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AOA



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Environmental  
Planning &  
Landscape  
Architecture

**FINAL CRITICAL AREAS STUDY**  
for  
**FISH AND WILDLIFE HABITAT  
CONSERVATION AREAS & WETLANDS**

**ALL WOOD RECYCLING  
REDMOND, WASHINGTON**

**DEV070139; Project File #L110008, L110016, SEPA File #L11009**

*Prepared For:*

ALL WOOD RECYCLING  
Attn: Lee Daily  
8504 – 192<sup>nd</sup> Ave. NE  
Redmond, Washington 98052

August 26, 2011  
Revised March 15, 2013

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REDMOND, WASHINGTON  
FINAL CRITICAL AREA STUDY**

**For  
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& WETLANDS**

**August 26, 2011  
(Revised March 15, 2013)**

**1.0 INTRODUCTION**

This report is the result of a stream and wetland reconnaissance and delineation on the All Wood Recycling project site located along Evans Creek in the City of Redmond, Washington (**Figure 1**). The purpose of this report is to: 1) describe the streams and wetlands identified and delineated on the site, 2) identify impacts to the 25-foot Shoreline Natural Buffer of Evans Creek, and 3) describe the measures that will be implemented to restore these impacts.

It is our understanding that the historical and on-going use of the site as a wood recycling facility located within the riparian corridor of the stream is a vested use, and that only those new impacts within the 25-foot Natural Buffer require restoration. Furthermore, the identified areas of relatively recent disturbance within the 25-foot Natural Buffer are the only known non-vested impacts that have occurred within this buffer. The 25-foot shoreline buffer and all impacts (both vested and new) are depicted on **Drawing L-1**.

**EVANS CREEK RE-ROUTING & RESTORATION PLAN**

It is our understanding that the City of Redmond is in the process of developing plans to re-route Evans Creek through the large off-site wetland to the north and east of the project site. It is our recommendation that the buffer restoration plan described below, including the removal of any existing concrete within the 25-foot Natural Shoreline buffer, only be implemented if the stream re-routing does not occur. A bond or other financial guarantee could be posted by the property owner to ensure that the restoration plan is installed later if necessary.

**2.0 GENERAL PROPERTY DESCRIPTION AND LAND USE**

The project site is located in the SE ¼ of the SE ¼ of Section 6, Township 25 North, Range 06 East, W.M. in the City of Redmond, Washington. The property address is 8504 – 192<sup>nd</sup> Ave. NE and it consists of tax lot 062506-9044.

Evans Creek drains from southeast to northwest through the central portion of the site. Vegetation on the property is generally limited to a relatively narrow strip of trees and shrubs within the riparian corridor of this stream and within a wetland in the southeastern portion of the property. The remainder of the site consists of the All Wood Recycling facility with associated buildings and stock-pile areas. Surrounding land use consists primarily of industrial areas to the west and south and a large wetland system to the north and east.

### 3.0 METHODOLOGY

The stream and wetland reconnaissance of the subject property involved a two-part effort. The first part consisted of a preliminary assessment of the site (and its immediate surroundings) using published information about local environmental conditions. The second part involved a field review in which direct observations were made.

#### 3.1 Background Data Reviewed

Background information reviewed included the following:

- City of Redmond Fish and Wildlife Habitat Conservation Areas Map (**Figure 2**)
- City of Redmond Streams Classification Map (**Figure 3**)
- City of Redmond Wetland Map (**Figure 4**)
- Washington State Department of Fish and Wildlife (WDFW) Priority Habitat and Species (PHS) database

#### 3.2 Field Investigation

An initial site reconnaissance was conducted on December 23, 2010. During this reconnaissance observations were made of the general plant communities and wildlife habitats. Present and past land use practices were also noted, as were significant geological and hydrological features. A subsequent site review was conducted on June 15, 2011 to review the proposed buffer restoration areas.

The wetland and stream delineation on the site was conducted on August 9, 2011 utilizing the methodology outlined in the 1997 *Washington State Wetlands Identification and Delineation Manual* and the May 2010 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)*.

Plant species were identified according to the taxonomy of Hitchcock and Cronquist (1973), and the wetland status of plant species was assigned according to the *List of Plant Species that Occur in Wetlands*, published by the U.S. Fish and Wildlife Service (Reed 1988, 1993). Wetland classes were determined by the U.S. Fish and Wildlife Service's system of wetland classification (Cowardin, *et. al.* 1979).

Vegetation was considered hydrophytic if greater than 50% of the dominant plant species had a wetland indicator status of facultative or wetter (i.e., facultative, facultative wetland, or obligate wetland). In general, soil on the site was considered hydric if one or more of the following characteristics were present:

- organic soils or soils with an organic surface layer,
- matrix chroma just below the A-horizon (or 10 inches, whichever is less) of 1 or less in unmottled soils, or 2 or less if mottles were present, or
- gleying immediately below the A-horizon.

Indicators of wetland hydrology included, but were not necessarily limited to: drainage patterns, drift lines, sediment deposition, watermarks, and visual observation or evidence of inundation or saturated soils.

**Appendix A** contains data sheets prepared for representative locations in both the upland and wetland adjacent to the delineated wetland boundary. These data sheets document the vegetation, soils, and hydrology information that aided in the wetland boundary determination. Due to the historic and on-going use of the site as an industrial property, much of the wetland boundary coincided with the toe of a fill slope.

## **4.0 RESULTS OF WETLAND AND STREAM DELINEATION**

### **4.1 Existing Information**

The City of Redmond and WDFW mapping indicate that a Class I stream (Evans Creek) drains from southeast to northwest through the central portion of the site. In addition, this mapping indicates an on-site wetland that is part of a much larger off-site wetland system. The City mapping also shows a Class II tributary stream near the southeast portion of the site and a Class III stream along the site's northern border.

### **4.2 Fish and Wildlife Habitat Conservation Areas**

Evans Creek on the site consists of a well-defined, primarily high-banked channel. Vegetation within the riparian corridor of the stream consisted of a narrow strip of scattered deciduous trees with a dense understory dominated by Himalayan blackberry (*Rubus armeniacus*), salmonberry (*Rubus spectabilis*), Japanese knotweed (*Polygonum cuspidatum*), reed canarygrass (*Phalaris arundinacea*), and deadly nightshade (*Solanum dulcamara*). Tree species included black cottonwood (*Populus trichocarpa*), red alder (*Alnus rubra*), big-leaf maple (*Acer macrophyllum*), Oregon ash (*Fraxinus latifolia*), and Pacific willow (*Salix lasiandra*) (see tree survey prepared by SDA).

Habitat features within the riparian corridor were generally restricted to a few scattered logs and small snags. In addition, portions of the stream bank appear to have been historically stabilized with asphalt and concrete.

Evans Creek is considered a Class I Fish and Wildlife Habitat Conservation Area (FWHCA) and generally requires a standard 150-foot inner buffer plus a 50-foot outer buffer per RZC Chapter 21.64.020.B.3. The Class II stream located near the southeast portion of the site would require a 100-foot inner buffer and a 50-foot outer buffer and the Class III stream located along the northern boundary of the site would require a 100-foot buffer. However, since the Class II and III streams are located within a large Category I wetland that requires a 150-foot buffer, the wetland buffer would be more restrictive (see Section 4.3 below).

Due to historic and on-going industrial use of the property, vegetation within the riparian corridor is generally limited to the 25-foot Natural Shoreline Buffer.

### 4.3 Wetland A

Wetland A on the property is located in the southeast corner of the site and is associated with the Evans Creek riparian corridor (**Figure 6**). The on-site wetland is part of a much larger wetland system that extends off-site to the north, east, and south. The on-site portion of the wetland, and the off-site areas to the east and south, consist of a mix of forested and scrub-shrub plant communities dominated by Pacific willow, spirea (*Spiraea douglasii*), reed canarygrass, mannagrass (*Glyceria* sp.), cattail (*Typha latifolia*), and jewelweed (*Impatiens noli-tangere*). That portion of the wetland located off-site to the north is dominated by monotypic reed canarygrass.

Hydrologic support to the wetland appears to be from both a high groundwater table as well as periodic overbank flooding from Evans creek. At the time of the August 2011 field investigations, soils through the wetland were generally saturated to the surface with shallow ponding observed in places.

Based on a Critical Areas Designation prepared by the King County Department of Development and Environmental Services (DDES) in June 2010 for the adjacent property to the east, Wetland A has been rated as a Category I wetland with a Habitat Score of 25 (**Appendix B**). This category of wetland requires a standard 150-foot buffer adjacent high-impact land uses per RZC 21.64.030.B.2

## 5.0 WILDLIFE HABITAT ASSESSMENT

An on-site wildlife habitat assessment was conducted on August 9, 2011. During the site review plant communities were assessed and wildlife observations or signs were recorded. Evaluation included documenting vegetation community types, structural and plant species diversity, presence of habitat features (e.g., snags, downed logs), presence of invasive species, continuity with other habitat areas, and potential use by priority species.

### 5.1 Existing Information

The WDFW PHS database lists the following priority salmonid fish species as occurring within that portion of Evans Creek located on the project site:

- Coho Salmon (*Oncorhynchus kisutch*)  
State Status: Candidate  
Federal Status: Species of Concern
  
- Chinook Salmon (*Oncorhynchus tshawytscha*)  
State Status: Candidate  
Federal Status: Threatened
  
- Sockeye Salmon (*Oncorhynchus nerka*)  
State Status: Candidate  
Federal Status: None
  
- Steelhead (*Oncorhynchus mykiss*)

State Status: Candidate  
Federal Status: Threatened

- Coast Resident Cutthroat Trout (*Oncorhynchus clarki*)  
State Status: None  
Federal Status: None

The Washington Department of Natural Resources' Natural Heritage Information System did not identify any rare plants or high quality native ecosystems in the vicinity of the project.

## **5.2 Habitat Classifications**

Based on the habitat classifications outlined in *Wildlife-Habitat Relationships in Oregon and Washington* (Johnson and O'Neil, 2001) the matrix for the site would likely be classified as Urban and Mixed Environs – Medium Density Zone. The only other habitat type identified as a component of the matrix on the project site consists of Westside Riparian-Wetlands (**Figure 5**).

### **Urban and Mixed Environs – Medium Density Zone**

This habitat type was considered the matrix for the property due to the site's industrial use. Although the existing impervious surface on the site is greater than the 30-59% impervious surface threshold typically used for this habitat type, the site was determined to most accurately meet this habitat type matrix based on its position in the landscape and the surrounding land use.

This habitat type included all of the existing structures and impervious storage areas. Natural habitat features and vegetation are essentially non-existent.

### **Westside Riparian-Wetlands**

This habitat type is associated with a narrow band of vegetation adjacent Evans Creek and also included Wetland A in the southeast corner of the site. Vegetation within the riparian corridor of the stream consisted of a narrow strip of scattered deciduous trees with a dense understory dominated by Himalayan blackberry salmonberry, Japanese knotweed, reed canarygrass, and deadly nightshade. Tree species included black cottonwood, red alder, big-leaf maple, Oregon ash, and Pacific willow.

The on-site portion of the wetland, and the off-site areas to the east and south, consist of a mix of forested and scrub-shrub plant communities dominated by Pacific willow, spirea, reed canarygrass, manna grass, cattail, and jewelweed.

Habitat features within the riparian corridor and wetland were generally restricted to a few scattered logs and small snags.

**Appendix E** contains a City of Redmond Habitat Unit Assessment Form for this habitat type.

### **5.3 Wildlife Utilization**

Observations of wildlife utilization of the site were recorded during the habitat assessment. Since the number of wildlife species that utilize the site is expected to be much higher than the number actually observed during the limited field investigation, (due in part to the seasonality and cryptic nature of most wildlife species) those species that likely or potentially utilize the site were also noted (although this is not intended as an all inclusive list).

#### **Mammals**

Mammal observations during the AOA field investigations were limited to raccoon (*Procyon lotor*) tracks. In addition, the site likely provides habitat for a variety of small mammals such as mice, rats, voles, shrews, bats, squirrels, and weasels that are commonly found within similar habitats. Another mammal that likely commonly utilizes the site includes the Virginia opossum (*Didelphis virginiana*).

#### **Birds**

Bird species observed during the AOA field investigation were limited to the American crow (*Corvus brachyrhynchos*) and barn swallow (*Hirundo rustica*). Unobserved bird species that may utilize the property on a regular or occasional basis include (but are not limited to) the black-capped chickadee (*Parus atricapillus*), golden-crowned kinglet (*Regulus satrapa*), ruby-crowned kinglet (*Regulus calendula*), song sparrow (*Melospiza melodia*), Steller's jay (*Cyanocitta stelleri*), winter wren (*Troglodytes troglodytes*), northern flicker (*Colaptes auratus*), spotted towhee (*Pipilo maculatus*), rufous hummingbird (*Selasphorus rufus*), red-breasted sapsucker (*Sphyrapicus rubber*), downy woodpecker (*Picoides pubescens*), hairy woodpecker (*Picoides villosus*), bushtit (*Psaltriparus minimus*), Bewick's wren (*Thryomans bewickii*), American robin (*Turdus migratorius*), European starling (*Sturnus vulgaris*), dark-eyed junco (*Junco hyemalis*), house finch (*Carpodacus mexicanus*), and house sparrow (*Passer domesticus*).

#### **Reptiles and Amphibians**

Reptiles or amphibians observed during the AOA field investigation included garter snakes (*Thamnophis* spp.) and the red-legged frog (*Rana aurora*). Other species that may utilize the site include the northern alligator lizard (*Elgaria coerulea*), Pacific chorus frog (*Pseudacris regilla*), long-toed salamander (*Ambystoma macrodactylum*) and ensatina (*Ensatina eschscholtzii*).

### **6.0 WETLAND FUNCTIONS AND VALUES**

Wetlands, in general, provide many valuable ecological and social functions, including stormwater storage, water quality protection, groundwater recharge and discharge, and wildlife habitat. The functions associated with Wetland A were evaluated using the Washington State Department of Transportation's *Wetland Functions Characterization Tool for Linear Projects* (2000) (**Appendix C**). Wetland A generally has a relatively high value for most wetland functions due to its large overall size and its association with an anadromous fish-bearing water.

The wetland provides stormwater storage areas that reduce downstream flooding, while trapping sediments. The trapping of sediments and other pollutants within the wetlands maintains water quality in downstream areas and aids in the prevention of fish habitat degradation by limiting silt accumulation within spawning areas. The wetland provides further benefit to fish and other wildlife by releasing water slowly during the dry summer months, thereby contributing to the base flow of the stream.

In addition to its hydrologic functions, the wetland also provides significant biological functions. As a component of a large, structurally diverse system, the on-site wetland provides habitat for a variety of wildlife species. Another important biologic function of the wetland is the transport of nutrients (via Evans Creek) to downstream areas. Nutrients transported to downstream areas provide biological support for fish and other aquatic wildlife.

Although privately owned, the on-site wetland does provide some cultural wetland functions as part of the overall open space associated with the Evans Creek riparian corridor. The wetland contains some passive recreational opportunities such as wildlife viewing, and has the potential to provide educational opportunities.

#### **7.0 IMPACTS ON EVANS CREEK NATURAL SHORELINE BUFFER**

It is our understanding that the City of Redmond has identified areas of disturbance adjacent the south side of the 25-foot Natural Shoreline Buffer that have occurred since 2007 (**Drawing L-1**). These impacts (approximately 3,069 s.f. total) were apparently associated with the encroachment of outdoor storage areas as well as the installation of a stormwater vault and above ground tank.

It is also our understanding that there is a disagreement between the City of Redmond and the property owner regarding recent encroachment into the Natural Shoreline Buffer in the northwest portion of the site. According to the property owner, this portion of the site has historically been utilized as a stockpile area and the boundaries of disturbance have not changed. Although additional stockpiled materials have recently been placed in this area, apparently this material was placed over an historical stockpile area. The historical stockpile area was located beneath the canopy of the adjacent existing black cottonwood canopy, thereby limiting visibility of the historical disturbance on older aerial photos.

#### **7.1 Impacts to Buffer of Wetland A and Class II and III Streams**

All of the historic impacts to the buffers associated with Wetland A and the Class II and III streams that are depicted on the site plan are associated with vested uses with the exception of those overlapping recent impacts associated with the 25-foot natural shoreline buffer.

## **8.0 RESTORATION OF NATURAL SHORELINE BUFFER IMPACTS**

As part of the project, the Natural Shoreline Buffer impact areas identified by the City of Redmond along the south side of Evans Creek will be restored within a 3,069 s.f. enhancement area. During the restoration effort, the existing stormwater tank as well as all concrete and metal debris located and concrete walls within the restoration areas will be removed prior to planting (**Drawings L-1 to L-3**).

Restoration will include planting a variety of native trees, shrubs, and groundcovers to increase the plant species and structural diversity of the buffer while providing a visual and physical screen to the stream from the recycling facility. Implementation of the restoration plan should replace any minor functions lost through recent encroachment into this portion of the buffer.

### **8.1 Goal, Objectives, and Performance Standards for Restoration Areas**

The primary goal of the restoration plan is to replace the buffer functions lost through recent encroachment. To meet this goal, the following objectives and performance standards have been incorporated into the design of the plan:

**Objective A:** Increase the structural and plant species diversity within the restoration areas.

*Performance Standard: Following every monitoring event for a period of at least five years, the restoration area will contain at least 7 native plant species. In addition, there will be 100% survival of all woody planted species throughout the restoration area at the end of the first year of planting. Following Year 1, success will be based on an 80% survival rate.*

**Objective B:** Limit the amount of invasive and exotic species within the restoration areas.

*Performance Standard: After construction and following every monitoring event for a period of at least five years, exotic and invasive plant species will be maintained at levels below 20% total cover in all planted areas. These species include, but are not limited to, Himalayan and evergreen blackberry, reed canarygrass, Scot's broom, morning glory, Japanese knotweed, English ivy, thistle, and creeping nightshade.*

### **8.2 Construction Management**

Prior to commencement of any work in the restoration areas, the clearing limits will be staked and all existing vegetation to be saved will be clearly marked. A pre-construction meeting will be held at the site to review and discuss all aspects of the project with the landscape contractor and the owner.

A consultant will supervise plan implementation during construction to ensure that objectives and specifications of the restoration plan are met. Any necessary significant modifications to the design that occur as a result of unforeseen site conditions will be jointly approved by the City of Redmond and the consultant prior to their implementation.

### **8.3 Monitoring Methodology**

The monitoring program will be conducted for a period of five years, with reports submitted according to the following schedule:

- at the time of construction
- 30 days after planting
- early in the growing season after the second year following installation
- at the end of the growing season after the second year following installation
- annually for Years 3 through 5

Due to the relatively small size of the restoration area, the entire area will be reviewed and no permanent vegetation sampling plots will be established. As required, vegetation monitoring will include general appearance, health, mortality, colonization rates, percent cover, percent survival, volunteer plant species, and invasive weeds.

Photo-points will be established from which photographs will be taken throughout the monitoring period. These photographs will document general appearance and progress in plant community establishment in the restoration areas. Review of the photos over time will provide a visual representation of success of the plan.

#### **8.4 Maintenance Plan**

Maintenance will be conducted on a routine, year round basis. Additional maintenance needs will be identified and addressed following a twice-yearly maintenance review. Contingency measures and remedial action on the site shall be implemented on an as-needed basis at the direction of the consultant or the owner.

#### **Weed Control**

Routine removal and control of non-native and other invasive plants (e.g., reed canarygrass, Himalayan and evergreen blackberry, Japanese knotweed, Scot's broom, English ivy, morning glory, thistle and creeping nightshade) shall be performed only by manual means (i.e., no chemical use within riparian corridor). Undesirable and weedy exotic plant species shall be maintained at levels below 20% total cover within any given stratum at any time during the five-year monitoring period.

#### **8.5 Contingency Plan**

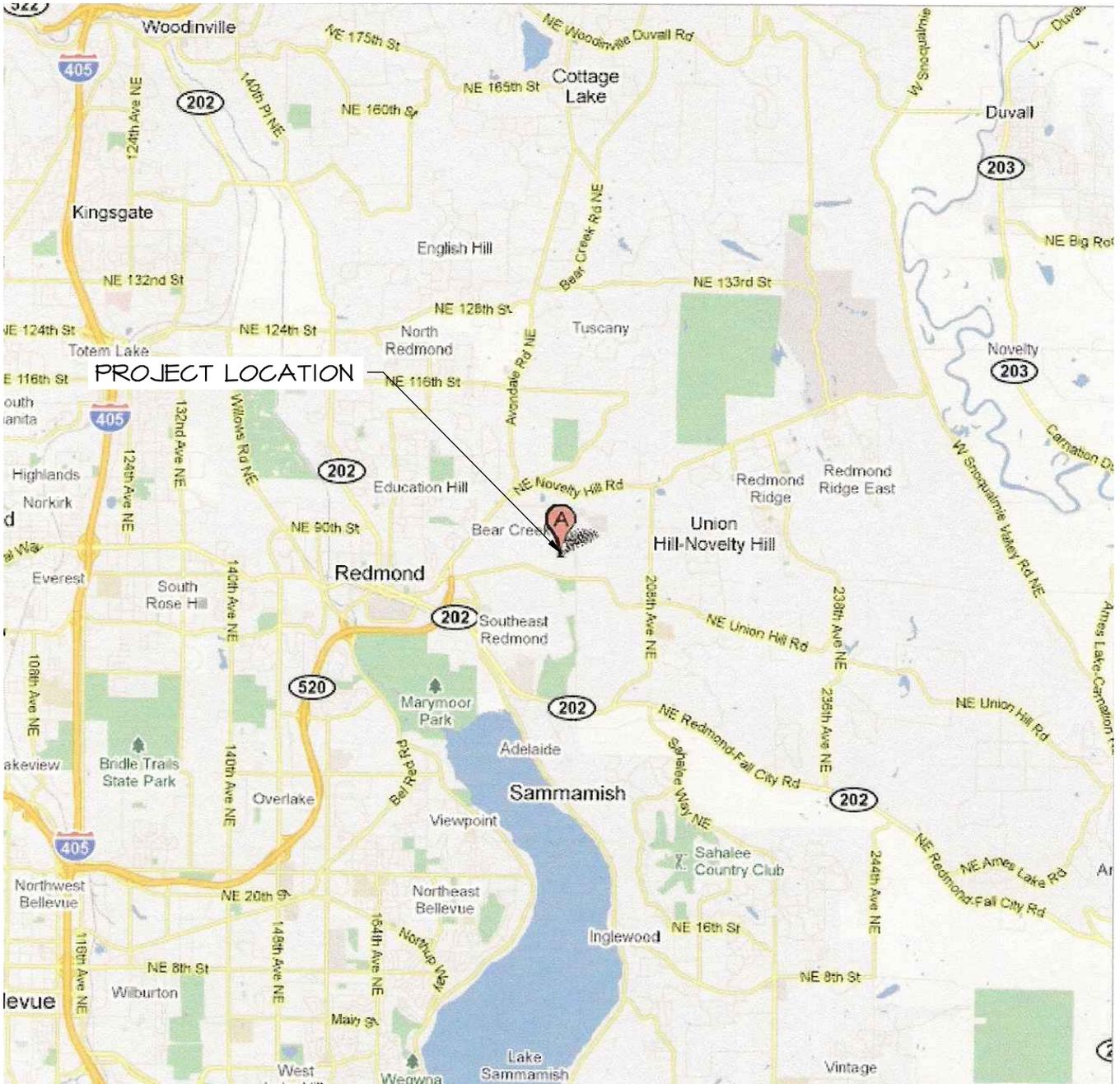
All dead plants will be replaced with the same species or an approved substitute species that meets the goal of the restoration plan. Plant material shall meet the same specifications as originally-installed material. Replanting will not occur until after reason for failure has been identified (e.g., moisture regime, poor plant stock, disease, shade/sun conditions, wildlife damage, etc.). Replanting shall be completed under the direction of the consultant, City of Redmond, or the owner.

#### **8.6 As-Built Plan**

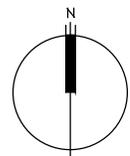
Following completion of construction activities, an as-built plan for the restoration area will be provided to the City of Redmond. The plan will identify and describe any changes in relation to the original approved plan.

## REFERENCES

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SOURCE: GOOGLE MAPS 2011



Altmann Oliver Associates, LLC

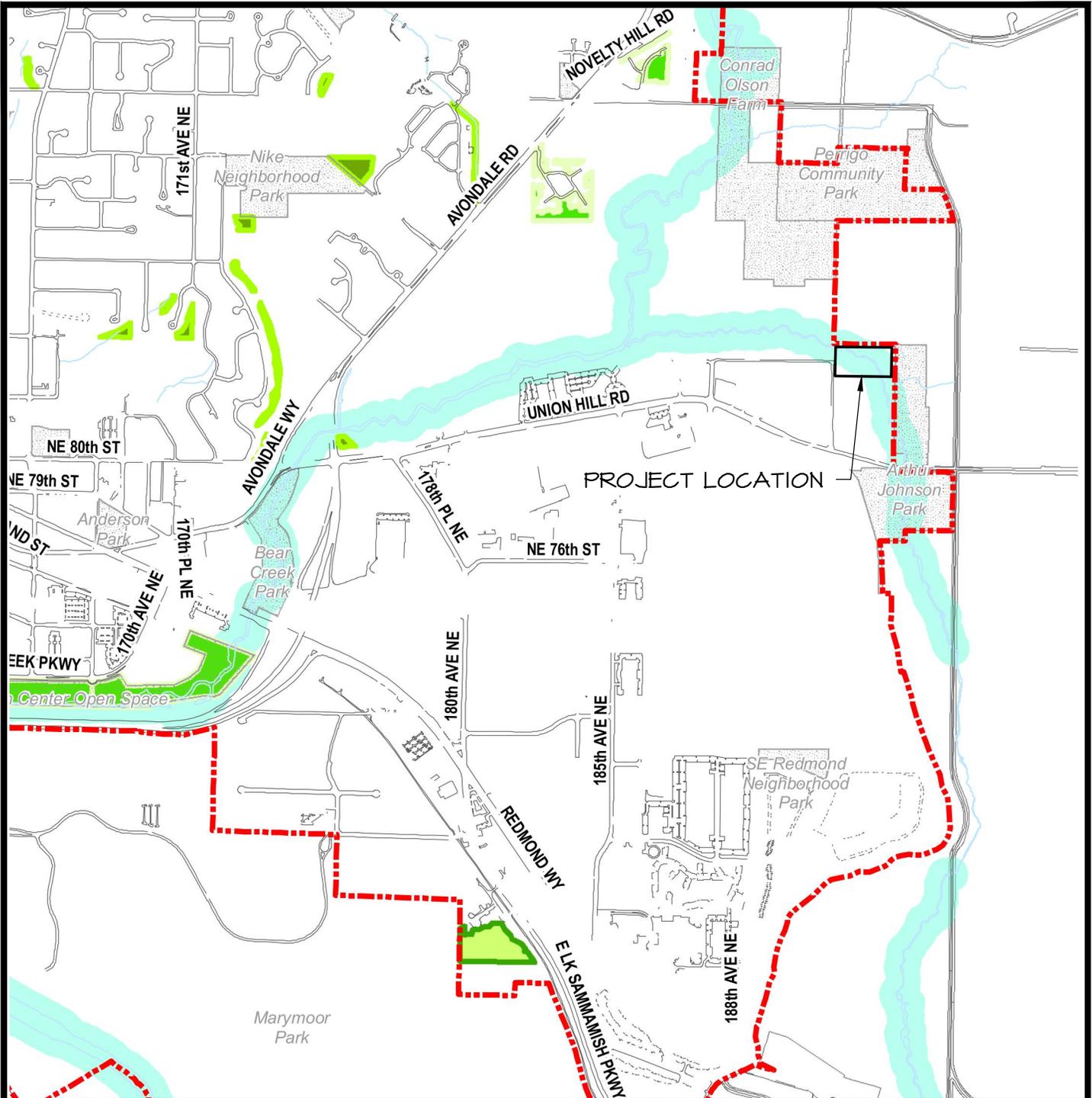
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FIGURE 1: VICINITY MAP  
ALL WOOD RECYCLING  
8504 192ND AVE. NE  
REDMOND, WASHINGTON

DRAWN	PROJECT
50	4002
SCALE	
NTS	
DATE	1/6
08-25-11	
REVISED	
10-31-12	

4002-LA-10-31-12.dwg



# City of Redmond

## Critical Areas Map

Effective: April 16, 2011

### Map 64.1 Fish and Wildlife Habitat Conservation Areas (Core Preservation Areas)

#### Legend:

- Transfer Development Rights Easements
- Open Space Easements
- Class 1 Streams and Buffers
- Redmond City Limits

Sources:  
USGS Geologic Maps

Note:  
This map shall be used as a general guide. It represents approximate locations. Consult the Critical Areas Ordinance (CAO) for reporting requirements. In the event there is a conflict between the map and the criteria or standards of the CAO, the criteria shall prevail.

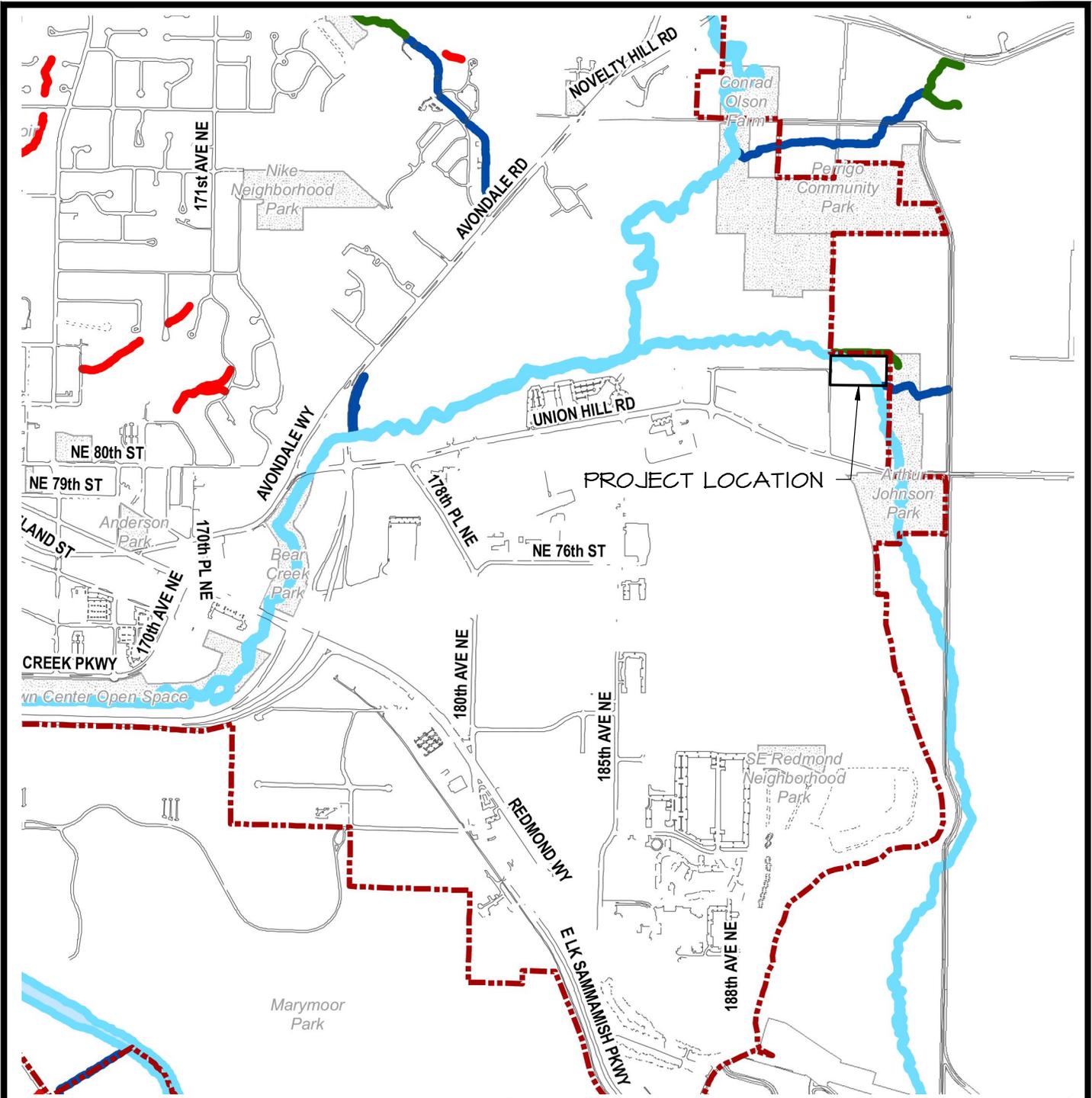
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FIGURE 2: CITY OF REDMOND FISH & WILDLIFE MAP  
ALL WOOD RECYCLING  
8504 192ND AVE. NE  
REDMOND, WASHINGTON

DRAWN	PROJECT
50	4002
SCALE	
NTS	
DATE	2/6
08-25-11	
REVISED	
10-31-12	



**City of Redmond**

*Critical Areas Map  
Effective: April 16, 2011*

**Legend:**

- Class I Stream
- Class II Stream
- Class III Stream
- Class IV Stream
- - - Redmond City Limits

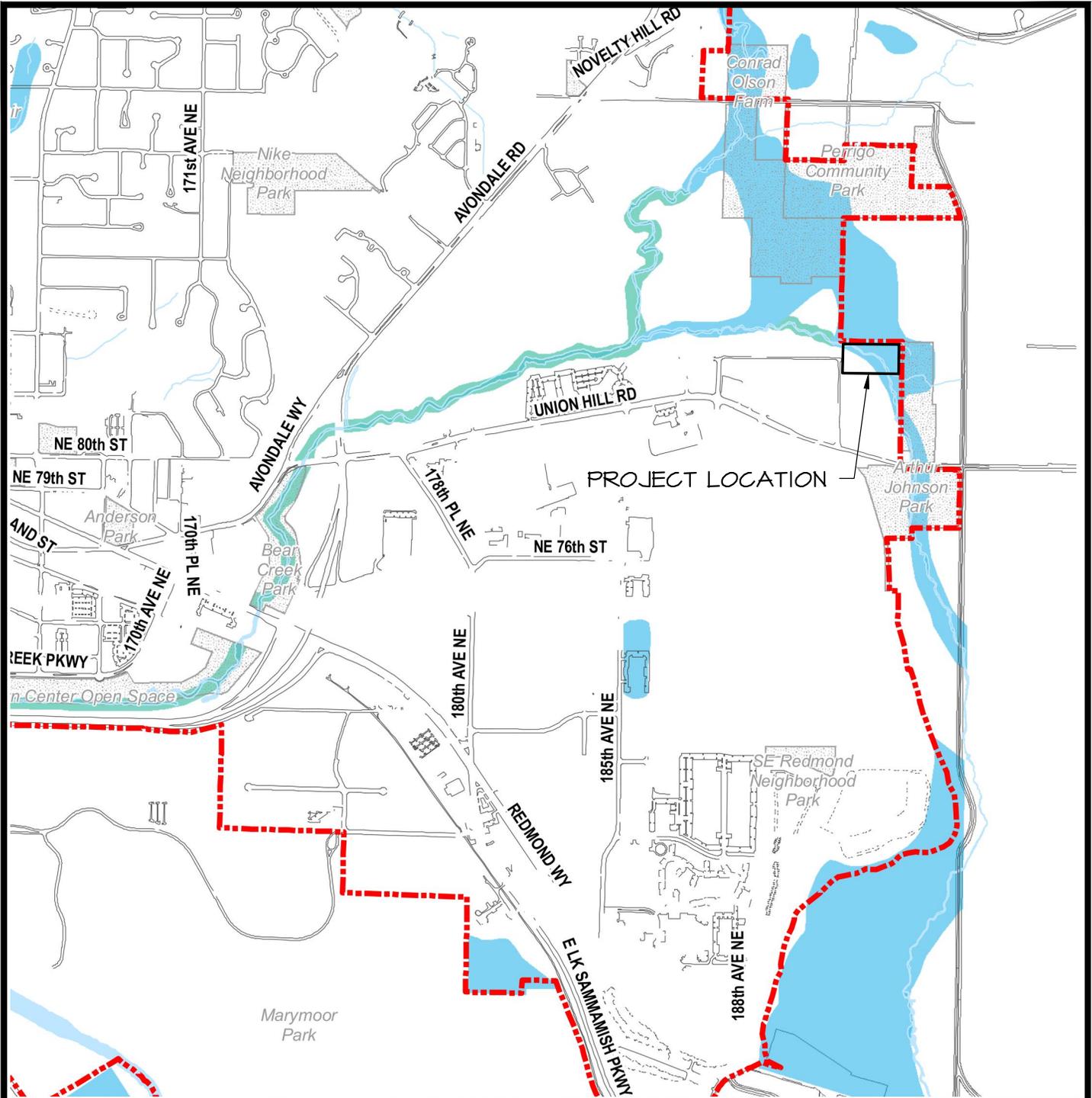
Sources:  
City of Redmond Public Works Department, Natural Resources Division  
City of Redmond GIS Services  
Washington Trout

Note:  
This map shall be used as a general guide. It represents the approximate location of streams. Consult the Critical Areas Ordinance (CAO) for reporting requirements. In the event there is a conflict between the map and the criteria or standards of the CAO, the criteria shall prevail.

**Map 64.3 Streams Classification**

<p><b>Altmann Oliver Associates, LLC</b> PO Box 578 Caman, WA 98014 Office (425) 333-4535 Fax (425) 333-4509</p>	<p><b>AOA</b> Environmental Planning &amp; Landscape Architecture</p>	<p><b>FIGURE 3: CITY OF REDMOND STREAM MAPPING</b> ALL WOOD RECYCLING 8504 192ND AVE. NE REDMOND, WASHINGTON</p>	<p><b>DRAWN</b> 50 <b>SCALE</b> NTS <b>DATE</b> 08-25-11 <b>REVISED</b> 10-31-12</p>	<p><b>PROJECT</b> 4002</p>
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3/6



# City of Redmond

Critical Areas Map  
Effective: April 16, 2011

## Map 64.4 Wetlands

### Legend:

- Mixed Wetland/Upland
- Wetland
- Redmond City Limits

Sources:  
USGS National Wetland Inventory  
Aerial Photo Interpretation  
SCS Soil Survey  
City of Redmond

Note:  
This map shall be used as a general guide. It represents approximate locations. Consult the Critical Areas Ordinance (CAO) for reporting requirements. In the event there is a conflict between the map and the criteria or standards of the CAO, the criteria shall prevail.

Altmann Oliver Associates, LLC

PO Box 578 Caman, WA 98014 Office (425) 333-4535 Fax (425) 333-4509

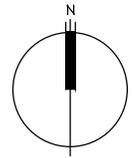


FIGURE 4: CITY OF REDMOND  
WETLAND MAPPING  
ALL WOOD RECYCLING  
8504 192ND AVE. NE  
REDMOND, WASHINGTON

DRAWN	PROJECT
50	4002
SCALE	
NTS	
DATE	4/6
08-25-11	
REVISED	
10-31-12	



SOURCE: GOOGLE EARTH 2011



## HABITAT CLASSIFICATIONS

- ① URBAN AND MIXED ENVIRONMENTS - MEDIUM DENSITY ZONE
- ② WESTSIDE RIPARIAN - WETLAND

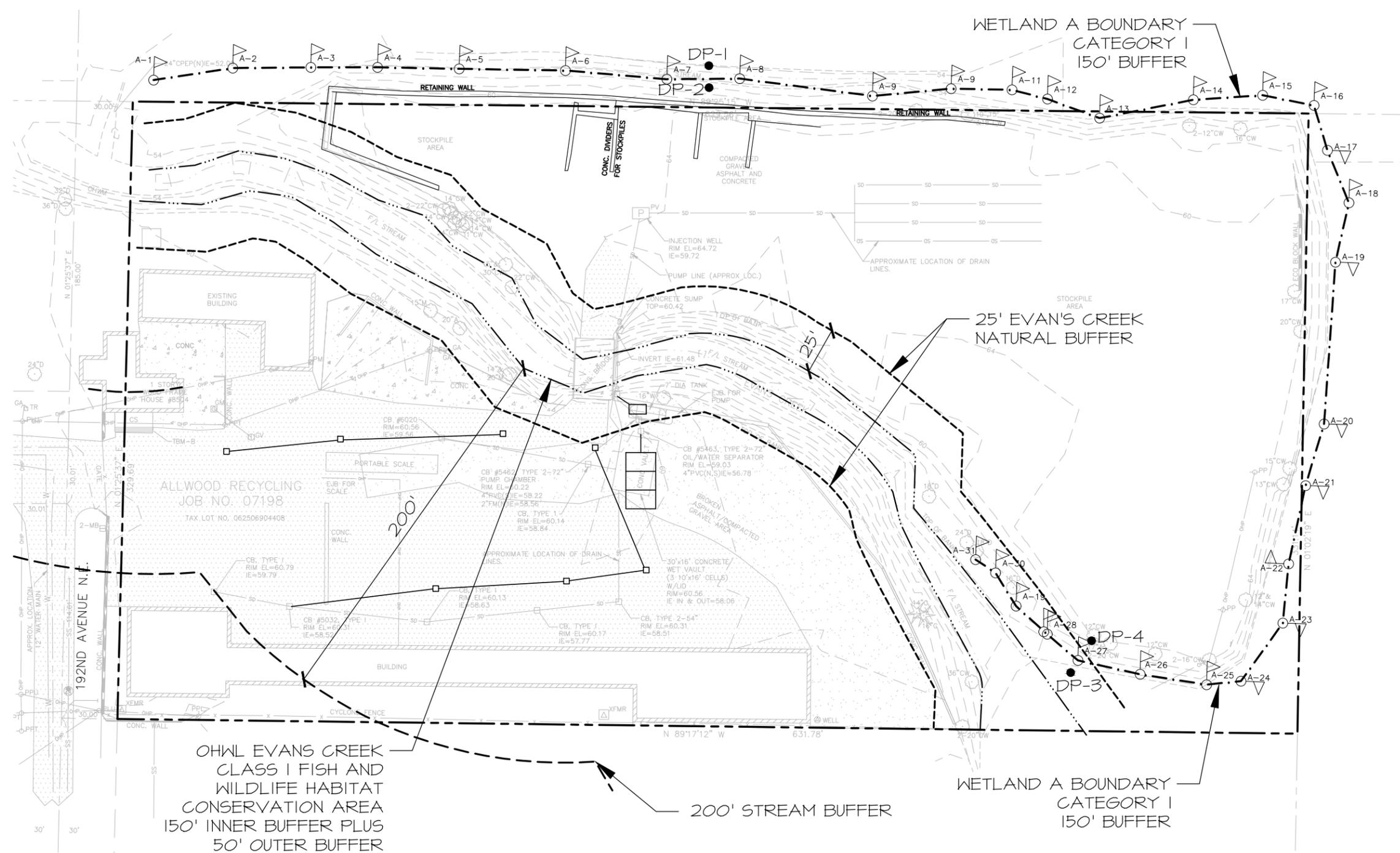
Altmann Oliver Associates, LLC

PO Box 578 Camanion, WA 98014 Office (425) 333-4535 Fax (425) 333-4509



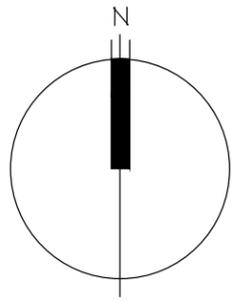
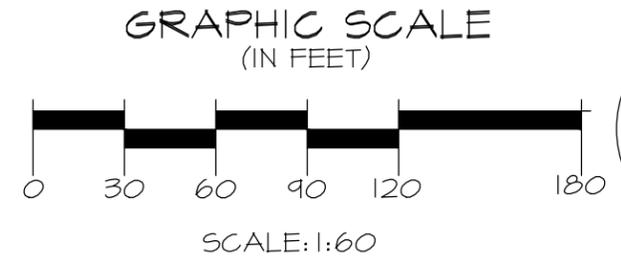
FIGURE 5: HABITAT MAP  
ALL WOOD RECYCLING  
8504 192ND AVE. NE  
REDMOND, WASHINGTON

DRAWN	PROJECT
50	4002
SCALE	
NTS	
DATE	5/6
08-25-11	
REVISED	
10-31-12	



# PLAN LEGEND

- PROPERTY LINE
- EVANS CREEK OHWL
- WETLAND BOUNDARY
- WETLAND FLAG LOCATION
- 25' EVAN'S CREEK NATURAL BUFFER
- 200' STREAM BUFFER
- DP-# SOIL TEST PLOT LOCATION
- EXISTING TREES



PROJECT	4002
DRAWN	SO
SCALE	AS NOTED
DATE	08-25-11
REVISION	6/6
REVISED	10-31-12

FIGURE 6: EXISTING CONDITIONS MAP  
 ALL WOOD RECYCLING  
 8504 192ND AVE. NE  
 REDMOND, WASHINGTON

**Altmann Oliver Associates, LLC**  
 PO Box 578 Camanville, WA 98014 Office (253) 333-4533 Fax (253) 333-4509

**AOA**  
 Environmental  
 Planning &  
 Landscape  
 Architecture

**APPENDIX A**  
**WETLAND DELINEATION DATA SHEETS**

~25' WEST AND 5' NORTH OF A-8

DATA FORM 1 (Revised)  
 Routine Wetland Determination  
 (WA State Wetland Delineation Manual or  
 1987 Corps Wetland Delineation Manual)

Project/Site: PARCEL 062506-9044	Date: 08/09/11
Applicant/owner: ALL WOOD RECYCLING	County: KING
Investigator(s): ALTMANN	State: WA
	S/T/R: 6/25N/CEE
Do Normal Circumstances exist on the site? <input checked="" type="radio"/> yes <input type="radio"/> no	Community ID:
Is the site significantly disturbed (atypical situation)? <input type="radio"/> yes <input checked="" type="radio"/> no	Transect ID:
Is the area a potential Problem Area? <input type="radio"/> yes <input checked="" type="radio"/> no	Plot ID: TP # 1
Explanation of atypical or problem area:	

**VEGETATION** (For strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	Stratum	% cover	Indicator	Dominant Plant Species	Stratum	% cover	Indicator
Phalaris arundinacea	H	80	FACW				
Impatiens noli-tangere	H	20	FACW				

**HYDROPHYTIC VEGETATION INDICATORS:**

% of dominants OBL, FACW, & FAC 100

Check all indicators that apply & explain below:

Visual observation of plant species growing in areas of prolonged inundation/saturation <input checked="" type="checkbox"/>	Physiological/reproductive adaptations <input type="checkbox"/>
Morphological adaptations <input type="checkbox"/>	Wetland plant database <input type="checkbox"/>
Technical Literature <input type="checkbox"/>	Personal knowledge of regional plant communities <input checked="" type="checkbox"/>
	Other (explain) <input type="checkbox"/>

Hydrophytic vegetation present?  yes  no

Rationale for decision/Remarks:  
 > 50% FAC OR WETTER

**HYDROLOGY**

Is it the growing season? <input checked="" type="radio"/> yes <input type="radio"/> no	Water Marks: yes <input type="radio"/> no <input checked="" type="radio"/>	Sediment Deposits: yes <input type="radio"/> no <input checked="" type="radio"/>
Based on: _____ soil temp (record temp _____) other (explain) <u>SUMMER</u>	Drift Lines: yes <input type="radio"/> no <input checked="" type="radio"/>	Drainage Patterns: <input checked="" type="radio"/> yes <input type="radio"/> no
Dept. of inundation: _____ inches	Oxidized Root (live roots) Channels <12 in. yes <input type="radio"/> no <input checked="" type="radio"/>	Local Soil Survey: <input checked="" type="radio"/> yes <input type="radio"/> no
Depth to free water in pit: _____ inches	FAC Neutral: yes <input type="radio"/> no <input checked="" type="radio"/>	Water-stained Leaves <input checked="" type="radio"/> yes <input type="radio"/> no
Depth to saturated soil: _____ inches	N/A	
Check all that apply & explain below: Stream, Lake or gage data: _____ Aerial photographs: _____ Other: _____	Other (explain):	

Wetland hydrology present?  yes  no

Rationale for decision/Remarks:  
 ASSUMED DUE TO HYDRIC SOILS - SATURATED TO SURFACE NEARBY

**SOILS**

Map Unit Name PUGET SILTY CLAY LOAM Drainage Class POORLY DRAINED  
 (Series & Phase)

Taxonomy (subgroup) \_\_\_\_\_ Field observations confirm  Yes  No mapped type?

Profile Description						
Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-12"		10YR 4/1	10YR 4/3	20% BRIGHT		

**Hydric Soil Indicators:** (check all that apply)

<input type="checkbox"/> Histosol	<input checked="" type="checkbox"/> Matrix chroma ≤ 2 with mottles
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> Mg or Fe Concretions
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> High Organic Content in Surface Layer of Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National/Local Hydric Soils List
<input checked="" type="checkbox"/> Gleyed or Low-Chroma (=1) matrix	<input type="checkbox"/> Other (explain in remarks)

Hydric soils present?  yes  no

Rationale for decision/Remarks: LOW CHROMA WITH MOTTLES

**Wetland Determination** (circle)

Hydrophytic vegetation present?	<input checked="" type="radio"/> yes	<input type="radio"/> no	Is the sampling point within a wetland?	<input checked="" type="radio"/> yes	<input type="radio"/> no
Hydric soils present?	<input checked="" type="radio"/> yes	<input type="radio"/> no			
Wetland hydrology present?	<input checked="" type="radio"/> yes	<input type="radio"/> no			

**Rationale/Remarks:** DELINEATION CORRESPONDS ROUGHLY TO TOE OF HISTORIC FILL SLOPE

NOTES:

225' WEST AND 5' SOUTH OF A-8

**DATA FORM 1 (Revised)**  
**Routine Wetland Determination**  
**(WA State Wetland Delineation Manual or**  
**1987 Corps Wetland Delineation Manual)**

Project/Site: PARCEL 062506-9044	Date: 08/09/11
Applicant/owner: ALL WOOD RECYCLING	County: KING State: WA S/T/R: 6/25N/06 E
Investigator(s): ALTMANN	Community ID: Transect ID: Plot ID: TP #2
Do Normal Circumstances exist on the site? <input checked="" type="radio"/> yes <input type="radio"/> no	
Is the site significantly disturbed (atypical situation)? <input checked="" type="radio"/> yes <input type="radio"/> no	
Is the area a potential Problem Area? <input type="radio"/> yes <input checked="" type="radio"/> no	
Explanation of atypical or problem area: HISTORIC FILL SLOPE	

**VEGETATION** (For strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	Stratum	% cover	Indicator	Dominant Plant Species	Stratum	% cover	Indicator
Rubus discolor	S	30	FACU	Cichorium intybus	H	10	NL
Phalaris arundinacea	H	30	FACW				
Equisetum telmateia	H	30	FACW				
Cirsium vulgare	H	10	FACJ				
Vicia sativa	H	10	UPL				
Impatiens noli-tangere	H	10	FACW				

**HYDROPHYTIC VEGETATION INDICATORS:**

% of dominants OBL, FACW, & FAC ~43%

Check all indicators that apply & explain below:

Visual observation of plant species growing in areas of prolonged inundation/saturation	_____	Physiological/reproductive adaptations	_____
Morphological adaptations	_____	Wetland plant database	_____
Technical Literature	_____	Personal knowledge of regional plant communities	_____
		Other (explain)	_____

Hydrophytic vegetation present?      yes       no

Rationale for decision/Remarks:

**HYDROLOGY**

Is it the growing season?       yes       no

Based on: \_\_\_\_\_ soil temp (record temp \_\_\_\_\_)  
 other (explain) Summer

Dept. of inundation: \_\_\_\_\_ inches

Depth to free water in pit: \_\_\_\_\_ inches

Depth to saturated soil: \_\_\_\_\_ inches

Check all that apply & explain below:

Stream, Lake or gage data: \_\_\_\_\_

Aerial photographs: \_\_\_\_\_ Other: \_\_\_\_\_

Water Marks: yes <input checked="" type="radio"/> no	Sediment Deposits: yes <input checked="" type="radio"/> no
on	
Drift Lines: yes <input checked="" type="radio"/> no	Drainage Patterns: yes <input checked="" type="radio"/> no
Oxidized Root (live roots) Channels <12 in. yes <input checked="" type="radio"/> no	Local Soil Survey: yes <input type="radio"/> no <u>N/A</u>
FAC Neutral: yes <input type="radio"/> no	Water-stained Leaves yes <input checked="" type="radio"/> no
Other (explain):	

Wetland hydrology present?      yes       no

Rationale for decision/Remarks:

COMPACT FILL SLOPE

**SOILS** FILL

Map Unit Name \_\_\_\_\_ Drainage Class \_\_\_\_\_  
 (Series & Phase)

Taxonomy (subgroup) \_\_\_\_\_ Field observations confirm Yes No  
 mapped type?

Profile Description						
Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)

**Hydric Soil Indicators:** (check all that apply)

<input type="checkbox"/> Histosol	<input type="checkbox"/> Matrix chroma ≤ 2 with mottles
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> Mg or Fe Concretions
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> High Organic Content in Surface Layer of Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National/Local Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma (=1) matrix	<input type="checkbox"/> Other (explain in remarks)

Hydric soils present?      yes      **no**

Rationale for decision/Remarks:  
COMPACT FILL SLOPE

**Wetland Determination** (circle)

Hydrophytic vegetation present?	yes	<b>no</b>	Is the sampling point within a wetland?	yes	<b>no</b>
Hydric soils present?	yes	<b>no</b>			
Wetland hydrology present?	yes	<b>no</b>			

Rationale/Remarks:  
NO CRITERIA MET

NOTES:



**SOILS**

Map Unit Name PUGET SILTY CLAY LOAM  
(Series & Phase)

Drainage Class POORLY DRAINED

Taxonomy (subgroup)

Field observations confirm Yes  No

**Profile Description**

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-15"		10YR 2/1			MUCK	

**Hydric Soil Indicators:** (check all that apply)

- Histosol
- Histic Epipedon
- Sulfidic Odor
- Aquic Moisture Regime
- Reducing Conditions
- Gleyed or Low-Chroma (=1) matrix
- Matrix chroma ≤ 2 with mottles
- Mg or Fe Concretions
- High Organic Content in Surface Layer of Sandy Soils
- Organic Streaking in Sandy Soils
- Listed on National/Local Hydric Soils List
- Other (explain in remarks)

Hydric soils present?  yes  no

Rationale for decision/Remarks:  
LOW CHROMA MUCK

**Wetland Determination** (circle)

- Hydrophytic vegetation present?  yes  no
- Hydric soils present?  yes  no
- Wetland hydrology present?  yes  no
- Is the sampling point within a wetland?  yes  no

**Rationale/Remarks:**

DELINEATION CORRESPONDS TO TOE OF HISTORIC FILL SLOPE

**NOTES:**

~ 5' INTO UPLAND AT A-21

**DATA FORM 1 (Revised)**  
**Routine Wetland Determination**  
**(WA State Wetland Delineation Manual or**  
**1987 Corps Wetland Delineation Manual)**

Project/Site: PARCEL 062506-9044	Date: 08/09/11
Applicant/owner: ALL WOOD RECYCLING	County: KING
Investigator(s): AUTMANN	State: WA
	S/T/R: 6/25N/06E
Do Normal Circumstances exist on the site? <input checked="" type="radio"/> yes <input type="radio"/> no	Community ID:
Is the site significantly disturbed (atypical situation)? <input checked="" type="radio"/> yes <input type="radio"/> no	Transect ID:
Is the area a potential Problem Area? <input checked="" type="radio"/> yes <input type="radio"/> no	Plot ID: TP #4
Explanation of atypical or problem area: HISTORIC FILL SLOPE	

**VEGETATION** (For strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	Stratum	% cover	Indicator	Dominant Plant Species	Stratum	% cover	Indicator
Alnus rubra	T	60	FAC				
Polygonum cuspidatum	S	70	FACU				
Rubus discolor	S	30	FACU				
Polystichum muntonii	H	40	FACU				

**HYDROPHYTIC VEGETATION INDICATORS:**

% of dominants OBL, FACW, & FAC 25

Check all indicators that apply & explain below:

Visual observation of plant species growing in areas of prolonged inundation/saturation	___	Physiological/reproductive adaptations	___
Morphological adaptations	___	Wetland plant database	___
Technical Literature	___	Personal knowledge of regional plant communities	___
		Other (explain)	

Hydrophytic vegetation present? yes  no

Rationale for decision/Remarks: NOT > 50% FAC OR WETTER

**HYDROLOGY**

Is it the growing season? <input checked="" type="radio"/> yes <input type="radio"/> no	Water Marks: yes <input type="radio"/> no <input checked="" type="radio"/>	Sediment Deposits: yes <input type="radio"/> no <input checked="" type="radio"/>
Based on: <input checked="" type="checkbox"/> soil temp (record temp _____) other (explain) Summer	Drift Lines: yes <input type="radio"/> no <input checked="" type="radio"/>	Drainage Patterns: yes <input type="radio"/> no <input checked="" type="radio"/>
Dept. of inundation: _____ inches	Oxidized Root (live roots) Channels <12 in. yes <input type="radio"/> no <input checked="" type="radio"/>	Local Soil Survey: yes <input type="radio"/> no <input type="radio"/>
Depth to free water in pit: _____ inches	FAC Neutral: yes <input type="radio"/> no <input checked="" type="radio"/>	Water-stained Leaves yes <input type="radio"/> no <input checked="" type="radio"/>
Depth to saturated soil: _____ inches	Other (explain):	
Check all that apply & explain below: Stream, Lake or gage data: _____ Aerial photographs: _____ Other: _____		

Wetland hydrology present? yes  no

Rationale for decision/Remarks: COMPACT FILL SLOPE

**SOILS**

FILL

Map Unit Name \_\_\_\_\_  
(Series & Phase)

Drainage Class \_\_\_\_\_

Taxonomy (subgroup) \_\_\_\_\_

Field observations confirm Yes No  
mapped type?

**Profile Description**

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)

**Hydric Soil Indicators:** (check all that apply)

- |   |   |
|---|---|
| <input type="checkbox"/> Histosol                         | <input type="checkbox"/> Matrix chroma ≤ 2 with mottles                       |
| <input type="checkbox"/> Histic Epipedon                  | <input type="checkbox"/> Mg or Fe Concretions                                 |
| <input type="checkbox"/> Sulfidic Odor                    | <input type="checkbox"/> High Organic Content in Surface Layer of Sandy Soils |
| <input type="checkbox"/> Aquic Moisture Regime            | <input type="checkbox"/> Organic Streaking in Sandy Soils                     |
| <input type="checkbox"/> Reducing Conditions              | <input type="checkbox"/> Listed on National/Local Hydric Soils List           |
| <input type="checkbox"/> Gleyed or Low-Chroma (=1) matrix | <input type="checkbox"/> Other (explain in remarks)                           |

Hydric soils present?      yes      no

Rationale for decision/Remarks:

COMPACT FILL SLOPE

**Wetland Determination** (circle)

Hydrophytic vegetation present?	yes	<u>no</u>	Is the sampling point within a wetland?	yes	<u>no</u>
Hydric soils present?	yes	<u>no</u>			
Wetland hydrology present?	yes	<u>no</u>			

Rationale/Remarks:

NO CRITERIA MET

NOTES:

**APPENDIX B**  
**KING COUNTY CRITICAL AREAS DESIGNATION FOR**  
**WETLAND RATING**



## King County

Department of Development  
and Environmental Services

900 Oakesdale Avenue Southwest  
Renton, WA 98057-5212

206-296-6600 TTY 206-296-7217

[www.kingcounty.gov](http://www.kingcounty.gov)

June 7, 2010

Bill Moffet  
Union Shares LLC  
2144 Westlake Avenue North, #6  
Seattle, WA 98109

RE: Critical Areas Designation L10SA044, Parcels 0625069017, 0625069029 and 0625069042

Status: **Complete**

Dear Mr. Moffett:

The above-referenced parcels were reviewed to complete a Critical Areas Designation, including a site visit, and in-office review of existing maps and inventories. The site contains Flood Hazard, Seismic Hazard, Critical Aquifer Recharge, Wetland and Aquatic Area critical areas. Each is described in the paragraphs below, and shown on the attached site plan as applicable. Please note that the determination regarding some critical areas is vested for five years, and others, such as flood plain and wildlife habitat, are not vested. The reason for this is that the non-vested critical areas are more likely to change over a relatively short time period.

The site was also evaluated by Greg Wessel and Don Gauthier.

### Seismic Hazard Area (21A.24.290)

Your parcels are within a possible seismic hazard area. Seismic hazards, as defined here, include areas that host foundation soils that might liquefy during an earthquake, leading to loss of bearing capacity and settling or collapse of part of the structure. It is possible to build within a seismic hazard area, but only if mitigation is incorporated into the design of the structure (usually in the form of a special foundation) that eliminates or minimizes the impact of the hazard.

In order to determine the nature of the hazard, and hence the type of mitigation, we usually require an evaluation of the development site by a geological engineer or engineering geologist. The report should be a complete assessment of soil susceptibility to seismically induced liquefaction or other seismically induced settlement. Subsurface sampling is usually done, sometimes including deep borings, and if problematic soils are encountered, the engineer recommends appropriate changes to the building plans.

The presence of a seismic hazard area does NOT, however, affect the location of a septic system or water well. For this reason, we do not require a geological study until the building permit application review phase, although it is prudent to be aware of this issue prior to finalizing your building plans.

In this case, the greatest potential for significant seismic hazards exists in the western portions of the parcels, which may also be nearest regulated wetlands. Those portions of the parcels immediately adjacent to 196<sup>th</sup> Ave NE may not contain problematic foundation soils that would comprise a seismic hazard.

#### Critical Aquifer Recharge Area (21A.24.311 to 21A.24.316)

All three parcels contain Category I and Category II Critical Aquifer Recharge Areas (CARAs). All three categories of CARA (I, II, and III) have development restrictions that affect industrial and commercial practices. However, only Category I and Category II CARAs have development restrictions that might affect residential development, and only for parcels less than one acre in size. Your parcels are all greater than one acre in size, and so your planned residential development will not be affected by the presence of this critical area under the current parcel configuration.

#### Wetlands (21A.24.318).

The site contains a Category I Wetland located along the western portions of the parcels. This wetland is adjacent to Evans Creek and extends west outside the boundaries of the parcels within the Evans Creek flood plain. Standard buffers for this category of wetland for normal residential development are 190 feet plus a 15-foot building setback.

Using the Washington State Wetland Rating System for Western Washington, this riverine wetland had an overall score of 77 points, including 20 water quality function points, 32 hydrologic function points, and 25 habitat function points.

#### Aquatic Areas (21A.24.355).

A Type O Aquatic Area is located in the northeastern corner of parcel 0625069042. This intermittent creek enters the parcel via a culvert underneath 196<sup>th</sup> Avenue Northeast and continues approximately 150 feet before it infiltrates into the substrate at, or near, the northern parcel boundary. Standard buffers for this resource are 25 feet plus a 15-foot building setback.

#### Non-Vested Critical Areas

##### Flood Hazard Areas (21A.24.230 – 270)

A portion of each of the three parcels is located within the Zero-rise floodway (floodplain) of Evans Creek. Since a portion of each of these parcels is located outside the floodplain, development is allowed only on that portion of each parcel outside of the floodplain.

The following Flood Hazard Code provisions, KCC 21A.24.230 – 270, address development standards in the floodplain:

**Floodway, zero-rise** is defined in King County Code (KCC) 21A.06.505 as:

“Floodway, zero-rise: the channel of a stream and that portion of the adjoining floodplain which is necessary to contain and discharge the base flood flow without any measurable increase in base flood elevation.”

- A. For the purpose of this definition “measurable increase in base flood elevation” means a calculated upward rise in the base flood elevation, equal to or greater than 0.01 foot, resulting from a comparison of existing conditions and changed conditions directly attributable to alterations of the topography or any other flow obstructions in the floodplain. “Zero-rise floodway” is broader than that of the FEMA floodway, but always includes the FEMA floodway.
- B. “Zero-rise floodway” includes the entire floodplain unless a critical areas report demonstrates otherwise.”

**Zero-rise Floodway.** The following flood hazard code provisions define what development is allowed in the Zero-rise floodway:

- KCC 21A.24.250 F. states “New residential structures and substantial improvements to existing residential structures or any structure accessory to a residential use shall meet the following standards:
  1. Located the structures outside the FEMA floodway;
  2. Locate the structures only on lots in existence before November 27, 1990, that contain less than five thousand square feet of buildable land outside of the zero-rise floodway; and
  3. **To the maximum extent practical, locate the structures the farthest distance from the channel, unless the applicant can demonstrate that an alternative location is less subject to risk”**
- KCC 21A.24.250 G. states “Public and private utilities are only allowed if:
  1. The department determines that a feasible alternative site is not available;
  2. **A waiver is granted by the Seattle-King County department of public health for new on-site sewage disposal facilities;**
  3. The utilities are dry flood-proofed to or elevated above the flood protection elevation;
  4. Above-ground utility transmission lines, except for electrical transmission lines, are only allowed for the transport of nonhazardous substances; and
  5. Underground utility transmission lines transporting hazardous substances are buried at a minimum depth of four feet below the maximum depth of scour for the base flood, as predicted by a civil engineer and achieve sufficient negative buoyancy so that any potential for flotation or upward migration is eliminated”

**KCC 21A.24.240 Zero-rise flood fringe.**

- KCC 21A.24.240 A. states: “Development proposals and alterations shall not reduce the effective base flood storage volume of the floodplain. A development proposal shall provide

compensatory storage if grading or other activity displaces effective flood storage volume.  
Compensatory storage shall:

1. Provide equivalent volume at equivalent elevations to that being displaced;
  2. Hydraulically connect to the source of flooding;
  3. Provide compensatory storage in the same construction season as when the displacement of flood volume occurs and before the flood season begins on September 30 for that year; and
  4. Occur on the site. The director may approve equivalent compensatory storage off the site if legal arrangements, acceptable to the department, are made to assure that the effective compensatory storage volume will be preserved over time;"
- **KCC 21A.24.240 B.** states: "A structural engineer shall design and certify all elevated construction and submit the design to the department;"
  - **KCC 21A.24.240 C.** states: "A civil engineer shall prepare a base flood depth and base flood velocity analysis and submit the analysis to the department. Development proposals are not allowed if the base flood depth exceeds three feet or the base flood velocity exceeds three feet per second."

This completed Critical Areas Designation letter and attached site plan are vested for 5 years from the date of this letter. The vesting pertains only to critical areas.

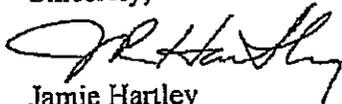
Please submit this letter with your septic design to the Health Department as applicable.

The attached site plan is an approximation based on information provided to the County. If impacts are proposed within approximately 200 feet of any critical areas, survey may be required.

Please note that the purpose of this review is to determine the location and classification of critical areas on your site, and is not an approval of existing or proposed development. Additional reviews, including but not limited to drainage, floodplain, shorelines, clearing, compliance with critical area codes, and fire flow may occur during the building permit process.

If you have any questions about this designation, you may contact me at (206) 296-6736.

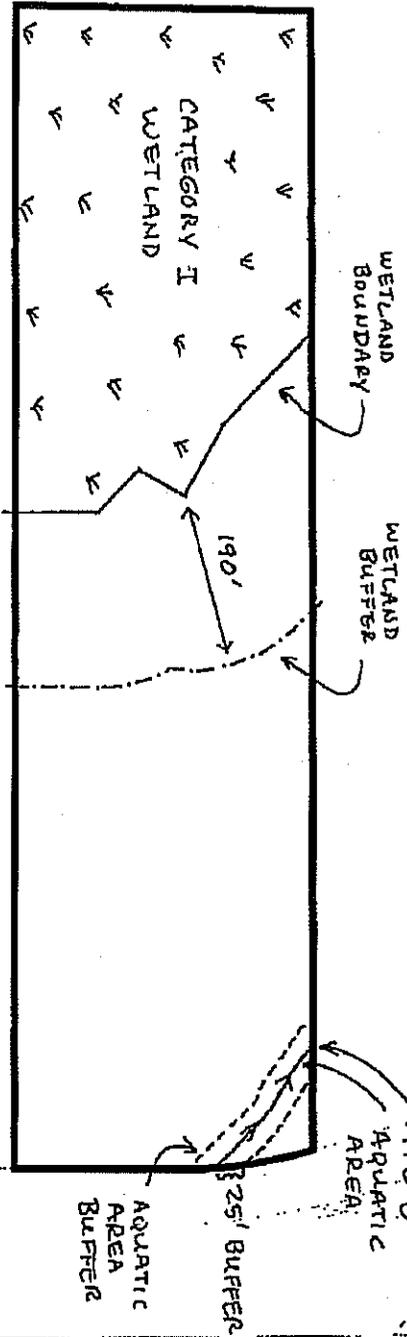
Sincerely,



Jamie Hartley  
Senior Ecologist  
Critical Areas Section

[JKH]: L108SA044.doc

Permit: L10SAD04  
Parcel: 0625069042  
Staff Name: J HARTLEY  
Accuracy: Non-Surveyed  
Date: May 26, 2010  
Valid Until: 6/1/2015



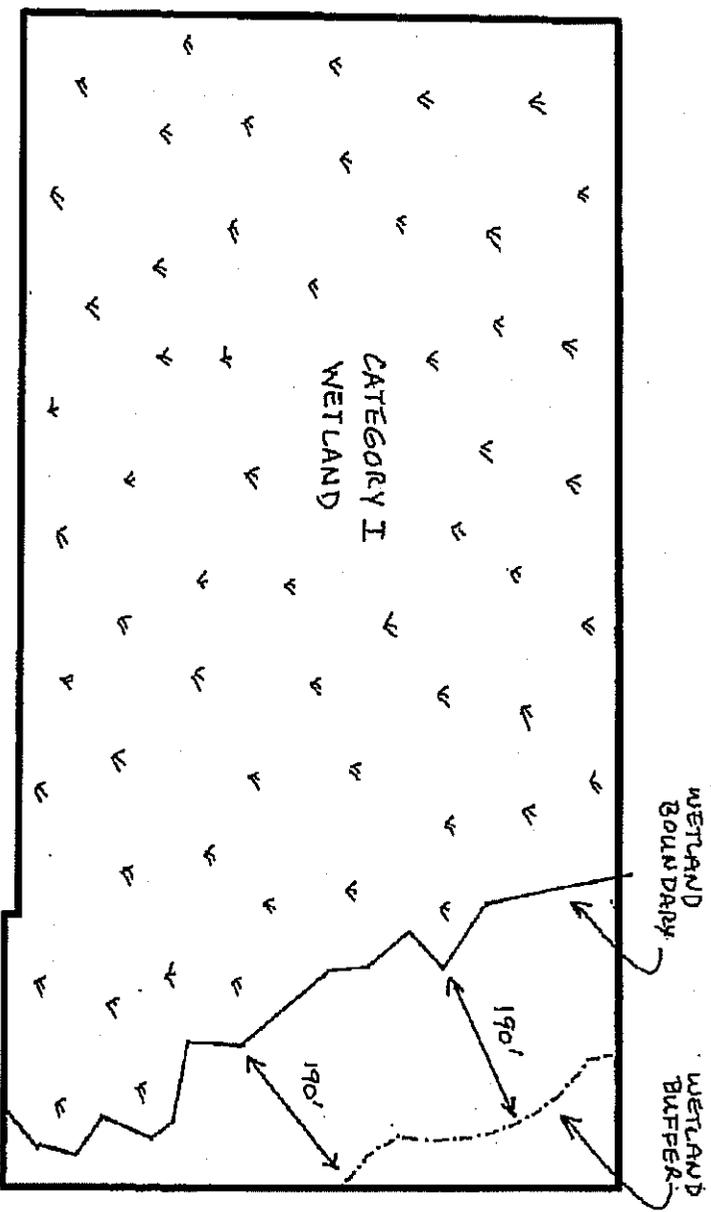
APPROVED  
BY *[Signature]*  
K & CRITICAL AREA REVIEW  
DATE 6/7/2010



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Permit: 110SA044  
Parcel: 0625069017  
Staff Name: J HARTLEY  
Accuracy: Non-Surveyed  
Date: May 26, 2010  
Valid Until: 6/1/2015

Parcels



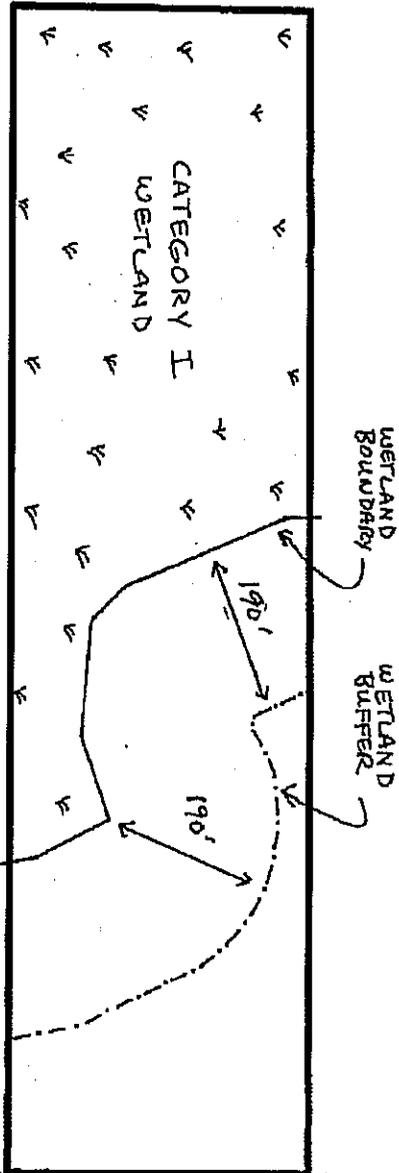
APPROVED
BY <i>[Signature]</i>
RIC CRITICAL AREA REVIEW
DATE 6/7/2010



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Permit: L10SA004  
Parcel: 0625069029  
Staff Name: J HARTLEY  
Accuracy: Non-Surveyed  
Date: May 26, 2010  
Valid Until:

Parcel



APPROVED  
BY *[Signature]*  
K & CRITICAL AREA REVIEW  
DATE 4/7/2010



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# WETLAND RATING FORM - WESTERN WASHINGTON

Name of Wetland: 1853  
 (attach map of wetland to rating form)

Project Name: <b>Novelty Hill Road EIS</b>
Project Number: <b>100992</b>

Location: SEC: \_\_\_\_\_ TOWNSHIP: \_\_\_\_\_ RANGE: \_\_\_\_\_ Size (acre): \_\_\_\_\_

Rated by: MB (Mason Bowles) Affiliation: KCDNRP Date(s): 4/5/2006

## SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I <u>  </u>	X <u>  </u>	II <u>  </u>	III <u>  </u>	IV <u>  </u>
Category I = Score >70 Category II = Score 51 -69 Category III = Score 30- 50 Category IV = Score <30		Score for Water Quality Functions		20
		Score for Hydrologic Functions		32
		Score for Habitat Functions		25
		<b>TOTAL SCORE</b>		<b>77</b>

JCH  
4/3/10  
OK ✓

Category based on SPECIAL CHARACTERISTICS of the wetland

I    II    Does Not Apply   X  

**FINAL CATEGORY** (choose the "highest" category from above) **CATEGORY I**

Check the appropriate type and class of wetland being rated.

Wetland Type	Wetland Class
Estuarine	Depressional
Natural Heritage Wetland	Riverine <span style="float: right;">X</span>
Bog	Lake-fringe
Mature Forest	Slope
Old Growth Forest	Flats
Coastal Lagoon	Freshwater Tidal
Interdunal	

**Does the wetland being rated meet any of the criteria below?**

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

**Checklist for Wetlands that Need Special Protection, and that are not Included in the Rating**

*SP1. Has the wetland been documented as a habitat for any Federally listed Threatened or Endangered plant or animal species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.

*SP2. Has the wetland been documented as habitat for any State listed Threatened or Endangered plant or animal species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database.

*SP3. Does the wetland contain individuals of Priority species listed by the WDFW for the state?*

*SP4. Does the wetland have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands into those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands

## Classification of Vegetated Wetlands for Western Washington

Wetland Name: \_\_\_\_\_

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

1. Are the water levels in the wetland usually controlled by tides (i.e. except during floods)?

YES – Freshwater  
Tidal Fringe

NO – go to 2

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?

YES – Freshwater  
Tidal Fringe

NO – Saltwater Tidal Fringe  
(Estuarine)

*If your wetland can be classified as a Freshwater Tidal Fringe use the forms for Riverine wetlands. If it is Saltwater Tidal Fringe it is rated as an Estuarine wetland. Wetlands that were called estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term “Estuarine” wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p. )*

2. Is the topography within the wetland flat and precipitation is only source (>90%) of water to it.

YES – The wetland class is Flats

NO – go to 3

If your wetland can be classified as a “Flats” wetland, use the form for Depressional wetlands.

3. Does the wetland meet both of the following criteria?

The vegetated part of the wetland is on the shores of a body of open water (without any vegetation on the surface) where at least 20 acres (8 ha) are permanently inundated (ponded or flooded):

At least 30% of the open water area is deeper than 6.6 ft (2 m)?

YES – The wetland class is Lake-fringe (Lacustrine Fringe)

NO – go to 4

4. Does the wetland meet all of the following criteria?

The wetland is on a slope (*slope can be very gradual*),

The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.

The water leaves the wetland without being impounded?

NOTE: *Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3ft diameter and less than 1 foot deep).*

YES – The wetland class is Slope  NO - go to 5

5. Is the wetland in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river? The flooding should occur at least once every two years, on the average, to answer “yes.” The wetland can contain depressions that are filled with water when the river is not flooding.

YES – The wetland class is Riverine

NO - go to 6

6. Is the wetland in a topographic depression in which water ponds, or is saturated to the surface, at some time of the year. This means that any outlet, if present, is higher than the interior of the wetland.

NO – go to 7

YES – The wetland class is Depressional

7. Is the wetland located in a very flat area with no obvious depression and no stream or river

NO – go to 8

YES – The wetland class is Depressional

8. Your wetland seems to be difficult to classify. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. Sometimes we find characteristics of several different hydrogeomorphic classes within one wetland boundary. Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. *NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland being rated. If the area of the second class is less than 10% classify the wetland using the first class.*

HGM Classes Within a Delineated Wetland Boundary	Class to Use in Rating
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

If you are unable still to determine which of the above criteria apply to your wetland, or you have more than 2 HGM classes within a wetland boundary, classify the wetland as Depressional for the rating.

## D Depressional and Flats Wetlands

**WATER QUALITY FUNCTIONS - Indicators that wetland functions to improve water quality**

**D 1. Does the wetland have the potential to improve water quality? (see p. 38)**

**D 1.1 Characteristics of surface water flows out of the wetland:**

<input type="checkbox"/>	Wetland is a depression with no surface water outlet	points = 3	<input type="text" value="0"/>
<input type="checkbox"/>	Wetland has an intermittently flowing, or highly constricted, outlet	points = 2	<input type="text" value="0"/>
<input type="checkbox"/>	Wetland has an unconstricted surface outlet	points = 1	<input type="text" value="0"/>
<input type="checkbox"/>	Wetland is flat and has no obvious outlet and/or outlet is a ditch	points = 1	<input type="text" value="0"/>

**D 1.2 The soil 2 inches below the surface is clay, organic, or smells anoxic (hydrogen sulfide or rotten eggs).**

<input type="checkbox"/>	YES	points = 4	<input type="text" value="0"/>
<input type="checkbox"/>	NO	points = 0	<input type="text" value="0"/>

**D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest class):**

<input type="checkbox"/>	Wetland has persistent, ungrazed, vegetation > = 95% of area	points = 5	<input type="text" value="0"/>
<input type="checkbox"/>	Wetland has persistent, ungrazed, vegetation > = 1/2 of area	points = 3	<input type="text" value="0"/>
<input type="checkbox"/>	Wetland has persistent, ungrazed vegetation > = 1/10 of area	points = 1	<input type="text" value="0"/>
<input type="checkbox"/>	Wetland has persistent, ungrazed vegetation < 1/10 of area	points = 0	<input type="text" value="0"/>

**D1.4 Characteristics of seasonal ponding or inundation.** This is the area of the wetland that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 yrs.

<input type="checkbox"/>	Area seasonally ponded is > 1/2 total area of wetland	points = 4	<input type="text" value="0"/>
<input type="checkbox"/>	Area seasonally ponded is > 1/4 total area of wetland	points = 2	<input type="text" value="0"/>
<input type="checkbox"/>	Area seasonally ponded is < 1/4 total area of wetland	points = 0	<input type="text" value="0"/>

NOTE: See text for indicators of seasonal and permanent inundation..

**Total for D 1**

*Add the points in the boxes above*

<input type="text" value="0"/>
--------------------------------

**D 2. Does the wetland have the opportunity to improve water quality? (see p. 44)** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? Note which of the following conditions provide the sources of pollutants.

<input type="checkbox"/>	Grazing in the wetland or within 150 ft
<input type="checkbox"/>	Untreated stormwater discharges to wetland
<input type="checkbox"/>	Tilled fields or orchards within 150 ft of wetland
<input type="checkbox"/>	A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging
<input type="checkbox"/>	Residential, urban areas, golf courses are within 150 ft of wetland
<input type="checkbox"/>	Wetland is fed by groundwater high in phosphorus or nitrogen
<input type="checkbox"/>	Other

YES multiplier is 2     NO multiplier is 1

<input type="text" value="1"/>
--------------------------------

**TOTAL - Water Quality Functions** Multiply the score from D1 by D2

*Add score to table on p. 1*

<input type="text" value="0"/>
--------------------------------

## D Depressional and Flats Wetlands

**HYDROLOGIC FUNCTIONS** - Indicators that wetland functions to reduce flooding and stream degradation

**D 3. Does the wetland have the potential to reduce flooding and erosion? (see p. 46)**

**D 3.1 Characteristics of surface water flows out of the wetland**

<input type="checkbox"/>	Wetland has no surface water outlet	points = 4	<input type="text" value="0"/>
<input type="checkbox"/>	Wetland has an intermittently flowing, or highly constricted, outlet	points = 2	<input type="text" value="0"/>
<input type="checkbox"/>	Wetland is flat and has no obvious outlet and/or outlet is a small dike	points = 1	<input type="text" value="0"/>
<input type="checkbox"/>	Wetland has an unobstructed surface outlet	points = 0	<input type="text" value="0"/>

**D 3.2 Depth of storage during wet periods**

Estimate the height of ponding above the bottom of the outlet

<input type="checkbox"/>	Marks of ponding are 3 ft or more above the surface	points = 7	<input type="text" value="0"/>
<input type="checkbox"/>	The wetland is a "headwater" wetland"	points = 5	<input type="text" value="0"/>
<input type="checkbox"/>	Marks of ponding between 2 ft to < 3 ft from surface	points = 5	<input type="text" value="0"/>
<input type="checkbox"/>	Marks are at least 0.5 ft to < 2 ft from surface	points = 3	<input type="text" value="0"/>
<input type="checkbox"/>	Wetland is flat but has small depressions on the surface that trap water	points = 1	<input type="text" value="0"/>
<input type="checkbox"/>	Marks of ponding less than 0.5 ft	points = 0	<input type="text" value="0"/>

**D 3.3 Contribution of wetland to storage in the watershed**

Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland itself.

<input type="checkbox"/>	The area of the basin is less than 10 times the area of wetland	points = 5	<input type="text" value="0"/>
<input type="checkbox"/>	The area of the basin is 10 to 100 times the area of the wetland	points = 3	<input type="text" value="0"/>
<input type="checkbox"/>	The area of the basin is more than 100 times the area of the wetland	points = 0	<input type="text" value="0"/>
<input type="checkbox"/>	Wetland is in the FLATS class (basin = the wetland, by definition)	points = 5	<input type="text" value="0"/>

Total for D 3 Add the points in the boxes above

<input type="text" value="0"/>
--------------------------------

**D 4. Does the wetland have the opportunity to reduce flooding and erosion? (see p. 49)**

Answer YES if the wetland is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater.

Note which of the following indicators of opportunity apply.

<input type="checkbox"/>	Wetland is in a headwater of a river or stream that has flooding problems
<input type="checkbox"/>	Wetland drains to a river or stream that has flooding problems
<input type="checkbox"/>	Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems
<input type="checkbox"/>	Other _____

YES multiplier is 2     NO multiplier is 1

<input type="text" value="1"/>
--------------------------------

**TOTAL** - Hydrologic Functions Multiply the score from D 3 by D 4

<input type="text" value="0"/>
--------------------------------

Add score to table on p. 1

**R Riverine and Freshwater Tidal Fringe Wetlands**

**WATER QUALITY FUNCTIONS** - Indicators that wetland functions to improve water quality

*R 1. Does the wetland have the potential to improve water quality? (see p. 50)*

*R 1.1 Area of surface depressions within the riverine wetland that can trap sediments during a flooding event:*

<input type="checkbox"/>	Depressions cover >3/4 area of wetland	points = 8	<input type="text" value="0"/>
<input checked="" type="checkbox"/>	Depressions cover > 1/2 area of wetland	points = 4	<input type="text" value="4"/>
<input type="checkbox"/>	Depressions present but cover < 1/2 area of wetland	points = 2	<input type="text" value="0"/>
<input type="checkbox"/>	No depressions present	points = 0	<input type="text" value="0"/>

*R 1.2 Characteristics of the vegetation in the wetland:*

<input type="checkbox"/>	Forest or shrub > 2/3 the area of the wetland	points = 8	<input type="text" value="0"/>
<input checked="" type="checkbox"/>	Forest or shrub > 1/3 area of the wetland	points = 6	<input type="text" value="6"/>
<input type="checkbox"/>	Ungrazed, emergent plants > 2/3 area of wetland	points = 6	<input type="text" value="0"/>
<input type="checkbox"/>	Ungrazed emergent plants > 1/3 area of wetland	points = 3	<input type="text" value="0"/>
<input type="checkbox"/>	Forest, shrub, and ungrazed emergent < 1/3 area of wetland	points = 0	<input type="text" value="0"/>

*Add the points in the boxes above*

*R 2. Does the wetland have the opportunity to improve water quality? (see p. 53)*

Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland?

*Note which of the following conditions provide the sources of pollutants.*

<input type="checkbox"/>	Grazing in the wetland or within 150ft
<input type="checkbox"/>	Untreated stormwater discharges to wetland
<input type="checkbox"/>	Tilled fields or orchards within 150 feet of wetland
<input type="checkbox"/>	A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging
<input type="checkbox"/>	Residential, urban areas, golf courses are within 150 ft of wetland
<input type="checkbox"/>	The river or stream linked to the wetland has a contributing basin where human activities have raised levels of sediment, toxic compounds or nutrients in the
<input checked="" type="checkbox"/>	Other _____

YES multiplier is 2     NO multiplier is 1

**TOTAL** - Water Quality Functions Multiply the score from R 1 by R 2

*Add score to table on p. 1*

**R Riverine and Freshwater Tidal Fringe Wetlands**

**HYDROLOGIC FUNCTIONS** - Indicators that wetland functions to reduce flooding and stream erosion

*R 3. Does the wetland have the potential to reduce flooding and erosion? (see p. 54)*

*R 3.1 Characteristics of the overbank storage the wetland provides:* Estimate the average width of the wetland perpendicular to the direction of the flow and the width of the stream or river channel (distance between banks). Calculate the ratio: (width of wetland)/(width of stream).

<input checked="" type="checkbox"/>	If the ratio is more than 20	points = 9	<input type="text" value="9"/>
<input type="checkbox"/>	If the ratio is between 10 – 20	points = 6	<input type="text" value="0"/>
<input type="checkbox"/>	If the ratio is 5- <10	points = 4	<input type="text" value="0"/>
<input type="checkbox"/>	If the ratio is 1- <5	points = 2	<input type="text" value="0"/>
<input type="checkbox"/>	If the ratio is < 1	points = 1	<input type="text" value="0"/>

*R 3.2 Characteristics of vegetation that slow down water velocities during floods:* Treat large woody debris as "forest or shrub". Choose the points appropriate for the best description.

<input checked="" type="checkbox"/>	Forest or shrub for >1/3 area OR Emergent plants > 2/3 area	points = 7	<input type="text" value="7"/>
<input type="checkbox"/>	Forest or shrub for > 1/10 area OR Emergent plants > 1/3 area	points = 4	<input type="text" value="0"/>
<input type="checkbox"/>	Vegetation does not meet above criteria	points = 0	<input type="text" value="0"/>

*Add the points in the boxes above*

*R 4. Does the wetland have the opportunity to reduce flooding and erosion? (see p. 57)*

Answer YES if the wetland is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Note which of the following conditions apply.

<input type="checkbox"/>	There are human structures and activities downstream (roads, buildings, bridges, farms) that can be damaged by flooding.
<input type="checkbox"/>	There are natural resources downstream (e.g. salmon redds) that can be damaged by flooding
<input checked="" type="checkbox"/>	Other _____

*(Answer NO if the major source of water to the wetland is controlled by a reservoir or the wetland is tidal fringe along the sides of a dike)*

<input checked="" type="checkbox"/>	YES multiplier is 2	<input type="checkbox"/>	NO multiplier is 1	<input type="text" value="2"/>
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**TOTAL** - Hydrologic Functions Multiply the score from R 1 by R 2

*Add score to table on p. 1*

## L Lake-Fringe Wetlands

**WATER QUALITY FUNCTIONS** - Indicators that the wetland functions to improve water quality

*L 1. Does the wetland have the potential to improve water quality? (see p. 59)*

*L 1.1 Average width of vegetation along the lakeshore*

<input type="checkbox"/>	Vegetation is more than 33ft (10m) wide	points = 6	<input type="text" value="0"/>
<input type="checkbox"/>	Vegetation is more than 16 (5m) wide and <33ft	points = 3	<input type="text" value="0"/>
<input type="checkbox"/>	Vegetation is more than 6ft (2m) wide and <16 ft	points = 1	<input type="text" value="0"/>
<input type="checkbox"/>	Vegetation is less than 6 ft wide	points = 0	<input type="text" value="0"/>

*L 1.2 Characteristics of the vegetation in the wetland.* Choose the appropriate description that results in the highest points, and do not include any open water in your estimate of coverage. In this case the herbaceous plants can be either the dominant form (called emergent class) or as an understory in a shrub or forest community.

<input type="checkbox"/>	Herbaceous plants cover >90% of the vegetated area	points = 6	<input type="text" value="0"/>
<input type="checkbox"/>	Herbaceous plants cover >2/3 of the vegetated area	points = 4	<input type="text" value="0"/>
<input type="checkbox"/>	Herbaceous plants cover >1/3 of the vegetated area	points = 3	<input type="text" value="0"/>
<input type="checkbox"/>	Other vegetation that is not aquatic bed in > 2/3 vegetated area	points = 3	<input type="text" value="0"/>
<input type="checkbox"/>	Other vegetation that is not aquatic bed in > 1/3 vegetated area	points = 1	<input type="text" value="0"/>
<input type="checkbox"/>	Aquatic bed cover > 2/3 of the vegetated area	points = 0	<input type="text" value="0"/>

*Add the points in the boxes above*

<input type="text" value="0"/>
--------------------------------

*L 2. Does the wetland have the opportunity to improve water quality? (see p. 61)*

Answer YES if you know or believe there are pollutants in the lake water, or surface water flowing through the wetland to the lake is polluted. Note which of the following conditions provide the sources of pollutants.

<input type="checkbox"/>	Wetland is along the shores of a lake or reservoir that does not meet water quality standards
<input type="checkbox"/>	Grazing in the wetland or within 150ft
<input type="checkbox"/>	Polluted water discharges to wetland along upland edge
<input type="checkbox"/>	Tilled fields or orchards within 150 feet of wetland
<input type="checkbox"/>	Residential or urban areas are within 150 ft of wetland
<input type="checkbox"/>	Parks with grassy areas that are maintained, ballfields, golf courses (all within 150 ft. of lake shore)
<input type="checkbox"/>	Power boats with gasoline or diesel engines use the lake

YES multiplier is 2     NO multiplier is 1

<input type="text" value="1"/>
--------------------------------

**TOTAL** - Water Quality Functions Multiply the score from L1 by L2

<input type="text" value="0"/>
--------------------------------

**L Lake-Fringe Wetlands**

**HYDROLOGIC FUNCTIONS** - Indicators that the wetland functions to reduce shoreline erosion

**L 3. Does the wetland have the potential to reduce shoreline erosion? (see p. 62)**

Average width and characteristics of vegetation along the lakeshore (do not include aquatic bed): (choose the highest scoring description that matches conditions in the wetland).

<input type="checkbox"/>	¾ of fringe vegetation is shrubs or trees at least 33 ft (10m) wide	points = 6	<input type="text" value="0"/>
<input type="checkbox"/>	> ¾ of fringe vegetation is shrubs or trees at least 6 ft. (2 m) wide	points = 4	<input type="text" value="0"/>
<input type="checkbox"/>	> ¼ of fringe vegetation is shrubs or trees at least 33 ft (10m) wide	points = 4	<input type="text" value="0"/>
<input type="checkbox"/>	Fringe vegetation is at least 6 ft (2m) wide	points = 2	<input type="text" value="0"/>
<input type="checkbox"/>	Fringe vegetation is less than 6 ft (2m) wide	points = 0	<input type="text" value="0"/>

Record the points from the box above

<input type="text" value="0"/>
--------------------------------

**L 4. Does the wetland have the opportunity to reduce erosion? (see p. 63)**

Are there features along the shore that will be impacted if the shoreline erodes? Note which of the following conditions apply.

<input type="checkbox"/>	There are human structures and activities along the upland edge of the wetland (buildings, fields) that can be damaged by erosion.
<input type="checkbox"/>	There are undisturbed natural resources along the upland edge of the wetland (e.g. mature forests other wetlands) than can be damaged by shoreline erosion
<input type="checkbox"/>	Other _____

YES multiplier is 2     NO multiplier is 1

<input type="text" value="1"/>
--------------------------------

**TOTAL** - Hydrologic Functions Multiply the score from L 3 by L 4

<input type="text" value="0"/>
--------------------------------

Add score to table on p. 1

**S Slope Wetlands**

**WATER QUALITY FUNCTIONS** - Indicators that wetland functions to improve water quality

*S 1.1 Characteristics of average slope of wetland:*

<input type="checkbox"/>	Slope is 1% or less (a 1% slope has a 1 foot vertical drop in elevation for every 100 ft horizontal distance)	points = 3	<input type="text" value="0"/>
<input type="checkbox"/>	Slope is 1% - 2%	points = 2	<input type="text" value="0"/>
<input type="checkbox"/>	Slope is 2% - 5%	points = 1	<input type="text" value="0"/>
<input type="checkbox"/>	Slope is greater than 5%	points = 0	<input type="text" value="0"/>

*S 1.2 The soil 2 inches below the surface is clay, organic, or smells anoxic (hydrogen sulfide or rotten eggs).*

<input type="checkbox"/>	YES = 3 points	<input type="checkbox"/>	NO = 0 points	<input type="text" value="0"/>
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*S 1.3 Characteristics of the vegetation in the wetland that trap sediments and pollutants: Choose the points appropriate for the description that best fits the vegetation in the wetland. Dense vegetation means you have trouble seeing the soil surface.*

<input type="checkbox"/>	Dense, ungrazed, herbaceous vegetation > 90% of the wetland area	points = 6	<input type="text" value="0"/>
<input type="checkbox"/>	Dense, ungrazed, herbaceous vegetation > 1/2 of area	points = 3	<input type="text" value="0"/>
<input type="checkbox"/>	Dense, woody, vegetation > 1/2 of area	points = 2	<input type="text" value="0"/>
<input type="checkbox"/>	Dense, ungrazed, herbaceous vegetation > 1/4 of area	points = 1	<input type="text" value="0"/>
<input type="checkbox"/>	Does not meet any of the criteria above for vegetation	points = 0	<input type="text" value="0"/>
Total for S 1 Add the points in the boxes above			<input type="text" value="0"/>

*S 2. Does the wetland have the opportunity to improve water quality? (see p. 67)*

Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? Note which of the following conditions provide the sources of pollutants.

<input type="checkbox"/>	Grazing in the wetland or within 150ft			
<input type="checkbox"/>	Untreated stormwater discharges to wetland			
<input type="checkbox"/>	Tilled fields, logging, or orchards within 150 feet of wetland			
<input type="checkbox"/>	Residential, urban areas, or golf courses are within 150 ft upslope of wetland			
<input type="checkbox"/>	Other _____			
<input type="checkbox"/>	YES multiplier is 2	<input checked="" type="checkbox"/>	NO multiplier is 1	<input type="text" value="1"/>

**TOTAL** - Water Quality Functions Multiply the score from S1 by S2

Add score to table on p. 1

<input type="text" value="0"/>
--------------------------------

**S Slope Wetlands**

**HYDROLOGIC FUNCTIONS** - Indicators that wetland functions to reduce flooding and stream erosion (see p. 68)

**S 3.1 Characteristics of vegetation that reduce the velocity of surface flows during storms.** Choose the points appropriate for the description that best fit conditions in the wetland.

<input type="checkbox"/>	Dense, uncut, rigid vegetation covers > 90% of the area of the wetland (stems of plants should be thick enough (usually > 1/8in), or dense enough, to remain erect during surface flows)	points = 6	<input type="text" value="0"/>
<input type="checkbox"/>	Dense, uncut, rigid vegetation > 1/2 area of wetland	points = 3	<input type="text" value="0"/>
<input type="checkbox"/>	Dense, uncut, rigid vegetation > 1/4 area	points = 1	<input type="text" value="0"/>
<input type="checkbox"/>	More than 1/4 of area is grazed, mowed, tilled or vegetation is not	points = 0	<input type="text" value="0"/>

**S 3.2 Characteristics of slope wetland that holds back small amounts of flood flows:**

The slope wetland has small surface depressions that can retain water over at least 10% of its area.

<input type="checkbox"/>	YES points = 2	<input type="checkbox"/>	NO points = 0	<input type="text" value="0"/>
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Add the points in the boxes above

<input type="text" value="0"/>
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**S 4. Does the wetland have the opportunity to reduce flooding and erosion? (see p. 70)**

Is the wetland in a landscape position where the reduction in water velocity it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows? Note which of the following conditions apply.

<input type="checkbox"/>	Wetland has surface runoff that drains to a river or stream that has flooding problems
<input type="checkbox"/>	Other

(Answer NO if the major source of water is controlled by a reservoir (e.g. wetland is a seep that is on the downstream side of a dam)

<input type="checkbox"/>	YES multiplier is 2	<input checked="" type="checkbox"/>	NO multiplier is 1	<input type="text" value="1"/>
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**TOTAL - Hydrologic Functions** Multiply the score from S 3 by S 4

Add score to table on p. 1

<input type="text" value="0"/>
--------------------------------

*These questions apply to wetlands of all HGM classes.*

**H HABITAT FUNCTIONS** - Indicators that wetland functions to provide important habitat

**H 1. Does the wetland have the potential to provide habitat for many species?**

**H 1.1 Vegetation structure (see p. 72)**

Check the types of vegetation classes present (as defined by Cowardin) if the class covers more than 10% of the area of the wetland or ¼ acre.

<input type="checkbox"/>	Aquatic bed
<input checked="" type="checkbox"/>	Emergent plants
<input type="checkbox"/>	Scrub/shrub(areas where shrubs have >30% cover)
<input checked="" type="checkbox"/>	Forested (areas where trees have >30% cover)
<input checked="" type="checkbox"/>	Forested areas have 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground cover)

*Add the number of vegetation types that qualify. If you have:*

4 types or more	points = 4
3 types	points = 2
2 types	points = 1
1 type	points = 0

**2**

**H 1.2. Hydroperiods (see p. 73)**

Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ acre to count. (see text for descriptions of hydroperiods)

<input type="checkbox"/>	Permanently flooded or inundated	>4 types present points = 3
<input checked="" type="checkbox"/>	Seasonally flooded or inundated	3 types present points = 2
<input type="checkbox"/>	Occasionally flooded or inundated	2 types present point = 1
<input checked="" type="checkbox"/>	Saturated only	
<input checked="" type="checkbox"/>	Permanently flowing stream or river in, or adjacent to, the wetland	
<input checked="" type="checkbox"/>	Seasonally flowing stream in, or adjacent to, the wetland	
<input type="checkbox"/>	Lake-fringe wetland	points = 2
<input type="checkbox"/>	Freshwater tidal wetland	points = 2

**3**

**0**

**0**

**H 1.3. Richness of Plant Species (see p. 75)**

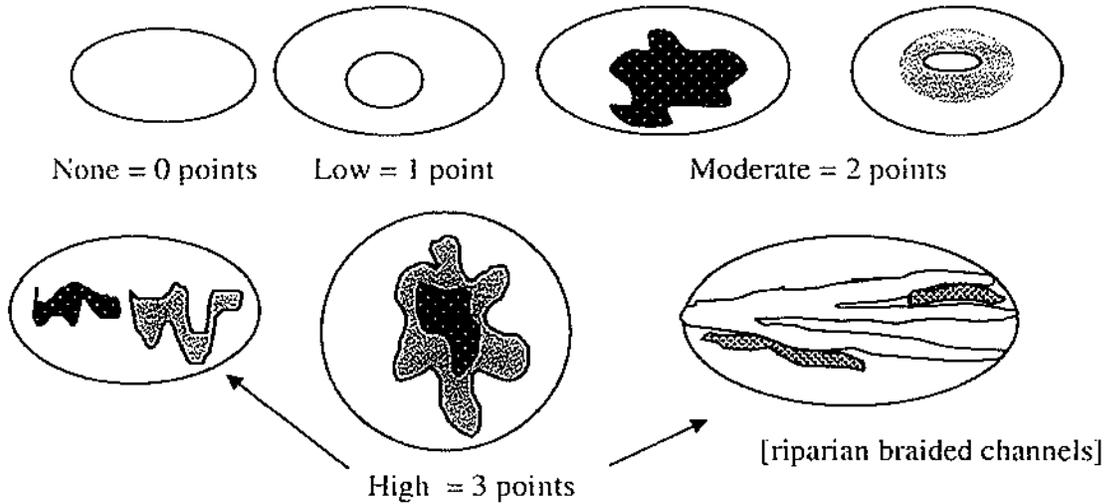
Count the number of plant species in the wetland that cover at least 10 square feet (different patches of the same species can be combined to meet the size threshold). You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, or Canadian Thistle.

If you counted:

<input checked="" type="checkbox"/>	> 19 species	points = 2	<b>2</b>
<input type="checkbox"/>	5 - 19 species	points = 1	<b>0</b>
<input type="checkbox"/>	< 5 species	points = 0	<b>0</b>

**H 1.4. Interspersion of habitats (see p. 76)**

Decide from the diagrams below whether interspersion between types of vegetation (described in H 1.1), or vegetation types and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.



NOTE: If you have four or more vegetation types or three vegetation types and open water the rating is always "high".

<b>X</b>	High	points = 3	<b>3</b>
	Moderate	points = 2	<b>0</b>
	Low	points = 1	<b>0</b>
	None	points = 0	<b>0</b>

**H 1.5. Special Habitat Features: (see p. 77)**

Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

<b>X</b>	Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long)	<b>1</b>
<b>X</b>	Standing snags (diameter at the bottom > 4 inches) in the wetland	<b>1</b>
<b>X</b>	Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream for at least 33 ft (10m)	<b>1</b>
	Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present	<b>0</b>
<b>X</b>	At least 1/4 acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated.(structures for egg-	<b>1</b>
	Invasive plants cover less than 25% of the wetland area in each stratum of plants	<b>0</b>

**H 1. TOTAL Score - potential for providing habitat**

Add the scores in the column above

**14**

**H 2. Does the wetland have the opportunity to provide habitat for many species?**

**H 2.1 Buffers (see p. 80).** Choose the description that best represents condition of buffer of wetland. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."

<input type="checkbox"/>	100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No developed areas within undisturbed part of buffer. (relatively undisturbed also means no-grazing)	Points = 5	<input type="checkbox"/> 0
<input type="checkbox"/>	100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. (relatively undisturbed also means no-grazing)	Points = 4	<input type="checkbox"/> 0
<input type="checkbox"/>	50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference.	Points = 4	<input type="checkbox"/> 0
<input type="checkbox"/>	100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference.	Points = 3	<input type="checkbox"/> 0
<input checked="" type="checkbox"/> X	50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference.	Points = 3	<input type="checkbox"/> 3

**If buffer does not meet any of the three criteria above:**

<input type="checkbox"/>	No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK.	Points = 2	<input type="checkbox"/> 0
<input type="checkbox"/>	No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK.	Points = 2	<input type="checkbox"/> 0
<input type="checkbox"/>	Heavy Grazing in buffer.	Points = 1	<input type="checkbox"/> 0
<input type="checkbox"/>	Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland)	Points = 0	<input type="checkbox"/> 0
<input type="checkbox"/>	Buffer does not meet any of the Criteria above.	Points = 1	<input type="checkbox"/> 0

**H 2.2 Corridors and Connections (see p. 81)**

H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor).

<input type="checkbox"/>	YES = 4 points (go to H 2.3)	<input type="checkbox"/>	NO = go to H 2.2.2	<input type="checkbox"/> 0
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H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? OR a Lake-fringe wetland, if it does not have an undisturbed corridor as in the question above?

<input checked="" type="checkbox"/> X	YES = 2 points (go to H 2.3)	<input type="checkbox"/>	NO = H 2.2.3	<input type="checkbox"/> 2
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**H 2.2.3 Is the wetland:**

- within 5 mi (8km) of a brackish or salt water estuary OR
- within 3 mi of a large field or pasture (>40 acres) OR
- within 1 mi of a lake greater than 20 acres?

<input type="checkbox"/>	YES = 1 point	<input checked="" type="checkbox"/> X	NO = 0 points	<input type="checkbox"/> 0
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**H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 82)**

Which of the following priority habitats are within 330ft (100m) of the wetland?

(see text for a more detailed description of these priority habitats)

<b>X</b>	<b>Riparian:</b> The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.
	<b>Aspen Stands:</b> Pure or mixed stands of aspen greater than 0.8 ha (2 acres).
	<b>Cliffs:</b> Greater than 7.6 m (25 ft) high and occurring below 5000 ft.
	<b>Old-growth forests:</b> (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of
	<b>Mature forests:</b> Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest.
	<b>Prairies:</b> Relatively undisturbed areas (as indicated by dominance of native plants) where grasses and/or forbs form the natural climax plant community.
	<b>Talus:</b> Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.
	<b>Caves:</b> A naturally occurring cavity, recess, void, or system of interconnected passages
	<b>Oregon White Oak:</b> Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%.
<b>X</b>	<b>Urban Natural Open Space:</b> A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other priority habitats, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development.
	<b>Estuary/Estuary-like:</b> Deepwater tidal habitats and adjacent tidal wetlands, usually semi-enclosed by land but with open, partly obstructed or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines there is appreciable dilution of sea water. Estuarine habitat extends upstream and landward to where ocean-derived salts measure less than 0.5% during the period of average annual low flow. Includes both estuaries and lagoons.
	<b>Marine/Estuarine Shorelines:</b> Shorelines include the intertidal and subtidal zones of beaches, and may also include the backshore and adjacent components of the terrestrial landscape (e.g., cliffs, snags, mature trees, dunes, meadows) that are important to shoreline associated fish and wildlife and that contribute to shoreline function (e.g., sand/rock/log recruitment, nutrient contribution, erosion control).

If wetland has 3 or more priority habitats = 4 points

If wetland has 2 priority habitats = 3 points

If wetland has 1 priority habitat = 1 point

No habitats = 0 points

**3**

**H 2.4 Wetland Landscape (choose the one description of the landscape around the wetland that best fits) (see p. 84)**

	There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating,	points = 5	0
	The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake fringe wetlands within ½ mile	points = 5	0
X	There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed	points = 3	3
	The wetland is Lake-fringe on a lake with disturbance and there are 3 other lake fringe wetland within ½ mile	points = 3	0
	There is at least 1 wetland within ½ mile.	points = 2	0
	There are no wetlands within ½ mile.	points = 0	0
<b>H 2. TOTAL Score - opportunity for providing habitat</b>			<b>11</b>
Add the scores in the column above			
<b>Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1</b>			<b>25</b>

## CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

### Wetland Type

Check off any criteria that apply to the wetland. Circle the appropriate Category when the appropriate criteria are met.

#### SC 1.0 Estuarine wetlands (see p. 86)

Does the wetland meet the following criteria for Estuarine wetlands?

	The dominant water regime is tidal,	
	vegetated, and	
	with a salinity greater than 0.5 ppt.	
	YES = Go to SC 1.1	<input checked="" type="checkbox"/> NO

*SC 1.1 Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151?*

	YES = Category I		NO go to SC 1.2	
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*SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following three conditions?*

	YES = Category I		NO = Category II	
--	------------------	--	------------------	--

	The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plantspecies. If the non-native <i>Spartina</i> spp. are the only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of <i>Spartina</i> would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of <i>Spartina</i> in determining the
	At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland.
	The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.

**SC 2.0 Natural Heritage Wetlands (see p. 87)**

Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species.

**SC 2.1** *Is the wetland being rated in a Section/Township/Range that contains a Natural Heritage wetland? (this question is used to screen out most sites before you need to contact WNHP/DNR)S/T/R information from Appendix D or accessed from WNHP/DNR web site.*

YES-contact WNHP/DNR (see p. 79) and go to SC 3.0  NO

**SC 2.2** *Has DNR identified the wetland as a high quality undisturbed wetland or as or as a site with state threatened or endangered plant species?*

YES = Category I  NO

**SC 3.0 Bogs (see p. 87)**

Does the wetland (or part of the wetland) meet both the criteria for soils and vegetation in bogs? Use the key below to identify if the wetland is a bog. If you answer yes you will still need to rate the wetland based on its functions.

*1. Does the wetland have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of the soil profile? (See Appendix B for a field key to identify organic soils)?*

Yes - go to Q. 3  No - go to Q. 2

*2. Does the wetland have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond?*

Yes - go to Q. 3  No - Is not a bog for purpose of rating

*3. Does the wetland have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)?*

Yes - Is a bog for purpose of rating  No - go to Q. 4

*NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog.*

*4. Is the wetland forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover (> 30% coverage of the total shrub/herbaceous cover)?*

YES = Category I  No - Is not a bog for purpose of rating

**SC 4.0 Forested Wetlands (see p. 90).** Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? If you answer yes you will still need to rate the wetland based on its

**Old-growth forests:** (west of Cascade crest) Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm) or more.

*NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter.*

YES = Category I                       NO                     

**Mature forests:** (west of the Cascade crest) Stands where the largest trees are 80 – 200 years old OR have average diameters (dbh) exceeding 21 inches (53cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth.

YES = Category I                       NO                     

**SC 5.0 Wetlands in Coastal Lagoons (see p. 91)**

Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks. The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon (needs to be measured near the bottom).

YES = Go to SC 5.1                       NO - not a wetland in a coastal lagoon

**SC 5.1 Does the wetland meets all of the following three conditions?**

<input type="checkbox"/>	The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of invasive plant species (see list of invasive species on p. 74).	
<input type="checkbox"/>	At least 3/4 of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland.C19	
<input type="checkbox"/>	The wetland is larger than 1/10 acre (4,350 square feet)	<input type="checkbox"/>
<input type="checkbox"/>	YES = Category I	<input type="checkbox"/> NO = Category II

**SC 6.0 Interdunal Wetlands (see p. 93)**

Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)?

YES - go to SC 6.1       NO - not an interdunal wetland

If you answer yes you will still need to rate the wetland based on its functions.

*In practical terms that means the following geographic areas:*

*Long Beach Peninsula- lands west of SR 103*

*Grayland-Westport- lands west of SR 105*

*Ocean Shores-Copalis- lands west of SR 115 and SR 109*

**SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is once acre or larger?**

YES = Category II       NO -- go to SC 6.2     

**SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre?**

YES = Category III     

Category of wetland based on Special Characteristics

**Not Applicable**

Choose the "highest" rating if wetland falls into several categories, and record on p. 1.

If you answered NO for all types enter "Not Applicable" on p. 1

**APPENDIX C**  
**WETLAND FUNCTIONS ASSESSMENT**

## Wetland Functions Field Data Form – WSDOT's BPJ Characterization \*

Project: ALL WOOD RECYCLINGDate: 08/09/11Wetland Name: ABiologist: ALTMANN

### A. Flood Flow Alteration (Storage and Desynchronization)

1. Wetland occurs in the upper portion of its watershed.
2. Wetland is in a relatively flat area and is capable of retaining higher volumes of water during storm events, than under normal rainfall conditions.
3. Wetland is a closed (depressional) system.
4. If flowthrough, wetland has constricted outlet with signs of fluctuating water levels, algal mats, and/or lodged debris.
5. Wetland has dense woody vegetation.
6. Wetland receives floodwater from an adjacent water course.
7. Floodwaters come as sheet flow rather than channel flow.

### B. Sediment Removal

1. Sources of excess sediment (from tillage or construction) are present upgradient of the wetland.
2. Slow-moving water and/or a deepwater habitat are present in the wetland.
3. Dense herbaceous vegetation is present.
4. Interspersion of vegetation and water is high in wetland.
5. Ponding of water occurs in the wetland.
6. Sediment deposits are present in wetland. ?

Likely or not likely to provide.  
(State your rationale.)

LIKELY

LARGE WETLAND SYSTEM  
WITH SOME STORAGE  
CAPACITY ADJACT  
EVANS CREEK

Likely or not likely to provide.  
(State your rationale.)

LIKELY

WETLAND CONTAINS  
DENSE VEGETATION  
THAT CAN TRAP  
SEDIMENTS DURING  
OVERBANK FLOODING

\* Adapted from the Highway Methodology Workbook Supplement for Wetland Functions and Values (COE, 1995).

### C. Nutrient and Toxicant Removal

1. Sources of excess nutrients (fertilizers) and toxicants (pesticides and heavy metals) are present upgradient of the wetland.
2. Wetland is inundated or has indicators that flooding is a seasonal event during the growing season.
3. Wetland provides long duration for water detention. ?
4. Wetland has at least 30% areal cover of live dense herbaceous vegetation.
5. Fine-grained mineral or organic soils are present in the wetland.

### D. Erosion Control and Shoreline Stabilization

*If associated with water course or shoreline.*

1. Wetland has dense, energy absorbing vegetation bordering the water course and no evidence of erosion. - PORTION
2. A herbaceous layer is part of this dense vegetation.
3. Trees and shrubs able to withstand erosive flood events are also part of this dense vegetation.

### E. Production of Organic Matter and its Export

1. Wetland has at least 30% areal cover of dense herbaceous vegetation.
2. Woody plants in wetland are mostly deciduous.
3. High degree of plant community structure, vegetation density, and species richness present. OVERALL
4. Interspersion of vegetation and water is high in wetland.
5. Wetland is inundated or has indicators that flooding is a seasonal event during the growing season.
6. Wetland has outlet from which organic matter is flushed.

Likely or not likely to provide.  
(State your rationale.)

LIKELY

DENSE HERBACEOUS  
VEGETATION CAN  
TRAP NUTRIENTS (EXCESS)  
DURING OVERBANK  
FLOODING.

Likely or not likely to provide.  
(State your rationale.)

LIKELY

BORDERS OF EVANS  
CREEK WITHIN WETLAND  
WELL-VEGETATED

Likely or not likely to provide.  
(State your rationale.)

LIKELY

DENSE VEGETATION  
ALLOWS FOR PRODUCTION  
OF ORGANIC MATTER  
WITH EXPORT  
DOWNSTREAM VIA  
EVANS CREEK

\* Adapted from the Highway Methodology Workbook Supplement for Wetland Functions and Values (COE, 1995).

**F. General Habitat Suitability**

1. Wetland is not fragmented by development.
2. Upland surrounding wetland is undeveloped.
3. Wetland has connectivity with other habitat types.
4. Diversity of plant species is high.
5. Wetland has more than one Cowardin Class, i.e., (PFO, PSS, PEM, PAB, POW, etc.)
6. Has high degree of Cowardin Class interspersions.
7. Evidence of wildlife use, e.g., tracks, scat, gnawed stumps, etc., is present

**G. Habitat for Aquatic Invertebrates**

1. Wetland must have permanent or evidence of seasonal inundation for this function to be provided.
2. Various water depths present in wetland
3. Aquatic bed vegetation present.
4. Emergent vegetation present within ponded area. *ASSUME*
5. Cover (i.e., woody debris, rocks, and leaf litter) present within in the standing water area.
6. A stream or another wetland within 2 km (1.2 mi) of wetland.

**H. Habitat for Amphibians**

1. Wetland contains areas of seasonal and/or permanent standing water in most years. (Must be present for this function to be provided)
2. Thin-stemmed emergent and/or floating aquatic vegetation present within areas of seasonal and/or perennial standing water. *ASSUME*
3. Wetland buffer < 40% developed, i.e., by pavement and/or buildings.

Likely or not likely to provide.  
(State your rationale.)

LIKELY

OVERALL STRUCTURAL  
AND PLANT SPECIES  
DIVERSITY HIGH - LIMITED  
IN AREAS.

LOW BUFFER  
FUNCTIONS

Likely or not likely to provide.  
(State your rationale.)

LIKEY

SEASONALLY INUNDATED  
AREAS HAVE DENSE  
VEGETATION

Likely or not likely to provide.  
(State your rationale.)

\* Adapted from the Highway Methodology Workbook Supplement for Wetland Functions and Values (COE, 1995).

4. Woody debris present within wetland.
5. Lands within 1 km (0.6 mi) of wetland are greater than or equal to 40% undeveloped (e.g., green belts, forest, grassland, agricultural).

6. Other wetlands and/or an intermittent or perennial stream within 1 km (0.6 mi) of wetland.

#### I. Habitat for Wetland-Associated Mammals

1. Permanent water present within the wetland. (Must be present for this function to be provided.)

2. Presence of emergent vegetation in areas of permanent water.

3. Areas containing dense shrubs and/or trees are present within wetland or its buffer.

4. Interspersion between different strata of vegetation.

5. Interspersion between permanent open water (without vegetation) and permanent water with vegetation.

6. Presence of banks suitable for denning.

7. Evidence of wildlife use, e.g., dens, tracks, scat, gnawed stumps, etc., is present.

#### J. Habitat for Wetland-Associated Birds

1. Wetland has 30 to 50% shallow open water and/or aquatic bed classes present within the wetland.

2. Emergent vegetation class present within the wetland.

3. Forested and scrub-shrub classes present within the wetland or its buffer.

4. Snags present in wetland or its buffer.

5. Sand bars and/or mud flats present within the wetland.

Likely or not likely to provide.  
(State your rationale.)

LIKELY  
SEASONALLY PONDED  
AREAS SUITABLE  
FOR AMPHIBIANS

Likely or not likely to provide.  
(State your rationale.)

LIKELY  
EVIDENCE OF  
BEAVER (GNAWED  
STUMPS) AND  
RACCOON (TRACKS)

Likely or not likely to provide.  
(State your rationale.)

LIKELY  
EVANS CREEK AND  
SOME SEASONALLY PONDED  
AREAS SUITABLE.

\* Adapted from the Highway Methodology Workbook Supplement for Wetland Functions and Values (COE, 1995).

- 6. Wetland contains invertebrates, amphibians, and/or fish.
- 7. Buffer contains relatively undisturbed grassland shrub and/or forest habitats.
- 8. Lands within 1 km (0.6 mi) of the wetland are greater than or equal to 40% undeveloped (e.g., green belts, forest, grassland, agricultural).

**K. General Fish Habitat**

*(Must be associated with a fish-bearing water.)*

- 1. Wetland has a perennial or intermittent surface-water connection to a fish-bearing water body
- 2. Wetland has sufficient size and depth of open water so as not to freeze completely during winter.
- 3. Observation of fish. - KNOWN
- 4. Herbaceous and/or woody vegetation is present in wetland and/or buffer to provide cover, shade, and/or detrital matter.
- 5. Spawning areas are present (aquatic vegetation and/or gravel beds).

**L. Native Plant Richness**

- 1. Dominant and codominant plants are native. PORTIONS
- 2. Wetland contains two or more Cowardin Classes.
- 3. Wetland has three or more strata of vegetation.
- 4. Wetland has mature trees. FEW

**M. Educational or Scientific Value**

- 1. Site has documented scientific or educational use.
- 2. Wetland is in public ownership. - PORTIONS
- 3. Parking at site is suitable for a school bus. ?

Likely or not likely to provide. (State your rationale.)
Likely or not likely to provide. (State your rationale.)  LIKELY  KNOWN FISH HABITAT ASSOCIATED WITH EVANS CREEK
Likely or not likely to provide. (State your rationale.)  LIKELY  PORTIONS OF SYSTEM DOMINATED BY NATIVE SPECIES
Likely or not likely to provide. (State your rationale.)  LIKELY  PORTIONS OF WETLAND IN PUBLIC OWNERSHIP

\* Adapted from the Highway Methodology Workbook Supplement for Wetland Functions and Values (COE, 1995).

#### N. Uniqueness and Heritage

1. Wetland contains documented occurrence of a state- or federally listed threatened or endangered species.
2. Wetland contains documented critical habitat, high quality ecosystems, or priority species respectively designated by the U.S. Fish and Wildlife Service, the WDNR's Natural Heritage Program, or WDFW's Priority Habitats and Species Program.
3. Wetland is part of a National Natural Landmark designated by the National Park Service or a Natural Heritage Site designated by WDNR.
4. Wetland has biological, geological, or other features that are determined rare by the local jurisdiction.
5. Wetland has been determined significant by the local jurisdiction because it provides functions scarce for the area.
6. Wetland is part of ...
  - an estuary,
  - a bog,
  - a mature forest.

Likely or not likely to provide.  
(State your rationale.)

LIKELY  
WETLAND CONTAINS  
EVANS CREEK WHICH  
PROVIDES HABITAT  
FOR PRIORITY  
SALMONIDS.

---

\* Adapted from the Highway Methodology Workbook Supplement for Wetland Functions and Values (COE, 1995).

### Wetland Functions & Values Form

Wetland I.D. A Project: ALL WOOD RECYCLING Assessed by: ALTMANN  
 Cowardin Class: P2/B2/DEM Ecology Category: 1 Local Rating: 1 Wetland size: ? Date: 08/09/11

Function/Value	Occurrence		Rationale	Principal Function(s)	Comments
	Y	N			
Flood Flow Alteration	✓			✓	
Sediment Removal	✓			✓	
Nutrient & Toxicant Removal	✓			✓	
Erosion Control & Shoreline Stabilization	✓			✓	
Production of Organic Matter and its Export	✓			✓	
General Habitat Suitability	✓			✓	
Habitat for Aquatic Invertebrates	✓			✓	
Habitat for Amphibians	✓			✓	
Habitat for Wetland-Associated Mammals	✓			✓	
Habitat for Wetland-Associated Birds	✓				
General Fish Habitat	✓			✓	
Native Plant Richness	✓				
Educational or Scientific Value	✓			✓	
Uniqueness and Heritage	✓				

**APPENDIX D**

**WETLAND AND STREAM SUMMARY SHEETS**

# STREAM SUMMARY SHEET

Stream Summary			Buffer Summary			Riparian Corridor Summary		
Label <sup>1</sup>	Type <sup>2</sup>	Linear Feet <sup>3</sup>	Required <sup>4</sup>	Proposed <sup>5</sup>	Averaging <sup>6</sup>	Disturbed Area <sup>7</sup>	Filled Area <sup>8</sup>	Mitigation Area <sup>9</sup>
EVANS CREEK	1	~550'	150' INNER 50' OUTER	N/A		3,069 sq. ft.		3,069 sq. ft.

<sup>1</sup> Stream A, B, C, etc.  
<sup>2</sup> Stream type per City stream classification system.  
<sup>3</sup> Length of stream on the property.  
<sup>4</sup> Required buffer width in feet per RCDG.  
<sup>5</sup> Proposed buffer width in feet.  
<sup>6</sup> Note if buffer averaging is used. If so, identify minimum and maximum buffer widths in feet as well as area in square feet contained within the buffer prior to and after averaging.  
<sup>7</sup> Area of buffer that is disturbed in square feet.  
<sup>8</sup> Area of buffer to be filled in square feet, such as for a road crossing.  
<sup>9</sup> Location and size in square feet of riparian corridor mitigation.

# WETLAND SUMMARY SHEET

Wetland Summary			Buffer Summary				Wetland Impacts		Mitigation Summary		
Label <sup>1</sup>	Category <sup>2</sup>	Size <sup>3</sup>	Required <sup>4</sup>	Proposed <sup>5</sup>	Increase <sup>6</sup> Reduce <sup>7</sup>	Averaging <sup>8</sup>	Fill <sup>9</sup>	Paper Fill <sup>10</sup>	Ratio <sup>11</sup>	Area <sup>12</sup>	Location <sup>13</sup>
A	I		150	N/A							

<sup>1</sup> Wetland A, B, C, etc.  
<sup>2</sup> Wetland category per City wetland classification system.  
<sup>3</sup> Area of wetland.  
<sup>4</sup> Required buffer width in feet per RCDG.  
<sup>5</sup> Proposed buffer width in feet.  
<sup>6</sup> Does the uniqueness of the wetland require an increased buffer? If so, what is the width in feet.  
<sup>7</sup> Is there a request to reduce the buffer width? If so, what is the width in feet.  
<sup>8</sup> Is buffer averaging being used? If so, what is the average buffer width in feet.  
<sup>9</sup> Amount of wetland fill.  
<sup>10</sup> Amount of paper fill.  
<sup>11</sup> Required ratio for wetland mitigation per RCDG.  
<sup>12</sup> Size of mitigation area.  
<sup>13</sup> Note location of mitigation area (keyed to the mitigation map).

**APPENDIX E**  
**HABITAT UNIT ASSESSMENT FORM**

**CITY OF REDMOND  
HABITAT UNIT ASSESSMENT FORM**

HABITAT UNIT: EVANS CREEK RIPARIAN/WETLAND  
 LOCATION: ALL WOOD RECYCLING  
 TOTAL SCORE: 20

Habitat Parameter	Scoring Criteria	Habitat Unit Score
<b>Size</b>	<ul style="list-style-type: none"> <li>• &gt;50 acres = 3 points</li> <li>• 10-50 acres = 2 points ?</li> <li>• 0-10 acres = 1 point</li> </ul>	2
<b>Vegetation Community Types</b>	<ul style="list-style-type: none"> <li>• ≥ 4 types = 3 points</li> <li>• 2-3 types = 2 points</li> <li>• 1 type = 1 point</li> <li>• None = 0 points</li> </ul>	2
<b>Community Interspersion</b>	<ul style="list-style-type: none"> <li>• High = 3 points</li> <li>• Medium = 2 points</li> <li>• Low = 1 point</li> <li>• None = 0 points</li> </ul>	2
<b>Priority Species Presence</b>	<ul style="list-style-type: none"> <li>• Threatened &amp; Endangered Species = 3 points</li> <li>• Candidate Species = 2 points</li> <li>• Monitor Species = 1 point</li> <li>• None = 0 points</li> </ul>	3
<b>Priority Species Habitat Use</b>	<ul style="list-style-type: none"> <li>• Breeding = 3 points</li> <li>• Roosting = 2 points</li> <li>• Foraging = 1 point</li> <li>• None = 0 points</li> </ul>	3
<b>Habitat Continuity</b>	<ul style="list-style-type: none"> <li>• Links protected habitats = 3 points</li> <li>• Links unprotected habitats = 2 points</li> <li>• Extends habitat corridor = 1 point</li> <li>• None = 0 points</li> </ul>	3
<b>Forest Vegetation Layers</b>	<ul style="list-style-type: none"> <li>• 3 layers = 3 points</li> <li>• 2 layers = 2 points</li> <li>• 1 layers = 1 point</li> <li>• None = 0 points</li> </ul>	2
<b>Forest Age</b>	<ul style="list-style-type: none"> <li>• Mature = 3 points</li> <li>• Pole = 2 points</li> <li>• Seedling/Shrub = 1 point</li> <li>• None = 0 points</li> </ul>	2
<b>Invasive Species Presence</b>	<ul style="list-style-type: none"> <li>• 0-25% = 3 points</li> <li>• 26-50% = 2 points</li> <li>• 51-75% = 1 point</li> <li>• 75-100% = 0 points</li> </ul>	1

**CITY OF REDMOND  
HABITAT UNIT ASSESSMENT FORM**

**VEGETATION COMMUNITY TYPES:**

DECIDUOUS RIPARIAN / WETLAND

**INVASIVE PLANTS:**

HIMALAYAN BLACKBERRY, REED CANARY GRASS,  
ENGLISH IVY, JAPANESE KNOTWEED

**HABITAT FEATURES (snags, perches, downed logs, etc):**

FEW (SEVERAL SMALL LOGS AND SNAGS) ON-SITE  
MORE SNAGS OFF-SITE

**WILDLIFE OBSERVATIONS (direct or indirect):**

PASSERINE BIRDS, RED-LEGGED FROGS, BEAVER, RACCOON,  
GARTER SNAKE

**THREATS TO HABITAT INTEGRITY:**

ADJACENT INDUSTRIAL USES

**OTHER NOTES:**

**APPENDIX F**  
**QUALIFICATIONS**

# Altmann Oliver Associates, LLC

# AOA



PO Box 578    Carnation, WA 98014    Office (425) 333-4535    Fax (425) 333-4509

Environmental  
Planning &  
Landscape  
Architecture

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## **JOHN J. ALTMANN, PRINCIPAL**

Ecologist, Project Manager

*Wetland Delineations, Stream Studies, Functional Analysis, Mitigation, Environmental Impact Assessments, Planning, Regulatory Analysis & Permitting, Wildlife Studies*

### **EXPERIENCE**

Mr. Altmann has 23 years of experience working in resource and environmental planning, project management, and field analysis. His main area of concentration has been wetlands and his experience includes: wetland delineations; environmental assessments; impact statements; mitigation plans and other wetland studies; natural resource inventories and sensitivity analyses; site planning; and wildlife habitat management studies in Washington, Oregon, Idaho, Alaska, California, Wyoming, New Jersey, New York, and Pennsylvania.

### **REPRESENTATIVE PROJECTS**

Responsible for over one thousand wetland and wildlife studies conducted in past 23 years, with most of these projects occurring in King, Snohomish, Skagit, Whatcom, Pierce, Thurston, Clark, Lewis, Kitsap, and Mason counties in Washington State. Most of these projects involved analysis of wetland conditions in relation to some proposed construction activity that could potentially affect their functions and values. Many of the studies involved wetland delineation only, whereas others required determination of wetland functions and values and wetland impact mitigation planning and other sensitive areas analyses. Project sizes ranged from under 1 acre to over 600 acres, with the wetlands on these properties being nearly as variable as their size. Wildlife studies include flora and fauna inventories, habitat impact assessments, and threatened and endangered species studies. Some of the projects representative of this experience are listed below.

*Wetland Delineations and Studies* for Weyerhaeuser Corporate Campus in the City of Federal Way, WA

*Wetland Mitigation and Long-Term Monitoring* for Weyerhaeuser Real Estate Development Company's Mint Farm Phase II project in the City of Longview, WA

*Wetland Delineation and Study* for the Group Health Support Facility in the City of Tukwila, WA

*Wetland Delineation, Study, and Mitigation Plan* for the Cadman High Rock Quarry in Snohomish County, WA

*Wetland Delineations, Studies, and Mitigation Plans* for the Microsoft Corporate Campus in the City of Redmond, WA

*Wetland Study, Mitigation Plan, Biological Assessment, and Long-Term Monitoring* on 90-acre Northpointe Corporate Campus for OPUS NW in Snohomish County, WA

*Wetland Delineation, Study, and Mitigation Plan* for the Puyallup Downs Residential Development in the City of Puyallup, WA

*Wildlife Study* on 40-acre Site in North Bend Area of King County, WA for Private Developer  
*Wetland Delineation and Study* for Data I/O Corporation in Redmond, WA for the Quadrant Corporation  
*Sensitive Areas Assessment* for 74-acre Church site in Redmond, King County, WA  
*Wetland Delineation* on 47-acre Marine Industrial Site Location in Snohomish River Estuary, Everett, Snohomish County, WA for Private Developer  
*Wetland Delineation and Study* for a 645-acre Planned Development near Bellingham, Whatcom County, for Trillium Corporation  
*Wetland Study and Mitigation Plan* for 37-acre Office Park Site in Redmond, King County, WA for Private Developer  
*Wetlands and Natural Features Study* for EIS, International Crossroads Hotel, Office and Retail Complex, Mahwah, Bergen County, NJ  
*Wetland Delineation and Study* for a Cogeneration/Power Facility in Sayreville, Middlesex County, NJ  
*Wetland Delineation and Assessment* for a Public Access Road and Boat Ramp, NJ Division of Fish, Game and Wildlife,  
*Wetland Delineation and Assessment*, Wysox Shopping Center Project, Wysox, PA  
*Wetland Maintenance and Monitoring Plan* for Property on Raging River in King County, WA for Private Developer  
*Wetland and Wildlife Inventory*, Trans-Mountain Oil Pipeline, Skagit County, WA  
*Wildlife Inventory and Habitat Impact Assessment*, ARCO AM/PM Mini-Market Facility, Bainbridge, Kitsap County, WA  
*Wildlife Study*, Highlands at Ross Creek, Port Orchard, Kitsap County, WA  
*Wildlife and Vegetation Study*, Lakeland Village EIS, Allyn, Mason County, WA

#### **OTHER PROJECT EXPERIENCE**

- Wetland Biologist for the King County Parks, Planning and Resource Department, Environmental Division, Resource Planning Section. Mapped, classified, inventoried and rated the wetlands in the cities of Kirkland, Bothell, Normandy Park, Duvall, and Lake Forest Park for inclusion in the King County Sensitive Areas Folio.
- Research Assistant for the NJ Division of Fish, Game and Wildlife's Endangered and Nongame Species Program. Responsible for the research, feeding, and monitoring of osprey fledglings for 3 seasons of the NJ osprey hacking program. Responsible for the collection and analysis of information pertaining to population size and migration along with species density and behavior of shorebirds along the Delaware Bay.
- Research Assistant for the NJ Division of Fish, Game and Wildlife. Responsible for the collection, processing and analysis of biological information pertaining to the whitetail deer population in NJ.

#### **EDUCATION**

B.S., Natural Resource Management, Wildlife Science Option, Rutgers University, Cook College, New Brunswick, NJ.

#### **PROFESSIONAL MEMBERSHIPS**

Society of Wetland Scientists  
The Wildlife Society