation of the Protected Property will further governmental policies established by, among other things, ORS 271.715 et seq., which permits creating conservation easements for the purposes of retaining or protecting natural, scenic, and open space values of real property, ensuring its availability for forest, recreational, or open space use, and protecting natural resources.

- The Healthy Streams Plan developed by District and adopted by Washington County in 2005 recognizes restoration in order to improve the overall health of the Tualatin River Basin.
- Gales Creek is designated as critical habitat by the National Marine Fisheries Service for steelhead trout.

NOW, THEREFORE, Owner and District agree as follows:

1. GRANT OF CONSERVATION EASEMENT: GENERAL PROVISIONS

- 1.1 Grant. Pursuant to the laws of the State of Oregon and in particular Oregon Revised Statutes 271.715 et seq. and in consideration of the facts recited above and the mutual covenants contained herein, and *in further consideration of the sum of \$160,000 dollars and other valuable consideration*, Owner hereby grants, conveys and warrants to District and its successors and assigns a perpetual conservation easement over the Protected Property (**Easement**).
- 1.2 Baseline Documentation. The Conservation Values of the Protected Property are further documented in an inventory of the Conservation Values and relevant features of the Protected Property, dated \_\_\_\_\_, on file at the offices of District and incorporated into this Easement by this reference (**Baseline Documentation**). The Baseline Documentation consists of reports, maps, photographs, and other documentation that provide, collectively, an accurate representation of the Protected Property at the time of this grant and which is intended to serve as an objective information baseline for monitoring compliance with the terms of this Easement. Baseline Documentation shall be updated five years from the time of this grant to reflect the post-restoration condition of the Protected Property. The parties intend that the Baseline Documentation shall be used by District to monitor Owner's future use of the Protected Property, the condition of the Protected Property and practices thereon. The parties further agree that, in the event a controversy arises with respect to the condition of the Protected Property or a particular resource thereof, the parties shall not be foreclosed from utilizing any other relevant document, survey or report to assist in the resolution of the controversy.
- 1.3 Resource Management Plan. District and Owner shall restore, enhance and maintain the Conservation Values and natural attributes of the Protected Property as described in the Resource Management Plan to be developed by District and Owner (Management Plan). The Management Plan shall include all required mitigation plans and other documentation needed to use the Protected Property as mitigation. The Management Plan is intended to be a flexible document which the parties may revise and update periodically over time to best manage the Conservation Values, but it does not and shall not confer any rights inconsistent with the provisions of this Easement. The Management Plan shall be subject to the terms of this Easement. Any conflict between a provision or provisions of this Easement and the Management Plan shall be resolved in favor of this Easement.
- 1.4 Changed Circumstances. Owner and District acknowledge that in the future conditions may change in the areas neighboring the Property, including, without limitation, increased development, land use and zoning changes. Owner and District further acknowledge that such future conditions may result in various hardships to Owner by virtue of the restrictions contained in this Easement, including without limitation, restrictions on the ability to develop the Property. However, Owner and District expressly intend that this Easement continue in perpetuity regardless of such changed conditions or circumstances and regardless of hardship, whether such hardship is economic or otherwise.

## 2. ZONES

For purposes of this Easement, the Protected Property is divided into two land use areas. The Conservation Zone is comprised of the areas where active restoration and protection of natural resources will occur. The Farm Zone is a field included within the Easement boundary where limited, sustainable agriculture will be allowed in accordance with the Salmon Safe or other District-approved certification for farm practices.

## 3. PROHIBITED USES FOR CONSERVATION ZONE

Any use of, or activity on, the Protected Property inconsistent with the purposes of this Easement is prohibited, and Owner acknowledges and agrees that it will not conduct, engage in or permit any such use or activity. Without limiting the generality of the foregoing sentence, the following uses of, or activities within the Conservation Zone of the Protected Property, though not an exhaustive list, are inconsistent with the purpose of this Easement and shall be prohibited, except as expressly permitted under Section 5 or 6 of this Easement:

- 3.1 Industrial and commercial activity. No industrial or commercial use of the Protected Property is allowed, except for gathering of seed and cuttings for native plant propagation by Owner as described in the Management Plan..
- 3.2 Agricultural Activities. Agricultural activities of any kind are prohibited, including without limitation the establishment and maintenance of a livestock corral, grazing or pasture uses, except for gathering of seed and cuttings for native plant propagation by Owner as described in the Management Plan, and as may be specifically allowed by District in its sole discretion to preserve, protect or enhance the Conservation Values. The site may not be used to exercise or train any domestic animal or livestock. This does not include native seed production, mowing, planting, herbicide use or other maintenance activities consistent with the Management Plan.
- 3.3 Domestic, Exotic or Farm Animals. No domestic, exotic, or farm animals of any kind are allowed on the Protected Property unless expressly permitted in writing by District and consistent with preservation, protection, and/or enhancement of the Conservation Values.
- 3.4 Residential development. Residential use or development is not allowed.
- 3.5 Subdivision. The legal or "de facto" partition, subdivision or other land division of the Protected Property or any portion thereof is prohibited.
- 3.6 Structures and Improvements. The placement or construction of any buildings, structures, or other improvements of any kind is prohibited including, without limitation, gazebos, tree houses, roads, and parking areas.
- 3.7 Utilities. No installation of above- or below-ground new utility systems or extensions of existing utility systems, including, without limitation, wells, water, sewer, septic systems and septic drain fields, power, fuel, and communication lines



and related facilities except as required to maintain one pump for irrigation withdrawals in Gales Creek, or unless expressly permitted in writing by District. Such permission may be granted or withheld at District's sole discretion.

- 3.8 Roads and trails. No new roads or trails shall be constructed, except as allowed under Section 6.4. Existing roads and trails may be maintained or improved but may not be widened or relocated.
- 3.9 Outdoor lighting. To minimize sky glow or light pollution originating from the Protected Property, and/or to minimize interference with the Conservation Values, no outdoor lighting shall be allowed within the Protected Property and any outdoor lighting within the Property (outside the Protected Property) that affects the Protected Property shall be minimized to avoid disturbing the Conservation Values.
- 3.10 Signs. The placement of commercial signs, billboards, or other advertising material on the Protected Property is prohibited, except as allowed under Section 5.
- 3.11 Alteration of Land. The alteration of the surface of the land, including, without limitation, the excavation, fill or removal of soil, sand, gravel, rock, peat or sod is prohibited, except in accordance with the Management Plan.
- 3.12 Alteration of Water Courses. The draining, filling, dredging, ditching or diking of wetland areas, the alteration or manipulation of ponds and water courses, or otherwise altering hydrology in the Protected Property is prohibited, except in accordance with the Management Plan approved by District under Section 1.3.
- 3.13 Mining. The exploration for, or development and extraction of, minerals and hydrocarbons on or below the surface of the Protected Property is prohibited.
- 3.14 Erosion or Water Pollution. Any use or activity that causes or is likely to cause significant soil degradation or erosion or significant pollution of any surface or subsurface waters is prohibited.
- 3.15 Waste Disposal. The disposal or storage of trash, rubbish, garbage, debris, vehicles, abandoned equipment, parts thereof or other unsightly, offensive, or hazardous waste or material on the Protected Property is prohibited. Disposal of fill may be allowed with District's express written consent in accordance with the Management Plan.
- 3.16 Hunting. No hunting or trapping, except by Owner and Owner's immediate family in accordance with the Management Plan, and except to the extent determined necessary by District, in its sole discretion, to preserve, protect or enhance the Conservation Values of the Protected Property.
- 3.17 Wildlife Disruption. The disruption of wildlife breeding, foraging and nesting activities is prohibited, except as allowed in section 3.16.

- 3.18 Removal of Trees and Other Vegetation. No pruning, cutting down, or other destruction or removal of live or dead trees and other vegetation located on the Protected Property, except as follows:
- Invasive trees and vegetation listed in the District's Target Species List may be removed to preserve, protect or enhance the Conservation Values of the Protected Property.
  - Tree or other vegetation may be removed as reasonably required to control outbreaks of disease, insects and for fire control, trail maintenance, or to remove a tree creating a hazard to life or property.
- 3.19 Non-Native or Invasive Vegetation. The intentional introduction on the Protected Property of noxious weeds or non-native or invasive species, as defined by the District's Target Species List or, if such List is no longer published, such other publication approved by District, is prohibited.
- 3.20 Harvesting of Native Plants. Commercial gathering, picking, taking or harvesting of native plants, or any parts thereof is prohibited except for seed and cutting material collected by Owner as described in the Management Plan to support native plant propagation, or for research, education or documentation/identification purposes, or as otherwise approved by District and in accordance with the Management Plan.
- 3.21 Off-Road Vehicles and Excessive Noise. The operation of motorcycles, dune buggies, snowmobiles, or any other type of off-road motorized vehicles or the operation of other sources of excessive noise pollution is prohibited with the exception of those uses for the protection of the Protected Property or in connection with any activity or construction specifically permitted under the terms of this Easement.
- 3.22 Use of Firearms. No discharge of firearms, bows and arrows, air guns, slingshots, and similar devices, except as allowed in paragraph 3.16.
- 3.23 Fires. No fires of all forms except prescribed fire as directed by District as necessary to preserve, protect and enhance the Conservation Values.
- 3.24 Fireworks. Use of all forms of fireworks within the Protected Property is prohibited, and fireworks shall not be used on the Property outside the Protected Property if such fireworks could endanger or adversely affect the Conservation Values.

#### 4. PROHIBITED USES FOR FARM ZONE

Any use of, or activity on, the Protected Property inconsistent with the purposes of this Easement is prohibited, and Owner acknowledges and agrees that it will not conduct, engage in or permit any such use or activity. Without limiting the generality of the foregoing sentence, the following uses of, or activities within the Farm Zone of the Protected Property, though not an exhaustive list, are inconsistent with the purpose of this Easement and shall be prohibited, except as expressly permitted under Section 5 or 6 of this Easement:

- 4.1 Industrial and commercial activity. No industrial or commercial use of the Protected Property is allowed.
- 4.2 Agricultural Activities. Agricultural activities are restricted to the sustainable, nursery cultivation of Oregon native plants and associated alternate crops in a rotation that complies with the Salmon Safe or other District-approved certification and best management practices described in Section 5.2. Specific prohibited practices include without limitation the establishment and maintenance of a livestock corral, grazing or pasture uses, except as may be specifically allowed by District in its sole discretion to preserve, protect or enhance the Conservation Values. The site may not be used to exercise or train any domestic animal or livestock. This does not include native seed production, mowing, planting, herbicide use or other maintenance activities consistent with the Management Plan.
- 4.3 Domestic, Exotic or Farm Animals. No domestic, exotic, or farm animals of any kind are allowed on the Protected Property, unless expressly permitted in writing by District and consistent with preservation, protection, and/or enhancement of the Conservation Values.
- 4.4 Residential development. Residential use or development is not allowed.
- 4.5 Subdivision. The legal or "de facto" partition, subdivision or other land division of the Protected Property or any portion thereof is prohibited.
- 4.6 Structures and Improvements. The placement or construction of any buildings, structures, or other improvements of any kind is prohibited including, without limitation, gazebos, tree houses, roads, and parking areas.
- 4.7 Utilities. No installation of above- or below-ground new utility systems or extensions of existing utility systems, including, without limitation, wells, sewer, septic systems and septic drain fields, power, fuel, and communication lines and related facilities. Notwithstanding the above, new utility systems may be installed upon portions of the Protected Property to support irrigation or the Conservation Purposes of this Easement with District's express written permission. Such permission may be granted or withheld at District's sole discretion.
- 4.8 Roads and trails. No new roads or trails shall be constructed, except as allowed under Section 6.4. Existing roads and trails may be maintained or improved but may not be widened or relocated.
- 4.9 Outdoor lighting. To minimize sky glow or light pollution originating from the Protected Property, and/or to minimize interference with the Conservation Values, no outdoor lighting shall be allowed within the Protected Property and any outdoor lighting within the Property (outside the Protected Property) that affects the Protected Property shall be minimized to avoid disturbing the Conservation Values.

- 4.10 Signs. The placement of commercial signs, billboards, or other advertising material on the Protected Property is prohibited, except as allowed under Section 5.1.
- 4.11 Alteration of Land. The alteration of the surface of the land, including, without limitation, the excavation, fill or removal of soil, sand, gravel, rock, peat or sod is prohibited, except in accordance with the Management Plan ..
- 4.12 Alteration of Water Courses. The draining, filling, dredging, ditching or diking of wetland areas, the alteration or manipulation of ponds and water courses, or otherwise altering hydrology in the Protected Property is prohibited, except in accordance with the Management Plan .
- 4.13 Mining. The exploration for, or development and extraction of, minerals and hydrocarbons on or below the surface of the Protected Property is prohibited.
- 4.14 Erosion or Water Pollution. Any use or activity that causes or is likely to cause significant soil degradation or erosion or significant pollution of any surface or subsurface waters is prohibited.
- 4.15 Waste Disposal. The disposal or storage of trash, rubbish, garbage, debris, vehicles, abandoned equipment, parts thereof or other unsightly, offensive, or hazardous waste or material on the Protected Property is prohibited. Disposal of fill may be allowed with District's express written consent in accordance with the Resource Management Plan approved by District under Section 1.3.
- 4.16 Hunting. No hunting or trapping, except by Owner and Owner's immediate family in accordance with the Management Plan, and except to the extent determined necessary by District, in its sole discretion, to preserve, protect or enhance the Conservation Values of the Protected Property.
- 4.17 Wildlife Disruption. The disruption of wildlife breeding, foraging and nesting activities is prohibited, except as allowed in section 4.16.
- 4.18 Non-Native or Invasive Vegetation. The intentional introduction on the Protected Property of noxious weeds or non-native or invasive species, as defined by the District's Target Species List or, if such List is no longer published, such other publication approved by District, is prohibited.
- 4.19 Off-Road Vehicles and Excessive Noise. The operation of motorcycles, dune buggies, snowmobiles, or any other type of off-road motorized vehicles or the operation of other sources of excessive noise pollution is prohibited with the exception of those uses for the protection of the Protected Property or in connection with any activity or construction specifically permitted under the terms of this Easement.
- 4.20 Use of Firearms. No discharge of firearms, bows and arrows, air guns, slingshots, and similar devices, except as allowed in section 4.16.

- 4.21 Fires. No fires of all forms except prescribed fire as directed by District as necessary to preserve, protect and enhance the Conservation Values.
- 4.22 Fireworks. Use of all forms of fireworks within the Protected Property is prohibited, and fireworks shall not be used on the Property outside the Protected Property if such fireworks could endanger or adversely affect the Conservation Values.

## 5. SPECIAL MANAGEMENT PROVISIONS

Owner and District shall comply with the following special management provisions, which provisions apply to both Zones.

- 5.1 Signs. Signs no larger than two feet by three feet in size are allowed, placed in locations mutually agreed upon by Owner and District, and for one or more of the following purposes only:
- 5.1.1 To state the name of the Property.
  - 5.1.2 To advertise the sale of the Property.
  - 5.1.3 To post signs as necessary to discourage trespassing.
  - 5.1.4 To further the Conservation Values outlined in any resource management plan there in- effect.
- To identify the land as protected by a conservation easement.
- 5.2 Salmon Safe Certification. All management actions shall comply with practices defined by the Salmon Safe certification, or other District-approved standard. This includes, but is not limited to:
- 5.2.1 No herbicides or pesticides listed on the Salmon Safe list of prohibited chemicals may be used on the Protected Property, and as deemed necessary by District to preserve, protect or enhance the Conservation Values of the Protected Property.

## 6. OWNER'S AFFIRMATIVE RIGHTS

- 6.1 General. Owner reserves for itself and its personal representatives, heirs, successors and assigns, all rights accruing from ownership of the Protected Property, including the right to engage in, or permit or invite others to engage in, any use of, or activity on, the Protected Property that is not inconsistent with the purposes of the Easement and that is not otherwise prohibited by this Easement. Owner may not, however, exercise these rights in a manner that would adversely impact the Conservation Values of the Protected Property. Additionally, Owner must give notice to District before exercising any reserved right that might have an adverse impact on the Conservation Values of the Protected Property.
- 6.2 Right to Convey. Owner may sell, give, lease, bequeath, devise, mortgage or otherwise encumber or convey the Protected Property subject to this Easement.

Owner agrees to (a) incorporate the terms of this Easement by reference in any deed or other legal instrument by which it divests itself of any interest in all or a portion of the Protected Property, including, without limitation, a leasehold interest (subject in any event to the prohibition on land division in Section 3 and 4 above); (b) describe this Easement in and append it to any executory contract for the transfer of any interest in the Protected Property; and (c) give written notice to District and DSL of the transfer of any interest in all or a portion of the Protected Property within sixty (60) days prior to closing. Such notice to District and DSL shall include the name, address, and telephone number of the prospective transferee or the prospective transferee's representative. The enforceability or validity of this Easement shall not be impaired or limited by any failure of Owner to comply with this paragraph.

- 6.3 Fences. Existing fences may be maintained, improved, replaced or removed. Additional fences may be constructed and maintained, improved, replaced or removed to mark boundaries, to secure the Protected Property, or as needed in carrying out activities permitted by this Easement.
- 6.4 Road Maintenance. Activities to maintain, renovate, or replace existing roads and trails are permitted to the extent necessary or desirable to protect, preserve or maintain the Conservation Values and to serve the existing residential use. The design and location of any renovation or replacement shall be subject to the prior written approval of District, and maintenance of the roads and trails may not adversely impact the Conservation Values of the Protected Property.
- 6.5 Recreational and Educational Uses. The Protected Property may be used for walking, nature observation or study, and other similar low impact recreational and educational programs or activities, provided that such activities are conducted in a manner and intensity that do not adversely impact the Conservation Values. Minor rustic structures such as tents and trail barriers may be placed on the Protected Property in conjunction with these activities.
- 6.6 Stewardship Activities. Owner may establish, reestablish, or maintain vegetation through seedlings, planting or natural succession and remove invasive plant species on the Protected Property provided such activities are in accordance with the Management Plan. Nothing in this Easement shall be construed to require Owner to replant or reforest any part of the Protected Property.

## 7. DISTRICT'S RIGHTS

To accomplish the purposes of this Easement, District shall have the following rights and remedies in addition to all other rights and remedies granted in this Easement, in equity or at law:

- 7.1 Right to Enter for Compliance. The right to enter the Protected Property at reasonable times and in a reasonable manner to: (a) obtain evidence for use in seeking judicial or other enforcement of this Easement; (b) survey or otherwise mark the boundaries of all or part of the Protected Property if necessary to determine whether there has been or may be a violation of this Easement; and (c) otherwise exercise its rights under this Easement. District shall also have the right to enter and inspect the Protected Property twice a year to monitor compliance

with the terms of the Easement. District shall notify Owner verbally at least 24 hours prior to entering the Protected Property.

- 7.2 Right to Enter for Other Purposes. District may enter the Protected Property up to 20 times a year for the first five years of the Easement, and up to 5 times a year thereafter. District shall notify Owner verbally at least 24 hours prior to entering the Protected Property for purposes other than compliance. District is allowed to bring persons or groups to enter the Protected Property for educational, scientific and biological purposes to observe and study on the Protected Property. District shall also have the right to hold up to three site tours per year during the first five years of the Easement and one site tour per year thereafter, provided that District shall make prior arrangements with Owner and agree to abide by any reasonable restrictions on access identified by Owner. Total group size shall be limited to 15 persons unless otherwise permitted by Owner. Notice and approval for this activity shall be as provided in Section 9. Additional entries may be granted at Owner's discretion.
- 7.3 Notice. District may not initiate judicial action until Owner has been given notice of the violation, or threatened violation, of this Easement and a reasonable opportunity, not to exceed thirty (30) days, to correct the situation. This provision shall not apply if, in District's sole discretion, immediate judicial action is necessary to prevent or mitigate significant damage to the Protected Property or if reasonable, good faith efforts to notify Owner are unsuccessful.
- 7.4 Remedies. Remedies available to District in enforcing this Easement include without limitation the right to request temporary or permanent injunctive relief for any violation or threatened violation of this Easement, to require restoration of the Protected Property to its condition at the time of this conveyance or as otherwise necessitated by a violation of this Easement, to seek specific performance or declaratory relief, and to recover damages resulting from a violation of this Easement or injury to any of the Conservation Values. These remedies are cumulative and are available without requiring District to prove actual damage to the Conservation Values. District and Owner also recognize that restoration, regardless of cost, may be the only adequate remedy for certain violations of this Easement. District is entitled to seek expedited relief, ex parte if necessary, and shall not be required to post any bond applicable to a petition for such relief.
- 7.5 Costs of Enforcement. In the event District must enforce the terms of this Easement, the costs of restoration necessitated by acts or omissions of Owner, its agents, employees, contractors, family members, invitees or licensees in violation of the terms of this Easement, and District's reasonable enforcement expenses, including attorneys' and consultants' fees, shall be borne by Owner or those of its heirs, successors, or assigns, against whom a judgment is entered. If District secures redress for an Easement violation without initiating or completing a judicial proceeding, the costs of such restoration and District's reasonable expenses shall be borne by Owner and those of its heirs, successors, or assigns who are otherwise determined to be responsible for the unauthorized activity or use. If Owner prevails in any judicial proceeding initiated by District to enforce

the terms of the Easement, District shall pay Owner's reasonable expenses, including attorneys' and consultants' fees.

- 7.6 Discretionary Enforcement. Enforcement of the terms of this Easement is at the discretion of District. District does not waive or forfeit the right to take any action necessary to ensure compliance with the terms of this Easement by any delay or prior failure of District in discovering a violation or initiating enforcement proceedings.
- 7.7 Acts Beyond Owner's Control. District may not bring any action against Owner for any changes to the Protected Property resulting from causes beyond Owner's control, such as changes caused by fire, flood, storm natural deterioration or the unauthorized acts of persons other than Owner or Owner's agents, employees or contractors or resulting from reasonable actions taken in good faith under emergency conditions to prevent or mitigate damage resulting from such causes. Owner shall take reasonable steps to prevent trespassing, but this Agreement does not create an obligation on the part of Owner to take extraordinary measures to prevent trespassing or to erect fences or monitoring devices along the Property boundaries. In the event the terms of this Easement are violated by acts of trespassers, Owner agrees, at District's option, to join in any suit, to assign its right of action to District or to appoint District its attorney in fact, for the purpose of pursuing enforcement action against the responsible parties. District shall have the right to pursue enforcement actions against the responsible parties even if Owner declines to do so.
- 7.8 Right of First Refusal. Owner hereby grants District a right of first refusal to purchase the Property upon the terms and conditions stated in this paragraph. If Owner receives an offer to purchase the Property, or any portion thereof, and it intends to accept the offer, or if Owner decides to make an offer to sell the Property or any portion thereof, Owner shall give a copy of the written offer to District. District shall have the right to accept the offer by written notice to Owner given within ninety (90) days after District's receipt of the offer. If District so accepts the offer, District will be bound to purchase the Property or portion thereof in accordance with the terms of the offer. If District declines an offer and the terms of the offer thereafter change materially, such revised offer shall be submitted to District as a new offer pursuant to this paragraph. As used herein, "offer" shall mean a negotiated purchase and sale agreement or a letter of intent to purchase the Property (or portion thereof) indicating the purchase price and payment terms, exceptions to title insurance to be delivered at closing, and any debt to be assumed, contingencies to closing and contingency period, estimated closing date, and all other material terms of the offer. The foregoing "Right of First Refusal" provisions shall not be enforceable against Wells Fargo Bank, N.A. (Lien Holder) (including any successors taking title to the property) or applicable in the event of a deed in lieu, short sale or foreclosure action.
- 7.9 Restoration, Maintenance, and Mitigation. District shall have the right to install, operate and maintain water control structures for the purposes of protecting, re-establishing, and enhancing wetlands and their functional values. This includes the right to transport construction materials to and from the Protected Property.



District shall have the right to establish and re-establish vegetation. District shall have the right to manipulate vegetation, topography and hydrology on the Protected Property through diking, pumping, water management, excavating, burning, cutting, herbicide application, and other suitable methods for the purpose of protecting and enhancing ecosystem functions as described in the Management Plan. District shall retain all rights to create, use, and/or sell any ecosystem credits generated by District-funded restoration and enhancement. This includes, but is not limited to, wetland, fish habitat, and water quality credits.

## **8. DSL's RIGHTS**

DSL is an intended third party beneficiary of this Easement and, pursuant to ORS 271.715, DSL is hereby granted third party right of enforcement. As such, DSL may exercise all of the rights and remedies provided to District herein, and is entitled to all of the indemnifications provided to District in this Easement. DSL and District each have independent authority to enforce the terms of this Easement; provided, however, that DSL expects that District shall have primary responsibility for monitoring and enforcement of the Easement. In the event that DSL and District do not agree as to whether the Owner is complying with the terms of the Easement, DSL or District may proceed with enforcement actions without the consent of the other. If DSL elects to enforce the terms of this Easement, it shall first follow the provisions applicable to District, including notice of violation, opportunity to cure and mediation as appropriate; provided, however, that DSL shall not be obligated to repeat any non-judicial dispute resolution steps already taken by Grantee. This third party right of enforcement will automatically transfer to another State agency charged with maintaining or restoring watersheds, fish and wildlife habitat, water quality and native salmonids in the event DSL is dissolved or reorganized.

In the event that the Protected Property is used by Owner in a manner that is not consistent with the Purpose of this Easement, and DSL in its sole discretion determines that the Conservation Values of the Protected Property have been diminished to the extent that the purpose of the DSL grant can no longer be accomplished, then DSL shall have the right, in addition to any other remedies described in this Easement, to require that Owner pay to DSL the sum that would otherwise be recoverable by DSL as a result of a condemnation or extinguishment of the Easement. Upon payment under this paragraph, District and DSL agree to record an amendment to this Easement releasing all of DSL's third-party enforcement rights under the Easement. In the event that any action is taken to void or modify the Easement, DSL will provide 60 days advance notice to the U.S. Army Corps of Engineer's district engineer.

## **9. NOTICE AND APPROVAL**

- 9.1 Owner. Several provisions of this Easement require Owner to notify District and to receive District's written approval prior to undertaking certain permitted uses and activities within the Protected Property. The purpose of requiring Owner to notify District prior to undertaking these permitted uses and activities is to afford District an adequate opportunity to ensure that the use or activity in question is designed and carried out in a manner consistent with the purposes of this Easement. Whenever such notice is required, Owner shall notify District in writing not less than 30 days prior to the date Owner intends to undertake the use or activity in question. The notice shall describe the nature, scope, design, location, timetable, and any other material aspect of the proposed use or activity

in sufficient detail to permit District to make an informed judgment as to its consistency with the purposes of this Easement.

- 9.2 District. Several provisions of this Agreement require District to give notice to Owner prior to undertaking certain activities within the Protected Property, unless otherwise specifically provided. Whenever such notice is required, District shall notify Owner in writing not less than thirty (30) days prior to the date District intends to undertake the use or activity in question, unless otherwise provided for by this Agreement.
- 9.3 Approval. When approval by one of the parties is required under this Agreement, except as expressly provided otherwise in this Agreement, such approval shall be granted or denied in writing within forty-five (45) days of receipt of a written request for approval, and such approval shall not be unreasonably withheld. Failure to expressly deny or to grant consent (or conditional consent) within such 45-day period shall be deemed denial.
- 9.4 Addresses. Any notice, demand, request, consent, approval, or communication the parties desire or are required to give to the other shall be in writing and either served personally (including by overnight delivery by reputable carrier, such as USPS, FedEx or UPS) or sent by first class mail, postage prepaid, addressed as follows:

To Owner:                   George and Sara Kral  
                                  12765 SW Watkins Ave  
                                  Tigard 97223

To District:                Clean Water Services  
                                  Watershed Management Department  
                                  2550 SW Hillsboro Hwy  
                                  Hillsboro, OR 97123

To DSL:                     Fee-in-Lieu Program Manager  
                                  Oregon Department of State Lands  
                                  775 Summer Street NE, Suite 100  
                                  Salem, OR 97301

or to such other address as either party designates by written notice to the other.

## 10. **EXTINGUISHMENT, CONDEMNATION AND SUBSEQUENT TRANSFER**

- 10.1 Extinguishment. If circumstances arise in the future that render the purposes of this Easement impossible to accomplish, this Easement can only be terminated or extinguished, whether in whole or in part, by judicial proceedings in a court having jurisdiction. The amount of the proceeds to which District and DSL shall be entitled, after the satisfaction of prior claims, from any sale, exchange, or involuntary conversion of all or any portion of the Protected Property subsequent to such termination or extinguishment, shall be determined, unless otherwise

provided by Oregon law at the time, in accordance with Section 10.2 and 10.5 of this Easement.

- 10.2 Valuation. This Easement constitutes a real property interest immediately vested in District, as to which, for the purpose of Sections 10.1 and 10.3 of this Easement, the parties stipulate entitles District and DSL to a portion of any proceeds of a subsequent sale, exchange or involuntary conversion of the Protected Property or any part thereof, in an amount that is equal to the fair market value of this Conservation Easement at the time of the extinguishment (as determined by competent appraiser) but that is not less than the amount determined by multiplying all proceeds from such subsequent sale, exchange or involuntary conversion by the ratio of the value of this Conservation Easement at the time of the conveyance to the value of the Protected Property as a whole at the time of this conveyance, without deduction for the value of the Conservation Easement.
- 10.3 Condemnation. If all or any of the Protected Property is taken by exercise of the power of eminent domain or acquired by purchase in lieu of condemnation, whether by public, corporate, or other authority, so as to terminate this Easement, in whole or in part, Owner, District, and DSL shall act jointly to recover the full value of their interests in the Protected Property subject to the taking or in lieu purchase and all direct or incidental damages resulting from the taking or in lieu purchase. All expenses reasonably incurred by Owner, District, and DSL in connection with the taking or in lieu purchase shall be paid out of the amount recovered (Remaining Proceeds). District shall be entitled to a portion of the Remaining Proceeds (including, for the purposes of this paragraph, proceeds from any lawful sale of the Protected Property unencumbered by the restrictions hereunder) at least equal to the amount described in Section 10.2 above on the date of taking or in lieu purchase.
- 10.4 Application of Remaining Proceeds. District shall use any Remaining Proceeds received under the circumstances described above in this Section in a manner consistent with the Conservation Purposes or as otherwise permitted by the Internal Revenue Code governing "qualified conservation easements" or governing county service districts.
- 10.5 DSL's Share of Remaining Proceeds. In the event of condemnation or extinguishment of the Easement pursuant to Section 10, DSL is entitled to \_\_\_% of any of District's Remaining Proceeds attributed to the value of the Easement. DSL may also recover the remaining endowment funds granted to District if the use of these funds is limited by the condemnation or extinguishment of the Easement.

## 11. GENERAL PROVISIONS

- 11.1 Public Access. Nothing in this Easement gives the general public a right to enter upon or use the Protected Property where no such right existed prior to the conveyance of this Easement.

- 11.2 Costs, Legal Requirements, Liabilities and Insurance. Owner retains all responsibilities and shall bear all costs and liabilities of any kind, including the payment of all taxes and assessments, related to the ownership, operation, upkeep, and maintenance of the Protected Property.
- 11.3 Insurance Coverages. Owner shall obtain and at all times maintain in force liability insurance in the minimum amount of \$300,000 per occurrence, subject to a \$600,000 annual limit. Owner agrees that District shall be named an additional insured on all liability policies carried by Owner covering Owner's activities on the Protected Property.
- 11.4 Taxes. Owner shall pay when due all taxes, assessments, fees, charges of whatever description levied on or assessed against the Protected Property by competent authority (collectively "taxes"), including any taxes imposed upon, or incurred as a result of, this Easement, and shall furnish District with satisfactory evidence of payment upon request.
- 11.5 Boundaries. It is Owner's obligation to locate and clearly mark the boundaries of the Protected Property, and any "Land Use Areas" or "Zones" identified in Exhibit C, before undertaking any actions that are restricted by this Easement in the vicinity of such boundary. District has the right to require a survey of the Protected Property or the relevant portion thereof, which shall be at Owner's cost to the extent necessary to determine if a land use activity is in compliance with the terms of this Easement.
- 11.6 Representations and Warranties. Owner represents and warrants that, after reasonable investigation and to the best of Owner's knowledge:
- 11.6.1 There has been no release, dumping, burying, abandonment or migration from off-site on the Protected Property of any substances, materials, or wastes that are hazardous, toxic, dangerous, or harmful or are designated as, or contain components that are, or are designated as, hazardous, toxic, dangerous, or harmful (Hazardous Materials) and/or that are subject to regulation as hazardous, toxic, dangerous, or harmful by any federal, state or local law, regulation, statute, or ordinance, including without limitation the Comprehensive Environmental Response Compensation and Liability Act of 1980, as amended (CERCLA) (collectively, "environmental laws");
- 11.6.2 Neither Owner nor Owner's predecessors in interest have disposed of any Hazardous Materials off-site.
- 11.6.3 There is no pending or threatened litigation affecting the Protected Property or any portion thereof. No civil or criminal proceedings have been instigated or are pending against Owner or its predecessors by government agencies or third parties arising out of alleged violations of environmental laws, and neither Owner nor its predecessors in interest have received any notices of violation, penalties, claims, demand letters, or other notifications relating to a breach of environmental laws.

11.6.4 There are no encumbrances, severed mineral interests, or other rights, estates, restrictions, conditions, easements and rights of way affecting the Protected Property other than what is shown of record.

11.7 Control. Nothing in this Easement shall be construed as giving rise, in the absence of a judicial decree, to any right or ability in District to exercise physical or managerial control over the day-to-day operations of the Protected Property, or any of Owner's activities on the Protected Property, or otherwise to become an owner or operator with respect to the Protected Property within the meaning of CERCLA.

11.8 Indemnification.

11.8.1 Indemnification of District. Owner shall hold harmless, defend, and indemnify District, and District's officers, directors, contractors, agents, and employees, against all claims, demands, actions, and suits (including all attorneys fees and costs incurred through trial, on appeal or petition for review) brought against any of them arising from the exercise of Owner's rights or responsibilities hereunder. Owner shall not be responsible under this Agreement for the acts or omissions of third parties, other than Owner's agents, employees, contractors, or subcontractors, or trespassers that Owner could have reasonably anticipated and have reasonably prevented.

11.8.2 Indemnification of Owner. District shall hold harmless, defend, and indemnify Owner, and Owners' officers, directors, contractors, agents and employees, against all claims, demands, actions, and suits (including all attorneys fees and costs incurred through trial, on appeal or on petition for review) brought against any of them arising from the exercise by District of its rights or responsibilities hereunder. District shall not be responsible under this Agreement for the acts or omissions of third parties, other than District's officers, directors, agents, employees, or contractors, except to the extent the acts or omissions of third parties are caused by the negligence of District or its officers, directors, contractors, agents, and employees.

Lien Holder consents to Owner's covenants in Section 11.8 but does not so covenant itself.

11.9 No Waiver of Immunities. Nothing herein shall be construed to constitute a waiver by any of the parties hereto of any and all statutory immunities as may be provided by state and federal recreational use immunity statutes and by similar state and federal statutes providing immunity to encourage the public use of privately and/or publicly held lands. Further, Owner and District claim all the rights and immunities against liability for injury to the public to the fullest extent of the law under any and all applicable provisions of the law.

11.10 Assignment. District shall have the right to assign, either wholly or partially, its right, title and interest hereunder, to any organization described in both IRC §§ 170(h)(3) and 2522(a) and any such assignee shall have like power of assignment

and the applicable regulations promulgated thereunder, and authorized to acquire and hold conservation easements under ORS 271.715 (or any successor provision(s) then applicable). As a condition of such transfer, District shall require that the transferee exercise its rights under the assignment consistent with the purposes of this Easement. District shall obtain approval of DSL, which approval shall not be unreasonably withheld, conditioned or delayed, and notify Owner in writing, at Owner's last known address, in advance of such assignment.

- 11.11 Succession. If at any time it becomes impossible for District to ensure compliance with the covenants, terms, conditions and restrictions contained in this Easement or District ceases to exist or to be authorized to acquire and hold conservation easements under ORS 271.715 (or any successor provision(s) then applicable), then District's rights and obligations under this Easement shall become vested in a qualified organization described in ORS 271.715.
- 11.12 Amendment. Under appropriate circumstances, this Easement may be modified or amended provided that Owner and District agree and written approval is first obtained from DSL, which approval shall not be unreasonably withheld, conditioned or delayed. However, no amendment or modification will be allowed if, in the sole and exclusive judgment of District, it: (i) does not further the purposes of this Easement, (ii) will adversely impact the Conservation Values protected by this Easement, (iii) affects the perpetual duration of the Easement, or (iv) affects the validity of the Easement under Oregon law. Any amendment or modifications must be in writing and recorded in the same manner as this Easement. At District's option, Owner, if Owner is requesting the amendment, shall pay District staff and legal time to process any such amendment. At Owner's option, District, if District is requesting the amendment, shall pay Owner's staff and legal time to process any such amendment.
- 11.13 Ambiguities. If any provision in this Easement is found to be ambiguous, an interpretation consistent with the Conservation Values that would render the provision valid shall be favored over any interpretation that would render it invalid. The parties acknowledge that each party and its counsel have reviewed and revised this Easement and that no rule of construction that ambiguities are to be resolved against the drafting party shall be employed in the interpretation of this Easement.
- 11.14 Recording. District shall record this instrument in a timely fashion in the official records of Washington County, Oregon, and in any other appropriate jurisdictions, and may re-record it at any time as may be required to preserve its rights in this Easement.
- 11.15 Controlling Law. The interpretation and performance of this Easement shall be governed by the laws of the State of Oregon.
- 11.16 Liberal Construction; Recitals. If any provision in this instrument is found to be ambiguous, an interpretation consistent with the purposes of this Easement shall be favored. The Recitals set forth at the beginning of this Agreement are intended to be contractual.

- 11.17 Severability. If any provision of this Easement is found to be invalid, the remainder of the provisions of this Easement shall not be affected.
- 11.18 Entire Agreement. This instrument sets forth the entire agreement of the parties with respect to the Protected Property and supersedes all prior discussions, negotiations, understandings, or agreements relating to the Protected Property. No alteration or variation of this instrument shall be valid or binding unless contained in an amendment approved by both parties.
- 11.19 No Forfeiture. Nothing contained in this Easement will result in a forfeiture or reversion of Owner's title in any respect.
- 11.20 Successors and Assigns. The covenants, terms, conditions, and restrictions of this Easement shall be binding upon, and inure to the benefit of, the parties to this Easement and their respective personal representatives, heirs, successors, and assigns, and shall continue as a servitude running in perpetuity with the Protected Property.
- 11.21 Termination of Rights and Obligations. A party's rights and obligations under this Easement terminate upon transfer of the party's interest in the Easement or Protected Property, except that liability for acts or omissions occurring prior to transfer shall survive transfer.
- 11.22 Consent of Lien Holder. At the time of conveyance of this Easement, the Property is subject to a Deed of Trust dated June 20, 2008 recorded as Document No. 2008-056537 (Mortgage) in the records of Washington County, Oregon. The holder of the Mortgage shall consent to the grant of the Easement on the Protected Property by Owner and permit District to enforce this Easement in perpetuity and prevent any modification or extinguishment of this Easement by the exercise of any rights of the Mortgage holder. The Consent of Lien Holder shown in attached Exhibit D shall be executed and delivered to District simultaneously with the execution and delivery of this Easement.

**12. SCHEDULE OF EXHIBITS**

- Exhibit A: Legal Description of Property Subject to Easement.
- Exhibit B: Legal Description of Protected Property, Conservation Zone & Farm Zone
- Exhibit C: Conservation Easement Map, showing Conservation and Farm Zones
- Exhibit D: Consent of Lien Holder

TO HAVE AND TO HOLD unto District, its successors, and assigns forever.

IN WITNESS WHEREOF, the undersigned Owner has executed this instrument this 11 day of December, 2009.

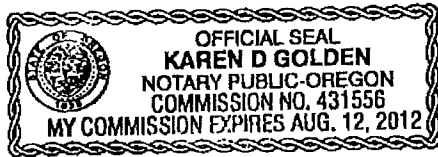
OWNER

George Kral  
Owner Name George Kral

Sara Kral  
Owner Name Sara Kral

STATE OF OREGON )  
COUNTY OF WASHINGTON ) ss.

Acknowledged before me this 11<sup>th</sup> day of DEC., 2009, by GEORGE  
KRAL AND SARA KRAL



Karen D Golden  
Notary Public

Clean Water Services hereby accepts the above Conservation Easement.

Dated: 12/17/09

CLEAN WATER SERVICES

By: Bill [Signature]  
General Manager or Designee

Oregon Department of State Lands hereby accepts the above Conservation Easement.

Dated: December 14, 2009

OREGON DEPARTMENT OF STATE LANDS

By: Lucie Soliday  
Title: Director



Exhibit A: Legal Description of Property Subject to Easement.

Legal description of property defined in deed document number 2008-056536, Washington County Deed Records, property owned by George L. and Sara H. Kral, being a part of the north half of the Marvil M. Watts Donation Land Claim Mo. 48, in Sections 21 and 28, Township 1 North, Range 4 West, Willamette Meridian, Washington County, Oregon, more particularly described as follows:

Beginning at a the northwest corner of the M.M. Watts DLC number 48; Thence easterly along the north line of said M.M. Watts DLC a distance of 2,210.60 feet to the centerline of N.W. Gales Creek Road, County Road Number 1311; Thence along the centerline of said County Road Number 1311 the following courses:

S51°55'46"E a distance of 184.10'  
S55°20'46"E a distance of 311.20'  
S34°23'46"E a distance of 218.00'  
S24°47'46"E a distance of 255.40'  
S18°00'46"E a distance of 219.40'  
S32°52'46"E a distance of 134.00'  
S40°36'46"E a distance of 325.53'

To the intersection of the Centerline of said County Road Number 1311 and the south boundary of the said M.M. Watts DLC; Thence S88°48'16"E a distance of 3024.60' to the south west corner of said M.M. Watts DLC; Thence S02°14'02"W a distance of 123.29' to the Point of Beginning.

Excepting the following Tracts;

Beginning at the northwest corner of said M.M. Watts DLC; Thence along the north boundary of said M.M. Watts DLC a distance of 687.57 feet to the west right-of-way line of Half-Mile Lane, County Road Number 1273; Thence along the west right-of-way line of said County Road Number 1273 a distance of 202.31' to a point; Thence westerly and parallel to the north boundary of said M.M. Watts DLC a distance of 826.23 feet to the west boundary of said M.M. Watts DLC; Thence northerly along the west boundary of said M.M. Watts DLC a distance of 222.00' to the point of beginning. (TAX LOTS 600 AND 900)

And

Beginning at a point on the north boundary of the said M.M. Watts DLC, point being 687.57' from the northwest corner of said M.M. Watts DLC and on the west right-of-way of Half-Mile Lane, County Road Number 1273; Thence along the westerly right-of-way of said County Road Number 1273 at a bearing of S29°35'08"E a distance of 1525.10' to the south boundary of said M.M. Watts DLC; Thence east along the south boundary of said M.M. Watts DLC a distance of 58.20' to the east right-of-way line of said County Road Number 1273; Thence along the easterly right-of-way of said County Road Number 1273 at a bearing of N29°35'08"W a distance of 1525.82' to the north boundary of said M.M. Watts DLC; Thence west along the north boundary of said M.M. Watts DLC a distance of 58.86' to the east right-of-way line of said County Road Number 1273 and the Point of Beginning. (HALF-MILE LANE RIGHT-OF-WAY)

And

Beginning at a point on the north boundary of the said M.M. Watts DLC, point being on the centerline of N.W. Gales Creek Road, County Road Number 1311, and 2210.60' from the northwest corner of said M.M. Watts DLC and; Thence following the centerline of said County Road Number 1311 along the following courses:

S51°55'46"E a distance of 184.10'  
S55°20'46"E a distance of 311.20'  
S34°23'46"E a distance of 218.00'  
S24°47'46"E a distance of 255.40'  
S18°00'46"E a distance of 219.40'  
S32°52'46"E a distance of 134.00'  
S40°36'46"E a distance of 325.53'

To the intersection of a line being 40.00 feet northerly, at right angle to the south boundary of the said M.M. Watts DLC, from the south boundary of the said M.M. Watts DLC; Thence S88°48'16"E a distance of 725.00' to a point defined as the centerline of Gales Creek; Thence following the centerline of Gales Creek, with all of the meanderings thereof a distance of 1490 feet, more or less, to the north boundary of said M.M. Watts DLC, and the Point of Beginning. (TAX LOT 800)

And

That area from the centerline of N.W. Gales Creek Road, County Road Number 1311, to the westerly right-of-way line of said N.W. Gales Creek Road, right-of-way having a width of 30 feet from centerline. (N.W. GALES CREEK ROAD RIGHT-OF-WAY)

Tract containing 59.17 acres more or less.

Exhibit B: Legal Description of Protected Property, Conservation Zone & Farm Zone

PROTECTED PROPERTY

Easement composed of areas for wetlands restoration, stream restoration and access on a portion of the property defined in deed document number 2008-056536, Washington County Deed Records, property owned by George L. and Sara H. Kral, easement more precisely described as follows:

Conservation Zone

**Access Area – 25 foot wide Access Area from Half-Mile Lane to Gales Creek**

Beginning at the southwest corner of that portion of the Kral Tract lying east of Half-Mile Lane, point being on the south boundary of said Watts DLC number 48, the south boundary of said Kral tract and on the east right-of-way line of said Half-Mile Lane; Thence along the south boundary of said Kral tract 595.00 feet to a point; Thence northerly at a bearing of N16°21'42"W a distance of 26.22' to a point; Thence westerly and parallel to the south boundary of the said Kral tract a distance of 601.98' to the easterly right-of-way line of said Half-Mile Lane; Thence southerly, along the easterly right-of-way line of said Half-Mile Lane, at a bearing of N29°34'17"W a distance of 29.10' to the Point of Beginning.

Tract containing 0.34 acres more or less.

Stream Restoration Area – Gales Creek

Beginning at a point on the south boundary of said Kral tract, point also being on the south boundary of the said Watts DLC number 48, point being at a bearing of S88°48'16"E a distance of 2,145.36' from the southwest corner of said Watts DLC; Thence northerly at a bearing of N16°21'42"W a distance of 758.82' to a point; Thence at a bearing of N14°31'13"W a distance of 589.32' to a point on the north boundary of said Kral tract, point also being on the north boundary of said Watts DLC number 48; Thence easterly at a bearing of S87°44'11"E a distance of 199.38' to a point in the approximate centerline of Gales Creek; Thence along the centerline of said Gales Creek at a bearing of S25°57'08"E a distance of 221.14' to a point; Thence along the centerline of said Gales Creek at a bearing of S15°01'09"E a distance of 197.37' to a point; Thence along the centerline of said Gales Creek at a bearing of S02°49'57"E a distance of 250.18' to a point; Thence along the centerline of said Gales Creek at a bearing of S05°19'05"W a distance of 148.59' to a point; Thence along the centerline of said Gales Creek at a bearing of S11°08'59"E a distance of 82.09' to a point; Thence along the centerline of said Gales Creek at a bearing of S26°22'22"E a distance of 85.29' to a point; Thence along the centerline of said Gales Creek at a bearing of S06°22'53"E a distance of 221.88' to a point; Thence along the centerline of said Gales Creek at a bearing of S15°31'46"E a distance of 132.87' to a point on the south boundary of said Kral tract; Thence along the south boundary of said Kral tract at a bearing of S88°48'16"E a distance of 98.24' to the Point of Beginning.

Tract containing 5.24 acres more or less.

**Wetland Restoration Area – Roderick Creek**

Beginning at a the northwest corner of said Kral tract, point being on the west boundary of the M.M. Watts DLC number 48, 222 feet from the northwest corner of said Watts DLC; Thence easterly along the north line of said Kral tract a distance of 825.86 feet to the westerly right-of-way line of Half Mile Lane, Count Road Number 1273; Thence southeasterly along the westerly right-of-way of said Half-Mile Lane at a bearing of N29° 34'17"W a distance of 1262.62 feet to the south boundary of the said Kral tract, line also being the south boundary of the said Watts DLC; Thence westerly along the south boundary of said Kral tract a distance of 983.73 feet to a point; Thence northerly at a bearing of N02°17'29"E a distance of 227.31' to a point; Thence at a bearing of N48°37'44"W a distance of 655.37' to the west boundary of said Kral tract; Thence along the west boundary of said Kral tract to the Point of Beginning.

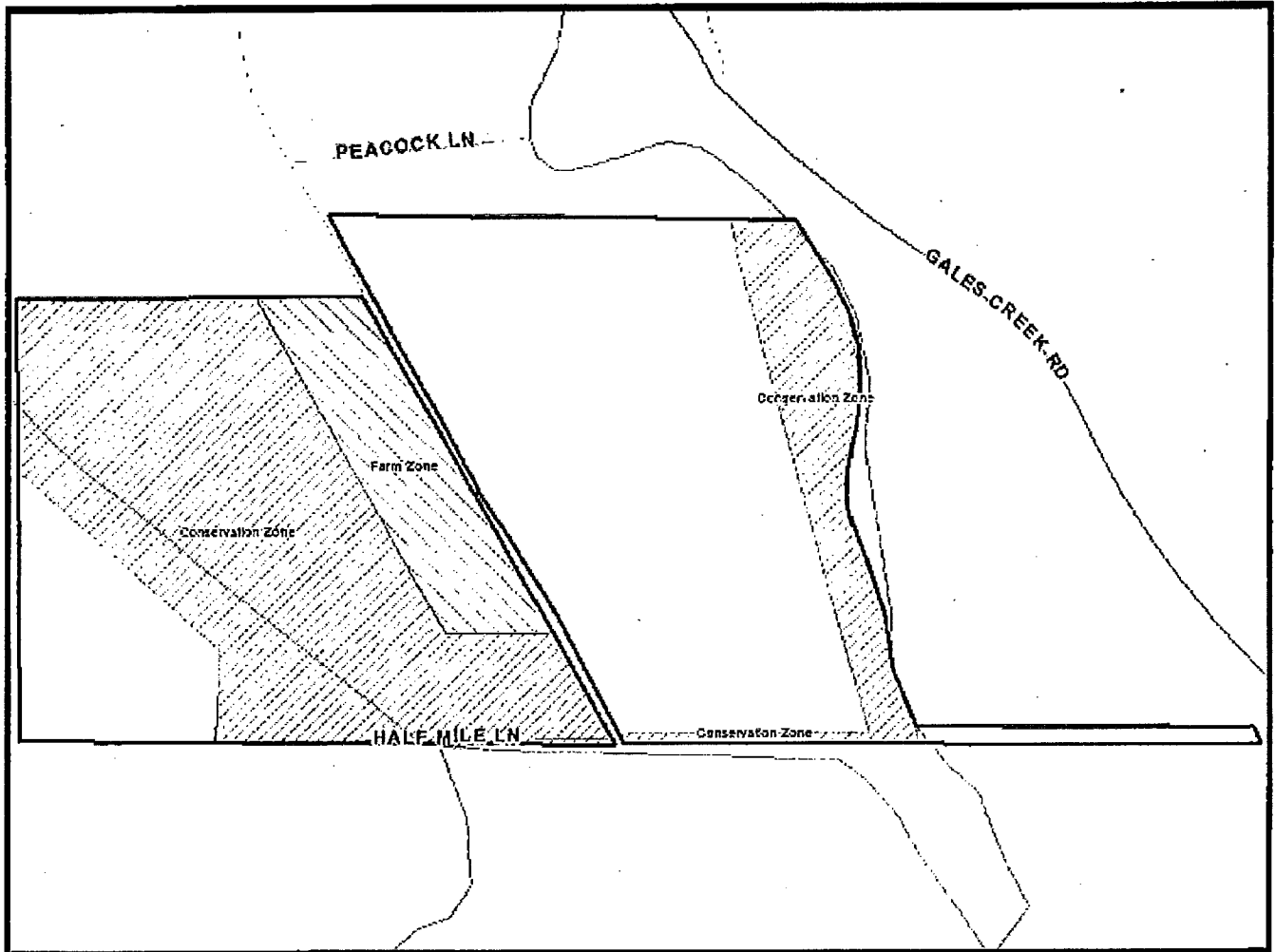
Tract containing 23.90 acres more or less, area of portion excepted for farming (Farm Zone) containing 4.999 acres more or less.

**Farm Zone**

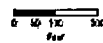
This tract has a portion called out as allowing farming, this portion having a legal description of:

Beginning at the northeast corner of that portion of the said Kral tract lying west of Half-Mile Lane, point also being on the westerly right-of-way line of said Half-Mile Lane; Thence along the westerly right-of-way line of said Half-Mile Lane at a bearing of N29°34'217"W a distance of 929.97' to a point; Thence at a bearing of S87°40'53"E a distance of 277.63' to a point; Thence at a bearing of S29°22'59"E a distance of 928.07' to a point on the north boundary of said Kral tract; Thence along the north boundary of said Kral tract 274.04 feet to the Point of Beginning.

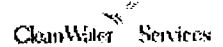
Exhibit C: Conservation Easement Map, showing Conservation and Farm Zones



Half Mile Lane  
Conservation Easement



All intended as definite property descriptions. All areas shown as a conservation easement are a separate legal interest in real estate. The boundaries of the easement are shown as a dotted line. There are no easements, recorded or implied, including the history of title, shown on this map. All areas shown as a conservation easement are shown as a separate parcel, including the boundaries.



**Consent of Lien Holder**

Wells Fargo Bank, N.A.(Lien Holder), is the current holder of a Deed of Trust dated **June 20, 2008** recorded as **Document No. 2008-056537** (Mortgage) in the records of Washington County, Oregon.

George L. Kral and Sara H. Kral (Kral) are the owners of the real property described in the Mortgage (Property) and the conservation easement area described in Exhibit A attached hereto and incorporated herein. The Kral intend to convey a Conservation Easement to Clean Water Services upon obtaining Lien Holder's consent.

Lien Holder hereby agrees as follows:

1. Lien Holder consents to the grant of a Conservation Easement by the Kral to Clean Water Services.
2. If the Mortgage is foreclosed or sold or the Property is sold under judicial or non-judicial proceedings, the Property shall be sold subject to the Conservation Easement.

SIGNED AND EXECUTED this 9th day of December, 2009.

Wells Fargo Bank, N.A.

By: Lorna L. Slaughter  
Lorna L. Slaughter, Vice President

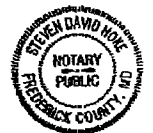
STATE of Maryland

COUNTY of Frederick

BEFORE ME, the undersigned authority, on this day personally appeared Lorna L. Slaughter, Vice President, of Wells Fargo Bank, N.A. known to me to be the person and Officer whose name is subscribed to the foregoing instrument and who acknowledged to me that she executed the same for the purposes and consideration therein expressed, in the capacity therein stated, as the act and deed of said Bank.

GIVEN UNDER MY HAND AND SEAL OF OFFICE THIS  
9<sup>th</sup> day of December, 2009.

Steven David Hoke  
Notary Public State of Maryland  
Steven David Hoke  
My commission expires: 05/04/2013



My Comm. Exp. 5/4/2013

Exhibit A: Legal Description of Protected Property, Conservation Zone & Farm Zone

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**Conservation Zone**

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Tract containing 0.34 acres more or less.

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Tract containing 23.90 acres more or less, area of portion excepted for farming (Farm Zone) containing 4.999 acres more or less.

### **Farm Zone**

This tract has a portion called out as allowing farming, this portion having a legal description of:

Beginning at the northeast corner of that portion of the said Kral tract lying west of Half-Mile Lane, point also being on the westerly right-of-way line of said Half-Mile Lane; Thence along the westerly right-of-way line of said Half-Mile Lane at a bearing of N29° 34' 21" W a distance of 929.97' to a point; Thence at a bearing of S87° 40' 53" E a distance of 277.63' to a point; Thence at a bearing of S29° 22' 59" E a distance of 928.07' to a point on the north boundary of said Kral tract; Thence along the north boundary of said Kral tract 274.04 feet to the Point of Beginning.



## Attachment E—Draft Long-Term Management Plan

# Long-term Management Plan For The Half Mile Lane FIL Project

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## I Introduction

### A Purpose of Establishment

The Gales-Creek Half Mile Lane Project (“Project”) was established in partnership by Clean Water Services (“District”), Oregon Department of State Lands (DSL), and George and Sara Kral (“Landowners”). The Project includes an in-lieu fee area funded by DSL and approved by an Interagency Review Team (IRT) chaired by the Corps of Engineers, and established through the DSL Statewide Fee in Lieu Instrument (“Instrument”) to compensate for unavoidable impacts to waters of the U.S. and may be used to compensate for unavoidable impacts to waters of the State. The Project is approximately 23.48 acres in total.

The **Conservation Zone** includes:

- Wetland Restoration Area—Roderick Creek is a DSL in-lieu fee area consisting of 12.71 acres of waters of the U.S. and 6.42 acres of non-agricultural use buffer within the DSL in-lieu fee project;
- Access Area—a 25-foot wide access area from Half Mile Lane to Gales Creek totaling 0.34 acres that is not included in the DSL in-lieu fee area.
- Stream Restoration Area—Gales Creek is 5.24 acres and is not included in the DSL in-lieu fee area.

The **Farm Zone** is 4.99 acres of buffer habitat and is part of the DSL in-lieu fee area that will be managed for sustainable agriculture.

### B Purpose of this Long-term Management Plan

The purpose of this long-term management plan is to ensure the Project is managed, monitored, and maintained in perpetuity. This management plan establishes objectives, priorities and tasks to manage and maintain the Project area.

### C Land Management and Responsibilities

The land manager and easement holder is Clean Water Services (District). The District shall implement this long-term management plan, managing the Project property in perpetuity to preserve its habitat and conservation values in accordance with the Project’s mitigation plan, the conservation easement, and this long-term management plan. Long-term management tasks shall be funded through an Endowment Fund (the “Fund”) maintained by the District.

## II Property Description and Desired Future Condition

Exiting and proposed conditions are outlined in the FIL Instrument—Mitigation Plan for Half Mile Lane Project. The primary goal of the Project is to restore

Roderick Creek to maximize floodplain interaction and enhance anadromous fish habitat and water quality functions. Objectives for the site are:

- 1) The reconstructed stream channel retains appropriate grades and cross sections to achieve project goals.
- 2) The reconstructed Roderick Creek channel should have continuous flow in part of its bed all year long during years of normal precipitation.
- 3) Roderick Creek is hydrologically connected to its floodplain when flows are greater than 44.3 cfs.
- 4) Fish can pass into and out of the project area during the majority of flows.
- 5) During the wettest time of the year, at least 75% of surface water is in or connected to a flowing channel that leaves the site
- 6) During peak annual flow, the surface water that flows through the channel and floodplain encounters measurable resistance from fairly rigid vegetation or channel-clogging debris, and follows a fairly indirect path from entrance to exit.
- 7) Maximize wetland and stream acreage based on existing and perceived historic wetland condition.
- 8) The project is protected in perpetuity from inconsistent land uses and buffer areas are in place to help protect the functionality of the project.

### **III Conservation Threats and Management Limitations**

#### **Conservation Threats**

Threats to the conservation values over the long term include ongoing industrial forest and rock quarry operations upstream on Roderick Creek. Non-native invasive plant species including Himalayan blackberry, reed canarygrass, and others are present throughout Gales Creek and represent a constant threat.

#### **Management limitations**

##### *A. Funding sources and deed restrictions*

Restoration on the property is funded as an in-lieu fee project from Department of State Lands and District. Forest Grove holds a waterline easement over the property, which limits the current ability to restore wetlands over this easement. The easement must be free of obstacles to the City entering to repair or maintain the water line. There is also an easement for Half Mile Lane that includes the culvert that will be replaced to improve fish passage. Maintenance to this crossing needs approval from all four signatories to the easement. In addition, there is a proposed Liquified Natural Gas line running through the area. The only management consideration requested at this time is to limit planting in the proposed alignment to vegetation less than 15 feet high to facilitate visual inspection of the line.

##### *B. Salmon Safe certification*

All operations within the Project must be compatible with the Salmon Safe certification or other organic standards in use by the landowner or approved by District. These limitations focus on use of herbicides and pesticides and are described in Attachment 2.

*C. Gathering of seed and cuttings*

The easement allows the Owner to gather seed and native cuttings for the purposes of propagation. This section describes how that gathering will occur. Owner will notify District within 24 hours of any gathering or cutting for commercial purposes.

Specify conditions, intensity, methods of collection, frequency, etc...[c1]

*D. Vegetation management (mowing, spraying, etc...)*

There will be active and intense management of the property for several years as a mitigation site. These activities include mowing and spraying to control weeds. It may include periodic burning.

*E. Alteration of land and water courses*

Significant land and water course operations will be conducted as part of restoration efforts. All of these activities will be conducted in accordance with the Mitigation Plan in Attachment 1, all necessary permits, and approval of District. It is not anticipated that future alterations will be required after initial construction. In the event they are (e.g. to deal with massive sedimentation events, flooding, or other unanticipated events); District will have the ability, after securing appropriate permits, to make alterations to protect the conservation values of the property.

*F. Waste disposal*

Some fill and waste disposal will occur within the easement area as a result of wetland and stream restoration. These removal/fill volumes are described in the Mitigation Plan. Disposal of any waste in order to protect the conservation values of the site needs written approval from District.

*G. Hunting*

Hunting is allowed for the Owner and their immediate family, and by District if needed to protect conservation values. The following restrictions apply.

- At no time will more than two people be hunting on the Protected Property
- Hunting season is restricted to an ODFW hunting season or from October 1 through January 1, whichever is the shorter period
- Hunting will occur no more than three days per week during hunting season
- District shall be given notice verbally within 24 hours of hunting occurring on the Protected Property
- No portion of the Protected Property shall be used for target practice

The hunting provision of the easement will be reevaluated after three years to see if there has been a significant positive or negative impact on the property's conservation values. If there has been a significant negative impact, the easement will be amended to prohibit hunting.

#### *H. Other stewardship activities*

The District wants to encourage active stewardship of the easement from Owner. This may include help managing invasive weeds, planting additional vegetation in areas, or otherwise sustaining the conservation values of the property. These activities must be consistent with both the easement and the Mitigation Plan for the project. In addition, the Owner needs to notify the District verbally within 24 hours of conducting major stewardship activities. For minor activities (e.g. small amounts of mowing or small interplantings of vegetation), no notification is required if consistent with the Mitigation Plan and easement, but Owner must keep records of activities and provide those to District. District, at its sole discretion, can classify activities as major or minor stewardship activities.

## **IV Management and Maintenance**

The overall goal of long-term management is to foster the long-term viability of the Project's waters of the U.S. and buffer areas. Routine monitoring and minor maintenance tasks are intended to assure the viability of the Project site in perpetuity. Those chosen to accomplish monitoring responsibilities will have the knowledge, training, and experience to accomplish monitoring responsibilities.

The District will conduct regular site examinations and monitoring of selected characteristics to determine stability and ongoing conditions and trends of the Project. Some indicators include invasion of exotic or deleterious species, condition of structures, degree of erosion, water quality, beaver activity, fire hazard, and/or other aspects that may affect project objectives and warrant management actions.

Vegetation management will be the primary ongoing task at the site. Native vegetation should dominate at the site and invasive species should be at levels that do not interfere with site objectives. The cover or density of vegetation should be at sufficient levels to achieve the expected functions and values predicted. Invasive species, especially new populations, should be controlled and are defined as those plants appearing on the Oregon Department of Agriculture Noxious Weed List, plus known problem species including *Phalaris arundinacea*, *Mentha puleguim*, *Holcus lanatus*, and *Anthoxanthum odoratum*. Non-native species should be controlled if they appear to be increasing in cover and distribution at the site, and are deemed by the District to be degrading site quality.

The other long-term risk at the site is any damage to the bridge or grade control structures. During each site visit, CWS will view the condition of the bridge and grade control structures then work with landowners to coordinate necessary repairs or replacement.

## **V Transfer, Replacement, Amendments, and Notices**

### **A Transfer**

Any transfer of responsibilities under this long-term management plan to a different land manager or endowment fund manager shall be requested by the District in writing to DSL, and will require written approval by DSL per terms of the conservation easement. These changes shall be incorporated into this long-term management plan by amendment. Subsequent parties assume the appropriate responsibilities described in this long-term management plan, unless otherwise amended in writing.

### **B Remedies**

Remedies available to the District, landowner, and DSL are outlined in the conservation easement.

### **C Amendments**

The District, landowner, and DSL may meet and confer from time to time, upon written request, to discuss revision of the long-term management plan to better meet management objectives and preserve the habitat and conservation values of the Project. Any proposed changes will be designed with input from all parties and should meet the amendment requirements outlined in the conservation easement. DSL will notify the Corps of Engineers of any proposed modifications or amendments. Any amendment or modifications that affect the conservation easement must be in writing and recorded in the same manner as the easement.

### **D Notices**

Any notices regarding this long-term management plan shall be directed to the parties as follows:

Clean Water Services  
Watershed Management Department  
2550 SW Hillsboro Hwy  
Hillsboro, OR 97123

Land Owner:  
George and Sara Kral

12765 SW Watkins Ave  
Tigard, OR 97223

Oregon Department of State Lands  
775 Summer St. NE, Suite 100  
Salem, OR 97301

DSL will retain the obligation to notify the Army Corps of Engineers (Corps) of proposed changes in accordance with the Conservation Easement.

## **V Funding and Task Prioritization**

### **A Funding**

Table 1 summarizes the anticipated costs of long-term management for the Project. These costs include estimates of time and funding needed to conduct the basic monitoring site visits, weed control, and trash removal. The total annual funding anticipated is approximately **\$5,500**, therefore, with the current annual estimated capitalization rate of 4.5% the total endowment amount required will be **\$123,000**.

DSL will contribute \$115,000 to seed the endowment in 2010. Funds will first be used in 2014, giving the endowment time to grow to roughly \$131,000 before any interest is expended.

District shall hold the Fund in an FDIC insured account. Interest monies earned will fund the long-term management, enhancement, and monitoring activities at the Project in a manner consistent with this long-term management plan.

District will consult the interest earnings of the account to determine the amount of funding available for management and monitoring activities. If unusual circumstances arise that require additional distributions from the Fund, District will work with the landowners and DSL to strategize funding solutions. However, District may, in its discretion, make additional distributions if it determines that the management objectives of the project warrant it. Such additional distributions shall not reduce the value of the endowment to less than 50 percent of the cumulative value of contributions to the Fund.



Table 1. Annual vegetation management costs

<b>Half Mile Lane Stewardship</b>	<b>Target Completion Date</b>	<b>Acres</b>	<b>Unit Price</b>	<b>Total Cost</b>
Maintenance - Backpack Spot or Area Spray	Spring	15	\$140.00	\$2,100.00
Maintenance - Backpack Spot or Area Spray	Fall	15	\$140.00	\$2,100.00
Herbicide Materials Reimbursement Allowance				\$800.00
10% Contingency				\$500.00
			<b>TOTAL</b>	<b>\$5,500.00</b>

**B Task Prioritization**

Due to unforeseen circumstances, prioritization of tasks, including tasks resulting from new requirements, may be necessary if insufficient funding is available to accomplish all tasks. The District and landowner shall discuss task priorities and funding availability to determine which tasks will be implemented. In general, tasks are prioritized in this order: 1) required by a local, state, or federal agency; 2) repair of grade control structures; 3) tasks necessary to maintain or remediate habitat quality; and 3) tasks that monitor resources, particularly if past monitoring has not shown downward trends. Equipment and materials necessary to implement priority tasks will also be considered priorities.

Attachment F— Example Credit Transaction Using Multiple Credit  
Types



# Oregon

Theodore R. Kulongoski, Governor

## Department of State Lands

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**State Land Board**

CENWP-OD-G Policy Specialist

P.O. Box 2946

Portland, Oregon 97208-2946

Theodore R. Kulongoski

Governor

Subject: Statement of Sale for 1000 Temperature Credits from the Half Mile Lane project to **Permittee Name**

Bill Bradbury

Secretary of State

November 5, 2009

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

Randall Edwards

State Treasurer

This letter confirms the sale of 1000 temperature credits. These credits are being used as compensatory mitigation for 20 linear feet of stream impacts in the Tualatin Basin as authorized by DA permit (**DA permit number**) and Oregon Removal-Fill Permit/GA (**DSL permit number**). By selling credits to the permittee above permittee, DSL is the party responsible for fulfilling the mitigation aspect of the Permit(s) listed above.

The temperature credit purchase represents 1.55% of the potential credits in the Floodplain and Channel habitat. Therefore, the following deductions should also be made from the credit ledger for this habitat area:

- 1000 temperature credits
- 0.04 wetland (ratio acres) credits
- 0.02 wetland (functional acres) credits
- 10.9 salmonid credits

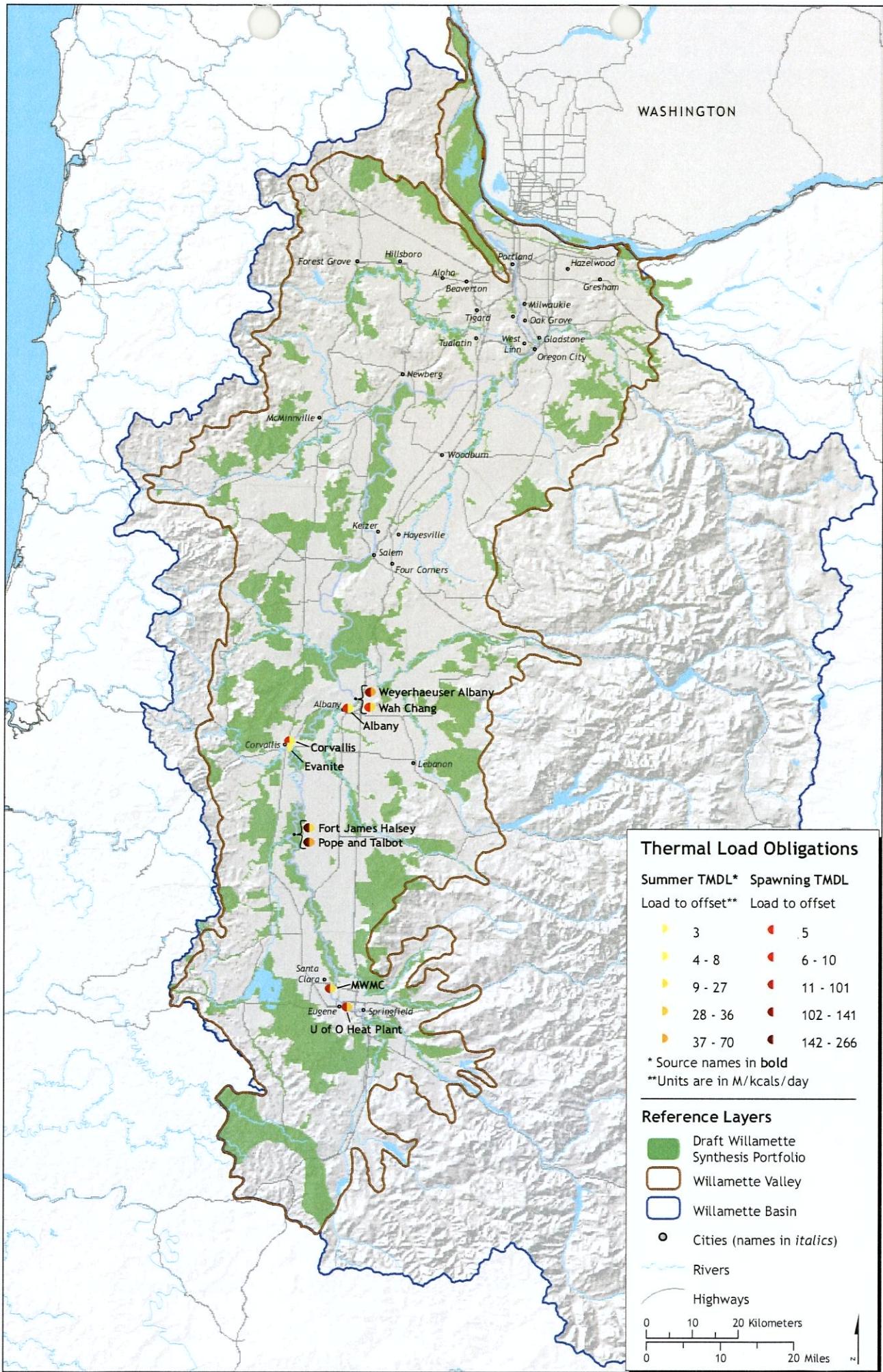
Credits from the wetland/buffer habitat area remain unchanged.

Sincerely,

Wetland Mitigation Specialist  
Oregon Department of State Lands

	Floodplain and Channel Area				Wetland and Buffer Area		
	Wetlands (Ratio Acres)	Wetlands (Functional Acres)	Salmonid Habitat	Temperature	Wetlands (Ratio Acres)	Wetlands (Functional Acres)	
<b>Credit Release Ledger</b>							
03/04/2010 Credit Release--15%		0.42	0.22	105.75	9,657.6	1.26	0.68
<b>Total of Released Credits</b>		0.42	0.22	105.75	9657.60	1.26	0.68
<b>Debit Ledger</b>							
	<b>Corps Permit Number</b>	<b>DSL Permit Number</b>					
04/10/2010 Permittee Name	xxxx-xxxxxxx	RF-xxxxxxx	0.04	0.02	10.9	1,000	

## Attachment G—Counting on the Environment’s Priority Areas



**Thermal Load Obligations**

Summer TMDL* Load to offset**	Spawning TMDL Load to offset
3	5
4 - 8	6 - 10
9 - 27	11 - 101
28 - 36	102 - 141
37 - 70	142 - 266

\* Source names in **bold**  
 \*\*Units are in M/kcals/day

**Reference Layers**

- Draft Willamette Synthesis Portfolio
- Willamette Valley
- Willamette Basin
- Cities (names in *italics*)
- Rivers
- Highways

