**Procurement Division**
Public Services Building
2051 Kaen Road
Oregon City, OR 97045
(503) 742-5444 (Office)

# REQUEST FOR QUOTES (RFQ) #2017-31

Issue Date: April 27, 2017

| | | | |
|---|---|---|---|
| Project Name: | Mt. Scott Creek – Oak Bluff Reach Water Resource Engineering Services | | |
| Quote Due Date/Time: | May 17, 2017, 2:00 PM | | |
| Project Coordinator | Gail Shaloum | Phone: | 503-742-4597 |
| | | Email: | |
| Contract Analyst: | Ryan Rice | Phone: | 503-742-5446 |
| | | Email: | rrice@clackamas.us |

**SUBMIT QUOTES VIA EMAIL TO PROCUREMENT@CLACKAMAS.US OR MAIL/HAND DELIVERY TO THE ABOVE ADDRESS**

**PLEASE NOTE: EMAIL SUBMISSIONS SHOULD HAVE "2017-31 OAK BLUFF REACH WATER RESOURCE ENGINEERING SERVICES" IN THE SUBJECT LINE**

## 1. ANNOUNCEMENT AND SPECIAL INFORMATION

Quoters are required to read, understand, and comply with all information contained within this Request for Quotes ("RFQ"). All quotes are binding upon Quoter for sixty (60) days from the Quote Due Date/Time. Quotes received after the Quote Due Date/Time may not be considered. If authorized in the RFQ and resulting contract, travel and other expense reimbursement will only be reimbursed in accordance with the Clackamas County travel reimbursement policy in effect at the time the expense is incurred.

It will be the responsibility of potential Quoters to refer daily to the Bids and Contract Information Page (www.clackamas.us/bids/index.html) to check for any available addenda, response to clarifying questions, cancellations or other information pertaining to this RFQ.

## 2. SCOPE

*Introduction*

Clackamas County Water Environment Services ("WES"), on behalf of Clackamas County Service District No. 1 ("CCSD #1"), referred to as "District" is seeking Proposals for a vendor to provide water resource engineering and design services to assist the District in technical studies, design, permitting, and construction services for the Mt. Scott Creek-Oak Bluff Reach Enhancement Project.

The Mt. Scott Creek-Oak Bluff Reach is located between Interstate 205 and the Three-Creeks Natural Area, just south of SE Oak Bluff Blvd. Mt. Scott Creek is a tributary to Kellogg Creek, which flows into the Willamette River. In this area, Mt. Scott Creek drains approximately 4.5 square miles of residential and commercial land uses. The project area contains approximately 3,270 linear feet of Mt. Scott Creek, 216 linear feet of a tributary stream, Dean Creek, and about 18 acres of land. The Mt. Scott Creek-Oak Bluff Reach Enhancement Project provides a unique opportunity to improve a natural area remaining in a very urbanized, highly impervious area.

Goals of this project are:

- Enhance in-stream habitat and stabilize select banks to reduce negative impacts of storm flows on the creek
- Identify opportunities to reduce peak flows and improve water quality

- Control non-native invasive plants and increase native riparian and wetland vegetation density, diversity and width, where feasible
- Improve public access and opportunities for environmental education

*Background*
In 2013, WES conducted a Stream and Habitat Assessment to document stream, riparian, and wetland health goals for the Project area and prepared a Conceptual and Management Site Plan. In 2014, grant applications were prepared and submitted to help secure funding for the Project. Grant applications to the Metro Nature in Neighborhoods Capital Grant program and the Oregon Watershed Enhancement Board (OWEB) were both successful.

The assessment, conceptual site plan, and planning-level cost estimate were prepared by ESA Vigil-Agrimis in 2013 and a wetland delineation in 2015. The estimated direct construction cost for the project is $325,000.00. Portions of the reports are attached.

The conceptual site plan currently contains the following elements:

- Large wood installed in key reaches to stabilize bed, trap coarse sediment, and increase complexity
- Bank stabilization measures on select banks posing threat to infrastructure or safety
- Backwater habitat creation, removal of small tributary culvert, and potential opportunity to improve the SE 84th Ave stream crossing
- Potential on-site stormwater management facility and/or low impact development retrofit on adjacent private property
- Increase of riparian and wetland vegetation density, diversity, and width
- Other wildlife habitat features
- Controlling non-native invasive plants
- Enhancing Oregon white oak habitat
- Improving public access and providing environmental interpretative signs

In addition to WES, project partners include the North Clackamas Urban Watersheds Council (NCUWC), North Clackamas Parks and Recreation District (NCPRD), and five private property owners/businesses. A Nature in Neighborhoods Capital grant (NiN Grant) from Metro and a Restoration grant (OWEB Grant) from Oregon Watershed Enhancement Board will fund portions of the Project. The Project must comply with stipulations in these grant agreements. WES will provide project coordination and funding for the remainder of project work.

The purpose of this RFQ is to contract with a firm to provide water resource engineering and design services for the Mt. Scott Creek-Oak Bluff Reach Enhancement Project in three phases as follows:

A. Pre-Design Studies
**Task 1**. Survey and analysis—Survey cross sections, longitudinal profiles, and topographic detail necessary to develop an understanding of the geomorphic setting, channel evolution trends, and processes at work in the study reach. Survey will utilize an existing horizontal and vertical datum recovered from previous survey work completed by consultants for WES. WES will coordinate access permissions.
**Task 2**. Hydrologic and hydraulic modeling—An existing conditions hydraulic model will be developed for the Project reach using appropriate estimates of peak flows from the 2-year up to the 100-year flood.
**Task 3**. RiverRAT documentation: Following the *Guiding Principles and Steps for Project Development* from the RiverRAT science framework document Chapter 4, Consultant shall complete an evaluation of the 7 steps for the Project. This information will be useful in permit applications and grant reporting. http://www.restorationreview.com/downloads/Science_and_Tools_for_Stream_Projects_2011.pdf
**Task 4**. Facilitate stakeholder meetings—Consultant shall obtain input from a variety of stakeholders including businesses that own the properties, North Clackamas Urban Watersheds Council (NCUWC), North Clackamas Parks and Recreation District (NCPRD), and WES staff. WES will select, identify, and

coordinate invitation of stakeholders, as well as provide consolidated stakeholder comments to the Consultant.

***Deliverables:***

1. A base map with survey control coordinates and plotted cross-sections to be included as part of design drawings;
2. Technical Memo describing technical analyses (hydrologic/hydraulic modeling, RiverRAT documentation, existing conditions for FEMA No-Rise Analysis if required);
3. Attendance and facilitation for up to 3 stakeholder meetings, may be a combination of site walks and indoor presentations.

B. Design and Permitting

The final design should take into account the existing work that has been completed as part of the assessment and conceptual planning. Development of the final design will also need to take into consideration stakeholder input and ensure compliance with OWEB requirements. Work includes design, permitting (including archaeological assessment if required), establishing photo monitoring points, and cost estimates.

**Task 1**. Permit-level designs—Using existing aerial photography, survey, and hydraulic analysis information Consultant shall develop a permit-level design for the Project. The design shall include the minimum information necessary to obtain regulatory permits from the following regulatory agencies: Oregon Department of State Lands, United States Army Corps of Engineers, Clackamas County Grading and WES Erosion Control. Project designs shall be developed in a manner that they meet SLOPES programmatic permits. Contractor shall solicit, schedule, and lead one meeting with regulators prior to submitting permit applications to gain agreement on permitting approach. Note that permits may require documentation of an ecological reference reach if using the latest Nationwide Permit 27. Complete FEMA No-Rise Analysis if required.

**Task 2**. Construction and bid documents—Refine permit-level drawings to a final package, obtaining input from WES at 30%, 60%, and 90%. Provide a bid sheet in table format and checklist of recommended construction contractor qualifications for Request for Bid. Attend pre-bid meeting with prospective bidders and assist WES in review of bids. WES will lead the solicitation and contract development for construction.

***Deliverables*:**

1. 30%, 60%, 90% Design documents (Assume one round of WES comments per set.);
2. Submittal of local and state permit applications necessary to construct the Project;
3. Final construction plans and specifications for bid, stamped and signed by an Oregon-licensed engineer;
4. Detailed engineer's cost estimate;
5. Pre-bid meeting attendance and review and score of bids.

C. Construction and Monitoring

Consultant to provide technical services during construction as necessary to ensure the Project is built to design plans and specifications, including review of RFIs, provide approvals where necessary, and provide construction oversight. Consultant shall establish and monitor approximately 5 ground-level photo point locations that comply with OWEB requirements (see https://www.oregon.gov/OWEB/docs/pubs/photopoint_monitoring_doc_july2007.pdf). Consultant shall coordinate photo point locations with WES and mark each point with rebar and survey cap, labelled with the photo point number. GPS coordinates of photo points shall be recorded and mapped. Photo monitoring shall occur pre-construction, during construction, and immediately following construction (one photo at each point during each phase).

***Deliverables*:**

1. Staking of project limits, grade stakes, locations of main project elements and elevation control points
2. On-the-ground construction oversight services
3. Photo point monitoring
4. Electronic file of photo monitoring series for each point

WES Responsibilities

WES will:

- Contact stakeholders and schedule meetings, to be facilitated by Consultant;
- Be responsible for obtaining easements over private properties and landowner agreements for private properties;
- Consolidate comments from stakeholders and provide one set of comments per each stage of design review;
- Lead the solicitation and contract development for construction;
- Complete post-project reporting as required by OWEB and Metro.

**Additional Contract Specifications:**

The term of the contract shall be from the effective date through **December 31, 2018,** or until all services are completed. No markup shall be allowed for subconsultant services. Travel reimbursement will only be authorized to the extent permitted by the County Contractor Travel Reimbursement Policy, found at: http://www.clackamas.us/bids/terms.html.

**Critical Date Schedule:**

The selected firm shall perform the services according to the following critical date schedule:

- Joint Permit Application Submitted December 1, 2017
- Final Bid Documents Completed March 1, 2018

**Additional Information**

The Scope further includes the following Maps, Plans, Drawings, and Reports attached and hereby included by reference:

1. Mt. Scott Creek Oak Bluff Reach Map Set: Regional Overview, Conceptual Site Plan, Existing Hydrology and Geomorphology, Existing Wetland and Plant Communities, Existing Habitat Features and Trails.
2. Wetland Delineation Report, dated June 2015.
3. Mt. Scott Creek: I-205 to Three Creek Natural Area Conceptual and Management Site Plan, dated June 7, 2013.

**3. Quote**

Quotes should be short and concise with the following information:

A. Demonstrate understanding of in-stream restoration design and permitting, native and wetland planting design, and commercial stormwater treatment;
B. Experience of staff in in-stream restoration design and permitting, commercial stormwater treatment, and native and wetland planting design projects of a similar scale and nature utilizing the consultant's selected approach within the past 5 years ;
C. Not-to-exceed price to complete the project
D. Fees on a time and material basis for each phase of the project with a total not to exceed fee for the project;
E. 3 references for similar projects;
F. Proposed timeline to complete the project; and
G. Any additional information that Clackamas County should take into consideration for the project or qualifications.

**4. Evaluation**

Quotes will be evaluated based on subjective factors including, but not limited to: Understanding of in-stream restoration design, staff experience for in-stream restoration, fee, references, and proposal to complete the project (including timeline).

**CLACKAMAS COUNTY CERTIFICATIONS**
**RFQ #2017-31**

Each Quoter must read, complete and submit a copy of this Clackamas County Certification with their Quote. Failure to do so may result in rejection of Quote. By signature on this Certification the undersigned certifies that they are authorized to act on behalf of the Quoter and that under penalty of perjury the undersigned will comply with the following:

**SECTION I. OREGON TAX LAWS**
As required in ORS 279B.110(2)(3), the undersigned hereby certifies that, to the best of the undersigned's knowledge, the Quoter is not in violation of any Oregon Tax Laws. For purposes of this certification, "Oregon Tax Laws" means a state tax imposed by ORS 320.005 to 320.150 and 403.200 to 403.250 and ORS chapters 118, 314, 316, 317, 318, 321, 323, and elderly rental assistance program under ORS 310.630 to 310.706, and local taxes administered by the Department of Revenue under ORS 305.620, all as applicable. If a contract is executed, this information will be reported to the Internal Revenue Service. Information not matching IRS records could subject Quoter to 28% backup withholding.

**SECTION II. NON-DISCRIMINATION**
The undersigned hereby certifies that the Quoter has not and will not discriminate in its employment practices with regard to race, creed, age, religious affiliation, sex, disability, sexual orientation, national origin, or any other protected class. Nor has Quoter or will Quoter discriminate against a subcontractor in the awarding of a subcontract because the subcontractor is a disadvantaged business enterprise, a minority-owned business, a woman-owned business, a business that a service-disabled veteran owns or an emergency small business that is certified under ORS 200.055.

**SECTION III. CONFLICT OF INTEREST**
The undersigned hereby certifies that no elected official, officer, agency or employee of Clackamas County is personally interested, directly or indirectly, in any resulting contract from this RFQ, or the compensation to be paid under such contract, and that no representation, statements (oral or in writing), of the County, its Commissioners, officers, agents, or employees had induced Quoter to submit this Quote. In addition, the undersigned hereby certifies that this proposal is made without connection with any person, firm, or corporation submitting a quote for the same material, and is in all respects fair and without collusion or fraud.

**SECTION IV. COMPLIANCE WITH SOLICITATION**
The undersigned further agrees and certifies that they:

1. Have read, understand and agree to be bound by and comply with all requirements, instructions, specifications, terms and conditions of the RFQ (including any attachments); and
2. Are an authorized representative of the Quoter, that the information provided is true and accurate, and that providing incorrect or incomplete information may be cause for rejection of the Quote or contract termination; and
3. Will furnish the designated item(s) and/or service(s) in accordance with the RFQ and Quote; and
4. Will use recyclable products to the maximum extend economically feasible in the performance of the contract work set forth in this RFQ.

Firm Name:_____ Date:_____

Signature:_____ Title:_____

Name:_____ Telephone:_____

Email:_____ OR CCB # (if applicable):_____

Business Designation (check one):
☐ Corporation ☐ Partnership ☐ Sole Proprietorship ☐ Non-Profit ☐ Limited Liability Company

☐ Resident Quoter, as defined in ORS 279A.120
☐ Non-Resident Quote. Resident State:_____

Oregon Business Registry Number: _____

**CLACKAMAS COUNTY**
**INSTRUCTIONS TO QUOTERS**

Quotes are subject to the applicable provisions and requirements of the Clackamas County Local Contract Review Board Rule C-047-0270 (Intermediate Procurements) and Oregon Revised Statutes.

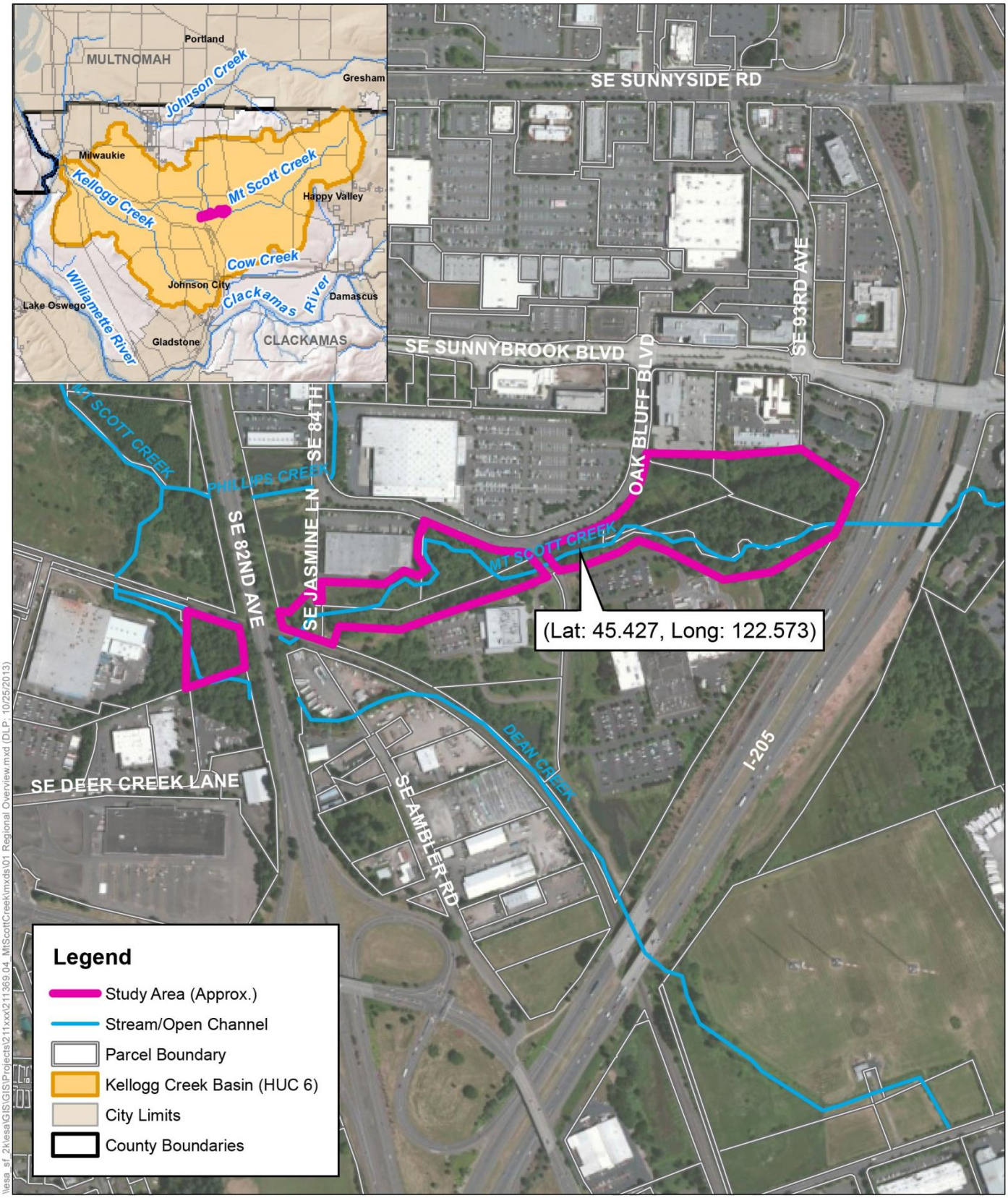
## QUOTE PREPARATION

1. **QUOTE FORMAT**: Quotes must be must be submitted as indicated in the RFQ. Quotes may be submitted in writing to Clackamas County via e-mail, mail or in person.
2. **CONFORMANCE TO RFQ REQUIREMENTS**: Quotes must conform to the requirements of the RFQ. Unless otherwise specified, all items quoted are to be new, unused and not remanufactured in any way. Any requested attachments must be submitted with the quote and in the required format. Quote prices must be for the unit indicated on the quote. Failure to comply with all requirements may result in quote rejection.
3. **ADDENDA**: Only documents issued as addenda by Clackamas County serve to change the RFQ in any way. No other directions received by the Quoter, written or verbal, serve to change the RFQ document. NOTE: IF YOU HAVE RECEIVED A COPY OF THE RFQ, YOU SHOULD CONSULT THE CLACKAMAS COUNTY BIDS AND CONTRACT INFORMATION WEBSITE (www.clackamas.us/bids/index.html) TO ENSURE THAT YOU HAVE NOT MISSED ANY ADDENDA OR ANNOUNCEMENTS. QUOTERS ARE NOT REQUIRED TO RETURN ADDENDUMS WITH THEIR QUOTE. HOWEVER, QUOTERS ARE RESPONSIBLE TO MAKE THEMSELVES AWARE OF, OBTAIN AND INCORPORATE ANY CHANGES MADE IN ANY ADDENDA ISSUED, AND TO INCORPORATE ANY CHANGES MADE BY ADDENDUM INTO THEIR FINAL QUOTE. FAILURE TO DO SO MAY, IN EFFECT, MAKE THE QUOTER'S QUOTE NON-RESPONSIVE, WHICH MAY CAUSE THE QUOTE TO BE REJECTED.
4. **USE of BRAND or TRADE NAMES**: Any brand or trade names used by Clackamas County in the specifications are for the purpose of describing and establishing the standard of quality, performance and characteristics desired and are not intended to limit or restrict competition. Quoters may submit quotes for substantially equivalent products to those designated unless the RFQ provides that a specific brand is necessary because of compatibility requirements, etc. All such brand substitutions shall be subject to approval by Clackamas County.
5. **PRODUCT IDENTIFICATION**: Quoters must clearly identify all products quoted. Brand name and model or number must be shown. Clackamas County reserves the right to reject any quote when the product information submitted with the quote is incomplete.
6. **FOB DESTINATION**: Unless specifically allowed in the RFQ, ***QUOTE PRICE MUST BE F.O.B. DESTINATION with all transportation and handling charges included in the Quote.***
7. **DELIVERY**: Delivery time must be shown in number of calendar days after receipt of purchase order.
8. **EXCEPTIONS**: Any deviation from quote specifications, or the form of the Clackamas County Professional Services Contract, may result in quote rejection at County's sole discretion.
9. **SIGNATURE ON QUOTE**: Quotes must be signed by an authorized representative of the Quoter. Signature on a quote certifies that the quote is made without connection with any person, firm or corporation making a quote for the same goods and/or services and is in all respects fair and without collusion or fraud. Signature on a quote also certifies that the Quoter has read and fully understands all quote specifications, and the Clackamas County Professional Services Contract (including insurance requirements). No consideration will be given to any claim resulting from quoting without comprehending all requirements of the RFQ.
10. **QUOTE MODIFICATION**: Quotes, once submitted, may be modified in writing before the time and date set for quote closing. Any modifications should be signed by an authorized representative, and state that the new document supersedes or modifies the prior quote. Quoters may not modify quotes after quote closing time.
11. **QUOTE WITHDRAWALS**: Quotes may be withdrawn by request in writing signed by an authorized representative and received by Clackamas County prior to the Quote Due Date/Time. Quotes may also be withdrawn in person before the Quote Due Date/Time upon presentation of appropriate identification.

12. **QUOTE SUBMISSION**: Quotes may be submitted by returning to Clackamas County Procurement Division in the location designated in the introduction of the RFQ via email, mail or in person; however, no oral or telephone quotes will be accepted. Envelopes, or e-mails containing Quotes should contain the RFQ Number and RFQ Title.

## QUOTE EVALUATION AND AWARD

1. **PRIOR ACCEPTANCE OF DEFECTIVE PROPOSALS**: Due to limited resources, Clackamas County generally will not completely review or analyze quotes which fail to comply with the requirements of the RFQ or which clearly are not the best quotes, nor will Clackamas County generally investigate the references or qualifications of those who submit such quotes. Therefore, neither the return of a quote, nor acknowledgment that the selection is complete shall operate as a representation by Clackamas County that an unsuccessful quote was complete, sufficient, or lawful in any respect.
2. **DELIVERY**: Significant delays in delivery may be considered in determining award if early delivery is required.
3. **CASH DISCOUNTS**: Cash discounts will not be considered for award purposes unless stated in the RFQ.
4. **PAYMENT**: Quotes which require payment in less than 30 days after receipt of invoice or delivery of goods, whichever is later, may be rejected.
5. **INVESTIGATION OF REFERENCES**: Clackamas County reserves the right to investigate references and or the past performance of any Quoter with respect to its successful performance of similar services, compliance with specifications and contractual obligations, and its lawful payment of suppliers, sub-contractors, and workers. Clackamas County may postpone the award or execution of the contract after the announcement of the apparent successful Quoter in order to complete its investigation. Clackamas County reserves the right to reject any quote or to reject all quotes at any time prior to Clackamas County's execution of a contract if it is determined to be in the best interest of Clackamas County to do so.
6. **METHOD OF AWARD**: Clackamas County reserves the right to make the award by item, groups of items or entire quote, whichever is in the best interest of Clackamas County.
7. **QUOTE REJECTION**: Clackamas County reserves the right to reject any and all quotes.
8. **QUOTE RESULTS**: Quoters who submit a quote will be notified of the RFQ results. Awarded quote files are public records and available for review by submitting a public records request or by appointment.

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Mt Scott Creek . 211369.04

SOURCE: Clackamas County, 2011; OWEB, 2010, ESRI, 2010.

Mt. Scott Creek Oak Bluff Reach
Regional Overview
Clackamas County, Oregon

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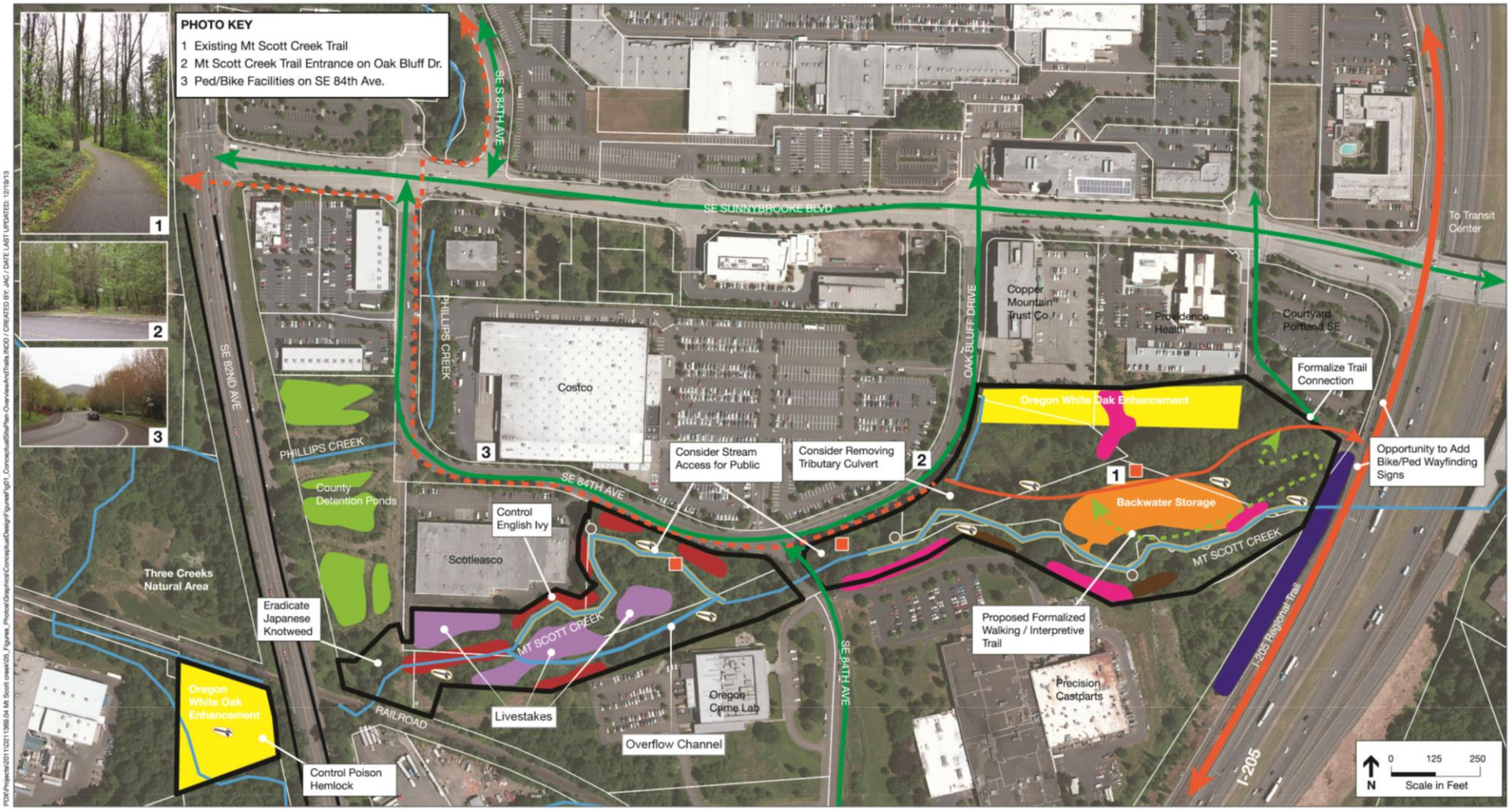
Miles




SOURCE: ESA, 2013.

## LEGEND

**RESTORATION ACTIONS**

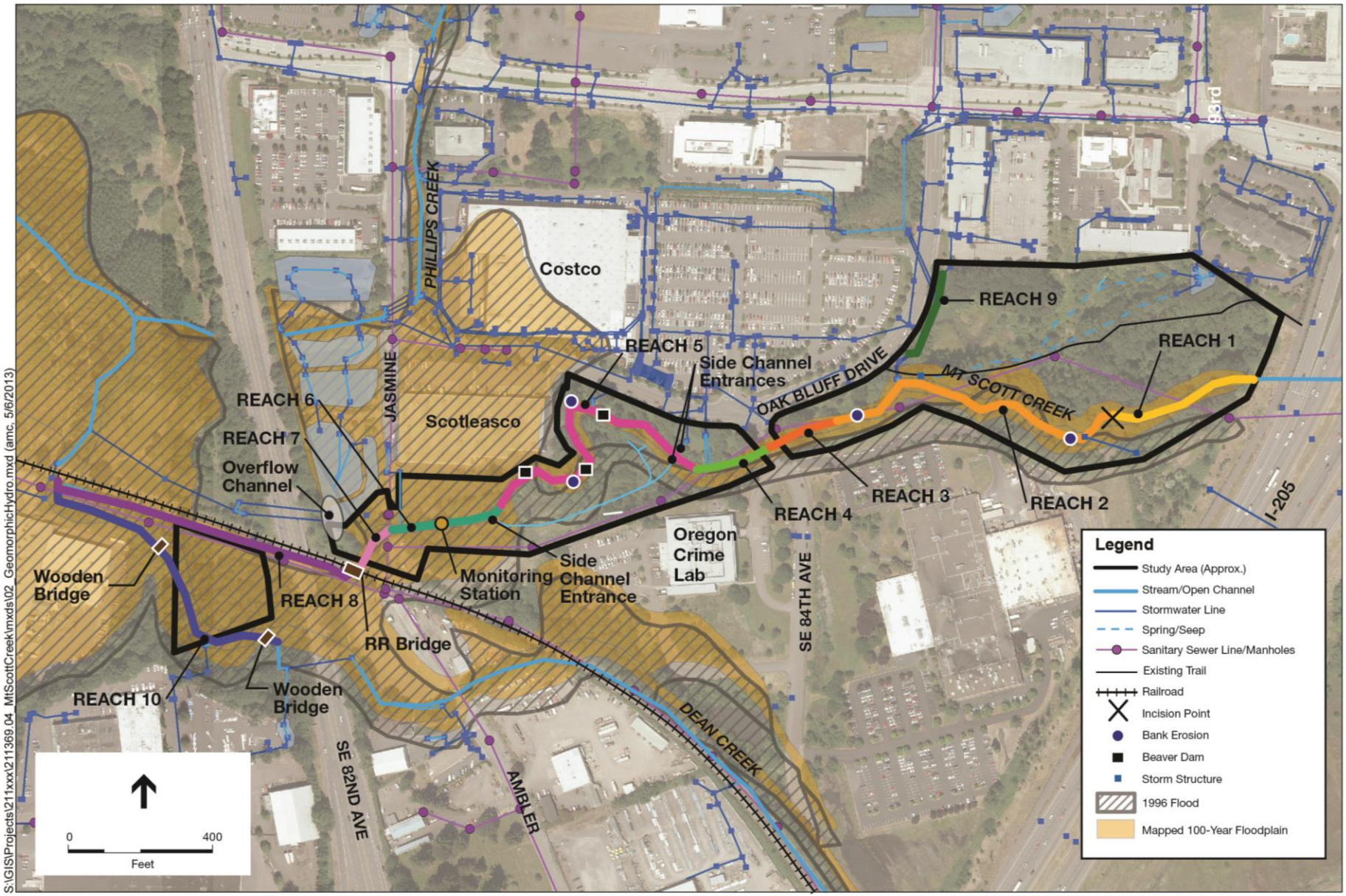
- Stabilize Cutbank
- Replace Himalayan Blackberry with Native Shrubs and Trees
- Install Livestakes in Wetlands to increase Habitat Complexity
- Backwater Storage
- Oregon White Oak Enhancement: Plant Oak Saplings and/or Thin Understory
- Consider Opportunities for Sparse Vegetation to Provide Habitat for Amphibians and Reptiles
- Increase Plant Density and Width of Riparian Buffer–Add Conifers such as Western Red Cedar
- Partner with ODOT to Enhance Buffer - Add Oaks and Madrone
- Parcel Boundary
- Install LWD
- Install Large Downed Wood for Wildlife Habitat

**TRAILS**

- Existing Ped/Bike Facilities on Surface Streets
- Existing Regional Trail
- Existing Greenway Trail
- Proposed Greenway Trail
- Proposed Walking Trail
- Interpretive/Overlook Opportunity

Mt Scott Creek . 211369.04

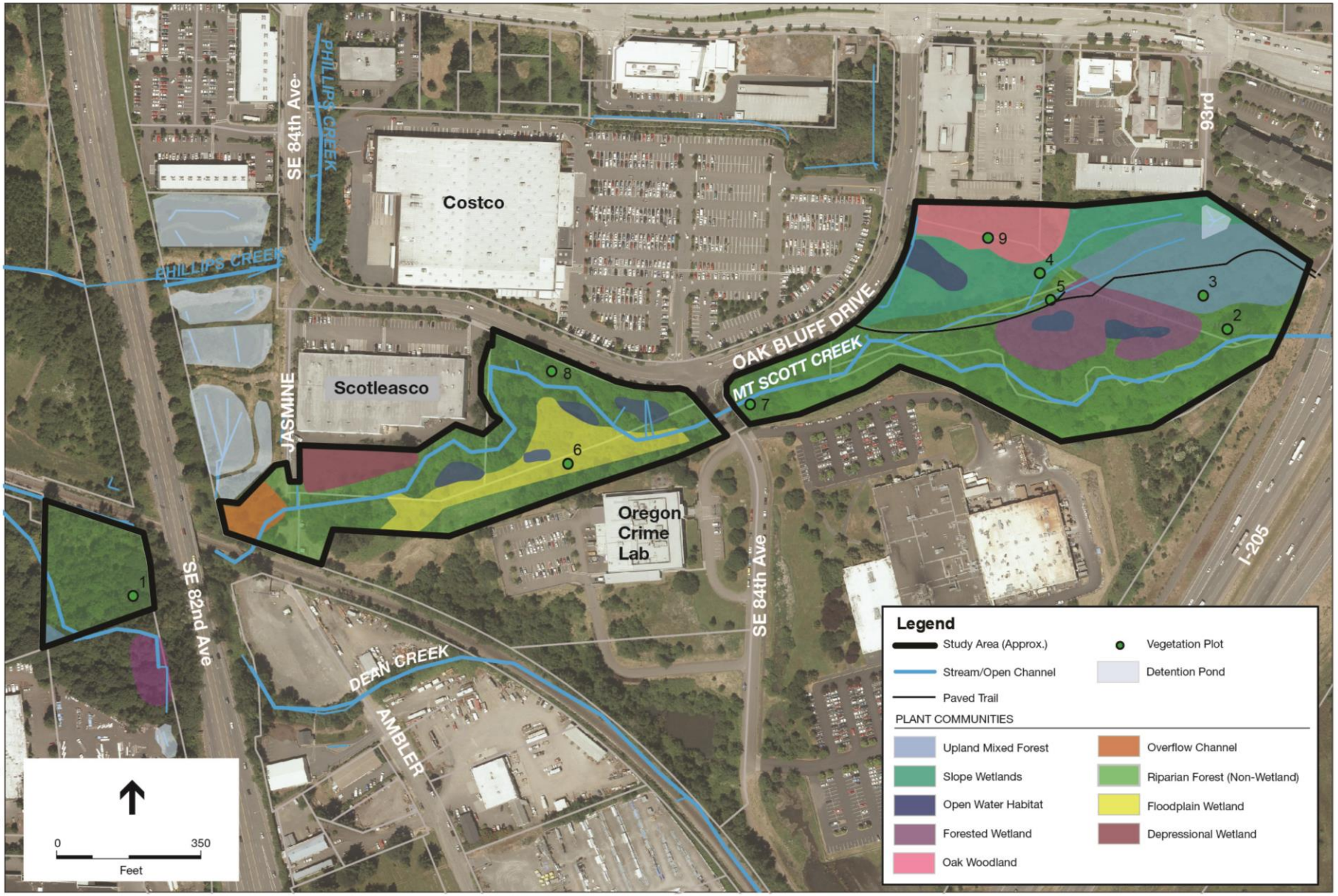
**Mt. Scott Creek Oak Bluff Reach**
Conceptual Site Plan - Overview and Trails
Clackamas County, Oregon




SOURCE: Clackamas County, ESA

Mt Scott Creek . 211369.04

**Mt. Scott Creek Oak Bluff Reach**
Existing Hydrology and Geomorphology
Clackamas County, Oregon




FILE NAME: Fig04_ExistingWetlandAndPlantCommunities.ai / CREATED BY: JAC / DATE LAST UPDATED: 06/10/13

SOURCE: Clackamas County, ESA, 2013.

Note: Wetland areas are approximated based on field observations, topographic contours, and Metro Goal 5 Mapping.

Mt Scott Creek . 211369.04

**Mt. Scott Creek Oak Bluff Reach**
Existing Wetland and Plant Communities
Clackamas County, Oregon


FILE NAME: Fig05_ExistingHabitatFeaturesAndTrails.ai / CREATED BY: JAC / DATE LAST UPDATED: 05/06/13

SOURCE: ESA, 2013.

Mt Scott Creek . 211369.04

**Mt. Scott Creek Oak Bluff Reach**
Existing Habitat Features and Trails
Clackamas County, Oregon

## WETLAND DELINEATION / DETERMINATION REPORT COVER FORM

This form must be included with any wetland delineation report submitted to the Department of State Lands for review and approval. A wetland delineation report submittal is not "complete" unless the fully completed and signed report cover form and the required fee are submitted. Attach this form to the front of an unbound report or include a hard copy of the completed form with a CD/DVD that includes a single PDF file of the report cover form and report (minimum 300 dpi resolution) and submit to: **Oregon Department of State Lands, 775 Summer Street NE, Suite 100, Salem, OR 97301-1279.** A single PDF attachment of the completed cover from and report may be e-mailed to **Wetland_Delineation@dsl.state.or.us**. For submittal of PDF files larger than 10 MB, e-mail instructions on how to access the file from your ftp or other file sharing website. Fees can be paid by check or credit card. Make the check payable to the Oregon Department of State Lands. To pay the fee by credit card, call 503-986-5200.

| | |
|---|---|
| ☒ Applicant ☐ Owner Name, Firm and Address:<br>Gail Shaloum, PLA; Environmental Policy Specialist<br>Water Environment Services,<br>150 Beavercreek Rd., Suite 430; Oregon City, OR 97045 | Business phone # 503.742.4597<br>Mobile phone # (optional) --<br>E-mail:gshaloum@co.clackamas.or.us |
| ☐ Authorized Legal Agent, Name and Address: | Business phone #<br>Mobile phone #<br>E-mail: |

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

Typed/Printed Name: Gail Shaloum Signature: Gail Shaloum

Date: 6/30/15 Special instructions regarding site access: Advance notice needed for access - 1 week

**Project and Site Information** (using decimal degree format for lat/long.,enter centroid of site or start & end points of linear project)

| | |
|---|---|
| Project Name: Mt. Scott Creek Oak Bluff Restoration | Latitude: 45. 427213 W Longitude: -122. 572758 N |
| Proposed Use: Voluntary stream and habitat restoration | Tax Map # Several, see report |
| Project Street Address (or other descriptive location):<br>Mt. Scott Creek between I-205 and SE. 82nd Ave., along Oak Bluff Boulevard | Township 2S Range 2E Section 4&5 QQ -<br>Tax Lot(s) Several, see report |
| | Waterway: Mt. Scott Creek River Mile: -- |
| City: Clackamas County: Clackamas | NWI Quad(s): Gladstone |

**Wetland Delineation Information**

| | |
|---|---|
| Wetland Consultant Name, Firm and Address:<br>Sarah Hartung, ESA<br>819 SE Morrison Street, Ste. 310<br>Portland, OR 97214 | Phone # 971-295-5004<br>Mobile phone # 503-407-6083<br>E-mail: shartung@esassoc.com |

The information and conclusions on this form and in the attached report are true and correct to the best of my knowledge.

Consultant Signature: Sarah Hartung Date: 6-29-2015

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

Wetland/Waters Present? ☒ Yes ☐ No | Study Area size: 20 acres | Total Wetland Acreage: 3.71

| **Check Box Below if Applicable:** | **Fees:** |
|---|---|
| ☐ R-F permit application submitted | ☒ Fee payment submitted **$406.00** |
| ☐ Mitigation bank site | ☐ Fee ($100) for resubmittal of rejected report |
| ☒ Wetland restoration/enhancement project (not mitigation) | ☐ No fee for request for reissuance of an expired report |
| ☐ Industrial Land Certification Program Site | |
| ☐ Reissuance of a recently expired delineation | |
| Previous DSL # Expiration date ____ | |

| **Other Information:** | Y | N | |
|---|---|---|---|
| Has previous delineation/application been made on parcel? | ☒ | ☐ | If known, previous DSL # WD2002-0633 & 0528 |
| Does LWI, if any, show wetland or waters on parcel? | ☒ | ☐ | |

**For Office Use Only**

DSL Reviewer: _____ Fee Paid Date: ____/____/____ DSL WD # _____

Date Delineation Received: ____/____/____ DSL Project # _____ DSL Site # _____

Scanned: ☐ Final Scan: ☐ DSL WN # _____ DSL App. # _____

# MT. SCOTT CREEK OAK BLUFF REACH RESTORATION PROJECT

## Wetland Delineation Report

**Prepared for**

Clackamas County
Water Environment Services
150 Beavercreek Rd.
Oregon City, OR 97045

**June 2015**

ESA VIGIL-AGRIMIS

# CONTENTS:



## LIST OF TABLES

## LIST OF MAPS IN APPENDIX A

# A. LANDSCAPE SETTING AND LAND USE

ESA Vigil-Agrimis (ESA VA) was contracted by Water Environment Services (WES) of Clackamas County to delineate wetlands and streams in support of planning and permitting for proposed habitat restoration in the Mt. Scott Creek Oak Bluff Natural Area. WES is working to protect and improve watershed health throughout its service districts, including the Mt. Scott Creek watershed, located southeast of Portland in Clackamas County. Mt. Scott Creek is a tributary to Kellogg Creek which flows into the Willamette River. The drainage area above the project site is approximately 4.5 square miles and is characterized by a mix of residential and commercial land uses. Mt. Scott Creek flows east to west and extends from about 1,100 feet elevation down to 100 feet elevation at the project site.

The study area investigated covers 20.11 acres in the Mt. Scott Creek drainage south of Sunnybrook Boulevard and west of I-205 in Sections 4 and 5, Township 2 South, Range 2 East Willamette Meridian, (Figures 1 and 2, Appendix A). The study area is bounded by SE 84$^{th}$ Avenue/Oak Bluff Boulevard to the north, industrial and public works development to the south (Clackamas County Medical Examiner's Office, Precision Castparts manufacturing facility), Interstate 205 to the east, and a natural area to the northwest (Three Creeks Natural Area). Property owners within the study area and corresponding tax lots are as follows: Clackamas County Service District No.1 (CCSD#1) (22E04B01102; 00300), ScotLeasCo Inc. (22E04B01702), Costco Wholesale Corporation (22E04B01601), Copper Mountain Trust Company (22E04B05500, Trustee – Quest Property Management), and Bre Timberwolf Property Owner LLC (22E04B05900). The adjoining tax lots are owned by DAS (22E04B01801, owner of Oregon State Medical Examiner building), Precision Castparts Company (22E04B01900, PCC Structurals Inc.), Providence Health & Services (22E04B05700), and ODOT Region 1 Right-of-Way.

The study area ranges in elevation from 93 to 169 feet above sea level, with the highest point located in the northeastern most corner adjacent to Interstate 205. The northern half of the site generally slopes and drains southwest to Mt. Scott Creek and the associated floodplain areas, while the southwestern segment of the study area drains west to Dean Creek and north to Mt. Scott Creek (off-site).

Current land use in the Mt. Scott Creek study area is open space/conservation land. CCSD#1 has conservation easements throughout the site. Land use in the vicinity consists of commercial and light industrial. Historical land use was open space/natural habitat, although some of the flat portions in the study area were likely used for agricultural production. The Mt. Scott Creek site is accessed by an existing multi-use paved trail which connects the Intersate-205 Multi-Use Path to existing sidewalks and bike lanes along Oak Bluff Boulevard. Primary uses of the regional trail include walking, running, and bicycling. A network of user-made trails exists in the study area, which are primarily used by people accessing illegal encampments and the Interstate 205 culvert. The user-made trails spur off from the paved trail and are primarily located in the eastern portion of the study area, south of the paved trail and north of Mt. Scott Creek. The encampments are situated below Douglas-fir (*Pseudotsuga menziesii* - FACU) trees on upland areas along Mt. Scott Creek and appear to consist of tarps, sleeping bags, trash, and other debris.

Maps and figures required by the Oregon Department of State Lands (DSL) are located in Appendix A. Wetland determination data forms are located in Appendix B. Ground-level color photographs of the wetland were taken to characterize typical conditions and are located in Appendix C. Photo points are also shown on Figures 5a-5c, Appendix A. All photos were taken during field investigations.

# B. SITE ALTERATIONS

No recent site alterations have affected the presence or extent of wetlands in the study area. The extent of wetlands in the study area in the late 1990s to early 2000s increased due to the creation of wetland mitigation sites. The open water habitat east of Oak Bluff Boulevard in Wetland 1 is part of a mitigation site for Costco development in the late 1990s (SRI/Shapiro, 1996). Additionally, existing natural wetlands were expanded and a series of terraced wetlands was created in Wetland 1 as part of mitigation for hotel development in the late 1990s. A backwater channel at the western section of the study area in Wetland 6 was excavated in the early 1980s to alleviate flooding south of the creek (SRI/Shapiro, 1996). A second backwater area and channel connection (Wetland 5) was created as part of mitigation for Costco development in the late 1990s (SRI/Shapiro, 1996).

# C. PRECIPITATION DATA AND ANALYSIS

Precipitation data for the periods immediately preceding field delineations for the project site are from the Sunnyside School Rain Gage Station 171 (City of Portland Bureau of Environmental Services, HYDRA Network, 2015), located near the study area. These data were compared to historical data from the WETS Oregon City (OR6344) to determine if precipitation was within the normal range. Precipitation for the days of the field visits when wetlands and ordinary high water lines (OHWL) were delineated and the preceding two weeks are presented in Table 1.

**Table 1. Precipitation Data for Field Days and the Previous Two Weeks**

| Date (2015) | Precipitation (inches) |
|---|---|
| Previous 2 Weeks (May 19 to June 1) | 0.07 |
| **June 2-3** | 0.33 |
| June 4-14 | 0.00 |
| **June 15** | 0.00 |
| Total | 0.40 |

Source: Sunnyside School Rain Gage Station 171
Note: Field days are shown in **BOLD.**

Average annual rainfall for the watershed is 35-40 inches. A comparison of actual rainfall versus the NRCS WETS average and normal range (NRCS, 2015) is presented in Table 2. Actual rainfall for March – May (three months prior to completion of field work), and the precipitation in the month of June that occurred prior to the field days is presented in Table 2. The rainfall that occurred in March is *above* average and *above* the WETS normal precipitation range. The rainfall that occurred in April is *below* average, but *within* the WETS normal precipitation range

for each month. The rainfall that occurred in June is *below* average, and *below* the WETS normal precipitation range for each month. The rainfall that occurred in May is *below* average and *below* the WETS normal precipitation range. The rainfall for March, April, May, and June is 122 percent, 73 percent, 24 percent, and 4.4 percent of average rainfall, respectively.

**Table 2. Precipitation for the Months Preceding Fieldwork**

| | | March | April | May | June* | Total |
|---|---|---|---|---|---|---|
| A. | Actual rainfall** (inches) | 5.74 | 2.54 | 0.64 | .04 | 8.96 |
| B. | WETS average rainfall *** (inches) | 4.70 | 3.46 | 2.70 | 0.915 | 11.77 |
| C. | Percent (%) of average rainfall (Line A/Line B) | 122% | 73% | 24% | 4.4% | 76% |
| D. | WETS normal precipitation range *** (inches) | 3.54-5.49 | 2.44-4.10 | 1.72-3.26 | 0.56-1.1 | 8.26-13.95 |

*Adjusted for a portion of June **Sunnyside School Rain Gage Station 171 *** Oregon City, OR 6344

# D. METHODS

Two levels of investigation were conducted for the analysis of wetlands in the Mt. Scott Creek study area: a review of existing information and formal on-site delineations.

## a. Review of Existing Information

A review of existing literature, maps, and other materials was conducted to identify wetlands or site characteristics indicative of wetlands in the study area:

- Topographic Map 1:24,000, Gladstone quadrangle (U.S. Geological Service, 1984);
- Soil Survey of Clackamas County, Oregon (Author, 1985);
- Hydric Soils List of Clackamas County, Oregon (Natural Resource Conservation Service, 2006);
- Precipitation data from Sunnyside School Rain Gage Station 171 (City of Portland, 2015);
- Precipitation data from Climate Analysis for Wetlands (WETS) Oregon City, OR6344 (National Resource Conservation Service, 2015);
- Aerial imagery (Google Earth Pro, 1990-2015).
- Mount Scott Creek Stream and Habitat Assessment (ESA, 2013).

Table 3 presents the soil units mapped by the Natural Resources Conservation Service (NRCS, 2006) located within the study area (also see Figure 4).

**Table 3: Mapped Soil Units within the Study Area**

| Soil map symbol | Map unit name | Hydric? | Hydric inclusions? |
|---|---|---|---|
| 25 | Cove silty clay loam | Yes | N/A |
| 70B | Powell silt loam, 0 to 8% slopes | No | Delena in depressions, 4%<br>Aquepts in depressions, 2% |
| 83 | Wapato silt loam | Yes | N/A |
| 91B | Woodburn silt loam, 3 to 8% slopes | No | Huberly in depressions, 3%<br>Dayton on terraces, 2%<br>Aquolls on flood plains, 1% |

Source: NRCS, 2014.

## b. On-site Wetland Delineations

Formal delineations were conducted by ESA VA staff on June 2, 3, and 15, 2015, following routine methods defined in the U.S. Army Corps of Engineers (Corps) *Wetlands Delineation Manual* (Environmental Laboratory, 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys and Coast Region* (U.S. Army Corps of Engineers, 2010). Wetlands 1-7, Mt. Scott Creek, and Tributary 1 were delineated on June 2 and 3, and Dean Creek was mapped on June 15. Wetland boundaries were recorded in the field by ESA VA staff using a Trimble GeoXT unit. Wetland areas were calculated by ESA VA staff.

Site specific methods for delineating wetlands in the study area involved walking the entire study area, observing surface indicators of wetland hydrology, and establishing at least one set of paired plots (one wetland and one upland) for each wetland. Twelve sets of paired plots (sample plots 1-24) were established in the study area. In some cases multiple paired plots were established to confirm the boundaries of a wetland. Data plots were established in all mapped hydric soil units. Sample plot (SP 25) was established in mapped hydric soils at the west end of the study site to confirm non-wetland conditions.

## c. Waterway Determinations

The study area is approximately bisected by Mt. Scott Creek, flowing from west to east. The OHWL of Mt. Scott Creek, an unnamed tributary to Mt. Scott Creek (Tributary 1), and Dean Creek were determined in the field in accordance with current DSL stream delineation methodology. Field indicators of OHW recognized by DSL include:

1) Clear, natural line impressed on the shore, including scour, shelving and exposed roots;
2) Change in plant community from riparian (e.g., willows) to upland (e.g., oak, fir) dominated. If the area is cropped, hydrophytic plants, or evidence of crop stress or damage from high flows would be indicative of high water;

3) Textural change of depositional sediment or changes in the character of the soil (e.g. from sand, sand and cobble, cobble and gravel to upland soils). Sediments may appear stratified. This indicator may require careful evaluation on floodplains where certain farming practices regularly disturb the soil profile;
4) Elevation below which no fine debris (needles, leaves, cones, seeds, soil organic matter) occurs; and
5) Presence of water-borne litter and debris, wrack accumulation, water-stained leaves, water lines on tree trunks, flattened vegetation. Certain farming practices can obscure these indicators.

# E. DESCRIPTION OF ALL WETLANDS AND OTHER NON-WETLAND WATERS

Seven wetlands and three streams were delineated in the study area and are described below. The project site includes approximately 3,270 linear feet of Mt. Scott Creek, 300 linear feet of Tributary 1 to Mt. Scott Creek, and 216 linear feet of a tributary stream, Dean (Deer) Creek.

## a. Wetland 1

Wetland 1 covers 1.44 acres on the hillslope and base of slope east of Oak Bluff Boulevard in the northeastern portion of the study area. It occupies a broad area to the west that narrows down to the east (Figure 5a). Wetland 1 occurs north of the paved trail between Oak Bluff Boulevard and SE 93rd Avenue. This area is a mosaic of natural and created wetlands fed by springs and seeps originating from the high terrace north of the site (PHS 1996). A channelized swale referred to as Tributary 1 runs along the western edge of Wetland 1, flowing north to south (for more detail on Tributary 1, see Section h below). A pond in the central and southwestern sections of Wetland 1 is fed by groundwater and seeps in the northeastern corner of Wetland 1. This open water habitat area is part of the mitigation site for the Costco development in the late 1990s (SRI/Shapiro, 1996)

The Cowardin classification (Cowardin et al, 1979) for the southwestern and central sections of Wetland 1 is PFO with a HGM class of Depressional. The Cowardin classification for the north and northwestern sections of Wetland 1 is PFO/PSS, with a HGM class of Slope. Sample plots (SP) 9, 11, and 13 characterize wetland conditions, with SP 10, 12, and 14 as the corresponding upland plots.

Red alder (*Alnus rubra* - FAC), Scouler's willow (*Salix scouleriana* - FAC), and black cottonwood (*Populus balsamifera* - FAC) dominate the overstory, while Oregon ash (*Fraxinus latifolia* - FACW) and red alder saplings dominate the understory. Dominant species in the herb stratum include giant horsetail (*Equisetum telmateia* – FACW), bird's foot trefoil (*Lotus corniculatus* – FAC), and bulrush (*Scirpus macrocarpus* – OBL). Subdominants include reed canarygrass (*Phalaris arundinacea* – FACW), big western bittercress (*Cardamine occidentalis* – FACW), water pennywort (*Hydrocotyle ranunculoides* – OBL), and soft rush (*Juncus effusus* – FACW).

Primary wetland hydrology indicators observed include Surface Water (A1), High Water Table (A2), Saturation (A3), Surface Soil Cracks (B6), and Oxidized Rhizospheres along Living Roots

(C3). The main sources of wetland hydrology are the springs originating at the top of the bluff and groundwater. Tributary 1 along the western edge does not contribute hydrology to Wetland 1. The ponded area was covered with duck weed and is estimated to range in depth from 1 to 4 feet.

Soils in Wetland 1 consist of clay, clay loam and silty clay loam in the top 20 inches and met the Depleted Matrix (F3) and Redox Dark Surface (F6) hydric soil indicators. Redox concentrations were observed in the matrix and in pore linings.

The wetland boundaries for this wetland were established along changes in topography (shift from hillslopes to low terraces and open water habitat). Upland sample plots 11, 12, and 14 characterize the general upland conditions, including a plant community of native Oregon white oak (*Quercus garryana* - FACU) and Himalayan blackberry, lack of hydric soil indicators, and lack of wetland hydrology indicators.

### b. Wetland 2

Wetland 2 covers 0.11 acres on the hillslope and is located in the northeastern portion of the study area (Figure 5a). The majority of Wetland 2 occurs north of the paved trail between Oak Bluff Boulevard and 93rd Avenue, with a small section south of the paved trail. The Cowardin classification for Wetland 2 is PSS with a HGM class of Slope. Sample plot 15 characterizes wetland conditions, with SP 16 as the corresponding upland plot.

Vegetation for this wetland generally consists of a sparse overstory of Oregon ash, and an understory of Oregon crabapple (*Malus fusca* – FACW) and snowberry (*Symphoricarpos albus* – FACU). The herbaceous layer is dominated by nightshade (*Solanum dulcamara* – FAC), big western bittercress, and Watson's willowherb (*Epilobium ciliatum* – FACW).

Primary wetland hydrology indicators for Wetland 2 include Surface Water (A1), High Water Table (A2), and Saturation (A3). Standing water was observed adjacent to SP 15 in a small seep. The source of water is a combination of runoff from the steep hillside, and groundwater expression (seepage). The seep disappeared about halfway down the slope and reappeared at the bottom where it is piped through a plastic culvert under the paved trail (inlet and outlet are shown on Figure 5a).

Observed soils in the wetland consisted of silty clay from 0 to 20 inches and met the Redox Dark Surface (F6) hydric soil indicator.

The wetland boundaries for this wetland were established along changes in topography (shift from hillslope to a terrace above depressions that separate Wetland 2 from Wetland 3) which in turn influence changes in wetland hydrology indicators, and a shift in plant communities. Upland sample plot 16 characterizes the general upland conditions, including a largely FACU plant community, lack of hydric soil indicators, and lack of wetland hydrology indicators.

## c. Wetlands 3 and 4

Wetlands 3 and 4 are south of a paved trail and consist of sloughs, channels and upland hummocks (Figure 5a). These wetlands are described together because they have similar characteristics. These wetlands are shallow depressions with pockets of surface water in a floodplain forest of Mt. Scott Creek. Wetlands 3 and 4 are Cowardin class PFO wetlands with a HGM class of Depressional - Closed (Wetland 3) and Depressional - Outflow (Wetland 4). Wetland 3 covers 0.32 acres and Wetland 4 covers 0.12 acres. Sample plots 17 and 19 characterize wetland conditions in Wetland 3, with SP 18 and 20 as the corresponding upland plots. Sample plot 21 characterizes wetland conditions in Wetland 4, with SP 22 as the corresponding upland plot.

The tree stratum has low (0-10 percent stratum cover per sample plot) canopy cover of Oregon Ash, with a low (5-30 percent stratum cover per sample plot) understory layer of Oregon ash, red-osier dogwood (*Cornus alba*, formerly *Cornus sericea* - FACW), and trace amounts of Indian plum (*Oemleria cerasiformis* - FACU). Limited to no ground cover vegetation was observed in the forested wetlands due to dense wooded conditions and/or seasonally flooded areas. The limited amount of herbaceous cover included buttercup (*Ranunculus repens* - FAC), Pacific blackberry (*Rubus ursinus* - FACU), and Watson's willowherb. Vegetation within the wetlands met the Dominance Test for hydrophytic vegetation.

Primary wetland hydrology indicators for the wetlands included Surface Water (A1), High Water Table (A2), Saturation (A3), Surface Soil Cracks (B6), and Sparsely Vegetated Concave Surface (B8). The sources of water are groundwater and flood overflow from Mt. Scott Creek. Wetland 4 has a temporary/seasonal outlet to Mt. Scott Creek, whereas Wetland 3 does not.

Soils in the wetlands consist of silt loam and silty clay loam in the top 20 inches and met the Depleted Matrix (F3) and Redox Dark Surface (F6) hydric soil indicators. Redox concentrations were found in the matrix and pore linings.

The wetland boundaries for these wetlands were established along changes in topography (a shift from concave, ponded depressions to top of bank/ upland areas). Upland sample plots 18, 20, and 22 characterize the general upland conditions, including a largely FACU plant community with Himalayan blackberry, bird's foot trefoil, fringecup (*Tellima grandiflora* - FACU), sword fern (*Polystichum munitum* - FACU), and aspen (*Populus tremuloides* - FACU). Upland sample plot areas lacked hydric soil indicators and wetland hydrology indicators.

## d. Wetland 5

Wetland 5 is in the 100-year floodplain of Mt. Scott Creek that covers 0.13 acres just south of SE 84$^{th}$ Avenue / Oak Bluff Boulevard (Figure 5b). The Cowardin classification for Wetland 5 is PSS, with a HGM class of Depressional - Outflow. Sample plot 3 characterizes wetland conditions, with SP 4 as the corresponding upland plot.

The canopy is dominated by red alder, with an understory of red-osier dogwood, Oregon ash, and red alder saplings. Ground cover is primarily by touch-me-not (*Impatiens noli-tangere* - FACW) interspersed with large-leaf avens (*Geum macrophyllum* - FAC) and slough sedge (*Carex*

*obnupta* - OBL). Vegetation within the wetland met the Dominance Test for hydrophytic vegetation.

A small pond with a perimeter of soft rush and reed canarygrass is the dominant feature in Wetland 5. Water depth is estimated to range from 1 to 3 feet deep. The bases of several red alder were used to aid in demarcating the extent of the pond, and a change in topography from the depressional wetland to steeper slopes. This open water habitat is part of the mitigation site for the Costco development in the late 1990s (SRI/Shapiro, 1996). A small channel 4 to 5 feet wide connects the pond in Wetland 5 to Mt. Scott Creek.

The primary wetland hydrology indicator observed at SP 3 was Surface Soil Cracks (B6), and surface water was present in the pond during field investigations. Secondary wetland hydrology indicators observed included Drainage Patterns (B10) and Geomorphic Position (D2). The main sources of wetland hydrology are overflow from Mt. Scott Creek, groundwater, and stormwater run-off.

Soils in the wetland consist of silty clay and silty clay loam in the top 20 inches and met the Depleted Matrix (F3) hydric soil indicator.

A shift in topography (depressional floodplain and open water habitat to top of bank) and corresponding shift of FAC to FACU vegetation was used to define the boundary between Wetland 5 and the surrounding upland area.

### e. Wetland 6

Wetland 6 covers 1.24 acres in the western half of the study area in the Mt. Scott Creek floodplain (Figure 5b). The Cowardin classification for Wetland 6 is PFO, with a HGM class of Riverine flow-through. Sample plots 1, 5, and 7 characterize wetland conditions, with SP 2, 6, and 8 as the corresponding upland plots.

Wetland 6 consists of a low floodplain terrace with side channels and ponded areas. A few clusters of brush and downed wood are present, but snags are limited. The buffer along the south end of the wetland (adjacent to the Crime Lab) is lined with some trees and shrubs, but gaps exist between woody clusters. The tree stratum is dominated primarily by Pacific willow (*Salix lasiandra* - FACW) followed by Oregon ash and red alder. The lower canopy layer is dominated by red alder and Pacific willow saplings. Touch-me-not, reed canary grass, slough sedge, bird's foot trefoil, and Watson's willowherb cover approximately 80 percent of the ground.

Primary wetland hydrology indicators observed were Surface Water (A1), High Water Table (A2), and Saturation (A3). The main sources of wetland hydrology are overflow from Mt. Scott Creek, and groundwater. A small overflow channel connects Mt. Scott Creek to the eastern edge of Wetland 6. The channel meanders through Wetland 6 and enters Mt. Scott Creek at the west end of the wetland.

Soils in the wetland consists of silty clay loam in the top 20 inches and met the Depleted Matrix (F3) hydric soil indicator. Redox concentrations were found in the matrix and in pore linings.

A shift in topography (depressional floodplain to top of bank/river bank) and corresponding shift to primarily FACU vegetation (Himalayan blackberry, sword fern, common snowberry) were used to define the boundary between Wetland 6 and the surrounding upland area.

## f. Wetland 7

Wetland 7 is a low-lying area adjacent to Mt. Scott Creek that covers 0.35 acres and is located at the western end of the study area (Figure 5b). A tall, wide upland berm shapes the south and east sides of this closed basin, while SE Jasmine Lane defines the west side and a parking lot defines the north side. Wetland 7 does not have a surface water connection to Mt. Scott Creek, except possibly during large storm events. The Cowardin classification for Wetland 7 is PSS, with a HGM class of Depressional - Closed. Sample plot 23 characterizes wetland conditions, with SP 24 as the corresponding upland plot.

The herb stratum is a monoculture of reed canarygrass, with a few clusters of soft rush. The shrub layer consists of Oregon ash, red alder, and Pacific willow saplings.

Primary wetland hydrology indicators observed were High Water Table (A2) and Saturation (A3). Pockets of surface water (0.5 - 1 foot deep) were present during field investigations in the southern portion of the wetland. The main sources of wetland hydrology are groundwater and precipitation.

Soil in the wetland consists of silty clay loam in the top 20 inches and met the Depleted Matrix (F3) hydric soil indicator. Redox concentrations were found in the matrix and in pore linings.

A shift in topography (depressional floodplain to top of berm/top of streambank), lack of hydrology, and lack of wetland soil indicators were used to define the boundary between Wetland 7 and the surrounding upland area.

## g. Mt. Scott Creek

Mt. Scott Creek is a tributary to Kellogg Creek which flows into the Willamette River. The drainage area above the project site is approximately 4.5 square miles and is characterized by a mix of residential and commercial land uses. Mt. Scott Creek flows east to west and extends from about 1,100 feet elevation down to 100 feet elevation at the project site. The stream emerges into the project area from an approximately 20 foot wide culvert that spans more than 500 feet under the Interstate 205 corridor. Within the project area, Mt. Scott Creek is approximately 3,207 linear feet. Bankfull width in the project area ranges from 6 to 20 feet, while bank height ranges from 1 foot to approximately 6 feet. Suspended and deposited fine sediment is prevalent throughout the majority of the creek, with additional cobble, gravel, and cobble bars in segmented reaches of the creek. DSL field indicators #1, 2 and 5 were used to determine the OHWL of Mt. Scott Creek.

In general, stability is at risk due to the low percentage of coarse sediments (15-30 percent), high entrenchment (floodplain connectivity) (< 1.4) and low gradient (< 2 percent) (Brown and Caldwell 2009). The majority of the stream length within the project area is highly entrenched with tall, steep stream banks.

*Hydrology*

Approximately 30 percent of the watershed above the project site is considered impervious and 80 percent of the total area is classified as urban (Brown and Caldwell 2009). Mt. Scott Creek drains an urbanized basin and experiences fluctuations in hydrology due to stormwater runoff causing localized flooding. Approximately 40 percent of the project area is within the FEMA mapped 100-year floodplain and 33 percent of the site was flooded during the 1996 floods, considered greater than a 50-year flood event for this watershed. Most of the 1996 flood area was along the west end of the site along both sides of SE 82nd Avenue. At a significantly smaller event in January 2009, water levels along the culverts along SE 84th Avenue were high, but only overtopped low bank. No record of overtopping banks exists for most of the project area, but both Phillips Creek and Dean Creek within and adjacent to the project area are predicted to overtop their banks at 2 to 5-year events (Brown and Caldwell 2009).

*Biology and Fish Habitat*

Historically, steelhead trout, Coho salmon and both sea-run and resident cutthroat trout spawned and reared in Mt. Scott Creek (Brown and Caldwell 2009). ODFW surveys show that populations of resident cutthroat trout and juvenile anadromous salmonids (Coho, steelhead/rainbow, other unidentified) have been found in Mt. Scott Creek during fall-winter 1997-98, fall-winter 2002-03, 2007 and spring 2008 (summarized in Brown and Caldwell 2009). The largest populations of salmonids found during ODFW surveys in the Kellogg-Mt. Scott watershed were found in the project area and upstream of the project area (Brown and Caldwell 2009). In previous surveys, Pacific lamprey and sculpin have also been found in this area (Montgomery 2001).

In an evaluation of habitat conducted for a Watershed Action Plan, the upper reaches of Mt. Scott Creek had amongst the highest habitat scores, and F-IBI scores for spring 2008 are considered acceptable in the project area (ODFW 2009). Within the project area, it was determined that the percent gravel in riffles was of high quality; while the percent slackwater pools, number and volume of large wood, and number of large boulders was lacking (Brown and Caldwell 2009).

## h. Tributary 1

A small tributary of Mt. Scott Creek begins at an outfall above Wetland 1, runs alongside a wetland pond complex, and into two 2-foot concrete culverts. The downstream culverts extend about 40 feet underground to a catch basin, then continue down the slope for 50 feet and empty into Mt. Scott Creek. Fish and wildlife passage constraints include the length of the culverts and the catch basin, which is expected to entrap several species during low to medium flows. Tributary 1 is confined on the west by Oak Bluff Boulevard, but is unconfined to the east. The stream runs through a shallow, narrow channel that occasionally widens and merges with the adjacent wetland, but is not a significant source of hydrology for the wetland. It is heavily vegetated with trees and shrubs rooted in the channel. Bed substrate consists of angular rock at the upstream end and above the culverts, and is otherwise silty with some small cobbles. DSL field indicators #1 and 5 were used to determine the OHWL of Tributary 1.

## i. Dean Creek

Dean Creek is a tributary of Mt. Scott Creek that flows from the south to northwest where it meets Mt. Scott Creek (located off-site) just east of the Three Creeks Natural Area (Figure 5c). A 920-foot long reach of Dean Creek is adjacent to the project area. Dean Creek is conveyed under SE 82nd Avenue via two 3-foot concrete box culverts. The culverts are about 200 feet in length and are expected to provide aquatic passage for some species, including beaver and amphibians. The culverts lack ledges or dry passage and are likely a barrier for most terrestrial species.

The banks of Dean Creek are covered by shrubs and trees, though there is little groundcover throughout most of the reach. Some trees can be seen rooting directly into the channel. Bed substrate is primarily fine sediments with gravel. Banks are not high and have been frequently overtopped. There are a few pieces of wood in the channel, but they are not large and do not frequently span the channel. A 12-inch concrete pipe outfall emerges near the stream at the project area boundary, set back approximately 6 feet from the channel. Downstream of the outfall, the banks become higher and the bank toe shows signs of minor erosion. Denser shrub and tree canopy surround the channel and it passes below an old bridge crossing (off-site) before turning north and entering two 3 foot diameter corrugated pipe culverts. The bridge crossing is open and provides aquatic as well as terrestrial passage for a range of terrestrial species. DSL field indicators #1, 2, 3 and 5 were used to determine the OHWL of Dean Creek within the study area.

*Hydrology*

Both FEMA flood maps and 1996 flood maps suggest flooding in this area between Dean and Mt. Scott Creeks (Brown and Caldwell 2009). Predicted peak flows are considerably lower in Dean Creek, but banks are not high for a significant length of the reach making it possible to overtop banks.

## j. Uplands

Uplands adjacent to wetland resources are generally located in top of bank, hillslope, and terrace locations. Approximately 31 percent of upland sample plots contained hydrophytic vegetation, all upland sample plots lacked hydric soils, and all lacked wetland hydrology indicators. Himalayan blackberry, snowberry, Indian plum, sticky willy (*Galium aparine* – FACU), and trailing blackberry (*Rubus ursinus* – FACU) were dominant species in many of the upland plots.

Upland mixed coniferous/deciduous forest is located on steep slopes on both sides of the main paved trail at the northeast end of the study area and is located on steep slopes at the southwest end of the study area. Dominant canopy trees include big-leaf maple (*Acer macrophyllum* - FACU), Douglas-fir, and Oregon white oak. The understory contains a diversity of native shrubs including Indian plum, common snowberry, Pacific ninebark (*Physocarpus capitatus* - FACW), vine maple (*Acer circinatum* - FAC), and beaked hazelnut (*Corylus cornuta* - FACU). English holly (*Ilex aquifolium* - FACU) and English hawthorn (*Crataegus monogyna* - FAC) are scattered throughout the upland forest, but are not dominants. Native trailing blackberry was a dominant groundcover species along with fringecup. Other herbs and grasses observed in the

groundcover include slender-foot sedge (an upland sedge), cleavers bedstraw, Herb Robert, and stinging nettle.

Upland area soils consisted of silt loam (10YR 3/2, 10YR 3/3, and 10YR 4/2) with generally faint to nonexistent redoximorphic features (2-5 percent with one exception of 10 percent in 9 out of 13 upland sample plots). Upland areas contained no evidence of wetland hydrology indicators.

The upland region west of Oregon Highway 213 that contains SP 25 has the lowest elevation for the study area along the banks of Dean Creek at 93 feet above sea level. Land slopes northward from 113 ft. in bottom southwest corner to a generally flat and consistent elevation of approximately 95 ft. in approximately 90 percent of this segmented portion of the study area.

# F. DEVIATION FROM LWI OR NWI

The North Clackamas Urban Wetland Inventory and Assessment that is accessible through the DSL Local Wetland Inventories (LWI) webpage excludes the study area from the assessment (SRI/Shapiro, 1994). Other available LWIs did not show that a LWI has been completed for this section of Clackamas County (DSL, 2015). The National Wetlands Inventory did not show any wetlands in the project area (USFWS, 2015). Mapped wetland information was sourced from geospatial data of the Oregon Wetlands Explorer Natural Resources Digital Library (Figure 3). The Oregon Wetlands Geodatabase is a compilation of nine wetland related data layers, referencing information from NRCS, USFS, FEMA, Weyerhaueser, and other sources. Compared to the field delineation, wetlands shown on Figure 3 are smaller and only roughly approximate the location of wetlands. Wetland 7 is not shown and Wetland 1 is significantly smaller on Figure 3. Wetlands are mapped along Dean Creek, however; no wetlands were identified during field investigations in this portion of the study area.

# G. MAPPING METHOD

Wetland boundaries, streams and sample plots were recorded in the field by ESA VA using a Trimble GeoXT hand-held unit with a post-processing accuracy of 3 to 5 feet.

# H. ADDITIONAL INFORMATION

Additional information includes an assessment of functions and values using the Oregon Rapid Wetland Assessment Protocol (ORWAP) (Adamus et al., 2010; Appendix D). Scores for the relative effectiveness of functions and the relative values of those functions for each HGM class of wetland are presented in Table 4. The assessment method provides a rating of the relative effectiveness of a wetland's functions and values compared to 221 reference wetlands in Oregon. Each function and value (or grouped functions and values) is rated on a scale of 0 to 10, with 10 being the highest score. To provide a high level of ecosystem services, both a wetland's functions and values of those functions should be high. A comparison of grouped functions is provided below (also see bottom rows of Table 4).

The wetlands in the study area scored low to moderate for Water Storage and Delay, with the exception of Wetland 3, in part due to steep slopes (Wetland 1 and 2) and presence of outlets

with moderate restrictions. Wetland 3 scored the highest (7 out of 10) for this function because of its deep depressions and lack of outlet. The wetlands scored moderate to high (5.85 to 10.00) for Water Quality grouped functions due to the presence of surface water in the wetlands for several weeks at a time, and some cases months. The wetlands perform poorly for Carbon Sequestration in part because of past soil disturbance (Wetlands 1, 5, and 6), and limited microtopography. Wetlands 5 and 6 scored the highest for Fish Support grouped functions because of direct surface water connections with Mt. Scott Creek. All of the wetlands scored in the moderate range for Aquatic Support grouped functions (4.9 to 7.5) because of the interspersion of emergent vegetation with surface water. Terrestrial Support grouped function scores were also moderate for Wetlands 1, 2, 3, 4 and 6 because of the presence of downed wood, relatively complex habitat structure, and a variety of native plant species.

Overall, the Mt. Scott Creek study area provides relatively diverse habitat for a variety of resident and migratory wildlife species typically found in urban settings. It serves as a linkage between Mt. Talbert to the east and the Three Creeks Natural Area to the West. The proximity of the Three Creeks Natural Area site and natural areas along Dean Creek to the south increase the value of the Mt. Scott Creek site as habitat for native flora and fauna. While wooded cover is extensive throughout the study area, opportunities still exist for expanding natural buffers, increasing structural diversity, and controlling invasive weeds. Table 4: Summary of the Relative Functions and Values of Wetlands in the Study Area

**Table 4: Summary of the Relative Functions and Values of Wetlands in the Study Area**

| | Wetland 1 | | Wetland 2 | | Wetland 3 | | Wetland 4 | | Wetland 5 | | Wetland 6 | | Wetland 7 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Specific Functions:** | Funct Score | Value Score | Funct Score | Value Score | Funct Score | Value Score | Funct Score | Value Score | Funct Score | Value Score | Funct Score | Value Score | Funct Score | Value Score |
| Water Storage & Delay (WS) | 0.00 | 3.92 | 0.00 | 4.42 | 7.00 | 4.42 | 4.70 | 8.68 | 4.20 | 7.85 | 2.80 | 8.26 | 3.50 | 8.26 |
| Sediment Retention & Stabil. (SR) | 5.47 | 3.50 | 5.85 | 4.60 | 10.00 | 4.17 | 5.72 | 3.76 | 6.01 | 2.78 | 6.15 | 4.84 | 10.00 | 4.29 |
| Phosphorus Retention (PR) | 7.91 | 4.53 | 5.15 | 5.53 | 10.00 | 5.04 | 4.34 | 5.74 | 7.78 | 4.74 | 8.29 | 6.69 | 10.00 | 6.21 |
| Nitrate Removal & Retention (NR) | 5.40 | 3.92 | 5.48 | 4.67 | 10.00 | 4.28 | 6.47 | 4.00 | 5.27 | 3.25 | 5.90 | 4.79 | 10.00 | 4.40 |
| Thermoregulation (T) | 5.89 | 1.25 | 5.00 | 0.00 | 0.00 | 0.00 | 1.67 | 5.00 | 3.61 | 6.25 | 7.11 | 7.50 | 0.00 | 2.50 |
| Carbon Sequestration (CS) | 2.47 | -- | 2.22 | -- | 1.37 | -- | 1.63 | -- | 1.91 | -- | 2.80 | -- | 2.02 | -- |
| Organic Matter Export (OE) | 5.93 | -- | 4.19 | -- | 0.00 | -- | 4.80 | -- | 4.90 | -- | 5.54 | -- | 0.00 | -- |
| Aquatic Invertebrate Habitat (INV) | 4.76 | 5.14 | 7.50 | 7.00 | 6.52 | 7.00 | 6.65 | 7.00 | 4.04 | 6.79 | 5.82 | 8.19 | 6.42 | 7.00 |
| Anadromous Fish Habitat (FA) | 0.00 | 4.41 | 0.00 | -- | 0.00 | 3.37 | 0.00 | 10.00 | 6.79 | 10.00 | 8.19 | 10.00 | 0.00 | 4.66 |
| Non-anadromous Fish Habitat (FR) | 5.14 | 2.21 | 3.36 | -- | 1.48 | 1.69 | 1.62 | 1.54 | 3.15 | 2.16 | 4.64 | 2.55 | 3.08 | 2.33 |
| Amphibian & Reptile Habitat (AM) | 2.62 | 3.33 | 5.73 | 4.67 | 5.41 | 4.67 | 5.33 | 4.67 | 2.20 | 3.33 | 3.32 | 4.67 | 5.88 | 4.67 |
| Waterbird Feeding Habitat (WBF) | 4.41 | 4.11 | 0.00 | 4.67 | 3.37 | 4.67 | 3.07 | 4.67 | 4.31 | 3.00 | 5.11 | 5.78 | 4.66 | 5.78 |
| Waterbird Nesting Habitat (WBN) | 0.00 | 3.08 | 0.00 | 3.50 | 0.00 | 3.50 | 0.00 | 3.50 | 0.00 | 2.25 | 5.82 | 4.33 | 0.00 | 4.33 |
| Songbird, Raptor, & Mammal Habitat (SBM) | 3.61 | 3.00 | 3.62 | 4.67 | 4.12 | 4.67 | 4.12 | 4.67 | 3.31 | 3.00 | 4.30 | 4.67 | 3.51 | 4.67 |
| Pollinator Habitat (POL) | 4.30 | 0.00 | 5.07 | 0.00 | 4.62 | 0.00 | 4.62 | 0.00 | 3.71 | 0.00 | 5.28 | 2.22 | 3.05 | 2.22 |
| Native Plant Diversity (PD) | 6.07 | 4.5 | 6.56 | 7.00 | 7.75 | 7.00 | 7.75 | 7.00 | 4.94 | 4.50 | 5.48 | 7.00 | 3.66 | 7.00 |
| | | | | | | | | | | | | | | |
| **Grouped Functions:** | Group Scores: funct. | Group Scores values | Group Scores: funct. | Group Scores values | Group Scores: funct. | Group Scores values | Group Scores: funct. | Group Scores values | Group Scores: funct. | Group Scores values | Group Scores: funct. | Group Scores values | Group Scores: funct. | Group Scores values |
| Hydrologic Function (WS) | 0.00 | 3.92 | 0.00 | 4.42 | 7.00 | 4.42 | 4.70 | 8.68 | 4.20 | 7.85 | 2.80 | 8.26 | 3.50 | 8.26 |
| Water Quality Group (WQ) | 7.91 | 4.53 | 5.85 | 5.53 | 10.00 | 5.04 | 6.47 | 5.74 | 7.78 | 6.25 | 8.29 | 7.50 | 10.00 | 6.21 |
| Carbon Sequestration (CS) | 2.47 | -- | 2.22 | -- | 1.37 | -- | 1.63 | -- | 1.91 | -- | 2.80 | -- | 2.02 | -- |
| Fish Support Group (FISH) | 5.14 | 4.41 | 3.36 | 0.00 | 1.48 | 3.37 | 1.62 | 10.00 | 6.79 | 10.00 | 8.19 | 10.00 | 3.08 | 4.66 |
| Aquatic Support Group (AQ) | 5.93 | 5.14 | 7.50 | 7.00 | 6.52 | 7.00 | 6.65 | 7.00 | 4.90 | 6.79 | 5.82 | 8.19 | 6.42 | 7.00 |
| Terrestrial Support Group (TERR) | 6.07 | 4.50 | 6.56 | 7.00 | 7.75 | 7.00 | 7.75 | 7.00 | 4.94 | 4.50 | 5.48 | 7.00 | 3.66 | 7.00 |
| Public Use & Recognition (PU) | -- | 4.05 | -- | 5.24 | -- | 1.90 | -- | 1.90 | -- | 5.24 | -- | 3.57 | -- | 3.10 |
| Provisioning Services (PS) | -- | 0.00 | -- | 0.00 | -- | 0.00 | -- | 0.00 | -- | 0.00 | -- | 0.00 | -- | 0.00 |

# I. RESULTS AND CONCLUSIONS

Seven wetlands and three streams were delineated by ESA VA in June 2015 at the Mt. Scott Creek site (Figures 5a-5c, Appendix A). Table 5 is a summary of the aquatic resources found on-site.

**Table 5: Wetlands and Waterways Summary**

| Wetland Name | Area (Acre) | HGM | Cowardin Class | Likely Jurisdiction* | |
|---|---|---|---|---|---|
| | | | | DSL | Corps |
| Wetland 1 | 1.44 | Depressional | PFO | Yes | Yes |
| Wetland 2 | 0.11 | Slope | PSS | Yes | Yes |
| Wetland 3 | 0.32 | Depressional | PFO | Yes | Yes |
| Wetland 4 | 0.12 | Depressional | PFO | Yes | Yes |
| Wetland 5 | 0.13 | Depressional | PSS | Yes | Yes |
| Wetland 6 | 1.18 | Riverine | PFO | Yes | Yes |
| Wetland 7 | 0.35 | Depressional | PSS | Yes | Yes |
| Mt. Scott Creek | N/A | N/A | N/A | Yes | Yes |
| Dean Creek | N/A | N/A | N/A | Yes | Yes |
| Tributary 1 | N/A | N/A | N/A | Yes | Yes |

* This is a preliminary determination that will require concurrence from DSL and the Corps.

# J. DISCLAIMER

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

# APPENDIX A:
# MAPS

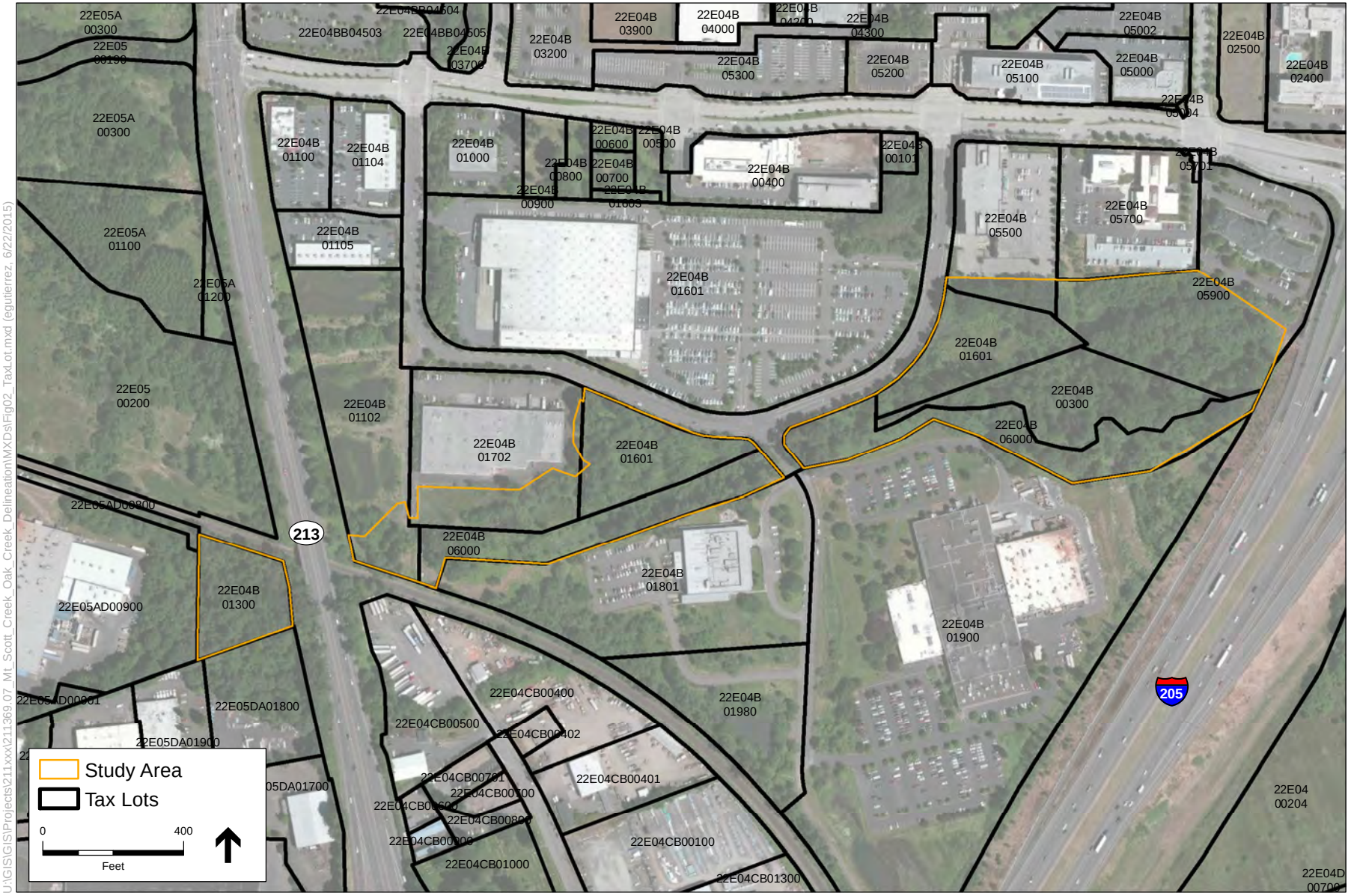

U:\GIS\GIS\Projects\211xxx\211369.07_Mt_Scott_Creek_Oak_Creek_Delineation\MXDs\Fig01_LocationMap.mxd (egutierrez, 6/19/2015)

SOURCE: ESA 2015; OSM 2014; ODOT 2010

Mt. Scott Creek Oak Bluff. 211369.07

**Figure 1**

Location Map



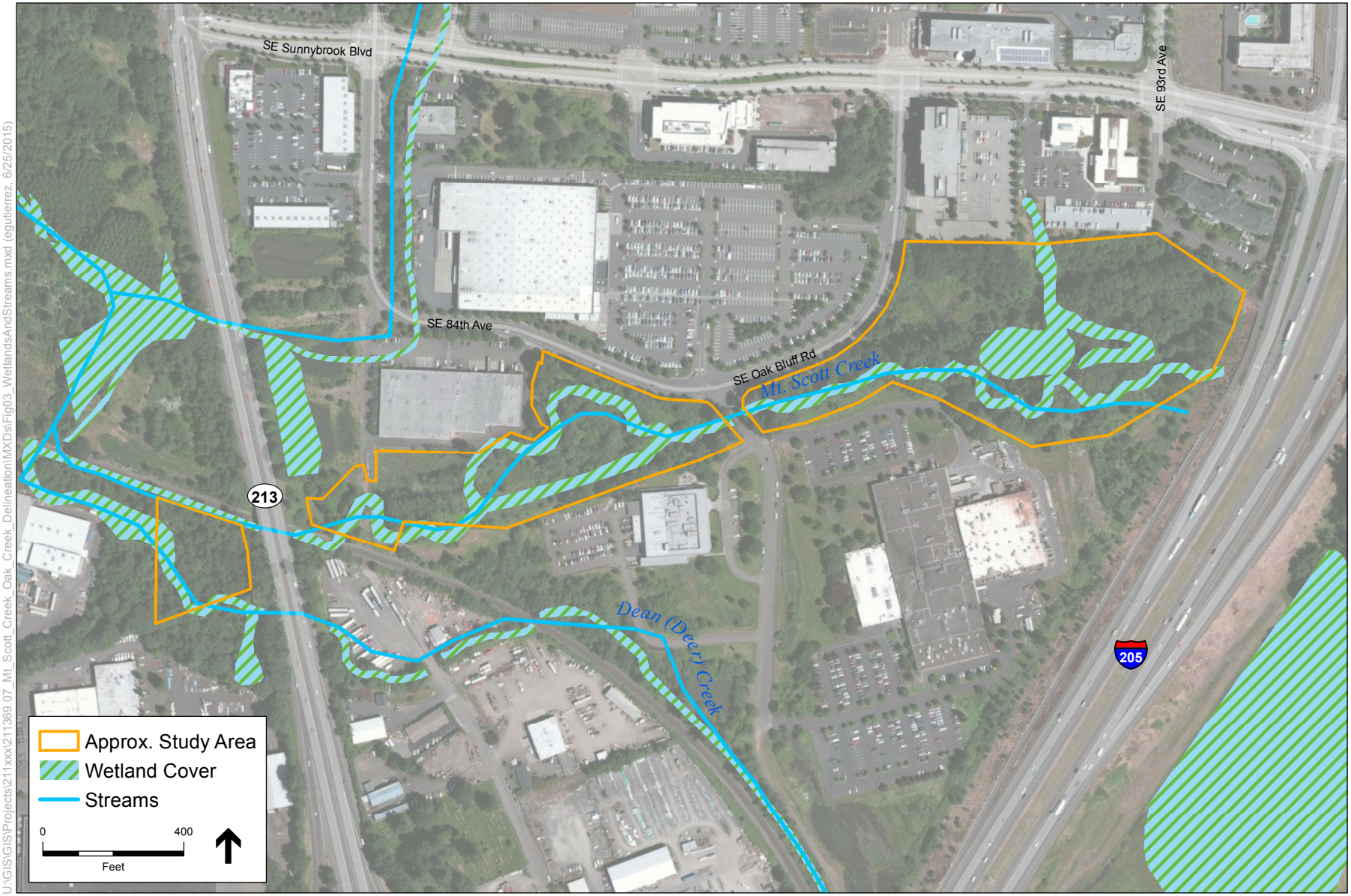

U:\GIS\GIS\Projects\211xxx\211369.07_Mt_Scott_Creek_Oak_Creek_Delineation\MXDs\Fig02_TaxLot.mxd (egutierrez, 6/22/2015)

SOURCE: OSM 2014 (Tax Lots); NAIP 2013 (Aerial)

Mt. Scott Creek Oak Bluff. 211369.07

**Figure 2**

Tax Lot and Aerial Map




U:\GIS\GIS\Projects\211xxx\211369.07_Mt_Scott_Creek_Oak_Creek_Delineation\MXDs\Fig03_WetlandsAndStreams.mxd (egutierrez, 6/25/2015)

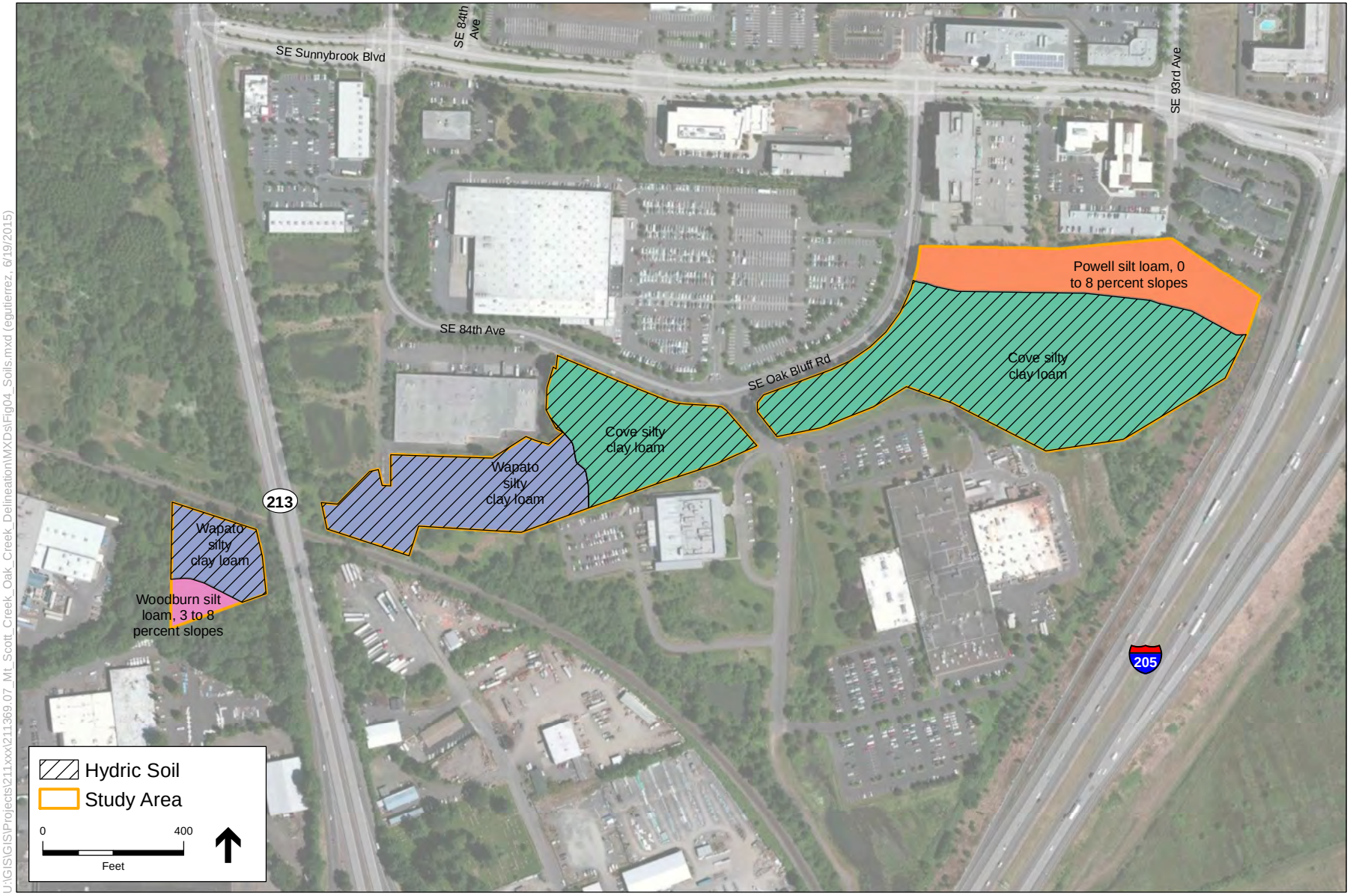
SOURCE: ESA 2015; OSM 2014; NAIP 2013; Oregon Wetland Cover 2009

NOTE: The Oregon Wetlands Cover is a compilation of polygon data from numerous sources, and represents the most comprehensive dataset available for the location and composition of the state's wetlands. It uses as a base all available digital data from the National Wetland Inventory (NWI; U.S. Fish and Wildlife Service, USFWS), to which has been added draft NWI mapping (Oregon Natural Heritage Information Center and The Wetlands Conservancy, ORNHIC and TWC), mapping from Local Wetland Inventories (LWIs; Department of State Lands, DSL), wetlands along state highways (Oregon Department of Transportation, ODOT), and mapping of individual sites by a variety of federal, state, academic, and nonprofit sources.

Mt. Scott Creek Oak Bluff. 211369.07

**Figure 3**

Oregon Wetlands Cover Map



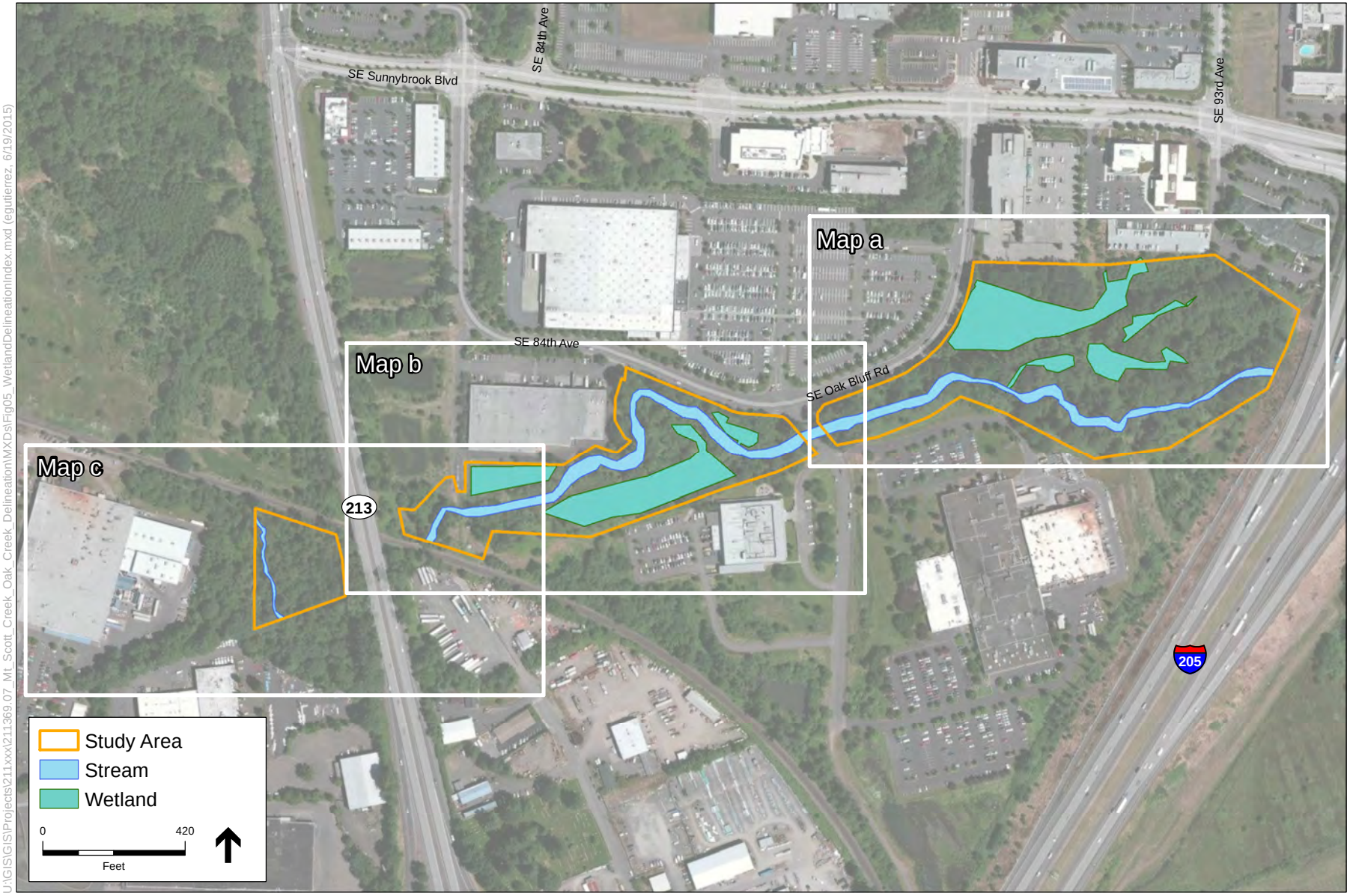

U:\GIS\GIS\Projects\211xxx\211369.07_Mt_Scott_Creek_Oak_Creek_Delineation\MXDs\Fig04_Soils.mxd (egutierrez, 6/19/2015)

SOURCE: ESA 2015; OSM 2014; NAIP 2013; NRCS 2010

Mt. Scott Creek Oak Bluff. 211369.07

**Figure 4**

Soils



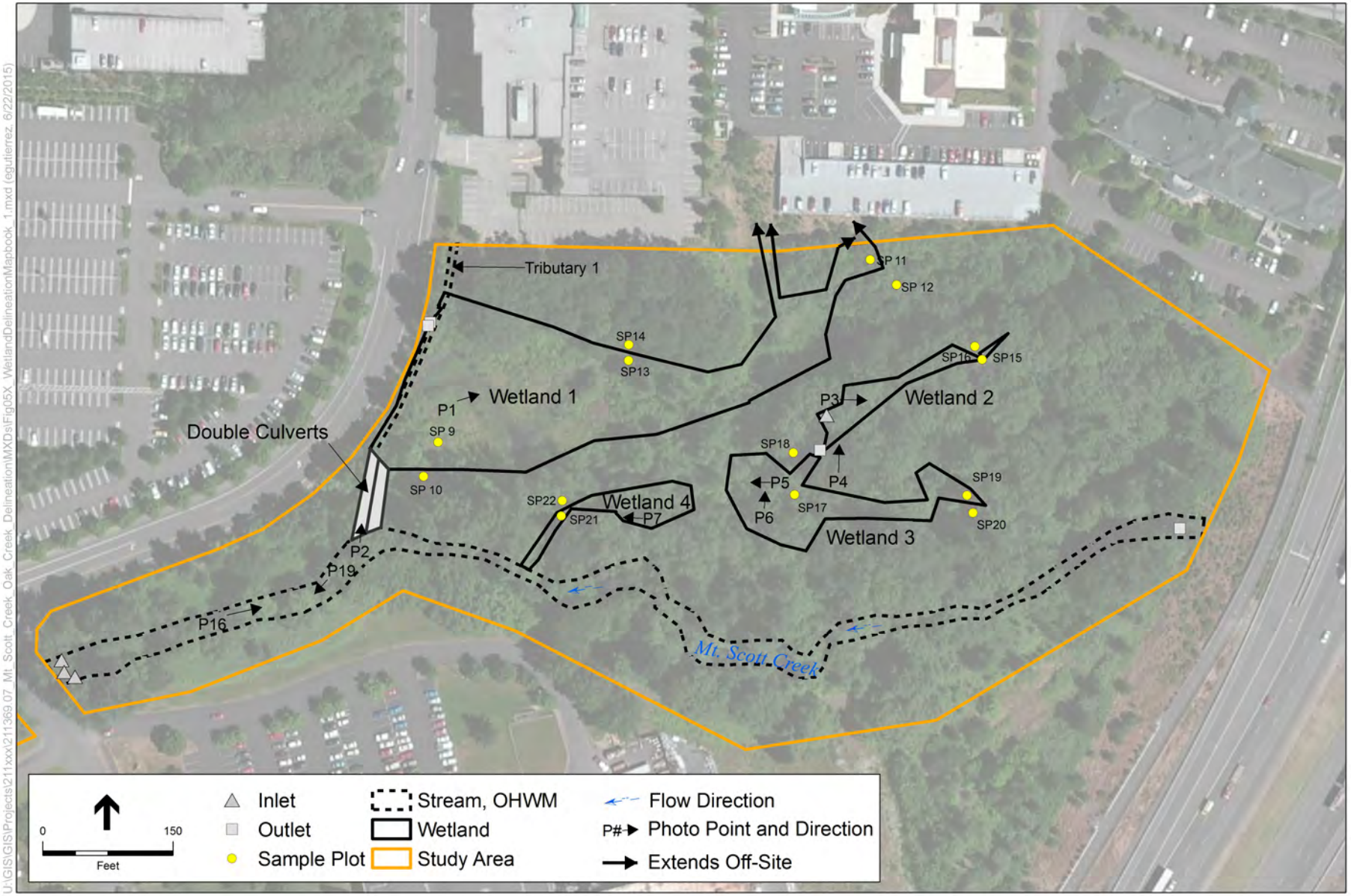

U:\GIS\GIS\Projects\211xxx\211369.07_Mt_Scott_Creek_Oak_Creek_Delineation\MXDs\Fig05_WetlandDelineationIndex.mxd (egutierrez, 6/19/2015)

SOURCE: OSM 2014; NAIP 2013

Scott Creek Oak Bluff. 211369.07

**Figure 5**

Wetland Delineation Index Map




U:\GIS\GIS\Projects\211xxx\211369.07_Mt_Scott_Creek_Oak_Creek_Delineation\MXDs\Fig05X_WetlandDelineationMapbook_1.mxd (egutierrez, 6/22/2015)

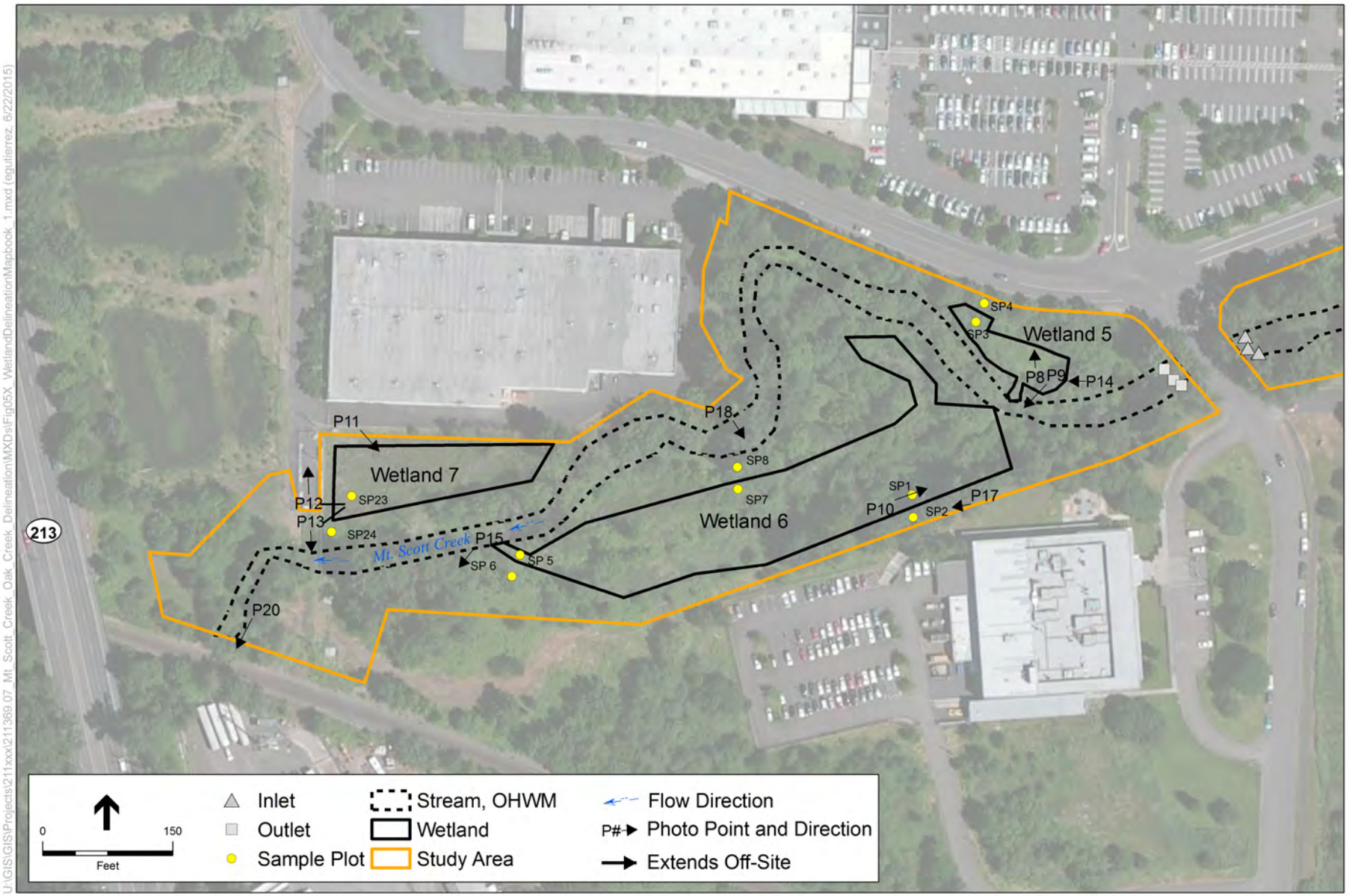
SOURCE: OSM 2014; NAIP 2013;

Mapping accuracy note: Wetland boundaries and sample plots were mapped by ESA using a Trimble GeoXT with a median post-processed horizontal accuracy of 3 - 5 feet

Mt. Scott Creek Oak Bluff. 211369.07

**Figure 5a**

Wetland Delineation Map



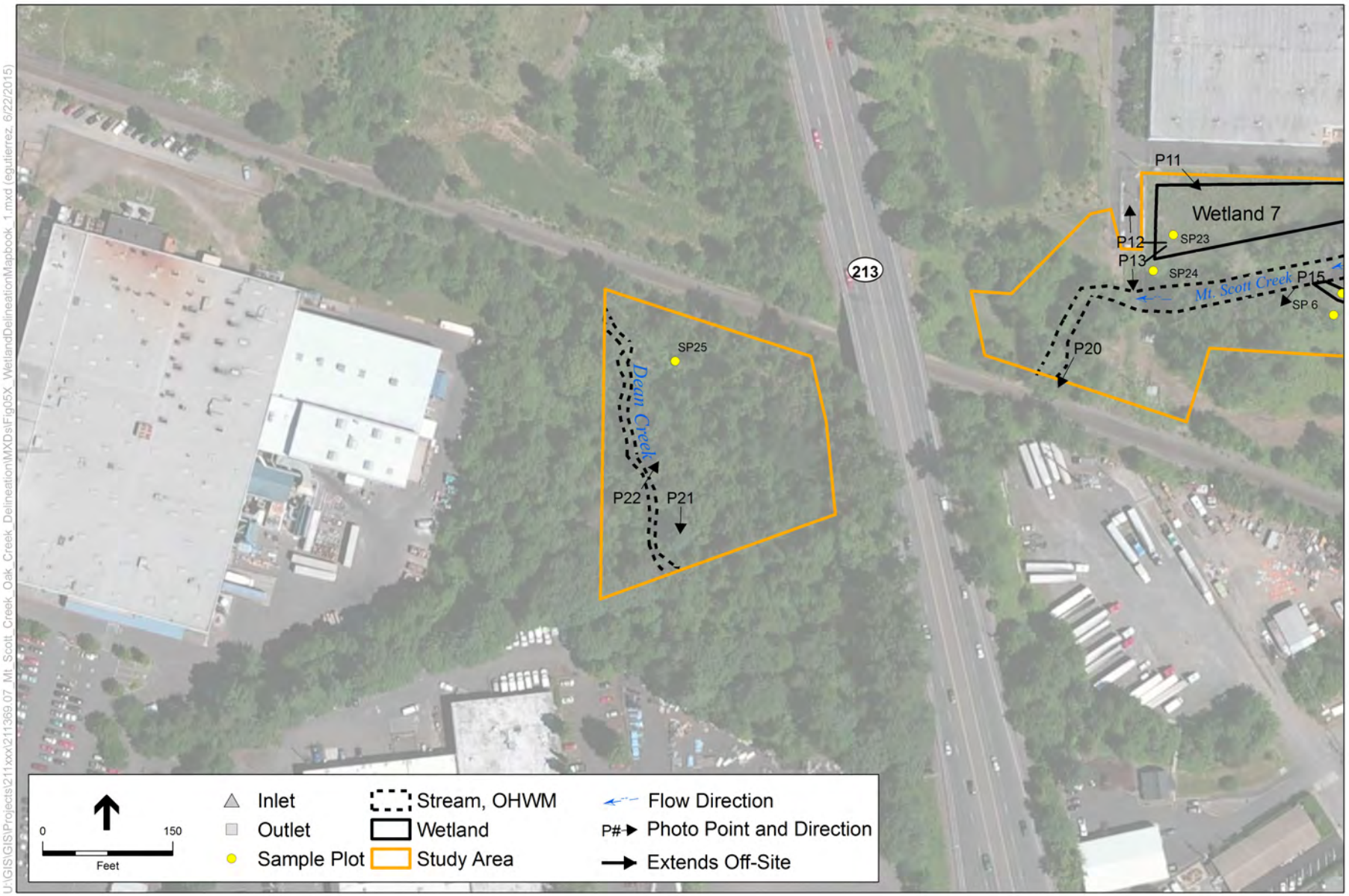

SOURCE: OSM 2014; NAIP 2013;

Mapping accuracy note: Wetland boundaries and sample plots were mapped by ESA using a Trimble GeoXT with a median post-processed horizontal accuracy of 3 - 5 feet

Mt. Scott Creek Oak Bluff. 211369.07

**Figure 5b**

Wetland Delineation Map

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SOURCE: OSM 2014; NAIP 2013;

Mapping accuracy note: Wetland boundaries and sample plots were mapped by ESA using a Trimble GeoXT with a median post-processed horizontal accuracy of 3 - 5 feet

Mt. Scott Creek Oak Bluff. 211369.07

**Figure 5c**

Wetland Delineation Map

# APPENDIX B:
# WETLAND DETERMINATION DATA FORMS

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

Project/Site: Mt. Scott Creek / Oak Bluff Boulevard City/County: Clackamas/Clackamas Sampling Date: 6/2/2015
Applicant/Owner: Clackamas Co. - Water Environment Services State: OR Sampling Point: SP1
Investigator(s): Sarah Hartung and Ava Laszlo Section, Township, Range: S4, T2S, R2E
Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave Slope (%): 1-2 %
Subregion (LRR): A: NW Forests & Coast Lat: 45.42674149150 Long: -122.5741767 Datum: NAD83
Soil Map Unit Name: Cove silty clay loam NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____ Soil ____ or Hydrology ____ significantly disturbed? No Are "Normal Circumstances" present? Yes **X** No ____
Are Vegetation ____ Soil ____ or Hydrology ____ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes X No ____
Hydric Soil Present? Yes X No ____ **Is the Sampled Area**
Wetland Hydrology Present? Yes X No ____ **within a Wetland?** **Yes X** **No** ____

Remarks: Rainfall for May is below normal range
SP location: south end of floodplain wetland, south of Mt. Scott next to OR State Police parking lot

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30' R ) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. Salix lasiandra | 5 | * | FACW |
| 2. Fraxinus latifolia | 10 | * | FACW |
| 3. Alnus rubra | 5 | * | FAC |
| 4. | | | |
| | 20 | = Total Cover | |
| **Sapling/Shrub Stratum** (Plot size: 30' R ) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 0 | = Total Cover | |
| **Herb Stratum** (Plot size: 5' R ) | | | |
| 1. Impatiens noli-tangere | 40 | * | FACW |
| 2. Phalaris arundinacea | 40 | * | FACW |
| 3. | | | |
| 4. | | * | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| | 80 | = Total Cover | |
| **Woody Vine Stratum** (Plot size: ____ ) | | | |
| 1. | | | |
| 2. | | | |
| | 0 | = Total Cover | |

% Bare Ground in Herb Stratum 20

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species ____ | x 1= 0 |
| FACW species ____ | x 2= 0 |
| FAC species ____ | x 3= 0 |
| FACU species ____ | x 4= 0 |
| UPL species ____ | x 5= 0 |
| Column Totals: 0 (A) | 0 (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

- ____ 1- Rapid Test For Hydrophytic Vegetation
- X 2- Dominance Test is >50%
- ____ 3- Prevalence Index is ≤3.0[1]
- ____ 4- Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5- Wetland Non-Vascular Plants[1]
- ____ 6- Problematic Hydrophytic Vegetation[1](Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** **Yes X** **No** ____

Remarks:

## SOIL

Sampling Point: SP1

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

| Depth | Matrix | | Redox Features | | | | | |
|---|---|---|---|---|---|---|---|---|
| (inches) | Color (moist) | % | Color (moist) | % | Type[1] | Loc[2] | Texture[3] | Remarks |
| 0-3 | 10YR 4/1 | 100 | | | | | Si Cl Lm | |
| 3-20 | 10YR 4/1 | 70 | 10YR 3/4 | 30 | C | M | Si Cl Lm | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix. [3]Note: Sa = Sand. Si = Silt, Cl = Clay, Lm = Loam

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: ___

Depth (inches): ___

**Hydric Soil Present?** **Yes** X **No** ___

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery(B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

**Field Observations:**

| | | | | | |
|---|---|---|---|---|---|
| Surface Water Present? | Yes | ___ | No | X | Depth (Inches): ___ |
| Water Table Present? | Yes | X | No | ___ | Depth (Inches): 1 |
| Saturation Present? (includes capillary fringe) | Yes | X | No | ___ | Depth (Inches): 0 |

**Wetland Hydrology Present?** **Yes** X **No** ___

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

Remarks:

Surface water 10 feet away in side channel

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

Project/Site: Mt. Scott Creek / Oak Bluff Boulevard City/County: Clackamas/Clackamas Sampling Date: 6/2/2015
Applicant/Owner: Clackamas Co. - Water Environment Services State: OR Sampling Point: SP2
Investigator(s): Sarah Hartung and Ava Laszlo Section, Township, Range: S4, T2S, R2E
Landform (hillslope, terrace, etc.): Top of bank Local relief (concave, convex, none): Convex Slope (%): 5
Subregion (LRR): A: NW Forests & Coast Lat: 45.42672983 Long: -122.57415346100 Datum: NAD83
Soil Map Unit Name: Cove silty clay loam NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____ Soil ____ or Hydrology ____ significantly disturbed? No Are "Normal Circumstances" present? Yes **X** No ____
Are Vegetation ____ Soil ____ or Hydrology ____ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes ____ No X
Hydric Soil Present? Yes ____ No X **Is the Sampled Area**
Wetland Hydrology Present? Yes ____ No X **within a Wetland? Yes ____ No X**

Remarks: Rainfall for May is below normal range
SP location: 3 feet upslope of wetland

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30' R ) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. Populus balsamifera | 50 | * | FAC |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 50 | = Total Cover | |
| **Sapling/Shrub Stratum** (Plot size: 30' R ) | | | |
| 1. Crataegus monogyna | 5 | | FAC |
| 2. Populus balsamifera | 10 | | FAC |
| 3. Rubus armeniacus | 60 | * | FACU |
| 4. Fraxinus latifolia | 2 | | FACW |
| 5. | | | |
| | 77 | = Total Cover | |
| **Herb Stratum** (Plot size: 5' R ) | | | |
| 1. Poa pratensis | 5 | * | FAC |
| 2. Geranium robertianum | 5 | * | FACU |
| 3. | | | |
| 4. | | * | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| | 10 | = Total Cover | |
| **Woody Vine Stratum** (Plot size: ____ ) | | | |
| 1. | | | |
| 2. | | | |
| | 0 | = Total Cover | |

% Bare Ground in Herb Stratum 90

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species ____ | x 1= 0 |
| FACW species ____ | x 2= 0 |
| FAC species ____ | x 3= 0 |
| FACU species ____ | x 4= 0 |
| UPL species ____ | x 5= 0 |
| Column Totals: 0 (A) | 0 (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

____ 1- Rapid Test For Hydrophytic Vegetation
____ 2- Dominance Test is >50%
____ 3- Prevalence Index is ≤3.0[1]
____ 4- Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ 5- Wetland Non-Vascular Plants[1]
____ 6- Problematic Hydrophytic Vegetation[1](Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** **Yes** ____ **No X**

Remarks:

## SOIL

Sampling Point: SP2

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

| Depth | Matrix | | Redox Features | | | | | |
|---|---|---|---|---|---|---|---|---|
| (inches) | Color (moist) | % | Color (moist) | % | Type[1] | Loc[2] | Texture[3] | Remarks |
| 0-15 | 10YR 3/2 | 98 | 10YR 3/3 | 2 | C | M | Si Lm | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix. [3]Note: Sa = Sand. Si = Silt, Cl = Clay, Lm = Loam

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: Rock / roots

Depth (inches): 15

**Hydric Soil Present?** **Yes** ___ **No** X

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery(B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

**Field Observations:**

| | | | |
|---|---|---|---|
| Surface Water Present? | Yes ___ | No X | Depth (Inches): |
| Water Table Present? | Yes ___ | No X | Depth (Inches): |
| Saturation Present? (includes capillary fringe) | Yes ___ | No X | Depth (Inches): |

**Wetland Hydrology Present?** **Yes** ___ **No** X

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

Remarks:

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

Project/Site: Mt. Scott Creek / Oak Bluff Boulevard City/County: Clackamas/Clackamas Sampling Date: 6/2/2015
Applicant/Owner: Clackamas Co. - Water Environment Services State: OR Sampling Point: SP3
Investigator(s): Sarah Hartung and Ava Laszlo Section, Township, Range: S4, T2S, R2E
Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave Slope (%): 3
Subregion (LRR): A: NW Forests & Coast Lat: 45.42732776240 Long: -122.57385361300 Datum: NAD83
Soil Map Unit Name: Cove silty clay loam NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____ Soil ____ or Hydrology ____ significantly disturbed? No Are "Normal Circumstances" present? Yes **X** No ____
Are Vegetation ____ Soil ____ or Hydrology ____ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes X No ____
Hydric Soil Present? Yes X No ____ **Is the Sampled Area**
Wetland Hydrology Present? Yes X No ____ **within a Wetland?** **Yes X** **No** ____

Remarks: Rainfall for May is below normal range

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30' R ) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. Alnus rubra | 75 | * | FAC |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 75 | = Total Cover | |
| **Sapling/Shrub Stratum** (Plot size: 30' R ) | | | |
| 1. Cornus alba | 20 | * | FACW |
| 2. Fraxinus latifolia | 40 | * | FACW |
| 3. Alnus rubra | 10 | | FAC |
| 4. | | | |
| 5. | | | |
| | 70 | = Total Cover | |
| **Herb Stratum** (Plot size: 5' R ) | | | |
| 1. Impatiens noli-tangere | 70 | * | FACW |
| 2. Geum macrophyllum | 10 | | FAC |
| 3. Carex obnupta | 5 | | OBL |
| 4. | | * | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| | 85 | = Total Cover | |
| **Woody Vine Stratum** (Plot size: ____ ) | | | |
| 1. | | | |
| 2. | | | |
| | 0 | = Total Cover | |

% Bare Ground in Herb Stratum 15

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species ____ | x 1= 0 |
| FACW species ____ | x 2= 0 |
| FAC species ____ | x 3= 0 |
| FACU species ____ | x 4= 0 |
| UPL species ____ | x 5= 0 |
| Column Totals: 0 (A) | 0 (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

- ____ 1- Rapid Test For Hydrophytic Vegetation
- X 2- Dominance Test is >50%
- ____ 3- Prevalence Index is ≤3.0[1]
- ____ 4- Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5- Wetland Non-Vascular Plants[1]
- ____ 6- Problematic Hydrophytic Vegetation[1](Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** **Yes X** **No** ____

Remarks:

## SOIL

Sampling Point: SP3

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

| Depth | Matrix | | Redox Features | | | | | |
|---|---|---|---|---|---|---|---|---|
| (inches) | Color (moist) | % | Color (moist) | % | Type[1] | Loc[2] | Texture[3] | Remarks |
| 0-6 | 10YR 4/2 | 90 | 10YR 3/4 | 10 | C | M | Si Cl Lm | |
| 6-20 | 10YR 6/2 | 75 | 10YR 4/6 | 25 | C | M | Si Cl | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix. [3]Note: Sa = Sand. Si = Silt, Cl = Clay, Lm = Loam

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: ___

Depth (inches): ___

**Hydric Soil Present?** **Yes** **X** **No** ___

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery(B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B)**
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

**Field Observations:**

| | | | | | |
|---|---|---|---|---|---|
| Surface Water Present? | Yes ___ | No X | Depth (Inches): ___ | | |
| Water Table Present? | Yes ___ | No X | Depth (Inches): >20 | | |
| Saturation Present? (includes capillary fringe) | Yes ___ | No X | Depth (Inches): >20 | **Wetland Hydrology Present?** | **Yes X No** ___ |

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

Remarks:

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

Project/Site: Mt. Scott Creek / Oak Bluff Boulevard City/County: Clackamas/Clackamas Sampling Date: 6/2/2015
Applicant/Owner: Clackamas Co. - Water Environment Services State: OR Sampling Point: SP4
Investigator(s): Sarah Hartung and Ava Laszlo Section, Township, Range: S4, T2S, R2E
Landform (hillslope, terrace, etc.): Top of bank Local relief (concave, convex, none): None Slope (%): 15
Subregion (LRR): A: NW Forests & Coast Lat: 45.42736845880 Long: -122.57380539000 Datum: NAD83
Soil Map Unit Name: Cove silty clay loam NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____ Soil ____ or Hydrology ____ significantly disturbed? No Are "Normal Circumstances" present? Yes **X** No ____
Are Vegetation ____ Soil ____ or Hydrology ____ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes X No ____
Hydric Soil Present? Yes ____ No X
Wetland Hydrology Present? Yes ____ No X
**Is the Sampled Area within a Wetland?** **Yes** ____ **No X**

Remarks: Rainfall for May is below normal range
SP location: 3 feet higher than swale / wetland

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30' R ) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. Fraxinus pennsylvanica | 25 | * | FAC |
| 2. Salix scouleriana | 15 | * | FAC |
| 3. Alnus rubra | 20 | * | FAC |
| 4. | | | |
| | 60 | = Total Cover | |
| **Sapling/Shrub Stratum** (Plot size: 30' R ) | | | |
| 1. Rubus armeniacus | 50 | * | FACU |
| 2. Mahonia aquifolium | 15 | * | FACU |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 65 | = Total Cover | |
| **Herb Stratum** (Plot size: 5' R ) | | | |
| 1. Tellima grandiflora | 30 | * | FACU |
| 2. Ranunculus repens | 30 | * | FAC |
| 3. Poa pratensis | 10 | | FAC |
| 4. Dipsacus fullonum | 20 | * | FAC |
| 5. Equisetum arvense | 10 | | FAC |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| | 100 | = Total Cover | |
| **Woody Vine Stratum** (Plot size: ____ ) | | | |
| 1. | | | |
| 2. | | | |
| | 0 | = Total Cover | |

% Bare Ground in Herb Stratum 0

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 63% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species ____ | x 1= 0 |
| FACW species ____ | x 2= 0 |
| FAC species ____ | x 3= 0 |
| FACU species ____ | x 4= 0 |
| UPL species ____ | x 5= 0 |
| Column Totals: 0 (A) | 0 (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

____ 1- Rapid Test For Hydrophytic Vegetation
X 2- Dominance Test is >50%
____ 3- Prevalence Index is ≤3.0[1]
____ 4- Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ 5- Wetland Non-Vascular Plants[1]
____ 6- Problematic Hydrophytic Vegetation[1](Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** **Yes X** **No** ____

Remarks:

## SOIL

Sampling Point: SP4

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

| Depth | Matrix | | Redox Features | | | | | |
|---|---|---|---|---|---|---|---|---|
| (inches) | Color (moist) | % | Color (moist) | % | Type[1] | Loc[2] | Texture[3] | Remarks |
| 0-4 | 10YR 3/2 | 100 | | | | | Si Lm | |
| 4-20 | 10YR 4/2 | 100 | | | | | Si Lm | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix. [3]Note: Sa = Sand. Si = Silt, Cl = Clay, Lm = Loam

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present? Yes ___ No X**

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery(B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

**Field Observations:**

Surface Water Present? Yes ___ No X Depth (Inches): _____

Water Table Present? Yes ___ No X Depth (Inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (Inches): _____

**Wetland Hydrology Present? Yes ___ No X**

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

Remarks:

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

Project/Site: Mt. Scott Creek / Oak Bluff Boulevard City/County: Clackamas/Clackamas Sampling Date: 6/2/2015
Applicant/Owner: Clackamas Co. - Water Environment Services State: OR Sampling Point: SP5
Investigator(s): Sarah Hartung and Ava Laszlo Section, Township, Range: S4, T2S, R2E
Landform (hillslope, terrace, etc.): Floodplain channel Local relief (concave, convex, none): Concave Slope (%): 2
Subregion (LRR): A: NW Forests & Coast Lat: 45.42655806880 Long: -122.57588546300 Datum: NAD83
Soil Map Unit Name: Wapato silty clay loam NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____ Soil ____ or Hydrology ____ significantly disturbed? No Are "Normal Circumstances" present? Yes **X** No ____
Are Vegetation ____ Soil ____ or Hydrology ____ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes X No ____
Hydric Soil Present? Yes X No ____ **Is the Sampled Area**
Wetland Hydrology Present? Yes X No ____ **within a Wetland? Yes X No ____**

Remarks: Rainfall for May is below normal range

SP location: west end of Wetland 6

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30' R ) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 0 | = Total Cover | |
| **Sapling/Shrub Stratum (Plot size: 30' R )** | | | |
| 1. Alnus rubra | 20 | * | FAC |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 20 | = Total Cover | |
| **Herb Stratum (Plot size: 5' R )** | | | |
| 1. Impatiens noli-tangere | 70 | * | FACW |
| 2. Phalaris arundinacea | 10 | | FACW |
| 3. | | | |
| 4. | | * | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| | 80 | = Total Cover | |
| **Woody Vine Stratum (Plot size: _____ )** | | | |
| 1. | | | |
| 2. | | | |
| | 0 | = Total Cover | |

% Bare Ground in Herb Stratum 20

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species ____ | x 1= 0 |
| FACW species ____ | x 2= 0 |
| FAC species ____ | x 3= 0 |
| FACU species ____ | x 4= 0 |
| UPL species ____ | x 5= 0 |
| Column Totals: 0 (A) | 0 (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

- ____ 1- Rapid Test For Hydrophytic Vegetation
- X 2- Dominance Test is >50%
- ____ 3- Prevalence Index is ≤3.0[1]
- ____ 4- Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5- Wetland Non-Vascular Plants[1]
- ____ 6- Problematic Hydrophytic Vegetation[1](Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present? Yes X No ____**

Remarks:

## SOIL

Sampling Point: SP5

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

| Depth | Matrix | | Redox Features | | | | | |
|---|---|---|---|---|---|---|---|---|
| (inches) | Color (moist) | % | Color (moist) | % | Type[1] | Loc[2] | Texture[3] | Remarks |
| 0-15 | 10YR 4/2 | 80 | 10YR 4/6 | 20 | C | M, PL | Si Cl Lm | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix. [3]Note: Sa = Sand. Si = Silt, Cl = Clay, Lm = Loam

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: Rock / wood

Depth (inches): 15

**Hydric Soil Present?** **Yes** X **No** ___

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- X Surface Water (A1) - channel
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery(B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

**Field Observations:**

| | | | | | |
|---|---|---|---|---|---|
| Surface Water Present? | Yes | ___ | No | X | Depth (Inches): ___ |
| Water Table Present? | Yes | X | No | ___ | Depth (Inches): 12 |
| Saturation Present? (includes capillary fringe) | Yes | X | No | ___ | Depth (Inches): 10 |

**Wetland Hydrology Present?** **Yes** X **No** ___

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

Remarks:

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

Project/Site: Mt. Scott Creek / Oak Bluff Boulevard City/County: Clackamas/Clackamas Sampling Date: 6/2/2015
Applicant/Owner: Clackamas Co. - Water Environment Services State: OR Sampling Point: SP6
Investigator(s): Sarah Hartung and Ava Laszlo Section, Township, Range: S4, T2S, R2E
Landform (hillslope, terrace, etc.): Top of bank Local relief (concave, convex, none): None Slope (%): 5
Subregion (LRR): A: NW Forests & Coast Lat: 45.42648838390 Long: -122.57596317300 Datum: NAD83
Soil Map Unit Name: Wapato silty clay loam NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____ Soil ____ or Hydrology ____ significantly disturbed? No Are "Normal Circumstances" present? Yes **X** No ____
Are Vegetation ____ Soil ____ or Hydrology ____ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes ____ No X
Hydric Soil Present? Yes ____ No X **Is the Sampled Area**
Wetland Hydrology Present? Yes ____ No X **within a Wetland? Yes ____ No X**

Remarks: Rainfall for May is below normal range

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30' R ) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. Populus balsamifera | 60 | * | FAC |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 60 | = Total Cover | |
| **Sapling/Shrub Stratum** (Plot size: 30' R ) | | | |
| 1. Rubus armeniacus | 85 | * | FACU |
| 2. Populus balsamifera | 5 | | FAC |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 90 | = Total Cover | |
| **Herb Stratum** (Plot size: 5' R ) | | | |
| 1. Galium aparine | 20 | * | FACU |
| 2. Rubus ursinus | 20 | * | FACU |
| 3. | | | |
| 4. | | * | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| | 40 | = Total Cover | |
| **Woody Vine Stratum** (Plot size: ____ ) | | | |
| 1. | | | |
| 2. | | | |
| | 0 | = Total Cover | |

% Bare Ground in Herb Stratum 60

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species ____ | x 1= 0 |
| FACW species ____ | x 2= 0 |
| FAC species ____ | x 3= 0 |
| FACU species ____ | x 4= 0 |
| UPL species ____ | x 5= 0 |
| Column Totals: 0 (A) | 0 (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

____ 1- Rapid Test For Hydrophytic Vegetation
____ 2- Dominance Test is >50%
____ 3- Prevalence Index is ≤3.0[1]
____ 4- Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ 5- Wetland Non-Vascular Plants[1]
____ 6- Problematic Hydrophytic Vegetation[1](Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** **Yes** ____ **No X**

Remarks:

## SOIL

Sampling Point: SP6

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

| Depth | Matrix | | Redox Features | | | | | |
|---|---|---|---|---|---|---|---|---|
| (inches) | Color (moist) | % | Color (moist) | % | Type[1] | Loc[2] | Texture[3] | Remarks |
| 0-16 | 10YR 3/2 | 100 | | | | | Si Lm | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix. [3]Note: Sa = Sand. Si = Silt, Cl = Clay, Lm = Loam

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: Rock

Depth (inches): 16

**Hydric Soil Present?** **Yes** ___ **No** X

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery(B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

**Field Observations:**

Surface Water Present? Yes ___ No X Depth (Inches): ___

Water Table Present? Yes ___ No X Depth (Inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (Inches): ___

**Wetland Hydrology Present?** **Yes** ___ **No** X

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

Remarks:

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

Project/Site: Mt. Scott Creek / Oak Bluff Boulevard City/County: Clackamas/Clackamas Sampling Date: 6/2/2015
Applicant/Owner: Clackamas Co. - Water Environment Services State: OR Sampling Point: SP7
Investigator(s): Sarah Hartung and Ava Laszlo Section, Township, Range: S4, T2S, R2E
Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave Slope (%): 7
Subregion (LRR): A: NW Forests & Coast Lat: 45.42678315570 Long: -122.57495578200 Datum: NAD83
Soil Map Unit Name: Wapato silty clay loam NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____ Soil ____ or Hydrology ____ significantly disturbed? No Are "Normal Circumstances" present? Yes **X** No ____
Are Vegetation ____ Soil ____ or Hydrology ____ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes X No ____
Hydric Soil Present? Yes X No ____ **Is the Sampled Area**
Wetland Hydrology Present? Yes X No ____ **within a Wetland? Yes X No ____**

Remarks: Rainfall for May is below normal range

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30' R ) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. Salix lasiandra | 30 | * | FACW |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 30 | = Total Cover | |
| **Sapling/Shrub Stratum** (Plot size: 30' R ) | | | |
| 1. Salix lasiandra | 10 | * | FACW |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 10 | = Total Cover | |
| **Herb Stratum** (Plot size: 5' R ) | | | |
| 1. Carex obnupta | 50 | * | OBL |
| 2. Lotus corniculatus | 15 | * | FACW |
| 3. Epilobium ciliatum | 15 | * | FACW |
| 4. | | * | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| | 80 | = Total Cover | |
| **Woody Vine Stratum** (Plot size: ____ ) | | | |
| 1. | | | |
| 2. | | | |
| | 0 | = Total Cover | |

% Bare Ground in Herb Stratum 20

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species | x 1= 0 |
| FACW species | x 2= 0 |
| FAC species | x 3= 0 |
| FACU species | x 4= 0 |
| UPL species | x 5= 0 |
| Column Totals: 0 (A) | 0 (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

X 1- Rapid Test For Hydrophytic Vegetation
____ 2- Dominance Test is >50%
____ 3- Prevalence Index is ≤3.0[1]
____ 4- Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ 5- Wetland Non-Vascular Plants[1]
____ 6- Problematic Hydrophytic Vegetation[1](Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** **Yes X No ____**

Remarks:

## SOIL

Sampling Point: SP7

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

| Depth | Matrix | | Redox Features | | | | | |
|---|---|---|---|---|---|---|---|---|
| (inches) | Color (moist) | % | Color (moist) | % | Type[1] | Loc[2] | Texture[3] | Remarks |
| 0-20 | 10YR 4/1 | 75 | 10YR 4/6 | 25 | C | M, PL | Si Cl Lm | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix. [3]Note: Sa = Sand. Si = Silt, Cl = Clay, Lm = Loam

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: ___

Depth (inches): ___

**Hydric Soil Present?** **Yes** **X** **No** ___

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery(B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

**Field Observations:**

| | | | | | |
|---|---|---|---|---|---|
| Surface Water Present? | Yes | ___ | No | X | Depth (Inches): ___ |
| Water Table Present? | Yes | X | No | ___ | Depth (Inches): ___ |
| Saturation Present? (includes capillary fringe) | Yes | X | No | ___ | Depth (Inches): ___ |

**Wetland Hydrology Present?** **Yes** **X** **No** ___

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

Remarks:

Surface water 2-3 feet deep within 5 feet of plot

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

Project/Site: Mt. Scott Creek / Oak Bluff Boulevard City/County: Clackamas/Clackamas Sampling Date: 6/2/2015
Applicant/Owner: Clackamas Co. - Water Environment Services State: OR Sampling Point: SP8
Investigator(s): Sarah Hartung and Ava Laszlo Section, Township, Range: S4, T2S, R2E
Landform (hillslope, terrace, etc.): Riverbank Local relief (concave, convex, none): Convex Slope (%): 3
Subregion (LRR): A: NW Forests & Coast Lat: 45.42685303930 Long: -122.57496035400 Datum: NAD83
Soil Map Unit Name: Wapato silty clay loam NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____ Soil ____ or Hydrology ____ significantly disturbed? No Are "Normal Circumstances" present? Yes **X** No ____
Are Vegetation ____ Soil ____ or Hydrology ____ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes ____ No X
Hydric Soil Present? Yes ____ No X **Is the Sampled Area**
Wetland Hydrology Present? Yes ____ No X **within a Wetland? Yes ____ No X**

Remarks: Rainfall for May is below normal range
SP location: top of bank 2 feet higher than wetland

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30' R ) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. Pseudotsuga menziesii | 30 | * | FACU |
| 2. Thuja plicata | 20 | * | FAC |
| 3. | | | |
| 4. | | | |
| | 50 | = Total Cover | |
| **Sapling/Shrub Stratum** (Plot size: 30' R ) | | | |
| 1. Oemleria cerasiformis | 20 | * | FACU |
| 2. Symphoricarpos albus | 10 | | FACU |
| 3. Prunus virginiana | 5 | | FACU |
| 4. Rubus armeniacus | 25 | * | FACU |
| 5. | | | |
| | 60 | = Total Cover | |
| **Herb Stratum** (Plot size: 5' R ) | | | |
| 1. Polystichum munitum | 20 | * | FACU |
| 2. Galium aparine | 10 | * | FACU |
| 3. Rubus ursinus | 10 | * | FACU |
| 4. | | * | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| | 40 | = Total Cover | |
| **Woody Vine Stratum** (Plot size: ____ ) | | | |
| 1. | | | |
| 2. | | | |
| | 0 | = Total Cover | |

% Bare Ground in Herb Stratum 60

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 14% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species ____ | x 1= 0 |
| FACW species ____ | x 2= 0 |
| FAC species ____ | x 3= 0 |
| FACU species ____ | x 4= 0 |
| UPL species ____ | x 5= 0 |
| Column Totals: 0 (A) | 0 (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

____ 1- Rapid Test For Hydrophytic Vegetation
____ 2- Dominance Test is >50%
____ 3- Prevalence Index is ≤3.0[1]
____ 4- Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ 5- Wetland Non-Vascular Plants[1]
____ 6- Problematic Hydrophytic Vegetation[1](Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** **Yes ____ No X**

Remarks:

## SOIL

Sampling Point: SP8

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

| Depth | Matrix | | Redox Features | | | | | |
|---|---|---|---|---|---|---|---|---|
| (inches) | Color (moist) | % | Color (moist) | % | Type[1] | Loc[2] | Texture[3] | Remarks |
| 0-8 | 10YR 3/2 | 100 | | | | | Si Lm | |
| | | | | | | | | |
| | | | | | | | | |
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[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix. [3]Note: Sa = Sand. Si = Silt, Cl = Clay, Lm = Loam

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** **Yes** ___ **No** X

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery(B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

**Field Observations:**

Surface Water Present? Yes ___ No X Depth (Inches): _____

Water Table Present? Yes ___ No X Depth (Inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (Inches): _____

**Wetland Hydrology Present?** **Yes** ___ **No** X

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

Remarks:

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

Project/Site: Mt. Scott Creek / Oak Bluff Boulevard City/County: Clackamas/Clackamas Sampling Date: 6/2/2015
Applicant/Owner: Clackamas Co. - Water Environment Services State: OR Sampling Point: SP9
Investigator(s): Sarah Hartung and Ava Laszlo Section, Township, Range: S4, T2S, R2E
Landform (hillslope, terrace, etc.): Base of hillslope Local relief (concave, convex, none): none Slope (%): 3
Subregion (LRR): A: NW Forests & Coast Lat: 45.42802952840 Long: -122.57102276800 Datum: NAD83
Soil Map Unit Name: Cove silty clay loam NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____ Soil ____ or Hydrology ____ significantly disturbed? No Are "Normal Circumstances" present? Yes **X** No ____
Are Vegetation ____ Soil ____ or Hydrology ____ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes X No ____
Hydric Soil Present? Yes X No ____ **Is the Sampled Area**
Wetland Hydrology Present? Yes X No ____ **within a Wetland? Yes X No ____**

Remarks: Rainfall for May is below normal range

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30' R ) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. Alnus rubra | 20 | * | FAC |
| 2. Populus balsamifera | 5 | * | FAC |
| 3. | | | |
| 4. | | | |
| | 25 | = Total Cover | |
| **Sapling/Shrub Stratum** (Plot size: 30' R ) | | | |
| 1. Fraxinus latifolia | 60 | * | FACW |
| 2. Alnus rubra | 20 | * | FAC |
| 3. Salix scouleriana | 5 | | FAC |
| 4. | | | |
| 5. | | | |
| | 85 | = Total Cover | |
| **Herb Stratum** (Plot size: 5' R ) | | | |
| 1. Lotus corniculatus | 50 | * | FAC |
| 2. Scirpus microcarpus | 20 | * | OBL |
| 3. Juncus patens | 5 | | FACW |
| 4. | | * | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| | 75 | = Total Cover | |
| **Woody Vine Stratum** (Plot size: ____ ) | | | |
| 1. | | | |
| 2. | | | |
| | 0 | = Total Cover | |

% Bare Ground in Herb Stratum 25

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species | x 1= 0 |
| FACW species | x 2= 0 |
| FAC species | x 3= 0 |
| FACU species | x 4= 0 |
| UPL species | x 5= 0 |
| Column Totals: 0 (A) | 0 (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

- ____ 1- Rapid Test For Hydrophytic Vegetation
- X 2- Dominance Test is >50%
- ____ 3- Prevalence Index is ≤3.0[1]
- ____ 4- Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5- Wetland Non-Vascular Plants[1]
- ____ 6- Problematic Hydrophytic Vegetation[1](Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** **Yes X No ____**

Remarks:

## SOIL

Sampling Point: SP9

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

| Depth | Matrix | | Redox Features | | | | | |
|---|---|---|---|---|---|---|---|---|
| (inches) | Color (moist) | % | Color (moist) | % | Type[1] | Loc[2] | Texture[3] | Remarks |
| 0-20 | 10YR 4/1 | 80 | 10YR 4/4 | 20 | C | M, PL | Cl Lm | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix. [3]Note: Sa = Sand. Si = Silt, Cl = Clay, Lm = Loam

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: ___

Depth (inches): ___

**Hydric Soil Present?** **Yes** X **No** ___

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery(B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

**Field Observations:**

| | | | | | |
|---|---|---|---|---|---|
| Surface Water Present? | Yes ___ | No X | Depth (Inches): ___ | | |
| Water Table Present? | Yes ___ | No X | Depth (Inches): >20 | | |
| Saturation Present? (includes capillary fringe) | Yes ___ | No X | Depth (Inches): >20 | **Wetland Hydrology Present?** | **Yes** X **No** ___ |

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

Remarks:

Top 3 inches saturated from recent rain

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

Project/Site: Mt. Scott Creek / Oak Bluff Boulevard City/County: Clackamas/Clackamas Sampling Date: 6/2/2015
Applicant/Owner: Clackamas Co. - Water Environment Services State: OR Sampling Point: SP10
Investigator(s): Sarah Hartung and Ava Laszlo Section, Township, Range: S4, T2S, R2E
Landform (hillslope, terrace, etc.): Trail embankment Local relief (concave, convex, none): None Slope (%): 3-5 %
Subregion (LRR): A: NW Forests & Coast Lat: 45.42793485490 Long: -122.57108290800 Datum: NAD83
Soil Map Unit Name: Cove silty clay loam NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____ Soil ____ or Hydrology ____ significantly disturbed? No Are "Normal Circumstances" present? Yes **X** No ____
Are Vegetation ____ Soil ____ or Hydrology ____ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes X No ____
Hydric Soil Present? Yes ____ No X
Wetland Hydrology Present? Yes ____ No X
**Is the Sampled Area within a Wetland?** **Yes** ____ **No X**

Remarks: Rainfall for May is below normal range
SP location: near Wetland 1 off Oak Bluff Trail

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30' R ) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. Alnus rubra | 50 | * | FAC |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 50 | = Total Cover | |
| **Sapling/Shrub Stratum** (Plot size: 30' R ) | | | |
| 1. Spiraea douglasii | 40 | * | FACW |
| 2. Rubus armeniacus | 40 | * | FACU |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 80 | = Total Cover | |
| **Herb Stratum** (Plot size: 5' R ) | | | |
| 1. Galium aparine | 40 | * | FACU |
| 2. Tolmiea menziesii | 30 | * | FAC |
| 3. | | | |
| 4. | | * | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| | 70 | = Total Cover | |
| **Woody Vine Stratum** (Plot size: ____ ) | | | |
| 1. | | | |
| 2. | | | |
| | 0 | = Total Cover | |

% Bare Ground in Herb Stratum 30

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 60% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species ____ | x 1= 0 |
| FACW species ____ | x 2= 0 |
| FAC species ____ | x 3= 0 |
| FACU species ____ | x 4= 0 |
| UPL species ____ | x 5= 0 |
| Column Totals: 0 (A) | 0 (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

____ 1- Rapid Test For Hydrophytic Vegetation
X 2- Dominance Test is >50%
____ 3- Prevalence Index is ≤3.0[1]
____ 4- Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ 5- Wetland Non-Vascular Plants[1]
____ 6- Problematic Hydrophytic Vegetation[1](Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** **Yes X** **No** ____

Remarks:

## SOIL

Sampling Point: SP10

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

| Depth | Matrix | | Redox Features | | | | | |
|---|---|---|---|---|---|---|---|---|
| (inches) | Color (moist) | % | Color (moist) | % | Type[1] | Loc[2] | Texture[3] | Remarks |
| 0-20 | 10YR 3/3 | 90 | 10YR 3/4 | 10 | C | M | Si Lm | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix. [3]Note: Sa = Sand. Si = Silt, Cl = Clay, Lm = Loam

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: ___

Depth (inches): ___

**Hydric Soil Present?** **Yes** ___ **No** X

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery(B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

**Field Observations:**

Surface Water Present? Yes ___ No X Depth (Inches): ___

Water Table Present? Yes ___ No X Depth (Inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (Inches): ___

**Wetland Hydrology Present?** **Yes** ___ **No** X

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

Remarks:

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

Project/Site: Mt. Scott Creek / Oak Bluff Boulevard City/County: Clackamas/Clackamas Sampling Date: 6/3/2015
Applicant/Owner: Clackamas Co. - Water Environment Services State: OR Sampling Point: SP11
Investigator(s): Sarah Hartung and Ava Laszlo Section, Township, Range: S4, T2S, R2E
Landform (hillslope, terrace, etc.): Flat terrace between hillslopes Local relief (concave, convex, none): None Slope (%): 1-2 %
Subregion (LRR): A: NW Forests & Coast Lat: 45.42864304490 Long: -122.56904833300 Datum: NAD83
Soil Map Unit Name: Powell silt loam 0 to 8 percent slopes NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____ Soil ____ or Hydrology ____ significantly disturbed? No Are "Normal Circumstances" present? Yes **X** No ____
Are Vegetation ____ Soil ____ or Hydrology ____ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes X No ____
Hydric Soil Present? Yes X No ____ **Is the Sampled Area**
Wetland Hydrology Present? Yes X No ____ **within a Wetland? Yes X No ____**

Remarks: Rainfall for May is below normal range

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30' R ) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. Alnus rubra | 70 | * | FAC |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 70 | = Total Cover | |
| **Sapling/Shrub Stratum** (Plot size: 30' R ) | | | |
| 1. Fraxinus latifolia | 25 | * | FACW |
| 2. Rubus armeniacus | 2 | | FACU |
| 3. Acer macrophyllum | 2 | | FACU |
| 4. | | | |
| 5. | | | |
| | 29 | = Total Cover | |
| **Herb Stratum** (Plot size: 5' R ) | | | |
| 1. Equisetum telmateia | 80 | * | FACW |
| 2. Cardamine occidentalis | 5 | | FACW |
| 3. Phalaris arundinacea | 10 | | FACW |
| 4. Solanum dulcamara | 3 | * | FAC |
| 5. Epilobium ciliatum | T | | FACW |
| 6. Athyrium filix-femina | 2 | | FAC |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| | 100 | = Total Cover | |
| **Woody Vine Stratum** (Plot size: ____ ) | | | |
| 1. | | | |
| 2. | | | |
| | 0 | = Total Cover | |

% Bare Ground in Herb Stratum 0

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species ____ | x 1= 0 |
| FACW species ____ | x 2= 0 |
| FAC species ____ | x 3= 0 |
| FACU species ____ | x 4= 0 |
| UPL species ____ | x 5= 0 |
| Column Totals: 0 (A) | 0 (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

- ____ 1- Rapid Test For Hydrophytic Vegetation
- X 2- Dominance Test is >50%
- ____ 3- Prevalence Index is ≤3.0[1]
- ____ 4- Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5- Wetland Non-Vascular Plants[1]
- ____ 6- Problematic Hydrophytic Vegetation[1](Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present? Yes X No ____**

Remarks:

## SOIL

Sampling Point: SP11

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

| Depth | Matrix | | Redox Features | | | | | |
|---|---|---|---|---|---|---|---|---|
| (inches) | Color (moist) | % | Color (moist) | % | Type[1] | Loc[2] | Texture[3] | Remarks |
| 0-3 | 10YR 3/1 | 100 | | | | | Si Cl Lm | |
| 3-20 | 10YR 3/1 | 80 | 10YR 3/4 | 20 | C | M | Si Cl Lm | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix. [3]Note: Sa = Sand. Si = Silt, Cl = Clay, Lm = Loam

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: ___

Depth (inches): ___

**Hydric Soil Present?** **Yes** **X** **No** ___

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery(B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

**Field Observations:**

| | | | | | |
|---|---|---|---|---|---|
| Surface Water Present? | Yes ___ | No X | Depth (Inches): ___ | | |
| Water Table Present? | Yes X | No ___ | Depth (Inches): 9 | | |
| Saturation Present? (includes capillary fringe) | Yes X | No ___ | Depth (Inches): 0 | **Wetland Hydrology Present?** | **Yes X No** ___ |

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

Remarks:

Surface water in a narrow rivulet through center of terrace

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

Project/Site: Mt. Scott Creek / Oak Bluff Boulevard City/County: Clackamas/Clackamas Sampling Date: 6/3/2015
Applicant/Owner: Clackamas Co. - Water Environment Services State: OR Sampling Point: SP12
Investigator(s): Sarah Hartung and Ava Laszlo Section, Township, Range: S4, T2S, R2E
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): 1-2 %
Subregion (LRR): A: NW Forests & Coast Lat: 45.42856469940 Long: -122.56898054900 Datum: NAD83
Soil Map Unit Name: Powell silt loam, 0 to 8 percent slopes NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____ Soil ____ or Hydrology ____ significantly disturbed? No Are "Normal Circumstances" present? Yes **X** No ____
Are Vegetation ____ Soil ____ or Hydrology ____ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes X No ____
Hydric Soil Present? Yes ____ No X
Wetland Hydrology Present? Yes ____ No X
**Is the Sampled Area within a Wetland?** **Yes** ____ **No X**

Remarks: Rainfall for May is below normal range

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30' R ) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. Alnus rubra | 30 | * | FAC |
| 2. Fraxinus latifolia | 60 | * | FACW |
| 3. | | | |
| 4. | | | |
| | 90 | = Total Cover | |
| **Sapling/Shrub Stratum** (Plot size: 30' R ) | | | |
| 1. Fraxinus latifolia | 20 | * | FACW |
| 2. Oemleria cerasiformis | 7 | * | FACU |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 27 | = Total Cover | |
| **Herb Stratum** (Plot size: 5' R ) | | | |
| 1. Poa pratensis | 60 | * | FAC |
| 2. Equisetum telmateia | 5 | | FACW |
| 3. Ranunculus repens | 5 | | FAC |
| 4. Epilobium ciliatum | 3 | * | FACW |
| 5. Geum macrophyllum | 5 | | FAC |
| 6. Cardamine occidentalis | 3 | | FACW |
| 7. Galium aparine | 1 | | FACU |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| | 82 | = Total Cover | |
| **Woody Vine Stratum** (Plot size: ____ ) | | | |
| 1. | | | |
| 2. | | | |
| | 0 | = Total Cover | |

% Bare Ground in Herb Stratum 18

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 80% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species ____ | x 1= 0 |
| FACW species ____ | x 2= 0 |
| FAC species ____ | x 3= 0 |
| FACU species ____ | x 4= 0 |
| UPL species ____ | x 5= 0 |
| Column Totals: 0 (A) | 0 (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

____ 1- Rapid Test For Hydrophytic Vegetation
X 2- Dominance Test is >50%
____ 3- Prevalence Index is ≤3.0[1]
____ 4- Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ 5- Wetland Non-Vascular Plants[1]
____ 6- Problematic Hydrophytic Vegetation[1](Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** **Yes X** **No** ____

Remarks:

## SOIL

Sampling Point: SP12

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

| Depth | Matrix | | Redox Features | | | | | |
|---|---|---|---|---|---|---|---|---|
| (inches) | Color (moist) | % | Color (moist) | % | Type[1] | Loc[2] | Texture[3] | Remarks |
| 0-20 | 10YR 4/2 | 95 | 10YR 3/3 | 5 | C | M | Si Lm | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix. [3]Note: Sa = Sand. Si = Silt, Cl = Clay, Lm = Loam

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: ___

Depth (inches): ___

**Hydric Soil Present?** **Yes** ___ **No** X

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery(B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

**Field Observations:**

Surface Water Present? Yes ___ No X Depth (Inches): ___

Water Table Present? Yes ___ No X Depth (Inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (Inches): ___

**Wetland Hydrology Present?** **Yes** ___ **No** X

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

Remarks:

Dry soil

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

Project/Site: Mt. Scott Creek / Oak Bluff Boulevard City/County: Clackamas/Clackamas Sampling Date: 6/3/2015
Applicant/Owner: Clackamas Co. - Water Environment Services State: OR Sampling Point: SP13
Investigator(s): Sarah Hartung and Ava Laszlo Section, Township, Range: S4, T2S, R2E
Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave Slope (%): 2-3 %
Subregion (LRR): A: NW Forests & Coast Lat: 45.42830329140 Long: -122.57017682500 Datum: NAD83
Soil Map Unit Name: Cove silty clay loam NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____ Soil ____ or Hydrology ____ significantly disturbed? No Are "Normal Circumstances" present? Yes **X** No ____
Are Vegetation ____ Soil ____ or Hydrology ____ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes X No ____
Hydric Soil Present? Yes X No ____ **Is the Sampled Area**
Wetland Hydrology Present? Yes X No ____ **within a Wetland? Yes X No ____**

Remarks: Rainfall for May is below normal range

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30' R ) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. Salix scouleriana | 15 | * | FAC |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 15 | = Total Cover | |
| **Sapling/Shrub Stratum** (Plot size: 30' R ) | | | |
| 1. Fraxinus latifolia | 50 | * | FACW |
| 2. Rubus armeniacus | 1 | | FACU |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 51 | = Total Cover | |
| **Herb Stratum** (Plot size: 5' R ) | | | |
| 1. Galium aparine | 3 | | FACU |
| 2. Juncus effusus | 7 | | FACW |
| 3. Scirpus microcarpus | 60 | * | OBL |
| 4. Rubus armeniacus | 5 | * | FACU |
| 5. Hydrocotyle ranunculoides | 15 | | OBL |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| | 90 | = Total Cover | |
| **Woody Vine Stratum** (Plot size: ____ ) | | | |
| 1. | | | |
| 2. | | | |
| | 0 | = Total Cover | |

% Bare Ground in Herb Stratum 10

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species ____ | x 1= 0 |
| FACW species ____ | x 2= 0 |
| FAC species ____ | x 3= 0 |
| FACU species ____ | x 4= 0 |
| UPL species ____ | x 5= 0 |
| Column Totals: 0 (A) | 0 (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

____ 1- Rapid Test For Hydrophytic Vegetation
X 2- Dominance Test is >50%
____ 3- Prevalence Index is ≤3.0[1]
____ 4- Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ 5- Wetland Non-Vascular Plants[1]
____ 6- Problematic Hydrophytic Vegetation[1](Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present? Yes X No ____**

Remarks:

## SOIL

Sampling Point: SP13

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

| Depth | Matrix | | Redox Features | | | | | |
|---|---|---|---|---|---|---|---|---|
| (inches) | Color (moist) | % | Color (moist) | % | Type[1] | Loc[2] | Texture[3] | Remarks |
| 0-10 | 10YR 5/1 | 80 | 10YR 3/6 | 20 | C | M | Si Cl Lm | |
| 10-20 | CH 1 4/5 GY | 70 | 10YR 3/4 | 30 | C | M | Cl | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix. [3]Note: Sa = Sand. Si = Silt, Cl = Clay, Lm = Loam

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: ___

Depth (inches): ___

**Hydric Soil Present?** **Yes** X **No** ___

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery(B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

**Field Observations:**

| | | | | | |
|---|---|---|---|---|---|
| Surface Water Present? | Yes ___ | No X | Depth (Inches): ___ | | |
| Water Table Present? | Yes X | No ___ | Depth (Inches): 10 | | |
| Saturation Present? (includes capillary fringe) | Yes X | No ___ | Depth (Inches): 0-10 | **Wetland Hydrology Present?** | **Yes** X **No** ___ |

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

Remarks:

Surface water in pond 3 feet away

Water seeping down profile throughout top 10 inches

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

Project/Site: Mt. Scott Creek / Oak Bluff Boulevard City/County: Clackamas/Clackamas Sampling Date: 6/3/2015
Applicant/Owner: Clackamas Co. - Water Environment Services State: OR Sampling Point: SP14
Investigator(s): Sarah Hartung and Ava Laszlo Section, Township, Range: S4, T2S, R2E
Landform (hillslope, terrace, etc.): Base of hillslope Local relief (concave, convex, none): None Slope (%): 0-2
Subregion (LRR): A: NW Forests & Coast Lat: 45.42834522830 Long: -122.57018503000 Datum: NAD83
Soil Map Unit Name: Powell silt loam, 0 to 8 percent slopes NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____ Soil ____ or Hydrology ____ significantly disturbed? No Are "Normal Circumstances" present? Yes **X** No ____
Are Vegetation ____ Soil ____ or Hydrology ____ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes ____ No X
Hydric Soil Present? Yes ____ No X **Is the Sampled Area**
Wetland Hydrology Present? Yes ____ No X **within a Wetland? Yes ____ No X**

Remarks: Rainfall for May is below normal range

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30' R ) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. Quercus garryana | 60 | * | FACU |
| 2. Malus fusca | 15 | * | FACW |
| 3. | | | |
| 4. | | | |
| | 75 | = Total Cover | |
| **Sapling/Shrub Stratum** (Plot size: 30' R ) | | | |
| 1. Oemleria cerasiformis | 60 | * | FACU |
| 2. Symphoricarpos albus | 20 | * | FACU |
| 3. Ilex aquifolium | 7 | | UPL |
| 4. Crataegus monogyna | 5 | | FAC |
| 5. Rubus armeniacus | 3 | | FACU |
| | 95 | = Total Cover | |
| **Herb Stratum** (Plot size: 5' R ) | | | |
| 1. Ranunculus repens | 50 | * | FAC |
| 2. Rubus ursinus | 20 | * | FACU |
| 3. | | | |
| 4. | | * | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| | 70 | = Total Cover | |
| **Woody Vine Stratum** (Plot size: ____ ) | | | |
| 1. | | | |
| 2. | | | |
| | 0 | = Total Cover | |

% Bare Ground in Herb Stratum 30

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species ____ | x 1= 0 |
| FACW species ____ | x 2= 0 |
| FAC species ____ | x 3= 0 |
| FACU species ____ | x 4= 0 |
| UPL species ____ | x 5= 0 |
| Column Totals: 0 (A) | 0 (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

____ 1- Rapid Test For Hydrophytic Vegetation
____ 2- Dominance Test is >50%
____ 3- Prevalence Index is ≤3.0[1]
____ 4- Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ 5- Wetland Non-Vascular Plants[1]
____ 6- Problematic Hydrophytic Vegetation[1](Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** **Yes ____ No X**

Remarks:

## SOIL

Sampling Point: SP14

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

| Depth | Matrix | | Redox Features | | | | | |
|---|---|---|---|---|---|---|---|---|
| (inches) | Color (moist) | % | Color (moist) | % | Type[1] | Loc[2] | Texture[3] | Remarks |
| 0-13 | 10YR 3/2 | 98 | 10YR 3/3 | 2 | C | M | Si Lm | |
| 13-20 | 10YR 3/2 | 95 | 10YR 3/4 | 5 | C | M | Si Lm | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix. [3]Note: Sa = Sand. Si = Silt, Cl = Clay, Lm = Loam

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** **Yes** ___ **No** X

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery(B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

**Field Observations:**

Surface Water Present? Yes ___ No X Depth (Inches): _____

Water Table Present? Yes ___ No X Depth (Inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (Inches): _____

**Wetland Hydrology Present?** **Yes** ___ **No** X

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

Remarks:

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

Project/Site: Mt. Scott Creek / Oak Bluff Boulevard City/County: Clackamas/Clackamas Sampling Date: 6/3/2015
Applicant/Owner: Clackamas Co. - Water Environment Services State: OR Sampling Point: SP15
Investigator(s): Sarah Hartung and Ava Laszlo Section, Township, Range: S4, T2S, R2E
Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave Slope (%): 5-10 %
Subregion (LRR): A: NW Forests & Coast Lat: 45.42832862910 Long: -122.56848980600 Datum: NAD83
Soil Map Unit Name: Powell silt loam, 0 to 8 percent slopes NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____ Soil ____ or Hydrology ____ significantly disturbed? No Are "Normal Circumstances" present? Yes **X** No ____
Are Vegetation ____ Soil ____ or Hydrology ____ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes X No ____
Hydric Soil Present? Yes X No ____ **Is the Sampled Area**
Wetland Hydrology Present? Yes X No ____ **within a Wetland?** **Yes X** **No** ____

Remarks: Rainfall for May is below normal range

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30' R ) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. Fraxinus latifolia | 15 | * | FACW |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 15 | = Total Cover | |
| **Sapling/Shrub Stratum** (Plot size: 30' R ) | | | |
| 1. Malus fusca | 10 | * | FACW |
| 2. Symphoricarpos albus | 5 | * | FACU |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 15 | = Total Cover | |
| **Herb Stratum** (Plot size: 5' R ) | | | |
| 1. Solanum dulcamara | 60 | * | FAC |
| 2. Cardamine oligosperma | 15 | * | FAC |
| 3. Epilobium ciliatum | 10 | | FACW |
| 4. | | * | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| | 85 | = Total Cover | |
| **Woody Vine Stratum** (Plot size: ____ ) | | | |
| 1. | | | |
| 2. | | | |
| | 0 | = Total Cover | |

% Bare Ground in Herb Stratum 15

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 80% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species ____ | x 1= 0 |
| FACW species ____ | x 2= 0 |
| FAC species ____ | x 3= 0 |
| FACU species ____ | x 4= 0 |
| UPL species ____ | x 5= 0 |
| Column Totals: 0 (A) | 0 (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

- ____ 1- Rapid Test For Hydrophytic Vegetation
- X 2- Dominance Test is >50%
- ____ 3- Prevalence Index is ≤3.0[1]
- ____ 4- Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5- Wetland Non-Vascular Plants[1]
- ____ 6- Problematic Hydrophytic Vegetation[1](Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** **Yes X** **No** ____

Remarks:

## SOIL

Sampling Point: SP15

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

| Depth | Matrix | | Redox Features | | | | | |
|---|---|---|---|---|---|---|---|---|
| (inches) | Color (moist) | % | Color (moist) | % | Type[1] | Loc[2] | Texture[3] | Remarks |
| 0-20 | 10YR 3/1 | 80 | 10YR 3/4 | 20 | C | M | Si Lm | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix. [3]Note: Sa = Sand. Si = Silt, Cl = Clay, Lm = Loam

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: ___

Depth (inches): ___

**Hydric Soil Present?** **Yes** X **No** ___

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery(B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

**Field Observations:**

| | | | | | |
|---|---|---|---|---|---|
| Surface Water Present? | Yes ___ | No X | Depth (Inches): ___ | | |
| Water Table Present? | Yes X | No ___ | Depth (Inches): 6 | | |
| Saturation Present? (includes capillary fringe) | Yes X | No ___ | Depth (Inches): 0 | **Wetland Hydrology Present?** | **Yes** X **No** ___ |

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

Remarks:

Standing water nearby in seep / river inlet

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

Project/Site: Mt. Scott Creek / Oak Bluff Boulevard City/County: Clackamas/Clackamas Sampling Date: 6/3/2015
Applicant/Owner: Clackamas Co. - Water Environment Services State: OR Sampling Point: SP16
Investigator(s): Sarah Hartung and Ava Laszlo Section, Township, Range: S4, T2S, R2E
Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): None Slope (%): 20
Subregion (LRR): A: NW Forests & Coast Lat: 45.42834846660 Long: -122.56854444300 Datum: NAD83
Soil Map Unit Name: Powell silt loam 0 to 8 percent slopes NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____ Soil ____ or Hydrology ____ significantly disturbed? No Are "Normal Circumstances" present? Yes **X** No ____
Are Vegetation ____ Soil ____ or Hydrology ____ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes ____ No X
Hydric Soil Present? Yes ____ No X **Is the Sampled Area**
Wetland Hydrology Present? Yes ____ No X **within a Wetland? Yes ____ No X**

Remarks: Rainfall for May is below normal range
SP location: near Wetland 2

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30' R ) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. Acer macrophyllum | 25 | * | FACU |
| 2. Fraxinus latifolia | 40 | * | FACW |
| 3. | | | |
| 4. | | | |
| | 65 | = Total Cover | |
| **Sapling/Shrub Stratum (Plot size: 30' R )** | | | |
| 1. Rubus armeniacus | 20 | * | FACU |
| 2. Symphoricarpos albus | 50 | * | FACU |
| 3. Acer macrophyllum | 5 | | FACU |
| 4. Corylus cornuta | 10 | | FACU |
| 5. | | | |
| | 85 | = Total Cover | |
| **Herb Stratum (Plot size: 5' R )** | | | |
| 1. Cardamine oligosperma | 10 | | FAC |
| 2. Galium aparine | 10 | | FACU |
| 3. Rubus ursinus | 60 | * | FACU |
| 4. | | * | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| | 80 | = Total Cover | |
| **Woody Vine Stratum (Plot size: _____ )** | | | |
| 1. | | | |
| 2. | | | |
| | 0 | = Total Cover | |

% Bare Ground in Herb Stratum 20

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 20% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species | x 1= 0 |
| FACW species | x 2= 0 |
| FAC species | x 3= 0 |
| FACU species | x 4= 0 |
| UPL species | x 5= 0 |
| Column Totals: 0 (A) | 0 (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

____ 1- Rapid Test For Hydrophytic Vegetation
____ 2- Dominance Test is >50%
____ 3- Prevalence Index is ≤3.0[1]
____ 4- Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ 5- Wetland Non-Vascular Plants[1]
____ 6- Problematic Hydrophytic Vegetation[1](Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** **Yes ____ No X**

Remarks:

## SOIL

Sampling Point: SP16

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

| Depth | Matrix | | Redox Features | | | | | |
|---|---|---|---|---|---|---|---|---|
| (inches) | Color (moist) | % | Color (moist) | % | Type[1] | Loc[2] | Texture[3] | Remarks |
| 0-4 | 10YR 3/2 | 100 | | | | | Si Lm | |
| 4-20 | 10YR 3/2 | 98 | 10YR 3/3 | 2 | C | M | Si Lm | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix. [3]Note: Sa = Sand. Si = Silt, Cl = Clay, Lm = Loam

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: ___

Depth (inches): ___

**Hydric Soil Present?** **Yes** ___ **No** X

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery(B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

**Field Observations:**

Surface Water Present? Yes ___ No X Depth (Inches): ___

Water Table Present? Yes ___ No X Depth (Inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (Inches): ___

**Wetland Hydrology Present?** **Yes** ___ **No** X

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

Remarks:

Dry soil below, slightly moist in top 2 inches from recent rain

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

Project/Site: Mt. Scott Creek / Oak Bluff Boulevard City/County: Clackamas/Clackamas Sampling Date: 6/3/2015
Applicant/Owner: Clackamas Co. - Water Environment Services State: OR Sampling Point: SP17
Investigator(s): Sarah Hartung and Ava Laszlo Section, Township, Range: S4, T2S, R2E
Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave Slope (%): 0-2%
Subregion (LRR): A: NW Forests & Coast Lat: 45.42789241690 Long: -122.56941506800 Datum: NAD83
Soil Map Unit Name: Cove silty clay loam NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____ Soil ____ or Hydrology ____ significantly disturbed? No Are "Normal Circumstances" present? Yes **X** No ____
Are Vegetation ____ Soil ____ or Hydrology ____ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes X No ____
Hydric Soil Present? Yes X No ____ **Is the Sampled Area**
Wetland Hydrology Present? Yes X No ____ **within a Wetland? Yes X No ____**

Remarks: Rainfall for May is below normal range

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30' R ) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. Fraxinus latifolia | 10 | * | FACW |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 10 = Total Cover | | |
| **Sapling/Shrub Stratum** (Plot size: 30' R ) | | | |
| 1. Fraxinus latifolia | 5 | * | FACW |
| 2. Oemleria cerasiformis | T | | FACU |
| 3. Rosa pisocarpa | 2 | | FAC |
| 4. | | | |
| 5. | | | |
| | 7 = Total Cover | | |
| **Herb Stratum** (Plot size: 5' R ) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | * | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| | 0 = Total Cover | | |
| **Woody Vine Stratum** (Plot size: ____ ) | | | |
| 1. | | | |
| 2. | | | |
| | 0 = Total Cover | | |

% Bare Ground in Herb Stratum 100

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species ____ | x 1= 0 |
| FACW species ____ | x 2= 0 |
| FAC species ____ | x 3= 0 |
| FACU species ____ | x 4= 0 |
| UPL species ____ | x 5= 0 |
| Column Totals: 0 (A) | 0 (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

____ 1- Rapid Test For Hydrophytic Vegetation
X 2- Dominance Test is >50%
____ 3- Prevalence Index is ≤3.0[1]
____ 4- Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ 5- Wetland Non-Vascular Plants[1]
____ 6- Problematic Hydrophytic Vegetation[1](Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present? Yes X No ____**

Remarks:
Several upland hummocks covered with upland species

## SOIL

Sampling Point: SP17

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

| Depth | Matrix | | Redox Features | | | | | |
|---|---|---|---|---|---|---|---|---|
| (inches) | Color (moist) | % | Color (moist) | % | Type[1] | Loc[2] | Texture[3] | Remarks |
| 0-3 | 10YR 3/2 | 90 | 10YR 3/6 | 10 | C | M | Si Lm | |
| 3-20 | 10YR 4/1 | 80 | 10YR 4/6 | 20 | C | M, PL | Si Cl Lm | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix. [3]Note: Sa = Sand. Si = Silt, Cl = Clay, Lm = Loam

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: ___

Depth (inches): ___

**Hydric Soil Present?** **Yes** X **No** ___

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery(B7)
- X Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- X Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

**Field Observations:**

| | | | | | |
|---|---|---|---|---|---|
| Surface Water Present? | Yes ___ | No X | Depth (Inches): ___ | | |
| Water Table Present? | Yes ___ | No X | Depth (Inches): ___ | | |
| Saturation Present? (includes capillary fringe) | Yes ___ | No X | Depth (Inches): ___ | **Wetland Hydrology Present?** | **Yes** X **No** ___ |

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

Remarks:

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

Project/Site: Mt. Scott Creek / Oak Bluff Boulevard City/County: Clackamas/Clackamas Sampling Date: 6/3/2015
Applicant/Owner: Clackamas Co. - Water Environment Services State: OR Sampling Point: SP18
Investigator(s): Sarah Hartung and Ava Laszlo Section, Township, Range: S4, T2S, R2E
Landform (hillslope, terrace, etc.): Terrace above depressions Local relief (concave, convex, none): None Slope (%): 5
Subregion (LRR): A: NW Forests & Coast Lat: 45.42802439270 Long: -122.56942522900 Datum: NAD83
Soil Map Unit Name: Cove silty clay loam NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____ Soil ____ or Hydrology ____ significantly disturbed? No Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____ Soil ____ or Hydrology ____ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes ____ No X
Hydric Soil Present? Yes ____ No X **Is the Sampled Area**
Wetland Hydrology Present? Yes ____ No X **within a Wetland? Yes ____ No X**

Remarks: Rainfall for May is below normal range
SP location: Adjacent to Wetland 3

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30' R ) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. Thuja plicata | 10 | | FAC |
| 2. Fraxinus latifolia | 40 | * | FACW |
| 3. Populus balsamifera | 10 | | FAC |
| 4. Pseudotsuga menziesii | 30 | * | FACU |
| | 90 | = Total Cover | |
| **Sapling/Shrub Stratum** (Plot size: 30' R ) | | | |
| 1. Oemleria cerasiformis | 30 | * | FACU |
| 2. Fraxinus latifolia | 20 | * | FACW |
| 3. Crataegus monogyna | 10 | | FAC |
| 4. Symphoricarpos albus | 20 | * | FACU |
| 5. | | | |
| | 80 | = Total Cover | |
| **Herb Stratum** (Plot size: 5' R ) | | | |
| 1. Tellima grandiflora | 30 | * | FACU |
| 2. Polystichum munitum | 20 | * | FACU |
| 3. Rubus ursinus | 20 | * | FACU |
| 4. Galium aparine | 10 | * | FACU |
| 5. Geranium robertianum | 20 | * | FACU |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| | 100 | = Total Cover | |
| **Woody Vine Stratum** (Plot size: ____ ) | | | |
| 1. | | | |
| 2. | | | |
| | 0 | = Total Cover | |

% Bare Ground in Herb Stratum 0

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 9 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 22% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species ____ | x 1= 0 |
| FACW species ____ | x 2= 0 |
| FAC species ____ | x 3= 0 |
| FACU species ____ | x 4= 0 |
| UPL species ____ | x 5= 0 |
| Column Totals: 0 (A) | 0 (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

____ 1- Rapid Test For Hydrophytic Vegetation
____ 2- Dominance Test is >50%
____ 3- Prevalence Index is ≤3.0[1]
____ 4- Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ 5- Wetland Non-Vascular Plants[1]
____ 6- Problematic Hydrophytic Vegetation[1](Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** **Yes ____ No X**

Remarks:

## SOIL

Sampling Point: SP18

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

| Depth | Matrix | | Redox Features | | | | | |
|---|---|---|---|---|---|---|---|---|
| (inches) | Color (moist) | % | Color (moist) | % | Type[1] | Loc[2] | Texture[3] | Remarks |
| 0-20 | 10YR 4/2 | 97 | 10YR 3/3 | 3 | C | M | Si Lm | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix. [3]Note: Sa = Sand. Si = Silt, Cl = Clay, Lm = Loam

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** **Yes** ___ **No** X

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery(B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

**Field Observations:**

Surface Water Present? Yes ___ No X Depth (Inches): _____

Water Table Present? Yes ___ No X Depth (Inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (Inches): _____

**Wetland Hydrology Present?** **Yes** ___ **No** X

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

Remarks:

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

Project/Site: Mt. Scott Creek / Oak Bluff Boulevard City/County: Clackamas/Clackamas Sampling Date: 6/3/2015
Applicant/Owner: Clackamas Co. - Water Environment Services State: OR Sampling Point: SP19
Investigator(s): Sarah Hartung and Ava Laszlo Section, Township, Range: S4, T2S, R2E
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Concave Slope (%): 2
Subregion (LRR): A: NW Forests & Coast Lat: 45.42793005110 Long: -122.56856955000 Datum: NAD83
Soil Map Unit Name: Cove silty clay loam NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____ Soil ____ or Hydrology ____ significantly disturbed? No Are "Normal Circumstances" present? Yes **X** No ____
Are Vegetation ____ Soil ____ or Hydrology ____ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes X No ____
Hydric Soil Present? Yes X No ____ **Is the Sampled Area**
Wetland Hydrology Present? Yes X No ____ **within a Wetland? Yes X No ____**

Remarks: Rainfall for May is below normal range
SP location: east end of Wetland 3

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30' R ) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 0 | = Total Cover | |
| **Sapling/Shrub Stratum (Plot size: 30' R )** | | | |
| 1. Cornus alba | 5 | * | FACW |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 5 | = Total Cover | |
| **Herb Stratum (Plot size: 5' R )** | | | |
| 1. Ranunculus repens | 20 | * | FAC |
| 2. Epilobium ciliatum | 10 | * | FACW |
| 3. | | | |
| 4. | | * | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| | 30 | = Total Cover | |
| **Woody Vine Stratum (Plot size: ____ )** | | | |
| 1. | | | |
| 2. | | | |
| | 0 | = Total Cover | |

% Bare Ground in Herb Stratum 70

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species ____ | x 1= 0 |
| FACW species ____ | x 2= 0 |
| FAC species ____ | x 3= 0 |
| FACU species ____ | x 4= 0 |
| UPL species ____ | x 5= 0 |
| Column Totals: 0 (A) | 0 (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

____ 1- Rapid Test For Hydrophytic Vegetation
X 2- Dominance Test is >50%
____ 3- Prevalence Index is ≤3.0[1]
____ 4- Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ 5- Wetland Non-Vascular Plants[1]
____ 6- Problematic Hydrophytic Vegetation[1](Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present? Yes X No ____**

Remarks:

## SOIL

Sampling Point: SP19

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

| Depth | Matrix | | Redox Features | | | | | |
|---|---|---|---|---|---|---|---|---|
| (inches) | Color (moist) | % | Color (moist) | % | Type[1] | Loc[2] | Texture[3] | Remarks |
| 0-12 | 10YR 3/1 | 95 | 10YR 3/6 | 5 | C | M | Si Lm | |
| 12-20 | 10YR 4/2 | 90 | 10YR 4/6 | 10 | C | M, PL | Si Cl Lm | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix. [3]Note: Sa = Sand. Si = Silt, Cl = Clay, Lm = Loam

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: ___

Depth (inches): ___

**Hydric Soil Present?** **Yes** X **No** ___

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery(B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

**Field Observations:**

| | | | | | |
|---|---|---|---|---|---|
| Surface Water Present? | Yes | ___ | No | X | Depth (Inches): ___ |
| Water Table Present? | Yes | X | No | ___ | Depth (Inches): 7 |
| Saturation Present? (includes capillary fringe) | Yes | X | No | ___ | Depth (Inches): 3 |

**Wetland Hydrology Present?** **Yes** ___ **No** ___

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

Remarks:

Surface water nearby in slight depression 2-3" deep

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

Project/Site: Mt. Scott Creek / Oak Bluff Boulevard City/County: Clackamas/Clackamas Sampling Date: 6/3/2015
Applicant/Owner: Clackamas Co. - Water Environment Services State: OR Sampling Point: SP20
Investigator(s): Sarah Hartung and Ava Laszlo Section, Township, Range: S4, T2S, R2E
Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): None Slope (%): 3-5 %
Subregion (LRR): A: NW Forests & Coast Lat: 45.42786840430 Long: -122.56858056800 Datum: NAD83
Soil Map Unit Name: Cove silty clay loam NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____ Soil ____ or Hydrology ____ significantly disturbed? No Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____ Soil ____ or Hydrology ____ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes ____ No X
Hydric Soil Present? Yes ____ No X **Is the Sampled Area**
Wetland Hydrology Present? Yes ____ No X **within a Wetland? Yes ____ No X**

Remarks: Rainfall for May is below normal range
SP location: Adjacent to SP 19, Wetland 3

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30' R ) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. Fraxinus latifolia | 20 | * | FACW |
| 2. Alnus rubra | 10 | * | FAC |
| 3. | | | |
| 4. | | | |
| | 30 | = Total Cover | |
| **Sapling/Shrub Stratum** (Plot size: 30' R ) | | | |
| 1. Symphoricarpos albus | 10 | * | FACU |
| 2. Rubus armeniacus | 20 | * | FACU |
| 3. Oemleria cerasiformis | 10 | * | FACU |
| 4. | | | |
| 5. | | | |
| | 40 | = Total Cover | |
| **Herb Stratum** (Plot size: 5' R ) | | | |
| 1. Tellima grandiflora | 40 | * | FACU |
| 2. Rubus ursinus | 30 | * | FACU |
| 3. Galium aparine | 20 | * | FACU |
| 4. | | * | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| | 90 | = Total Cover | |
| **Woody Vine Stratum** (Plot size: ____ ) | | | |
| 1. | | | |
| 2. | | | |
| | 0 | = Total Cover | |

% Bare Ground in Herb Stratum 10

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species ____ | x 1= 0 |
| FACW species ____ | x 2= 0 |
| FAC species ____ | x 3= 0 |
| FACU species ____ | x 4= 0 |
| UPL species ____ | x 5= 0 |
| Column Totals: 0 (A) | 0 (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

____ 1- Rapid Test For Hydrophytic Vegetation
____ 2- Dominance Test is >50%
____ 3- Prevalence Index is ≤3.0[1]
____ 4- Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ 5- Wetland Non-Vascular Plants[1]
____ 6- Problematic Hydrophytic Vegetation[1](Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes ____ No X

Remarks:

## SOIL

Sampling Point: SP20

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

| Depth | Matrix | | Redox Features | | | | | |
|---|---|---|---|---|---|---|---|---|
| (inches) | Color (moist) | % | Color (moist) | % | Type[1] | Loc[2] | Texture[3] | Remarks |
| 0-20 | 10YR 3/2 | 97 | 10YR 3/3 | 3 | C | M | Si Lm | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix. [3]Note: Sa = Sand. Si = Silt, Cl = Clay, Lm = Loam

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: ___

Depth (inches): ___

**Hydric Soil Present?** **Yes** ___ **No** X

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery(B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

**Field Observations:**

| | | | |
|---|---|---|---|
| Surface Water Present? | Yes ___ | No X | Depth (Inches): ___ |
| Water Table Present? | Yes ___ | No X | Depth (Inches): ___ |
| Saturation Present? (includes capillary fringe) | Yes ___ | No X | Depth (Inches): ___ |

**Wetland Hydrology Present?** **Yes** ___ **No** X

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

Remarks:

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

Project/Site: Mt. Scott Creek / Oak Bluff Boulevard City/County: Clackamas/Clackamas Sampling Date: 6/3/2015
Applicant/Owner: Clackamas Co. - Water Environment Services State: OR Sampling Point: SP21
Investigator(s): Sarah Hartung and Ava Laszlo Section, Township, Range: S4, T2S, R2E
Landform (hillslope, terrace, etc.): Floodplain depression Local relief (concave, convex, none): concave Slope (%): 1
Subregion (LRR): A: NW Forests & Coast Lat: 45.42779845520 Long: -122.57039519900 Datum: NAD83
Soil Map Unit Name: Cove silty clay loam NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____ Soil ____ or Hydrology ____ significantly disturbed? No Are "Normal Circumstances" present? Yes **X** No ____
Are Vegetation ____ Soil ____ or Hydrology ____ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes X No ____
Hydric Soil Present? Yes X No ____ **Is the Sampled Area**
Wetland Hydrology Present? Yes X No ____ **within a Wetland? Yes X No ____**

Remarks: Rainfall for May is below normal range

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30' R ) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. Fraxinus latifolia | 5 | * | FACW |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 5 | = Total Cover | |
| **Sapling/Shrub Stratum** (Plot size: 30' R ) | | | |
| 1. Fraxinus latifolia | 25 | * | FACW |
| 2. Cornus alba | 5 | | FACW |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 30 | = Total Cover | |
| **Herb Stratum** (Plot size: 5' R ) | | | |
| 1. Ranunculus repens | 5 | * | FAC |
| 2. Rubus ursinus | 2 | * | FACU |
| 3. | | | |
| 4. | | * | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| | 7 | = Total Cover | |
| **Woody Vine Stratum** (Plot size: ____ ) | | | |
| 1. | | | |
| 2. | | | |
| | 0 | = Total Cover | |

% Bare Ground in Herb Stratum 93

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species ____ | x 1= 0 |
| FACW species ____ | x 2= 0 |
| FAC species ____ | x 3= 0 |
| FACU species ____ | x 4= 0 |
| UPL species ____ | x 5= 0 |
| Column Totals: 0 (A) | 0 (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

- ____ 1- Rapid Test For Hydrophytic Vegetation
- X 2- Dominance Test is >50%
- ____ 3- Prevalence Index is ≤3.0[1]
- ____ 4- Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5- Wetland Non-Vascular Plants[1]
- ____ 6- Problematic Hydrophytic Vegetation[1](Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** **Yes X No ____**

Remarks:
Tree and shrubs at very edge

## SOIL

Sampling Point: SP21

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

| Depth | Matrix | | Redox Features | | | | | |
|---|---|---|---|---|---|---|---|---|
| (inches) | Color (moist) | % | Color (moist) | % | Type[1] | Loc[2] | Texture[3] | Remarks |
| 0-3 | 10YR 3/2 | 90 | 10YR 4/4 | 10 | C | M | Si Lm | |
| 3-20 | 10YR 4/1 | 85 | 10YR 4/6 | 15 | C | M, PL | Si Cl Lm | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix. [3]Note: Sa = Sand. Si = Silt, Cl = Clay, Lm = Loam

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: ___

Depth (inches): ___

**Hydric Soil Present?** **Yes** X **No** ___

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery(B7)
- X Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- X Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

**Field Observations:**

Surface Water Present? Yes ___ No X Depth (Inches): ___

Water Table Present? Yes ___ No X Depth (Inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (Inches): ___

**Wetland Hydrology Present?** **Yes** X **No** ___

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

Remarks:

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

Project/Site: Mt. Scott Creek / Oak Bluff Boulevard City/County: Clackamas/Clackamas Sampling Date: 6/3/2015
Applicant/Owner: Clackamas Co. - Water Environment Services State: OR Sampling Point: SP22
Investigator(s): Sarah Hartung and Ava Laszlo Section, Township, Range: S4, T2S, R2E
Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Convex Slope (%): 5-8 %
Subregion (LRR): A: NW Forests & Coast Lat: 45.42783063930 Long: -122.57041702800 Datum: NAD83
Soil Map Unit Name: Cove silty clay loam NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ____ (If no, explain in Remarks.)
Are Vegetation ____ Soil ____ or Hydrology ____ significantly disturbed? No Are "Normal Circumstances" present? Yes **X** No ____
Are Vegetation ____ Soil ____ or Hydrology ____ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes ____ No X
Hydric Soil Present? Yes ____ No X
Wetland Hydrology Present? Yes ____ No X
**Is the Sampled Area within a Wetland?** **Yes** ____ **No X**

Remarks: Rainfall for May is below normal range

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30' R ) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. Populus tremuloides | 30 | * | FACU |
| 2. Crataegus monogyna | 20 | * | FAC |
| 3. | | | |
| 4. | | | |
| | 50 | = Total Cover | |
| **Sapling/Shrub Stratum** (Plot size: 30' R ) | | | |
| 1. Oemleria cerasiformis | 30 | * | FACU |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 30 | = Total Cover | |
| **Herb Stratum** (Plot size: 5' R ) | | | |
| 1. Rubus ursinus | 30 | * | FACU |
| 2. Galium aparine | 20 | * | FACU |
| 3. Polystichum munitum | 10 | | FACU |
| 4. Tellima grandiflora | 20 | * | FACU |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| | 80 | = Total Cover | |
| **Woody Vine Stratum** (Plot size: ____ ) | | | |
| 1. | | | |
| 2. | | | |
| | 0 | = Total Cover | |

% Bare Ground in Herb Stratum 20

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 17% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species ____ | x 1= 0 |
| FACW species ____ | x 2= 0 |
| FAC species ____ | x 3= 0 |
| FACU species ____ | x 4= 0 |
| UPL species ____ | x 5= 0 |
| Column Totals: 0 (A) | 0 (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

____ 1- Rapid Test For Hydrophytic Vegetation
____ 2- Dominance Test is >50%
____ 3- Prevalence Index is ≤3.0[1]
____ 4- Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ 5- Wetland Non-Vascular Plants[1]
____ 6- Problematic Hydrophytic Vegetation[1](Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** **Yes** ____ **No X**

Remarks:

## SOIL

Sampling Point: SP22

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

| Depth | Matrix | | Redox Features | | | | | |
|---|---|---|---|---|---|---|---|---|
| (inches) | Color (moist) | % | Color (moist) | % | Type[1] | Loc[2] | Texture[3] | Remarks |
| 0-20 | 10YR 3/2 | 97 | 10YR 3/3 | 3 | C | M | Si Lm | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix. [3]Note: Sa = Sand. Si = Silt, Cl = Clay, Lm = Loam

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** **Yes** ___ **No** **X**

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery(B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

**Field Observations:**

Surface Water Present? Yes ___ No X Depth (Inches): _____

Water Table Present? Yes ___ No X Depth (Inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (Inches): _____

**Wetland Hydrology Present?** **Yes** ___ **No** **X**

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

Remarks:

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

Project/Site: Mt. Scott Creek / Oak Bluff Boulevard City/County: Clackamas/Clackamas Sampling Date: 6/3/2015
Applicant/Owner: Clackamas Co. - Water Environment Services State: OR Sampling Point: SP23
Investigator(s): Sarah Hartung and Ava Laszlo Section, Township, Range: S4, T2S, R2E
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 2
Subregion (LRR): A: NW Forests & Coast Lat: 45.42667976160 Long: -122.57670022800 Datum: NAD83
Soil Map Unit Name: Wapato silty clay loam NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____ Soil ____ or Hydrology ____ significantly disturbed? No Are "Normal Circumstances" present? Yes **X** No ____
Are Vegetation ____ Soil ____ or Hydrology ____ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes X No ____
Hydric Soil Present? Yes X No ____ **Is the Sampled Area**
Wetland Hydrology Present? Yes X No ____ **within a Wetland?** **Yes X** **No** ____

Remarks: Rainfall for May is below normal range

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30' R ) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 0 = Total Cover | | |
| **Sapling/Shrub Stratum** (Plot size: 30' R ) | | | |
| 1. Fraxinus latifolia | 10 | | FACW |
| 2. Alnus rubra | 5 | | FAC |
| 3. Salix lasiandra | 5 | | FACW |
| 4. | | | |
| 5. | | | |
| | 20 = Total Cover | | |
| **Herb Stratum** (Plot size: 5' R ) | | | |
| 1. Phalaris arundinacea | 100 | * | FACW |
| 2. | | | |
| 3. | | | |
| 4. | | * | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| | 100 = Total Cover | | |
| **Woody Vine Stratum** (Plot size: ____ ) | | | |
| 1. | | | |
| 2. | | | |
| | 0 = Total Cover | | |

% Bare Ground in Herb Stratum 0

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species ____ | x 1= 0 |
| FACW species ____ | x 2= 0 |
| FAC species ____ | x 3= 0 |
| FACU species ____ | x 4= 0 |
| UPL species ____ | x 5= 0 |
| Column Totals: 0 (A) | 0 (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

- ____ 1- Rapid Test For Hydrophytic Vegetation
- X 2- Dominance Test is >50%
- ____ 3- Prevalence Index is ≤3.0[1]
- ____ 4- Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5- Wetland Non-Vascular Plants[1]
- ____ 6- Problematic Hydrophytic Vegetation[1](Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** **Yes X** **No** ____

Remarks:

## SOIL

Sampling Point: SP23

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

| Depth | Matrix | | Redox Features | | | | | |
|---|---|---|---|---|---|---|---|---|
| (inches) | Color (moist) | % | Color (moist) | % | Type[1] | Loc[2] | Texture[3] | Remarks |
| 0-20 | 10YR 4/1 | 80 | 10YR 4/6 | 20 | C | M, PL | Si Cl Lm | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix. [3]Note: Sa = Sand. Si = Silt, Cl = Clay, Lm = Loam

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
___ Loamy Gleyed Matrix (F2)
X Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils[3]:**

___ 2 cm Muck (A10)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: _____
Depth (inches): _____

**Hydric Soil Present?** **Yes** ____ **No** ____

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
X High Water Table (A2)
X Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery(B7)
___ Sparsely Vegetated Concave Surface (B8)
___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B)**
___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Stunted or Stressed Plants (D1) (**LRR A**)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B)**
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Saturation Visible on Aerial Imagery (C9)
___ Geomorphic Position (D2)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)
___ Raised Ant Mounds (D6) (**LRR A**)
___ Frost-Heave Hummocks (D7)

**Field Observations:**

Surface Water Present? Yes ____ No X Depth (Inches): _____
Water Table Present? Yes X No ____ Depth (Inches): _____
Saturation Present? Yes X No ____ Depth (Inches): _____
(includes capillary fringe)

**Wetland Hydrology Present?** **Yes** X **No** ____

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

Remarks:

Surface water at base of south berm up to 1 foot

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

Project/Site: Mt. Scott Creek / Oak Bluff Boulevard City/County: Clackamas/Clackamas Sampling Date: 6/3/2015
Applicant/Owner: Clackamas Co. - Water Environment Services State: OR Sampling Point: SP24
Investigator(s): Sarah Hartung and Ava Laszlo Section, Township, Range: S4, T2S, R2E
Landform (hillslope, terrace, etc.): Berm, top of streambank Local relief (concave, convex, none): Convex Slope (%): 5-8 %
Subregion (LRR): A: NW Forests & Coast Lat: 45.4266371 Long: -122.5767413 Datum: NAD83
Soil Map Unit Name: Wapato silty clay loam NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____ Soil ____ or Hydrology ____ significantly disturbed? ____ Are "Normal Circumstances" present? Yes **X** No ____
Are Vegetation ____ Soil ____ or Hydrology ____ naturally problematic? ____ (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes X No ____
Hydric Soil Present? Yes ____ No X
Wetland Hydrology Present? Yes ____ No X
**Is the Sampled Area within a Wetland?** **Yes** ____ **No X**

Remarks: Rainfall for May is below normal range

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30' R ) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. Alnus rubra | 20 | * | FAC |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 20 | = Total Cover | |
| **Sapling/Shrub Stratum** (Plot size: 30' R ) | | | |
| 1. Rubus armeniacus | 50 | * | FACU |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 50 | = Total Cover | |
| **Herb Stratum** (Plot size: 5' R ) | | | |
| 1. Phalaris arundinacea | 80 | * | FACW |
| 2. | | | |
| 3. | | | |
| 4. | | * | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| | 80 | = Total Cover | |
| **Woody Vine Stratum** (Plot size: ____ ) | | | |
| 1. | | | |
| 2. | | | |
| | 0 | = Total Cover | |

% Bare Ground in Herb Stratum 20

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 67% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species ____ | x 1= 0 |
| FACW species ____ | x 2= 0 |
| FAC species ____ | x 3= 0 |
| FACU species ____ | x 4= 0 |
| UPL species ____ | x 5= 0 |
| Column Totals: 0 (A) | 0 (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

____ 1- Rapid Test For Hydrophytic Vegetation
X 2- Dominance Test is >50%
____ 3- Prevalence Index is ≤3.0[1]
____ 4- Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ 5- Wetland Non-Vascular Plants[1]
____ 6- Problematic Hydrophytic Vegetation[1](Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** **Yes X** **No** ____

Remarks:

## SOIL

Sampling Point: SP24

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

| Depth | Matrix | | Redox Features | | | | | |
|---|---|---|---|---|---|---|---|---|
| (inches) | Color (moist) | % | Color (moist) | % | Type[1] | Loc[2] | Texture[3] | Remarks |
| 0-15 | 10YR 3/2 | 100 | | | | | Si Lm | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix. [3]Note: Sa = Sand. Si = Silt, Cl = Clay, Lm = Loam

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: Rock / wood

Depth (inches): 15

**Hydric Soil Present? Yes ___ No X**

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery(B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

**Field Observations:**

Surface Water Present? Yes ___ No X Depth (Inches): ___

Water Table Present? Yes ___ No X Depth (Inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (Inches): ___

**Wetland Hydrology Present? Yes ___ No X**

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

Remarks:

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

Project/Site: Mt. Scott Creek / Oak Bluff Boulevard City/County: Clackamas/Clackamas Sampling Date: 6/3/2015
Applicant/Owner: Clackamas Co. - Water Environment Services State: OR Sampling Point: SP25
Investigator(s): Sarah Hartung and Ava Laszlo Section, Township, Range: S4, T2S, R2E
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): 2
Subregion (LRR): A: NW Forests & Coast Lat: 45.42628851110 Long: -122.57892071600 Datum: NAD83
Soil Map Unit Name: Wapato silty clay loam NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____ Soil ____ or Hydrology ____ significantly disturbed? No Are "Normal Circumstances" present? Yes **X** No ____
Are Vegetation ____ Soil ____ or Hydrology ____ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes ____ No X
Hydric Soil Present? Yes ____ No X **Is the Sampled Area**
Wetland Hydrology Present? Yes ____ No X **within a Wetland? Yes ____ No X**

Remarks: Rainfall for May is below normal range
SP location: east end study area

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30' R ) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. Populus balsamifera | 40 | * | FAC |
| 2. Quercus garryana | 20 | * | FACU |
| 3. | | | |
| 4. | | | |
| | 60 | = Total Cover | |
| **Sapling/Shrub Stratum** (Plot size: 30' R ) | | | |
| 1. Rubus armeniacus | 5 | | FACU |
| 2. Symphoricarpos albus | 15 | * | FACU |
| 3. Cornus alba | 10 | * | FACW |
| 4. | | | |
| 5. | | | |
| | 30 | = Total Cover | |
| **Herb Stratum** (Plot size: 5' R ) | | | |
| 1. Tellima grandiflora | 2 | | FACU |
| 2. Galium aparine | 20 | * | FACU |
| 3. Cardamine oligosperma | 20 | * | FAC |
| 4. Geranium robertianum | 10 | * | FACU |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| | 52 | = Total Cover | |
| **Woody Vine Stratum** (Plot size: ____ ) | | | |
| 1. | | | |
| 2. | | | |
| | 0 | = Total Cover | |

% Bare Ground in Herb Stratum 48

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 43% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species ____ | x 1= 0 |
| FACW species ____ | x 2= 0 |
| FAC species ____ | x 3= 0 |
| FACU species ____ | x 4= 0 |
| UPL species ____ | x 5= 0 |
| Column Totals: 0 (A) | 0 (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

____ 1- Rapid Test For Hydrophytic Vegetation
____ 2- Dominance Test is >50%
____ 3- Prevalence Index is ≤3.0[1]
____ 4- Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ 5- Wetland Non-Vascular Plants[1]
____ 6- Problematic Hydrophytic Vegetation[1](Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** **Yes ____ No X**

Remarks:

## SOIL

Sampling Point: SP25

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

| Depth | Matrix | | Redox Features | | | | | |
|---|---|---|---|---|---|---|---|---|
| (inches) | Color (moist) | % | Color (moist) | % | Type[1] | Loc[2] | Texture[3] | Remarks |
| 0-20 | 10YR 3/3 | 100 | | | | | Si Lm | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix. [3]Note: Sa = Sand. Si = Silt, Cl = Clay, Lm = Loam

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** **Yes** ___ **No** X

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
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- ___ Inundation Visible on Aerial Imagery(B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
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- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
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- ___ Frost-Heave Hummocks (D7)

**Field Observations:**

Surface Water Present? Yes ___ No X Depth (Inches): _____

Water Table Present? Yes ___ No X Depth (Inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (Inches): _____

**Wetland Hydrology Present?** **Yes** ___ **No** X

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

Remarks:

# APPENDIX C: GROUND LEVEL COLOR PHOTOGRAPHS

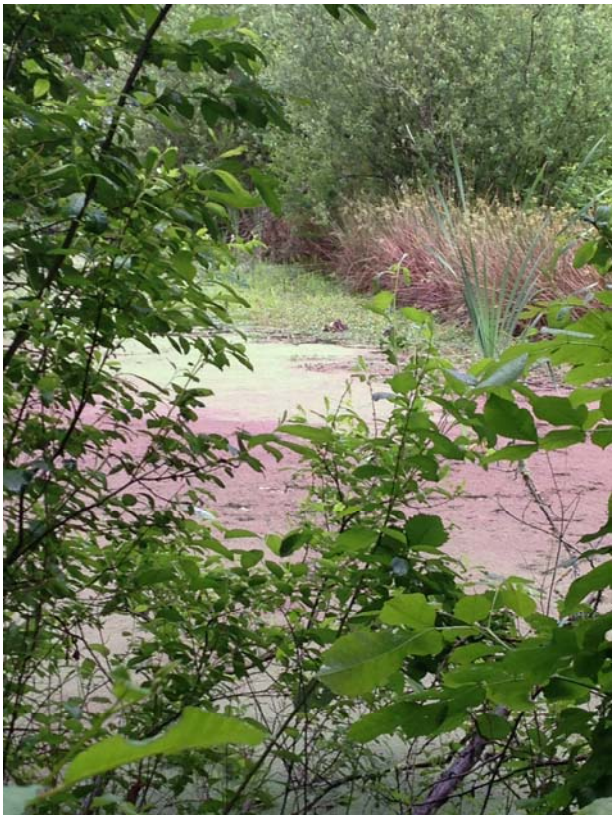

**Photo 1:** Wetland 1 looking northwest. 6/2/2015

**Photo 2:** Outlet of Tributary 1 into Mt. Scott Creek (southwest of Wetland 1). This photo shows one of two side-by-side culvert outlets. 6/2/2015

**Photo 3:** Wetland 2 facing southeast. This northern section of Wetland 2 is north of a paved multi-use, seen at the far right hand side of the photo. 6/3/2015

6/

**Photo 4:** Wetland 2 facing north. A paved multi-use trail divides Wetland 2. Culvert outlet is seen in bottom of photo. 6/3/2015

**Photo 5:** Depressional forested floodplain of Wetland 3. Herbaceous layer vegetation is sparse to none. Surface soil cracks are common. 6/3/2015

**Photo 6:** Depressional forested floodplain of Wetland 3. Herbaceous layer vegetation is scarce to none. Ponding and surface soil cracks are common. 6/3/2015

**Photo 7:** Depressional forested floodplain of Wetland 4. Herbaceous layer vegetation is scarce to none. Ponding and surface soil cracks are common. 6/3/2015

**Photo 8:** Wetland 5 with a reed canarygrass (*Phalaris arundinacea*) and soft rush (*Juncus effusus*) lined pond (looking north toward SE 84$^{th}$ Ave/Oak Bluff Boulevard). Outlet drains south into Mt. Scott Creek. 6/2/2015

**Photo 9:** Wetland 5 with touch-me-not (*Impatiens noli-tangere*), red alder (*Alnus rubra*), and reed canarygrass in the foreground. Pond is surrounded by red alder. 6/2/2015


**Photo 10:** Wetland 6. Shovel denotes location of SP 1. Dominant vegetation in Wetland 6 includes reed canarygrass, western touch-me-not, and red alder. 6/2/2015

**Photo 11:** Asphalt access road to SE Jasmine Lane, looking south toward top of berm of Wetland 7. 6/3/2015

**Photo 12:** Wetland 7 looking north, standing on top of berm looking down into wetland basin. 6/3/2015

**Photo 13:** Wetland 7 looking south into upland area. 6/3/2015

**Photo 14:** Downstream view of Mt. Scott Creek. Top and bottom of bank differ significantly in vegetative community. 6/2/2015

**Photo 15:** Mt. Scott Creek looking downstream. Low terrace on left bank dominated by reed canary grass. Shift in plant community above low terrace where OHWL is approximated (yellow line). 6/2/2015

**Photo 16:** Mt. Scott Creek upstream view, upstream of culverts on SE 84th Ave. 6/3/2015

**Photo 17:** Looking west at the backchannel that connects Wetland 5 pond (boundary approximated in yellow) and Mt. Scott Creek main stem to Wetland 6. 6/2/2015

**Photo 18:** Mt. Scott Creek north of Wetland 6 and east of Wetland 7, erosion of vertical banks. OHWL is just below top of bank (yellow dotted line). 6/2/2015

**Photo 19:** Downstream view of Mt. Scott Creek. Photo location is at the outlet of two culverts that connect Tributary 1 to Mt. Scott Creek. 6/3/2015

**Photo 20:** Left bank of Mt. Scott Creek by railroad crossing; Wrack line. 6/3/2015

**Photo 21:** Dean Creek looking upstream. Photo shows sloping banks on right and left creek sides, and low bench with wrack line on right bank. 6/15/2015

**Photo 22:** Dean Creek, looking downstream. Right bank shows change in soil color related to saturation gradient. OHWM is approximated by the dotted yellow line. 6/15/2015

# APPENDIX D: ADDITIONAL INFORMATION

# APPENDIX E: LITERATURE CITED

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# Mt. Scott Creek: I-205 to Three Creeks Natural Area

## Conceptual and Management Site Plan

Prepared for
Water Environment Services
Clackamas County Oregon

June 7, 2013

# Table of Contents



# List of Tables

# 1. Introduction

Clackamas County Water Environment Services (WES) is working to protect and improve watershed health throughout its service districts. One of the major watersheds is Mt. Scott Creek, located southeast of Portland, Oregon. Mt. Scott Creek is a tributary to Kellogg Creek which flows into the Willamette River. The drainage area above the project site is approximately 4.5 square miles and is characterized by a mix of residential and commercial land uses. WES and its natural resources partners are interested in seeing the health of the entire Mt. Scott Creek watershed improved for the benefit of the public, as well as for fish and wildlife resources.

As part of this goal, WES has initiated efforts to focus watershed improvement efforts in one section of the creek located between I-205 and Three Creeks Natural Area. WES owns or has easements from 50 to 150 feet wide around the stream that encompass approximately 12 acres along this section of Mt. Scott Creek. To conduct this assessment, WES obtained permission to access adjacent parcels for a total project area of 18 acres (Figure 1, Appendix A). The study area and immediately adjacent reaches described in this concept plan includes approximately 4,000 linear feet of Mt. Scott Creek (from I-205 to Three Creeks Natural Area; 3,270 linear feet in the study area) and 920 linear feet of a tributary stream, Dean (also known as Deer) Creek (from SE 82$^{nd}$ Avenue to Three Creeks Natural Area; 216 linear feet in the study area). Conservation easements provide WES with the ability to protect the integrity, viability, conveyance and water quality functions of the water course and associated buffer, and projects to maintain or enhance these qualities would not be conducted without landowner consent. Easements also allow WES to leverage capital funds to work on the property.

The purpose of this report is to build on the existing conditions assessment previously prepared for the site (ESA 2013), document stream, riparian and wetland health goals, and present a conceptual site plan developed to meet these goals. This segment of Mt. Scott Creek is designated as an intermediate priority in the Watershed Action Plans (WAP) for Kellogg-Mt. Scott Watershed (Brown and Caldwell 2009). The site plan will identify and prioritize actions that will improve the resiliency of Mt. Scott Creek in this area. These actions will be implemented by WES in coordination with natural resource management partners.

# 2. Stream, Riparian and Wetland Health Goals

The WES surface water program is focused on improving water quality and the resiliency of receiving streams in its service areas. The project area already supports a diversity of habitat types and a number of compensatory wetland mitigation sites. There are some challenges on the site typical of an urban waterway, including hydrologic impacts from upstream urbanization and the presence of invasive species across the site. There are also opportunities to restore and enhance existing features to provide a greater degree of floodwater storage, water quality treatment, and higher quality habitat. The site may also provide opportunities to manage off-site stormwater, which would reduce the likelihood of downstream impacts such as bed and bank erosion, flooding and degraded water quality commonly associated with urban runoff.

The previous site assessment (conducted by ESA) identified both watershed-scale and site specific environmental degradation that has occurred due to urbanization. Several actions can be performed on the site that would improve instream, riparian and wetland habitat. Goals and potential actions are

summarized in Table 1 and described in more detail in Section 3 of this report. Monitoring protocols and trend analysis for each goal will be documented in the Site Management Plan.

# 3. Conceptual Site Plan

The project area extends downstream from I-205 west to the Three Creeks property, just downstream of SE 82nd Avenue (ESA 2013 - Figure 1). Conditions in the project area are influenced by localized (direct) activities such as major road crossings, stormwater outfalls that alter flow conditions and transient encampments that adversely impact bank, wetland and riparian area conditions. Flow attenuation is an important function to maintain at the site to alleviate downstream flooding potential. The addition of large wood will help offset impacts of hydromodification by providing opportunities to trap coarse sediment, provide hydraulic diversity, create habitat features, and dissipate energy during high flow events. Enhancement of riparian wetlands and vegetation will improve the ability of these areas to maintain cool water temperatures, filter pollutants such as bacteria, and retain fine sediment that can fill interstitial spaces between cobbles, reducing use by aquatic organisms.

A Conceptual Site Plan has been developed to illustrate measures to improve habitat conditions on site. This site plan is illustrated in Figures 1-3 (Appendix A) and measures are summarized below.

## 3.1. Instream Habitat Elements

### 3.1.1. Large Wood

As documented in the previous site assessment (ESA 2013), this reach of Mt. Scott Creek has very low volumes of large wood relative to healthy streams in the Pacific Northwest (healthy is considered >20 pieces per 100 m; Foster et al. 2001). This is related to the developed nature of the watershed where sources of upstream large wood are lacking. Strategic installation of large wood could improve stream processes. The stream is currently adapting to unstable conditions where the channel is downcutting due to high volumes of stormwater run-off. Large wood introduces roughness to the channel that slows down in-channel velocities and dissipates energy during high flow events; therefore decreasing the risk of bed erosion. Roughness also provides opportunities for hydraulic diversity and can assist in development of a diversity of instream habitat features. Installed wood will also provide opportunities to trap sediment, especially coarse sediment already moving through the system that is necessary for fish spawning, foraging for insects, and hiding/resting for juvenile fish.

Initially, wood would be imported from sources off-site and could be placed as individual pieces or as a small jam due to the narrow bankfull width. There are a number of large trees adjacent to the stream that may eventually topple in to the channel, especially those chewed by beaver. These should be left onsite whenever feasible.

Wood placement will need to be considered in context of flood risk downstream (Figures 2 and 3). This is especially important as wood traps sediment, raising the channel bed and reducing instream storage. Reduction in storage or increase in flood risk would not be allowable with any project; therefore wood placement will need to be carefully considered. Flooding impacts potentially could be reduced if placement is coupled with an increase in water storage onsite. Large wood should not be placed immediately upstream or downstream of the SE 84th Avenue culvert due to the already flattened gradient or immediately upstream of the railroad crossing due to flooding potential and to protect infrastructure.

**Table 1.** Existing conditions, goals and potential actions for the Mt. Scott Creek project area. See Figures 1, 2, 3 for additional detail on potential actions. See ESA 2013 for detailed description of existing conditions.

| **Beneficial (+) existing conditions** *(preserve/enhance)* | **Degraded (-) existing conditions needing enhancement** *(problem identification)* | **Goals** | **Potential Actions / Opportunities** |
|---|---|---|---|
| **Hydrology** | | | |
| | Increased peak flows due to increased impervious area upstream from development and subsequent increases in stormwater runoff | Provide flood storage, NE portion of site<br>Implement LID requirements<br>Encourage upstream infiltration of stormwater | Create upstream backwater in the northeast portion of the site<br>Utilize LID techniques for retrofits and new development upstream and onsite to infiltrate stormwater<br>Promote use of LID |
| | Hydromodification - channel instability and degradation | Provide flood storage, NE portion of site | Utilize LID techniques for retrofits and new development upstream and onsite to infiltrate water<br>Promote use of LID<br>Install wood or other grade control to stabilize channel bed with coarse sediment |
| Wetland mitigation projects on site provide ecological benefits | | Preserve and enhance wetland functions | Conduct maintenance weeding in wetland mitigation sites<br>Grading or extensive modifications to mitigation sites could be considered though it would require permitting and extra scrutiny |
| Costco stormwater basin on site provides hydrologic benefits | | Preserve and enhance existing stormwater facilities | Plan for and conduct regular maintenance of stormwater facilities |
| **Water Quality** | | | |
| | Urban pollutants, especially phosphorus and bacteria (as noted in site assessment) | Provide stormwater treatment for urban runoff<br>Provide opportunities for overbank flow and infiltration | Utilize LID techniques for retrofits and new development upstream and onsite to infiltrate water<br>Provide opportunity for water to slow and filter through vegetation for water quality benefit<br>Provide water treatment in onsite swales<br>Outreach and education of upstream and adjacent residents on LID options |

| **Beneficial (+) existing conditions** *(preserve/enhance)* | **Degraded (-) existing conditions needing enhancement** *(problem identification)* | **Goals** | **Potential Actions / Opportunities** |
|---|---|---|---|
| | Temperature (as noted in site assessment) | Increase shade (i.e. plant trees along stream banks within riparian areas and within wetlands) | Increase plant density and width of buffer between SE 82nd and SE 84th Avenues<br>Consider native wetland tree plantings |
| **Geomorphology/Soils** | | | |
| Some coarse sediment available from upstream and onsite sources | Low overall percentage of coarse sediment (as noted in site assessment) | Improve conditions to allow trapping of spawning substrate<br>Wood placement to encourage sediment trapping | Install large wood in upstream and middle reaches to trap sediment<br>Plant trees in riparian areas for longer term source of large wood |
| Riffles | Some places entrenched, incising (see ESA 2013 Table 4) | Provide LWD | Install large wood in upstream and middle reaches<br>Upstream infiltration to reduce peak flows |
| | Outfalls directly entering channel reducing sediment delivery | Move outfalls back from channel to allow for infiltration or remove piping | Remove culvert from unnamed tributary along Oak Bluff Drive<br>Remove piping at other outfalls approx. 25' from stream to increase sediment delivery |
| | Some places w/high embeddedness | Wood placement to encourage sediment trapping and reduce downcutting of the bed | Install large wood in upstream and middle reaches |
| | Locations with accelerated bank erosion<br>Bed siltation | Natural approaches to reduce impact on locations of significant bank erosion, but allow for natural erosion processes to occur | Deflect high flows from unstable banks at risk of failure and affecting infrastructure<br>Plant native riparian vegetation to help stabilize steep banks that are harder to access or pose no threat to infrastructure |
| **Biology & Habitat** | | | |
| Aquatic habitats present | Simplified structure in some areas/lack of complexity, LWD, boulders<br>Few pools | Add structure, complexity to habitat | Install large wood in upstream and middle reaches<br>Improve aquatic habitats and reduce passage barriers for amphibians between wetlands and the stream |
| Riparian habitats | Somewhat degraded | Enhance existing Oregon white oak woodlot / mixed deciduous woodland | Retain existing Oregon white oaks. Enhance riparian and upland habitats by installing downed wood, brush piles, and retaining snags where safe.<br>Remove English hawthorn and reduce density of native shrubs in the oak woodland. |

| **Beneficial (+) existing conditions** *(preserve/enhance)* | **Degraded (-) existing conditions needing enhancement** *(problem identification)* | **Goals** | **Potential Actions / Opportunities** |
|---|---|---|---|
| Good overstory cover/shade in some areas | Weedy understory some areas | Manage weeds, plant natives | Remove Japanese knotweed population near overflow and monitor future establishment<br>Address knapweed and garlic mustard populations near detention ponds before they spread onsite<br>Remove Himalayan blackberry and replant with natives along southeast section of Mt. Scott |
| | Concern about SE 84th fish passage conditions | Improve SE 84th crossing | Consider working with roadway authority/owner to upgrade or replace culverts with a bridge to improve passage |
| Some snags | | Preserve snags | Promote development of large snags (> 20 inches dbh)<br>When snags need cutting for public safety, top them as high as possible while still retaining safety |
| Beaver activity/dams | | Design to encourage beavers, red legged frogs | Consider beaver herbivory when installing plants; consider pond depths and hydroperiod most beneficial to turtles, red-legged frogs and other native wildlife if designing floodwater storage |
| **Public Access** | | | |
| Paved trail from I-205 to Costco area | Unauthorized trails cut through habitat | Design to allow creek access/viewing but to discourage off-trail use<br>Increase public utilization to discourage transient use of sites | Patrol more often and work with Sherriff's office to control<br>Develop trail in northeast between existing trail and stream; site trail appropriately to minimize disturbance to fish and wildlife and their habitats |
| | Illegal encampments may affect trail users | Reduce or removal illegal encampments, especially those negatively impacting sensitive ecological features | Patrol more often and work with Sherriff's office to control |
| | No educational information provided onsite | Provide educational opportunities | Provide environmental interpretation signs along existing walkways |
| Potential to link this site to existing & future trail systems | | Provide information to encourage utilization of site<br>Explore opportunities to expand or enhance existing trail system | Place sign from I-205 trail explaining trail system through site<br>Explore connectivity options to the Three Creeks Natural Area |

### 3.1.2. Stabilize the Headcut

A small headcut was observed at the end of Reach 1 (ESA 2013 - Figure 4), likely enhanced by the presence of a tree at the bank toe and erosion occurring due to water being redirected around the tree. This headcut demarcates the transition from a more entrenched channel with embedded sediment downstream to a less entrenched, less embedded channel upstream. There is potential that the headcut could continue to migrate upstream until it approaches the I-205 culvert. Though the headcut is not deep, it could compromise fish passage if it migrated upstream to the culvert and created a drop from the culvert to the streambed. If large wood is added to the stream in strategic locations up- and downstream of the headcut, it may trap sediment and help stabilize the channel bed. If wood is not placed, stabilization measures would likely consist of large rounded rock that will armor the banks and bed of the stream and dissipate energy.

### 3.1.3. Stabilize Select Banks

Erosion is a natural process in streams, where undercut banks can provide preferred habitat for fish. It is important that the ability for the channel to erode and adjust to changing flows remains intact. However, it is also important that erosion does not occur in excess, releasing an overabundance of fine sediment and destabilize the channel in areas with critical infrastructure. The addition of large wood will assist in stabilizing the stream bed and in turn stabilize the banks. Revegetating banks with species that have strong root structures can also assist in stabilizing banks, but also allowing natural hydraulic and geomorphic processes to occur.

There are two locations where alternative action might be taken to protect infrastructure and provide a safe environment for recreation. The first location is on the north bank approximately 200 feet upstream of the SE 84$^{th}$ Avenue crossing (Figure 2). At this location, the bank is in excess of 6 feet high and at a 90 degree angle from the water surface. Vegetation has been cut back along the top of the bank and the bank appears to still be actively eroding. Additionally, this location is relatively close to the sidewalk with no understory providing easy access to the stream. Because of the steep angle, height of the bank and accessibility to pedestrians, this may be a good location to regrade the bank and dissipate some of the energy directed at the bank to reduce future erosion. Once regraded, this location may be a good place to encourage visitors to interact with the site.

The second location of concern is a sharp meander bend where the stream turns from a westerly direction to a southerly direction when it approaches the Scottsco property (Figure 3). This bank is actively eroding to the north, but continued erosion in this direction could put SE 84$^{th}$ Avenue and private property at risk. Approaches to stabilize this bank should focus on mechanisms to dissipate energy and deflect flows that are eroding the bank surface. Stabilization of the bank may include some regrading; however, the top of the bank is well vegetated, including the presence of several large trees. Impacts to vegetation should be minimal to protect bank/root strength. Other approaches could include the addition of wood or rock to help stabilize the bank toe and bank surface and revegetating where slope angles are low enough for establishment.

### 3.1.4. Create Backwater Habitat

To provide additional storage during peak flow events and improve juvenile rearing habitat, there is opportunity to create a backwater habitat on the east end of the project area (Figure 2). This area was selected because although it is outside the 100-year floodplain, vegetation is already acclimated to wet and/or saturated conditions and there are open muddy areas that hold seasonally ponded water. Therefore the impact on the established vegetation community at this location could be minimized. An

additional benefit of creating a backwater area would be to allow for more opportunity for infiltration, which could assist in improving water quality. Though the area being suggested is not within the FEMA 100-year floodplain, there are already small ponds and mud areas throughout this location. Large trees surround the site and on high points within the backwater habitat area, but appear to be generally tolerant of the saturated conditions through the wet season. The intent for this backwater area would be to enhance the existing wet-ponded areas to be utilized primarily during high flows.

Connectivity to the stream could be provided on the downstream end of the backwater habitat area, where access could potentially be gained through the forested area on the south side of the stream without the removal of significant overstory. Access could consist of crossing over the channel, which would have to be timed appropriately to avoid seasons affecting aquatic organisms of concern and water quality concerns will need to be addressed. Culverts could be placed in channel temporarily to provide access across the stream. Some vegetation may need to be removed to give equipment access to the stream. Another potential option would be to access this area along the existing trail system, though it may be necessary to cut back vegetation along the path and plan to repair the trail post-construction. Repairs could include replacing asphalt with permeable pavement. The connection would have to be graded and could provide an inset channel to prevent fish stranding in the alcove.

### 3.1.5. Remove Tributary Culverts

Reach 9, the small tributary that begins as stormwater outflow along Oak Bluff Drive, is well connected to a mitigation wetland and pond, but travels through a pair of concrete culverts 90 feet before entering Mt. Scott Creek. These culverts are placed beneath the trail and open space. The culverts are blockages to fish and wildlife and could pose more serious threat to amphibians and reptiles if they get trapped in the catch basin in the middle of the culvert structure. The culverts also reduce system-wide coarse gravels by reducing opportunities to move coarse gravel that would otherwise be entrained in an open channel. The culverts could be removed and the channel better connected to the stream. If the wetland is connected to the channel, it will be important to prevent fish stranding and to consider how to retain the function the mitigation wetland provides in treating water before it enters the mainstem of Mt. Scott Creek. Additionally, a bridge would need to be installed on the trail if the culverts are removed.

### 3.1.6. Address SE 84th Avenue Culverts

Investigate opportunities to improve the SE 84th Avenue stream crossing for passage of sediment and to improve crossings for fish and other wildlife. Accumulation of gravels and cobbles upstream of the culvert indicate that the culvert is trapping sediment, which flattens the stream and reduces the diversity in bed form that is necessary to maintain aquatic diversity. Additionally at this location, sediment accumulations could be used by fish for spawning, but because this is likely to be a shallow area of the stream redds could dry out as water levels drop. The culverts could be replaced with a bridge or an alternative culvert configuration that could facilitate passage.

### 3.1.7. Other Long-term Considerations

Dean Creek is currently channelized along the railroad southeast of the project site, passing under the railroad through an industrial area then under SE 82nd Avenue, and finally entering Mt. Scott Creek through a set of culverts. Mt. Scott Creek also is confined to a channel that parallels the railroad track for a distance. Opportunities may exist to realign one or both channels away from the railroad tracks. These projects could be considered in the future if and when major roadway projects are undertaken, in possible conjunction with those future projects and in partnership with those transportation entities. For example, the ODOT Sunrise Corridor project is one such project that could provide opportunities in this

area. Though this part of the Sunrise Corridor project is not currently funded, there are plans to potentially widen SE 82nd Avenue and provide connection south from SE 84th Avenue on Jasmine Lane. Both projects could impact the floodplain, but may also provide opportunities for enhancement within the project area.

Since Dean Creek is prone to flooding (based on landowner observations) and the stream corridor is degraded for a large portion of the length adjacent to or within the project area, Dean Creek could be realigned to meet Mt. Scott Creek further upstream. This would reduce the number of crossings under the railroad or SE 82nd Avenue. It may also provide opportunity for water in Dean Creek to infiltrate into the floodplain and promote better water quality.

In addition to Dean Creek realignment, Mt. Scott Creek could be realigned so that it does not have to cross to the south side of the railroad track. Mt. Scott crosses under the railroad tracks twice within 1000 feet, requiring 90 degree angles to be maintained at each stream-railroad crossing to keep the stream parallel to the railroad track. Additionally, with the stream immediately adjacent to the railroad, the stream has been maintained with riprap and vegetation treatments to keep the railway clear of obstruction. If the bridges over the railroad tracks and Mt. Scott Creek on SE 82nd Avenue was expanded far enough north during future roadway projects, the open space underneath the bridge could accommodate passage of Mt. Scott Creek, even with the addition of waters from Dean Creek. Another potential realignment opportunity would be once Mt. Scott Creek passes under the railroad tracks. The stream could be routed under SE 82nd Avenue at the Dean Creek culverts then resume a path northwards to the Three Creeks Natural Area.

Flooding in the areas east and west of SE 82nd Avenue has occurred frequently and is expected to continue; therefore, any proposed plans to realign the channel should take into consideration the potential extent of flooding. This is especially important to consider if the Sunrise Corridor project influences flows entering Dean Creek upstream of the project area. Additional studies related to stream hydrology, such as modeling of flows, may be required to determine whether or not relocation of Dean or Mt. Scott Creeks should be undertaken. Also important to consider is that a realignment of Dean Creek could substantially reduce overall stream length, which can result in loss of habitat and increased channel gradient and increased incision. Any changes to stream length will need a geomorphic assessment and may need bed control installed, mitigation for loss of habitat, and potentially require floodplain grading.

There may be interest in exploring a willing seller program for properties with structures located in the 100 year floodplain. Increases in development throughout the basin upstream of the project area could lead to increased peak flows and more frequent flooding of these properties and structures. Combined with prospective increases in winter rainfall due to climate change, flooding in this region could put infrastructure at risk. If such properties with structures in the floodplain could be purchased and reclaimed as floodplain, there may be opportunity to store additional flood water onsite.

## 3.2. Stormwater Management and Water Quality

### 3.2.1. Onsite Stormwater and Pollutant Treatment Opportunities

The project area currently contains several wetland mitigation sites (as described in the site assessment report) and stormwater detention facilities from surrounding development. As part of this project, three locations are highlighted as good opportunities to provide additional stormwater treatment. Two of these sites are located immediately upstream of the SE 84th Avenue crossing north and south of the creek,

respectively (Figure 2). To the south, the understory is primarily dominated by blackberry. Blackberry can be removed and replaced with a swale that can absorb runoff from the parking lot and nearby roads. This may take effort The swale would provide opportunity for infiltration and a slow release of water to the stream channel. A third location that may provide good stormwater treatment is northwest of the Oregon Crime Lab building (Figure 3). Water from the parking lot could be directed towards a vegetated swale adjacent to the wetland and floodway.

### 3.2.2. Watershed-wide Stormwater Treatment Opportunities

Increased frequency and intensity of peak flow events and associated erosion have been identified as a problem throughout the Mt. Scott Creek watershed. This is largely due to urban stormwater runoff and the lack of adequate stormwater management. Finding opportunities for reducing stormwater flows before they reach the project site is an important strategy for maintaining the overall health of this stream.

Seeking opportunities to retrofit existing development in the sub-basin with non-traditional stormwater management improvements such as Low Impact Development (LID) technologies are warranted. LID strategies could be used to reduce stormwater runoff upstream and adjacent to the site. Reducing runoff could help to minimize downstream flooding and water quality impacts to the stream. Retrofit of currently existing stormwater detention facilities in the upper part of the basin using LID could reduce the impacts to hydrology on the downstream area.

## 3.3. Riparian Habitat Elements

The riparian corridor in the study area has a relatively high canopy cover of black cottonwood over Indian plum and common snowberry with areas dominated by non-native Himalayan blackberry (ESA 2013). Other native plants in the riparian zone include big leaf maple, Oregon ash, red alder, red-osier dogwood and willows. A number of snags and some downed wood provide habitat diversity, resulting in a moderate to relatively high quality condition of the corridor. Several restoration activities are recommended to improve stream health and enhance wildlife habitat. These activities are described in the sections below.

### 3.3.1. Increase Density and Diversity of Riparian Vegetation

The width of the riparian corridor in lower Reach 2, Reaches 3, 4, and 5 (ESA 2013 - Figure 4) is constrained on the north side by SE 84$^{th}$ Avenue/Oak Bluff Drive and the Scottsco Building at the west end. To improve habitat values in this narrow vegetated corridor, these areas could be densely planted with a mix of native shrubs and trees (Figures 2 and 3). Increasing the density of native vegetation on the north side of Mt. Scott Creek along these reaches would complement current efforts of Himalayan blackberry removal. Clusters of dense native shrub plantings could be intermixed with more open areas in the understory to maintain some views of the stream corridor from the sidewalk along SE 84$^{th}$ Ave/Oak Bluff Drive. Native plantings would buffer the corridor from adjacent roadways and human activity, thereby improving interior habitat for a variety of wildlife species. Improvements to interior habitat would likely be the greatest for Reach 5, which has extensive floodplain wetland habitat south of the main stream channel.

The riparian corridor is currently lacking in conifers, which provide important year-round cover for wildlife and shade for the stream and interception of rain. Adding conifers such as western red cedar, Douglas-fir, and ponderosa pine would increase plant species richness and provide more complex habitat structure. The most common conifer once found in mixed coniferous/deciduous riparian forests

in floodplains like Mt. Scott Creek is western red cedar, while Douglas fir and grand firs were less common (City of Portland 2010). Understory diversity could also be increased by adding flowering native shrubs (thimbleberry, salmonberry, serviceberry, Pacific ninebark, and red-osier dogwood) and short-statured trees like cascara, Douglas hawthorn, and western flowering dogwood. These native shrubs and trees are desirable for wildlife value and aesthetically pleasing to the public.

### 3.3.2. Increase Width and Extent of Riparian Habitat

Opportunities exist onsite for expanding the width and extent of the wooded riparian corridor. Areas of mowed lawn and Himalayan blackberry south of Mt. Scott Creek along Reaches 1, 2, and 3 could be converted over time to riparian forest by planting native shrubs and trees (Figure 2). Considerable effort to remove Himalayan blackberry would be required and cooperation needed from Precision Castparts Corporation to convert lawn. Suitable species to plant in this area may include big-leaf maple, Oregon ash, western red cedar, Douglas-fir, and Oregon white oak. The oaks could be planted in sparse clusters away from incompatible and faster growing species. The understory could be planted sparsely depending on input from Precision Castparts.

The riparian corridor (i.e. upland habitat) between the Oregon Crime Lab and the floodplain wetland consists of a single row of black cottonwoods with a sparse understory. A large gap in wooded cover is also present along the northwest corner of the crime lab parking lot. While canopy gaps provide spatial diversity for wildlife, extending and increasing forested canopy in this area would benefit stream processes and increase interior habitat along Reach 5 (Figure 3).

In contrast to increasing the density and extent of woody plants in the riparian corridor, some areas could be managed as sparsely vegetated ground to improve amphibian and reptile habitat. These areas could occur near installed oak saplings on the south side of Mt. Scott Creek or in the slope and forested wetlands were native amphibians breed.

### 3.3.3. Enhance Riparian Wetlands with Native Plantings

The floodplain wetland south of Reach 5 and the depressional wetland along Reach 6 of Mt. Scott Creek are both dominated by reed canarygrass with scattered willow seedlings and red alder. Reed canarygrass is an invasive non-native wetland grass. The floodplain wetland has more forested cover than the depressional wetland, but both would benefit from installing live cuttings of willows (Pacific, Scouler's, Sitka, and rigid willow), black cottonwood, and red-osier dogwood to increase habitat diversity and shade out the reed canarygrass (Figure 3). Live cuttings are recommended because they are easy to install, are relatively economical compared to other nursery stock, and are able to compete with reed canarygrass. Increasing shade in reed canarygrass-dominated wetland areas is an accepted method of reducing the height and vigor of this invasive, matt-forming grass. Dense plantings of live stakes (1 to 2-feet o.c.) in selected areas of the floodplain wetland would be a proactive restoration strategy in the event Mt. Scott Creek shifts to the south during a large flood or as part of a design to minimize the sharp channel bend in Reach 5. Live cuttings could be planted throughout the floodplain wetland and along the overflow channel that was excavated in the early 1980s. Live cuttings installed within the depressional wetland would buffer the riparian corridor from human activity at the Scottsco Building and contribute to wildlife habitat. Herbicide treatment of reed canarygrass is not called for because the species is so difficult to eradicate and because of the possible negative effects on watershed health of herbicide application in this location.

### 3.3.4. Improve and Maintain Wildlife Habitat

Habitat management strategies that will benefit a multitude of species include retaining snags, installing large downed wood or brush piles onsite, and considering wildlife passage for any culvert improvements. A number of snags are scattered throughout the study area, but larger (i.e. greater than 20 inches diameter) should be encouraged to form on-site or be retained to the extent possible. At least 93 forest or woodland species use snags, stumps, or large woody debris for part of their life cycle (Vesely and Tucker 2004).

Some downed wood is present in the riparian forest and upland forests, but many areas have limited duff and lack fallen logs. Large wood and fallen logs aid in soil development, the maintenance of micro-organisms, and provide refugia for several small mammals, amphibians, reptiles, and some songbirds. Downed wood could be brought in and placed throughout the study area to increase habitat complexity or the process could be more passive and involve allowing large wood to remain where it has fallen.

Other habitat management strategies include considering wildlife passage for possible future culvert replacements at the SE 84$^{th}$ Avenue crossing. The openness ratio (height x width/ length) of the culverts could be increased to provide passage for more medium-sized and large terrestrial species under SE 84$^{th}$ Avenue.

### 3.3.5. Control Non-native Invasive Plants

A number of areas onsite are relatively free of invasive weeds, such as the stand of Oregon white oaks and the mixed upland forest in the eastern end of the study area (Figure 2). However, on-going invasive plant removal efforts are recommended to prevent the spread of weeds dispersed by birds such as Himalayan blackberry, English hawthorn, and English holly, as well as weeds introduced during flood events (Figure 2). Himalayan blackberry is the most abundant and widespread invasive non-native plant on-site, present in all reaches, especially on the south side of Reaches 2 and 3 along the Precision Castparts property line. Eradication of Himalayan blackberry is not realistic, but it should be prevented from spreading further into the mixed upland forest at the east end of the study area. The north side of Reaches 3, 4, 5, and 6 has been recently cleared of Himalayan blackberry. Care should be taken to not mistake the native trailing blackberry, which is present in these reaches, for young or resprouting Himalayan blackberry.

The western portion of the study area has a relatively open understory with a few pockets of invasive weeds like poison hemlock, garlic mustard (off-site) and knapweed (also offsite). A small cluster of Japanese knotweed has established in the overflow channel and should be eradicated to prevent further spread. Knotweed spreads easily along stream corridors from stem or root fragments, but can be controlled if caught early. Other invasive weeds in the study area include lesser celandine (*Ranunculus ficaria*) which has established in a few areas.

## 3.4. Enhance Oregon White Oak Habitat

A small stand of Oregon white oaks is located on the hillside in the northeast portion of the study area and in the riparian forest at the western end. Most of the decline of Oregon white oaks and their habitat in western Oregon is due to human disturbances including fire suppression, land use conversion to agriculture or development, and the planting of faster growing trees. Without active management in remnant oak stands, the natural process of forest succession gradually leads to the replacement of oaks by faster growing trees, such as big leaf maple and Oregon ash.

As part of long-term habitat management, a more detailed inventory of the oak stand east of Oak Bluff Drive is recommended. The inventory would involve documenting the precise location, size, and crown shape of the oaks on the slope in order to inform management decisions such as thinning the understory or replanting oaks. The oak stand includes several large trees but the understory is thick with Oregon ash, cherry, and other saplings.

Selected thinning in the understory at the base of the slope and establishing oak saplings is recommended to promote the next generation of oak trees. In addition to thinning, topping faster growing trees (other than oak) is another method to manage oak stands and provide snags at the same time. The base of the slope overlaps with a buffer established for mitigation wetlands to the south (SRI/Shapiro 1996). Selected thinning and establishing oak saplings in this area is viewed as compatible with original wetland mitigation goals of creating wildlife habitat and providing water quality functions.

Oregon white oaks could also be planted on the edges of the hillslope wetlands to the east and at the top of the bluff. The habitat in this area is relatively open with dense clusters of shrubs and tall saplings. Oregon white oaks could also be planted along the south side of Mt. Scott Creek along the property line with Precision Castparts and the Oregon Crime Lab, as well as at the west end of the study area where a few mature white oaks are growing with ash, maples and Douglas fir. Future plantings of oaks should consider competition from faster growing tree species; topping and/or thinning may be required to maintain oak habitat.

## 3.5. Provide Public Access

Though currently underused, the existing asphalt trail in the east section of the project area connects the I-205 Regional Trail to existing sidewalks and bike lanes along surface streets (Figure 1). It is possible that with the addition of wayfinding signs to indicate the connectivity of the trail to the surrounding trail and sidewalk system, this trail may become more frequently used as a connecting corridor. On the Metro Regional Trails & Greenways map, the trail is identified as part of the proposed North Clackamas Greenway, connecting to the existing I-205 Regional Trail and proposed Phillips Creek Trail.

The Mt. Scott Creek site has many opportunities, and a few challenges, for future trail development. There are opportunities to connect the existing multi-use trail to local businesses and the Three Creeks Natural Area using existing bike lanes, sidewalks, and trail connections. Challenges include the SE 82$^{nd}$ Avenue overpass and the railroad tracks, which create a barrier between the Mt. Scott Creek site and the Three Creeks Natural Area. WES recently became owner of the Three Creeks property and will be managing it in partnership with NCPRD. It is not currently open to the public, although there is unofficial use of the site and use allowed by permit. WES and NCPRD plan to develop a master plan for the site in the near future and any trail connections will need to consider the upcoming master plan. The sites could be connected with surface streets, sidewalks, and possibly pedestrian bridges and/or tunnels. One example opportunity would be to direct pedestrian traffic from SE 84$^{th}$ Avenue down Jasmine Lane towards the railroad tracks. A path could go under the existing SE 82$^{nd}$ Avenue bridge on the north side of the track and connect to the Three Creeks Natural Area. To take advantage of the existing right-of-way yet keep the public safe from the railroad activity, a fence and buffer could be placed to separate the path from the tracks. To allow ample space for a trail, some minor excavation of the fill could be conducted, with the placement of a retaining wall to prevent erosion of remaining fill material. The trail through this location would be similar to trails located throughout the Three Creeks Natural Area with the expectation of relatively light foot traffic. This section of trail could only be completed with cooperation with the railroad authority.

There are additional opportunities to provide interpretation and resting areas along the existing greenway trail and adjacent sidewalks. Urban streams such as Mt. Scott Creek provide valuable ecological functions and are opportunities to educate the community on the services that urban streams provide. Topics that could be addressed with interpretive signage include effects of hydromodification, fish and wildlife passage, stream ecology and processes, the importance of native plant communities and wildlife habitat, and potential threats and solutions. Signage could provide information on how nearby residents may protect water quality in the stream through minimizing use of herbicides and pesticides and retaining riparian vegetation. Native white oak restoration areas at the northeast end of the project area are a perfect location for informing the public of a rare habitat type that was once abundant in the Willamette Valley.

Unauthorized trails are located south of the existing trail and lead to transient camps. The trails provide access to streams down steep banks, traverse wetlands, and are narrow with compacted soil. There are at least two concentrated camps with a large amount of garbage and temporary infrastructure, and evidence of a number of smaller campsites throughout the area. High-volume use of foot paths and camps can erode banks and damage native vegetation. Illegal camps should be decommissioned by scarifying the soil and planting heavily with native species such as Nootka rose. Large woody debris and brush piles could be located on decommissioned trails to further deter use. The encampments can be viewed from a few locations along the primary asphalt path. Vegetation could be selectively thinned to provide narrow "view corridors," better exposing the encampments and potentially discouraging use. However, clearing vegetation is a temporary solution, and would require frequent maintenance. In addition, newly disturbed areas may promote the growth of invasive species.

Increased public utilization of the area may discourage the return of transients to this natural area. Some of the unauthorized trail system could be formalized as part of an interpretive trail with access to the creek, creating more "eyes" on the site. Engaging the local community with restoration and educational activities would further increase activity in this area of the site.

## 3.6. Implementation and Prioritizing Actions

The Concept Plan has a number of recommended elements that require detailed site analysis, design, permitting, and construction efforts that will need to be addressed as funding becomes available. However, some planting and invasive removal efforts can be performed by volunteers with little to no heavy equipment. Since there is much interest in this site due to the connectivity between Mt. Talbert and Three Creeks Natural Area, there may be opportunities to work with local groups and adjacent landowners to participate in revegetation actions. Due to the number of opportunities and the lack of existing funding to currently develop any of the recommended actions, the following list of high priority restoration opportunities will help guide future activity:

1) Install large wood along the channel in Reaches 1, 2, and 5 to stabilize bed, trap coarse sediment and increase complexity;
2) Stabilize select banks posing threat to infrastructure or safety;
3) Explore opportunities to reduce peak flows and improve water quality;
4) Install live cuttings to increase woody species density in the floodplain wetland;
5) Enhance and establish Oregon white oak habitat east of Oak Bluff Drive;
6) Eradicate Japanese knotweed in Reach 6;

7) Explore opportunities to improve wildlife passage by daylighting the Reach 9 connection to Mt. Scott Creek and/or replacing the SE 84th Avenue culverts with a bridge; and
8) Install informational signs and otherwise promote public awareness of the project area.

The prioritized list of restoration actions was developed based on on-site observations and collaboration with WES staff and partners. Efforts to reduce peak flows and the impacts of hydromodification are a top priority for the long-term maintenance of this site. However, to address the site hydrology, most of the actions will need to be taken upstream, outside of the project area. Restoration actions that can help address the impacts of hydromodification onsite include the addition of large wood and plantings along streambanks, though these actions may need to be continuously maintained until problems with hydrology are addressed.

Most of the riparian habitat improvement projects can be done as soon as funding and labor are available, and most if not all of these projects can be accomplished with volunteer labor under the direction of someone familiar with the restoration objectives and techniques. Revegetation or other habitat improvements proposed for areas where grading or other activities requiring heavy equipment are proposed should be implemented once the heavy equipment work has been completed.

The Mt. Scott Creek study area contains jurisdictional streams (Mt. Scott Creek and Dean Creek) and wetlands, some of which were created and/or expanded as part of past compensatory mitigation requirements (Shapiro/SRI 1996; PHS 1996). Proposed restoration activities in jurisdictional resources would require permitting and coordination with local, state and federal regulatory agencies including Clackamas County, Department of State Lands (DSL) ODFW, the U.S. Army Corps of Engineers (Corps), and NMFS. Examples of restoration projects that would require permitting include creating a fish backwater habitat, floodplain grading, placing large wood in streams and altering the ground in wetlands to improve habitat. Installing live stakes or cuttings in wetlands would likely not require permitting, but coordination with the resource agencies is recommended.

Both DSL and the Corps regulate activity that involves moving soil or material around in wetlands/streams, but each agency has slightly different permitting thresholds and requirements. A permit from DSL is required if more than 50 cubic yards of fill/removal is proposed (jurisdictional resources). If the resource is mapped as Essential Salmon Habitat, as is true for Mt. Scott Creek in the study area, but not Dean Creek, then any amount of fill/removal is regulated. Small-scale restoration activities may qualify for a General Authorization (GA) from DSL which is a streamlined permit with a 30-day review window and reduced fee. Altering an existing mitigation site for the purpose of improving habitat will require an Individual Permit with a 120-day review timeline and higher fees may be needed from DSL and a permit from the Corps to ensure compliance with Clean Water Act (Section 404). If the restoration involves extensive habitat modification, then an Individual Permit. The agencies would review the original compensatory mitigation documentation to ensure the proposed habitat change is consistent with original intent. They would also review the project to make sure there was not any deed restriction in place that would prohibit alterations.

The Corps regulates any amount of fill in wetlands and streams that exceeds the definition of “de minimus”. De minimus fill is defined as having an inconsequential effect on the regulated resource and is typically thought of as less than one cubic yard of fill. A permit from the Corps would trigger review under two other federal laws – Section 7 of the Endangered Species Act and Section 106 of the Historic Preservation Act (cultural and historical). Proposed restoration in the study area would likely qualify for a Nationwide Permit (NWP), which is a pre-issued permit for certain projects with minimal impacts to

regulated resources. Restoration would likely fit under a NWP 27 – Aquatic Habitat Restoration, Establishment and Enhancement, which authorizes stream restoration projects and requires "notification" or an application to be submitted. The review timeline for NWP is generally 45 to 60 days, but can take longer depending on approval of supporting documentation such as a wetland/waterway delineation report, Endangered Species Act review, and cultural resources report. Incidental impacts to listed fish from restoration projects would likely be covered under a renewed SLOPES Biological Opinion. Proposed restoration activities may also require land use review for any excavation or fill in floodplains and stream corridors, a grading permit, and erosion control plans.

# 4. Partners

Community and agency partners will be important for the implementation and maintenance of restoration elements. Oregon Department of Fish and Wildlife (ODFW), North Clackamas Parks and Recreation District (NCPRD) and North Clackamas Urban Watersheds Council (NCUWC) reviewed the assessment and provided input towards the goals and recommendations for the project area. As restoration actions are selected and activity proceeds, these partnerships along with participation by adjacent property owners, would help provide the support necessary to make restoration successful. For example, a relationship with Oregon Department of Transportation (ODOT) would be beneficial in discussing feasibility of planting in the I-205 corridor adjacent to the project area and addressing wildlife passage issues through the I-205 culvert. Developing relationships with adjacent landowners/businesses is a high priority for increasing public awareness of these sites and to promote the overall ecological health of the natural area. A stewardship committee could be formed with local businesses to promote interaction with the site.

# 5. Site Management Plan

ESA has prepared this Draft Site Management Plan as a part of the long-term management of the Mt. Scott Creek Site and development of a conceptual restoration plan for WES. Elements of the Conceptual Site Plan are expected to be implemented over many years. Prior to implementing restoration actions, several steps can be taken to maintain site conditions and prepare for future activity. For instance, monitoring for invasive plant species could help prevent problems prior to them becoming more widespread and assist in making adequate prevention plans as part of restoration design. Once habitat improvements are made, long-term success of the improvements will require on-going monitoring and annual maintenance.

Monitoring can be useful for multiple purposes at this project area. Pre-project monitoring can help to establish a baseline for determining results of actions taken and provide critical information to prepare for future action. Post-project monitoring can be used to provide an indication of the success of restoration elements. Whether it is pre-project or post-project, monitoring and site maintenance may be even more successful by coordinating with adjacent landowners and interested stakeholders. Working together will also provide support for the site as additional funds are being sought to implement restoration activities.

## 5.1. Monitoring

Even though funding may not yet be secured for the site, monitoring of existing conditions should continue or be initiated to prepare for future action. Discharge data should continue to be collected at the onsite gage station to develop a more reliable record of recent flow conditions. In addition to current discharge monitoring onsite, a number of additional parameters could be assessed to help meet goals for the site. Protocols are suggested below and provided in more detail in Appendix B.

Water quality has been monitored upstream and downstream of the Mt. Scott Creek site, but at a considerable distance from the project area. Water quality monitoring is recommended onsite as funding aids in targeting which water quality issues are of concern at the project area. Based on previous data collection efforts, temperature is a concern and would be beneficial to monitor continuously. Bacteria and metals could be collected in monthly and storm event grab samples. Protocols for sampling should follow the program currently in place for CCSD#1 (WES 2012).

To meet goals for the project area, a number of additional parameters have been identified and monitoring protocol suggested for each parameter (Table 2 and Appendix B). Data collected using this monitoring plan measure progress toward achieving goals developed for the site, identify trends, and can be used to determine modifications needed to the Conceptual Site Plan.

Results of monitoring can indicate if goals set for the site are being achieved with restoration actions that have been taken and, if they are not, will provide a mechanism to guide adjustments to either the goals or the actions being implemented. Monitoring activities address the degree to which installed features are providing the functions for which they were designed, the degree of disturbance that is occurring to the element, and the degree to which it might be impairing the function of the restoration element.

WES does not currently have staff or funding for monitoring; therefore, the protocol will need to adapt to the availability of resources. Top priority for this site is to conduct some sediment sampling combined with in-channel habitat mapping to determine whether sediment is accumulating on the channel bed. Also important is to survey for noxious weeds, especially EDRR (early detection – rapid response species). To maximize resources on sites where projects have been completed, WES could use ODFW's 2012 habitat monitoring protocol for the stream:

- http://oregonstate.edu/dept/ODFW/freshwater/inventory/pdffiles/hmethd12.pdf.

This rapid monitoring protocol would provide resources for performing surveys if the site is included as part of the ODFW survey program.

The methods developed for this site are based on published methodologies adapted for site specific geomorphic and landscape conditions (Appendix B). They are intended to be quantitative and easily reproducible with little technical training.

**Table 2.** Mt. Scott Creek Monitoring Goals, Protocols and Objectives

| Goal | Monitoring Protocol | Objective |
|---|---|---|
| Detect changes in the amount of LWD | 1. Large wood survey | Increase in LWD |
| Improve stream resiliency to flood events | 2. Cross section survey | Increased entrenchment ratio |
| Determine amount and size of coarse sediment in the reach | 3. Pebble counts | Confirmation that coarse sediment is available in the project area |
| Detect changes in the frequency and depth of pools | 4. Thalweg survey | Increase the frequency and depth of pools |
| Assess the quality of pools | 5. Pool Quality Index (PQI) | Improve the quality of pools |
| Maintain existing native vegetation | 6. Existing native vegetation | Stable or increasing canopy cover |
| Control the spread of non-native, invasive weeds | 7. Invasive species | Low cover of invasive species (recommend less than 20% weed cover in representative locations) |
| Conserve and expand Oregon white oaks habitat | 8. Oregon white oak | Thin the understory of the Oregon white oak woodlot in the northeast portion of study area; establish oak saplings at base of bluff and at west end |
| Successfully establish additional native shrubs and trees in the riparian zone | 9. Riparian habitat enhancement | At least 80% survival of planted trees and shrubs |
| Enhance wildlife habitat by installing brush piles and downed wood | 10. Wildlife habitat | Persistence of brush piles and wood over time; varying levels of decay in the installed wood |
| Conduct surveys for pond-breeding amphibians | 11. Amphibian breeding habitat | Document use of seasonal/permanent pools by native amphibians to better determine habitat needs. |

## 5.2. Maintenance

Stream and riparian restoration often requires the use of adaptive management techniques. The purpose of adaptive management is to enable decision making in the face of uncertainty while continually learning from the results of planned actions. An adaptive approach is a key tool to achieving the goal of continual, measurable ecosystem improvement, using new information to target and refine management strategies over time. Effective adaptive management involves:

- Establishment of explicit, measurable objectives;
- Development of conceptual models of the target system and its anticipated response to management interventions;
- Monitoring to address the response of system components; and
- Application of results to decision-making.

Due to the many variables that can affect the outcome of a restoration action, there is often a need to adjust the implementation sequence or even the overall project goals and expectations once the project has begun. A framework for developing stream function-based goals and achieving and assessing goals is a process that takes the following steps:

1) Identify stressors and existing conditions;
2) Identify goals and objectives;
3) Determine actions and strategies to address those goals;
4) Define hypotheses and tests or monitoring tasks to evaluate those actions;
5) Begin or continue monitoring;
6) Take action to address identified problems;
7) Continue monitoring;
8) Analyze monitoring data, evaluate response and determine if meeting objectives.

With the current effort on Mt. Scott Creek, information for steps #1 through #3 has been identified. For step #4, monitoring efforts have been suggested though hypotheses have not yet been described since actions have not yet been agreed upon.

The highest priority maintenance activity that can be started before other restoration actions is to address invasive plant communities. Regular hand removal of Himalayan blackberry and other unwanted invasive species (i.e. Japanese knotweed, English hawthorn, English holly and ivy) will be necessary in order to maintain native plant cover and diversity. Blackberry control will likely take repeated treatments. The most effective controls include a combination of physical removal and chemical application. For examples of effective removal techniques, see the following resources:

- Oregon State University Extension Service Managing Himalayan Blackberry in Western Oregon Riparian Areas http://extension.oregonstate.edu/catalog/pdf/em/em8894.pdf
- King County Noxious Weed Control Program Best Management Practices http://your.kingcounty.gov/dnrp/library/water-and-land/weeds/BMPs/blackberry-control.pdf

Japanese knotweed is a fast-growing and difficult plant to remove once it has established, therefore any occurrence of this noxious weed should be eradicated to prevent spreading. On-going monitoring for new occurrences will be required as this weed spreads by stem fragments dispersed during flood events (ODA 2013). The only effective control method is herbicide treatment with glyphosate (Roundup, Rodeo, and other trade names) and/or imazapyr (Habitat, Stalker, or Arsenal AC). Cutting, pulling, and mowing are not recommended because these practices only encourage denser new growth (OSU Extension Service 2011).

Proper management of white oaks in the urban setting is important as these species are slow growing and can be out-competed by more shade-tolerant species (Vesely and Tucker 2004). Protecting existing and newly established oak trees with an aggressive weed management schedule and rodent exclusion devices (for saplings) will be critical in their long term success. Understory species to consider thinning in the northeast portion of the study area include Oregon ash, cherry, and big-leaf maples.

# 6. References

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# Appendix A: Figures

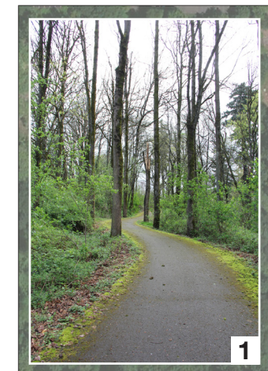


**PHOTO KEY**

1 Existing Mt Scott Creek Trail
2 Mt Scott Creek Trail Entrance on Oak Bluff Dr.
3 Ped/Bike Facilities on SE 84th Ave.
4 Jasmine Lane - Proposed Greenway
5 Existing Railroad/SE 82nd Ave. Underpass

SE 84TH AVE
SE 82ND AVE
SE SUNNYBROOK BLVD
SE 93RD AVE
To Transit Center
PHILLIPS CREEK
Costco
Formalize Trail Connection
Consider Stream Access for Public
Opportunity to Add Bike/Ped Wayfinding Signs
County Detention Ponds
SE JASMINE LN
SE 84TH AVE
OAK BLUFF DRIVE
Three Creeks Natural Area
Scottsco
MT SCOTT CREEK
Proposed Formalized Walking/Interpretive Trail
I-205 Regional Trail
I-205
Oregon Crime Lab
SE 84TH AVE
Precision Castparts
RAILROAD
Opportunity to Develop Trail Underpass with Retaining Wall and Safety Fence
FIG 2
FIG 3
N
0 125 250
Scale in Feet

FILE NAME: Fig01_ConceptualSitePlan-OverviewAndTrails.ai / CREATED BY: JAC / DATE LAST UPDATED: 05/15/13

SOURCE: ESA, 2013.

**LEGEND**

**RESTORATION ACTIONS**

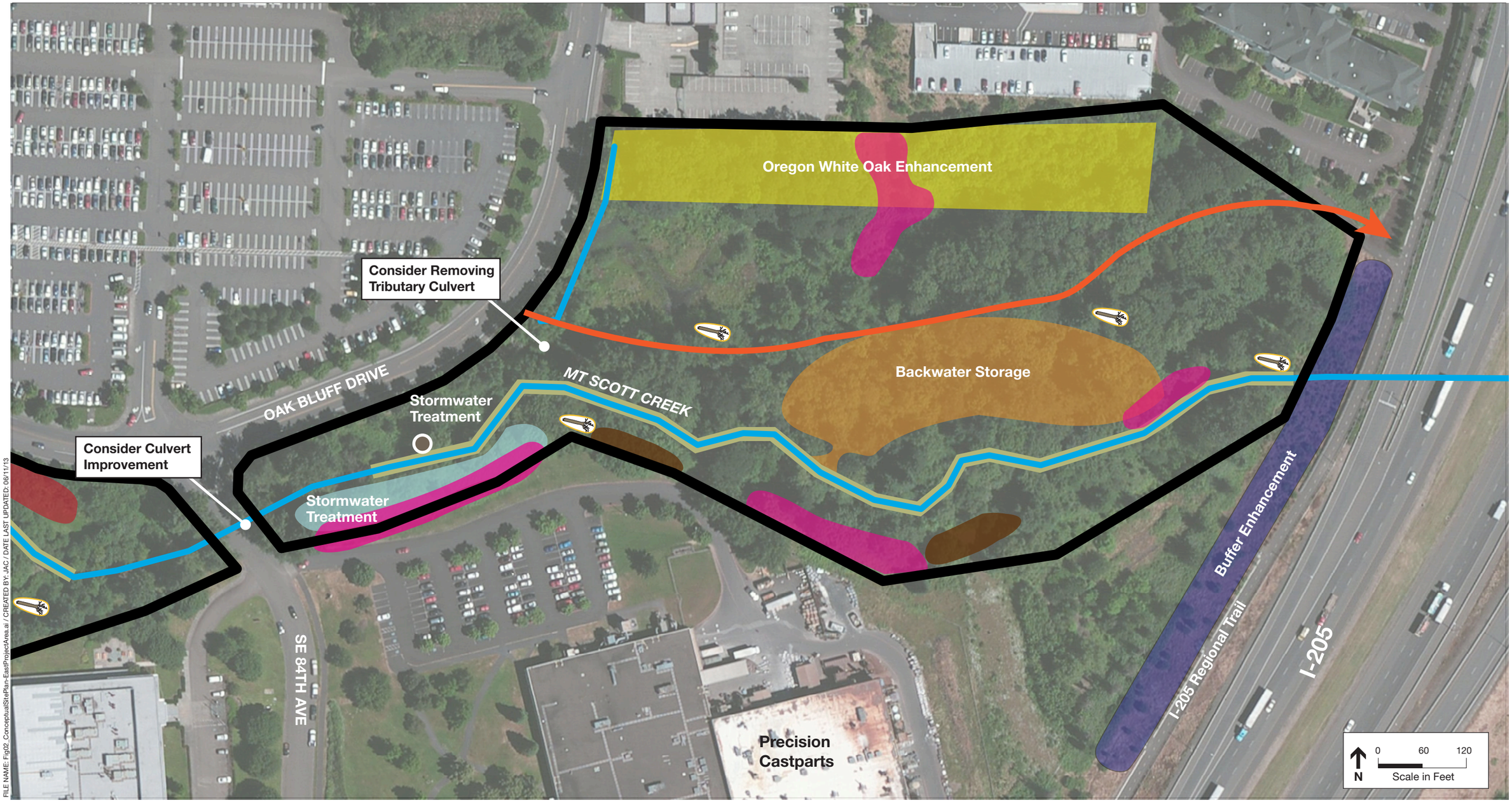
- Stabilize Cutbank
- Replace Himalayan Blackberry with Native Shrubs and Trees
- Install Livestakes in Wetlands to increase Habitat Complexity
- Install Large Downed Wood for Wildlife Habitat
- Increase Plant Density and Width of Riparian Buffer–Add Conifers such as Western Red Cedar
- Install LWD
- Install Wildlife Crossing Signs on Roadway
- Partner with ODOT to Enhance Buffer - Add Oaks and Madrone
- Backwater Storage
- Stormwater Treatment Opportunities
- Oregon White Oak Enhancement: Plant Oak Saplings and/or Thin Understory

**TRAILS**

- Existing Ped/Bike Facilities on Surface Streets
- Existing Regional Trail
- Existing Greenway Trail
- Proposed Greenway Trail
- Trail Opportunity
- Proposed Walking Trail
- Interpretive/Overlook Opportunity

Mt Scott Creek . 211369.04

**Figure 1**
Conceptual Site Plan - Overview and Trails
Clackamas County, Oregon




FILE NAME: Fig02_ConceptualSitePlan-EastProjectArea.ai / CREATED BY: JAC / DATE LAST UPDATED: 06/11/13

SOURCE: ESA, 2013.

**LEGEND**

**RESTORATION ACTIONS**

- Stabilize Cutbank
- Replace Himalayan Blackberry with Native Shrubs and Trees
- Partner with ODOT to Enhance Buffer - Add Oaks and Madrone
- Backwater Storage
- Stormwater Treatment Opportunities
- Oregon White Oak Enhancement: Plant Oak Saplings and/or Thin Understory
- Consider Opportunities for Sparse Vegetation to Provide Habitat for Amphibians and Reptiles
- Install LWD
- Existing Greenway Trail
- Install Large Downed Wood for Wildlife Habitat

Mt Scott Creek . 211369.04

**Figure 2**

Conceptual Site Plan - East Project Area
Clackamas County, Oregon

PHILLIPS CREEK
SE 82ND AVE
SE JASMINE LN
CCSD #1 Detention Ponds
Costco
SE 84TH AVE
Scottsco
Control English Ivy
Eradicate Japanese Knotweed
MT SCOTT CREEK
Stormwater Treatment
Oregon Crime Lab
SE 84TH AVE
Oregon White Oak Enhancement
Control Poison Hemlock
DEAN CREEK
N
0 60 120
Scale in Feet

FILE NAME: Fig03_ConceptSitePlan-WestProjectArea.ai / CREATED BY: JAC / DATE LAST UPDATED: 06/11/13

SOURCE: ESA, 2013.

**LEGEND**

**RESTORATION ACTIONS**

- Stabilize Cutbank
- Install Large Downed Wood for Wildlife Habitat
- Install LWD
- Increase Plant Density and Width of Riparian Buffer–Add Conifers such as Western Red Cedar
- Stormwater Treatment Opportunities
- Oregon White Oak Enhancement: Plant Oak Saplings and/or Thin Understory
- Install Livestakes in Wetlands to increase Habitat Complexity

Mt Scott Creek . 211369.04

**Figure 3**

Conceptual Site Plan - West Project Area
Clackamas County, Oregon

# Appendix B: Mt. Scott Creek Site Monitoring Protocols

# MT. SCOTT CREEK SITE MONITORING PROTOCOLS

The monitoring protocols presented in this appendix were selected specifically for the Mt. Scott Creek Site. They are intended to support the goals for the site and were developed so that they could be performed and produce accurate and reproducible quantitative data with little technical training.

# 1. LARGE WOOD MONITORING PROTOCOL

## TARGETS

Numerous studies have been conducted throughout the Pacific Northwest to quantify the amount of large wood in streams. In general, key pieces are defined as wood that is dynamically stable in the stream and provides habitat-forming functions such as creating scour pools or retaining sediment and smaller wood. The size of a key piece of large wood is dependent on stream channel size and power. For the purposes of this monitoring effort a key piece is considered to be equal or greater than 24 inches in average diameter and at least 30 feet long that is located at least partially within the active channel (Dominquez and Cedarholm 2000, Wing and Saugset 2002). This survey can be done in conjunction with the thalweg survey for efficiency and consistency in stream station.

## METHODS

Key pieces of large wood should be counted from upstream to downstream through the entire project area. A cloth tape should be set up at the downstream end of the I-205 culvert and stations established in the downstream direction for consistency; station 0+00 corresponds to the downstream end of the I-205 culvert on the upstream end of the project site. As the field crew walks downstream all key pieces of LWD should be recorded using the data sheet. In addition, the location of each key piece should be indicated on the site map.

## LARGE WOOD SURVEY SPECIFIC FIELD EQUIPMENT

In addition to personal gear and safety equipment, the following specific equipment is required for this monitoring protocol:

- 100 ft Cloth Tape
- Log Calipers or Loggers Tape (for easy diameter measurements)
- Site Map
- Data Sheet

## EXAMPLE DATA SHEET ELEMENTS

**Site:_____**

**Large Wood Field Data Sheet**

**Field Crew:** _____

**Date:** _____

**Definitions:**

Key Piece is greater than 24 in diameter
Key Piece is greater than 30 ft length

| Key Piece # | Profile Station | Diameter (inches) | Length (ft) | Species | Rootwad (Y/N) | Pool (Y/N) | Jam (Y/N | LB/RB |
|---|---|---|---|---|---|---|---|---|
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# 2. CROSS SECTION MONITORING PROTOCOL

## TARGETS

Instream habitat complexity can be measured by a variety of published methods (EPA 1999). However, many of these rely on staff with high levels of training and time intensive data analysis or have elements that are subjective and difficult to reproduce. Therefore, bankfull channel width at set cross sections will be used to represent habitat complexity. The bankfull and floodprone widths can be compared over the years; an increase in the width of the channel will indicate an increase in channel complexity. In addition, increasing variation in the channel morphology will also indicate an increase in channel complexity; and associated instream habitat.

For the purposes of this site and long-term on-going monitoring, entrenchment ratio will be used as an indicator of stream resiliency. Entrenchment ratio can be calculated from data collected during the cross section survey. An increase in entrenchment ratio indicates that the stream is highly connected to the floodplain and therefore likely more resilient to large flood events and changes in the hydrologic regime.

| Entrenchment Ratio | Description |
|---|---|
| < 1.4 | Entrenched |
| 1.4 to 2.2 | Moderately Entrenched |
| >2.2 | Slightly Entrenched |

Based on the existing data (ESA 2013), the channel is entrenched. To provide more opportunity for flow attenuation onsite and to reduce further incision, Mt. Scott Creek should be moderately to slightly entrenched throughout the site.

## METHODS

Standard stream survey methods should be used to survey the channel cross section. Cross sections should be established at each of the identified reaches. Cross section locations should be selected with a trained geomorphologist and located in riffles that are representative of the reach. These cross sections should be identified on a map and staked with metal fence posts. A bearing from each post and GPS coordinates should be documented in the event that a post cannot be located in the field. Project-specific benchmarks for vertical control should be established to allow for comparisons between monitoring efforts. The vertical benchmark should be a feature that is stable and easily found in the field. Examples include rebar with a cap or pre-cast cement footing. In addition, it may be possible to use the USGS gage station for vertical control or use Clackamas County survey crews to establish a benchmark at the site. This vertical control point should be the same as the control point established for the thalweg survey

Once the cross sections have been established a cloth tape should be strung between the metal fence posts with the 0+00 station located on the left bank. Relative elevations should then be measured going across

the section using a rod and an auto level. Key points to measure include the elevation of the water (water depth), the deepest part of the channel (thalweg), and the banks. The depths measured with the rod should be converted to a project datum and the cross section should be drawn to scale.

The floodprone width can be determined extending the elevation of 2 times the maximum bankfull depth to the point it intersects with the ground surface. The Entrenchment ratio can then be calculated by dividing the floodprone width by the bankfull width. The bankfull elevation can be identified in the field using indicators such as change in slope from steep banks to flat floodplain), change in vegetation (from gravel and sand to vegetation), and evidence of fine sediment deposition. Bankfull is the term used to describe the active channel and corresponds to the incipient point of flooding.

## CROSS SECTION SURVEY SPECIFIC FIELD EQUIPMENT

In addition to personal gear and safety equipment, the following specific equipment is required for this monitoring protocol:

- 200 ft Cloth Tape
- Rod and Auto Level
- Site Map
- Data Sheet
- Waders

## EXAMPLE DATA SHEET ELEMENTS

**Site:**
**Cross Section Survey Data Sheet**

**Field Crew:** _____
**Date:** _____
**Cross Section** _____

_____

**Definitions:**

BS: back site to the project site benchmark
HI: instrument height
FS: fore site measurement; rod reading for the cross section

| Station | BS | HI | FS | Water Depth | Notes |
|---|---|---|---|---|---|
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# 3. PEBBLE COUNTS

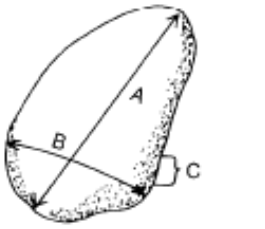
## TARGETS

Pebble counts are an established method for determining the coarse sediment composition of the bed surface. The Wolman pebble count is described in numerous publications, including the assumptions and limitations of this survey method. For purposes of this site and long-term monitoring, pebble counts are recommended at each cross section established for the Cross Section Monitoring Protocol. This method will only survey the riffles. There may be interest in also characterizing the pools throughout the site. This can be done by selecting a representative pool in each reach and establishing a long-term pebble count transect at these pools.

## METHODS

Starting at the active channel on one side of the stream, step forward into the channel perpendicular to flow. While looking away, place your index finger next to your big toe and select the first particle you touch. This is called the step-toe method, which is used to randomly select particles.

Measure the particle along the B-axis by determining the smallest hole the pebble fits through in the gravelometer and record the measurement (Figure 1). If a pebble is embedded or is too large to move, measure the shortest available axis.




A = LONGEST AXIS (LENGTH)
B = INTERMEDIATE AXIS (WIDTH)
C = SHORTEST AXIS (THICKNESS)

**Figure 1.** Pebble axes (Harrelson et al. 1994)

Continue the step-toe method moving across the active channel until reaching the opposite side. Take one small step upstream or downstream and repeat the transect. Continue this process until 100 particles are measured. Be careful to stay within the riffle.

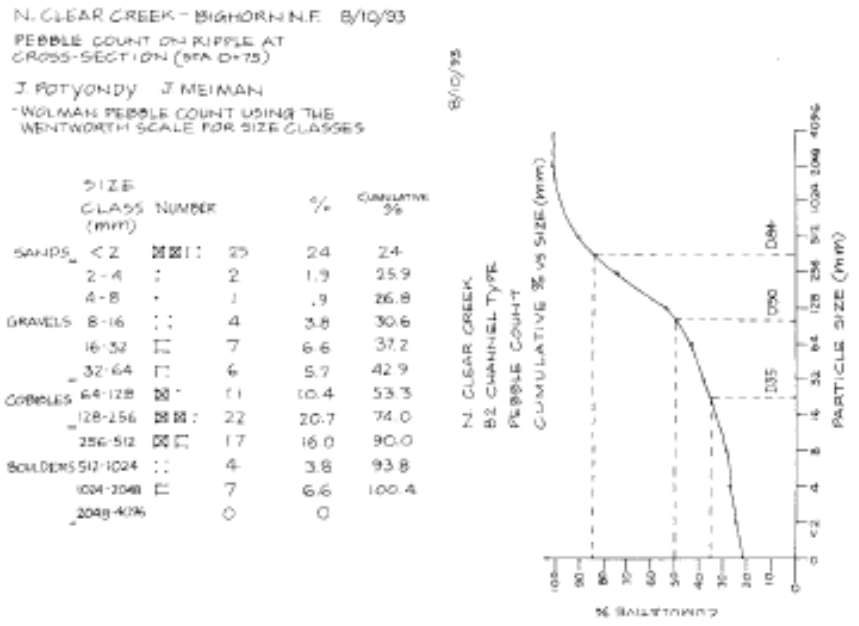
## PEBBLE COUNT SPECIFIC FIELD EQUIPMENT

In addition to personal gear and safety equipment, the following specific equipment is required for this monitoring protocol:

- Gravelometer (or metric ruler)
- Site Map
- Data Sheet
- Waders

## ANALYSIS

Plot data by particle size class (log scale) and frequency to determine particle size distribution (Figure 2). $D_{50}$ and percentages within each size class are the most commonly reported measures compared over time. $D_{50}$ is the particle size that 50% of the samples are smaller than or equal to.



N. CLEAR CREEK - BIGHORN N.F. 8/10/93
PEBBLE COUNT ON RIFFLE AT CROSS-SECTION (RFA D=75)
J. POTYONDY J. MEIMAN
"WOLMAN PEBBLE COUNT USING THE WENTWORTH SCALE FOR SIZE CLASSES

| | SIZE CLASS (mm) | NUMBER | | % | CUMULATIVE % |
|---|---|---|---|---|---|
| SANDS | < 2 | ⊠⊠⊡ | 25 | 24 | 24 |
| | 2 - 4 | ⁚ | 2 | 1.9 | 25.9 |
| | 4 - 8 | ∴ | 1 | .9 | 26.8 |
| GRAVELS | 8 - 16 | ⁚⁚ | 4 | 3.8 | 30.6 |
| | 16 - 32 | ⊡ | 7 | 6.6 | 37.2 |
| | 32 - 64 | ⊡⁚ | 6 | 5.7 | 42.9 |
| COBBLES | 64 - 128 | ⊠∴ | 11 | 10.4 | 53.3 |
| | 128 - 256 | ⊠⊠⁚ | 22 | 20.7 | 74.0 |
| | 256 - 512 | ⊠⊡ | 17 | 16.0 | 90.0 |
| BOULDERS | 512 - 1024 | ⁚⁚ | 4 | 3.8 | 93.8 |
| | 1024 - 2048 | ⊡ | 7 | 6.6 | 100.4 |
| | 2048 - 4096 | | 0 | 0 | |



**Figure 2.** Example of particle size distribution analysis method (Harrelson et al. 1994)

## EXAMPLE DATA SHEET ELEMENTS

**Site:**
**Cross Section Survey Data Sheet**

**Field Crew:** _____
**Date:** _____
**Cross Section** _____
_____

| Size classes | Size ranges (mm) | Tally |
|---|---|---|
| Silt and Sand | < 2 | |
| Fine gravel | 2 – 8 | |
| Medium gravel | 8.1 – 16 | |
| Coarse gravel | 16.1 – 32 | |
| Very coarse gravel | 32.1 – 64 | |
| Small cobbles | 64.1 – 90 | |
| Medium cobbles | 90.1 – 128 | |
| Large cobbles | 128.1 – 180 | |
| Very large cobbles | 180.1 – 256 | |
| Boulders | 256 – 1096 | |
| Bedrock | > 1096 | |
| Large wood, other | Leaves, sticks, wood | |

# 4. THALWEG SURVEY PROTOCOL

## TARGETS

The frequency and maximum pool depth for the project site can be determined using a thalweg survey. The thalweg survey will indicate trends in stream morphology complexity. The maximum pool depth and frequency of pools should increase as stream morphology becomes more complex. This survey can be done in conjunction with the large wood count for efficiency and consistency in stream station.

## METHODS

Standard stream survey methods should be used to survey the thalweg. In addition, project specific benchmarks for vertical control should be established to ensure that data collected in subsequent years is comparable. The vertical benchmark should be a feature that is stable and easily found in the field. Examples include rebar with a cap or pre-cast cement footing. In addition, it may be possible to use the USGS gage station for vertical control or use Clackamas County survey crews to establish a benchmark at the site. This vertical control point should be the same as the control point established for the cross section survey.

A cloth tape should be used to measure the stream station, with the 0+00 station located at the downstream end of the project site. The tape should generally follow the centerline of the channel. Relative elevations should then be measured using a rod and an auto level. Key points to measure include the elevation (depth) of the water and the deepest part of the channel and should be spaced approximately 2 to 10 feet apart to capture geomorphic features such as pools and riffles. The depths measured with the rod should be converted to a project datum and the cross section should be drawn to scale.

## THALWEG SURVEY SPECIFIC FIELD EQUIPMENT

In addition to personal gear and safety equipment, the following specific equipment is required for this monitoring protocol:

- 200 ft Cloth Tape
- Rod and Auto Level
- Site Map
- clamps
- Data Sheet/pencil
- Waders

## EXAMPLE DATA SHEET ELEMENTS

**Site:**
**Thalweg Section Survey Data Sheet**

**Field Crew:** _____
**Date:** _____

_____

**Definitions:**

BS: back site to the project site benchmark
HI: instrument height
FS: fore site measurement; rod reading for the thalweg

| Station | BS | HI | FS | Water Depth | Notes |
|---|---|---|---|---|---|
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# 5. POOL QUALITY INDEX PROTOCOL

## TARGETS

The quality of pools can be estimated using the PQI methodology (King County 2000; modified from Platts et al. 1983). This method is based on visual and quantitative measure of pools that assigns pool quality a numerical score. An increase in the average PQI for the reach would indicate that pool habitat quality is improving within the project reach.

## METHODS

The Pool Quality Index (PQI) was develop for rapid assessment of Puget Sound Lowland Streams, but is applicable to Mt. Scott Creek because similar geomorphic processes exist. The field crew should proceed from the downstream end of the project site to the upstream end. Each pool encounter should be scored according the PQI methods before moving to the next pool. In addition, the station of each pool should be noted on the data sheet.

Note: over conditions include large wood, over-hanging vegetation, and undercut streambanks

## PQI SURVEY SPECIFIC FIELD EQUIPMENT

In addition to personal gear and safety equipment, the following specific equipment is required for this monitoring protocol:

- 200 ft Cloth Tape
- Rod
- Site Map
- Waders
- Data Sheet/pencil

## EXAMPLE DATA SHEET ELEMENTS

**Site:_____**

**Pool Quality Data Sheet**

**Field Crew:** _____

**Date:** _____

_____

**Definitions:**

Excellent Cover (TBD)
Good Cover (TBD)
Poor Cover (TBD)

| Station | Pool Score | Pool Depth (ft) | % Channel Width | Cover Quality | Notes |
|---|---|---|---|---|---|
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# 6. EXISTING NATIVE VEGETATION MONITORING PROTOCOL

## TARGETS

A goal for this site is to maintain the existing native plant communities on the site. This will require 1) protecting the existing native vegetation, and 2) encouraging recruitment of additional native plants through natural regeneration.

Ideally the monitoring results will help determine if changes to the vegetation protection/promotion approach should be made and possibly what those changes should be.

## METHODS

In order to measure the effectiveness of the protection measures, the following steps would be required:

1) Measure how well protection measures are working

    - Conduct an inventory to create baseline. From this will come species list, areal extent of each plant community, photos, map of large trees and understory shrubs
    - 0Return once per year and +/- repeat inventory procedure
    - Compare yearly results—is area shrinking, expanding, staying the same

2) Measure opportunities for recruitment/regeneration and success

    - Using plant list obtained during baseline inventory above, conduct baseline inventory of seedlings of plants on list
    - Record presence of non-native invasive species
    - Map the locations of these and take photos
    - Repeat the inventory yearly

## SURVEY SPECIFIC FIELD EQUIPMENT

In addition to personal gear and safety equipment, the following specific equipment is required for this monitoring protocol:

- Plant List
- High-resolution aerial photo of site
- Site Map
- Camera
- Data Sheet/pencil

## EXAMPLE RIPARIAN HABITAT ENHANCEMENT DATA SHEET

| |
|---|
| **Site Name:** |
| **Field Crew:** |
| **Date:** |

**Definitions:**

**Vigor Classes:**
**1= thrive** Evidence of vigorous growth includes: new green leaders, flowers, developing fruits, sign of last year's fruits, etc.
**2= alive** No evidence of above, but plant is green and has no apparent signs of damage or stress.
**3= stressed** Plant color poor, withering leaves, desiccated leaders.
**4= dead** No sign of life.

**Intercept:** distance along tape measure that corresponds to center of plant

| **Plant Species** | **Intercept (cm)** | **Diameter (cm)** | Height (cm) | Stem count | **Vigor Class (1-4)** |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |

# 7. INVASIVE SPECIES MONITORING PROTOCOL

## TARGETS

Invasive species monitoring could accomplish at least two objectives at the Mt. Scott Creek site, including determining if an existing infestation area is increasing or decreasing in size, and detecting new infestations. For either objective an initial inventory of existing invasive species would be conducted in the survey area. The inventory information would serve as a baseline against which the results of subsequent repeated monitoring efforts could be compared.

## METHODS

Field crew should determine the study area prior to conducting the inventory/monitoring effort. Outline the weed infestation on an aerial photo. Measure the extent of the infestation in the field with a tape if feasible; otherwise visually estimate size of infestation. Install lath stakes at outer extent of the infestation area and photograph the stakes. Note relative density of plants, vigor, and presence of recruits. During return visits to the infestation site, note extent of infestation in comparison to stake location.

If more detailed data is desired, information can be collected using a belt transect sampling methodology described below for Riparian Enhancement Monitoring. Transect monitoring will provide information about the location and size of individual plants or colonies of plants that can be tracked over time.

## INVASIVE PLANT SURVEY SPECIFIC FIELD EQUIPMENT

In addition to personal gear and safety equipment, the following specific equipment is required for this monitoring protocol:

- 200 ft Cloth Tape
- Camera
- Site Map
- High-resolution aerial photo
- Data Sheet/pencil

## ANALYSIS

Information collected about weed infestations can be used to determine whether current invasive control methods are working or if additional control methods need to be implemented.

## EXAMPLE DATA SHEET ELEMENTS

**Mt. Scott Creek Confluence Site**
**Invasive Plant Species Survey Data Sheet**

**Field Crew:** _____
**Date:** _____
_____

**Definitions:**

Infestation area: area occupied by invasive species which can be outlined on an aerial photo

| **Infestation Area ID:** | Infestation Area Size (sq ft): | |
|---|---|---|
| **Invasive Plant Species** | **% of infestation area occupied by species** | **Notes** |
| | | |
| | | |
| **Infestation Area ID:** | Infestation Area Size (sq ft): | |
| **Invasive Plant Species** | **% of infestation area occupied by species** | **Notes** |
| | | |
| | | |

# 8. OREGON WHITE OAK RESTORATION MONITORING PROTOCOL

## TARGETS

Maintaining and improving existing oak habitat, and expanding the extent of oak habitat on the northeast end of Mt. Scott Creek are goals that have been established for the Mt. Scott Creek site. It will be necessary to conduct an initial inventory of site conditions before implementing any restoration or enhancement efforts. The baseline information will be used to determine species to be removed, species to be planted, and other management activities that might be required in order to maintain or establish additional oak habitat.

## METHODS

Once management projects have been initiated, yearly monitoring should be conducted. Since the sites are small, conducting an annual inventory of plants and site conditions is recommended.

Trees: Individual trees should be counted, and for each tree the following information should be collected: estimated height, diameter at breast height, health/vigor, and whether or not the individual tree (conifers or oaks in poor health) should be considered for thinning/removal.

Shrubs and Herbs: A list of all observed shrubs and herbaceous species should be compiled. For each species estimate and record the percentage of the entire site that the species occupies.

In addition to collecting data, individuals conducting the monitoring can also identify with colored flags individual plants that should be removed.

# EXAMPLE OREGON WHITE OAK HABITAT SURVEY DATA SHEET

**Field Crew:** _____

**Date:** _____

**Definitions:**

**1= thrive** Evidence of vigorous growth includes: new green leaders, flowers, developing fruits, sign of last year's fruits, etc.
**2= alive** No evidence of above, but plant is green and has no apparent signs of damage or stress.
**3= stressed** Plant color poor, withering leaves, desiccated leaders.
**4= dead** No sign of life.

| Tree Species | Diameter at breast height (dbh) | Remove ? | Notes |
|---|---|---|---|
| | | | |
| | | | |
| **Herb/Shrub Species** | **Diameter at 10 cm** | **Remove ?** | **Notes:** |
| | | | |
| | | | |
| | | | |

# 9. RIPARIAN HABITAT ENHANCEMENT MONITORING PROTOCOL

## TARGETS

An initial post-enhancement assessment followed by regular monitoring will need to be conducted in order to determine whether or not riparian habitat enhancement efforts are succeeding. Permanent monitoring transects can be established prior to beginning enhancement efforts or immediately following plant installation. The primary goal of monitoring would be to determine if enhancement efforts have been successful and have improved habitat quality and quantity, or if the efforts have not been successful and corrective actions are needed.

## METHODS

Set-up: Establish a permanent baseline parallel to the stream channel using a 200-meter measuring tape. Establish a series of permanent monitoring transects perpendicular to the baseline. The monitoring transects should be located to cross a variety of vegetation communities if possible, in order to obtain a good representation of the enhancement site. Mark the endpoints of the transects with metal stakes and colored flagging to assist subsequent monitoring teams in finding the transects. If the transects are longer than 10 meters, install additional metal posts between the endpoints. Record the distance along the baseline and compass direction for each transect location and record this.

Sampling: Stretch a 50-meter tape along each transect and conduct 2-meter wide belt transect sampling starting from the baseline. Extend a measuring rod or 2m rule and center over the measuring tape, so that the rod extends a meter to each side of the tape. Walk along tape and count and record species of each plant that occurs within one meter on either side of the tape. In the **Vigor** section of the data sheet, record the vigor class whether the plant is thriving, alive, stressed, or dead using the following codes: **1= thrive** Evidence of vigorous growth includes: new green leaders, flowers, developing fruits, sign of last year's fruits, etc. **2= alive** No evidence of above, but plant is green and has no apparent signs of damage or stress. **3= stressed** Plant color poor, withering leaves, desiccated leaders. **4= dead** No sign of life. Scratch bark to check for green cambium layer.

Record the distance on the tape (intercept) where the center of a plant is located, and record plant diameter and height as well as the number of stems arising from the ground.

For shrubs and tree seedlings/saplings (< 2 m), measure diameter 10 cm above the ground. If it is a multiple stemmed shrub, record the diameter of the thickest stem and the total number of stems emerging out of the ground. Tree saplings (trees less than 2 m tall) should be measured like shrubs - diameter 10 cm above ground. Trees greater than 2 m tall are measured as a tree. Diameter is recorded as "diameter at breast height" or **dbh**. Breast height is considered to be 4.5 ft above ground. Tree diameters are measured using a diameter tape, which gives a diameter when you measure circumference.

## SURVEY SPECIFIC FIELD EQUIPMENT

- 200-meter cloth measuring tape
- Diameter (dbh) tape if measuring trees
- Metal stakes, colored flagging, and permanent marker to mark permanent transects
- 2-foot long measuring rod
- Camera
- Data sheet/pencil

## ANALYSIS

Compare data from year to year to track the vigor and growth of plants.

## EXAMPLE RIPARIAN HABITAT ENHANCEMENT DATA SHEET

| |
|---|
| **Site Name:** |
| **Field Crew:** |
| **Date:** |

**Definitions:**

**Vigor Classes:**
**1= thrive** Evidence of vigorous growth includes: new green leaders, flowers, developing fruits, sign of last year's fruits, etc.
**2= alive** No evidence of above, but plant is green and has no apparent signs of damage or stress.
**3= stressed** Plant color poor, withering leaves, desiccated leaders.
**4= dead** No sign of life.

**Intercept:** distance along tape measure that corresponds to center of plant

| **Plant Species** | **Intercept (cm)** | **Diameter (cm)** | Height (cm) | Stem count | **Vigor Class (1-4)** |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |

# 10. WILDLIFE HABITAT MONITORING PROTOCOL

## TARGETS

Brush piles and downed wood may be placed in the upland mixed coniferous/deciduous forest and/or riparian zone adjacent to Mt. Scott Creek to provide wildlife habitat, promote soil development, and provide for micro-organisms. Downed wood placed in or near backwater or ponded water can be monitored for basking turtles. The goal of monitoring these structures would be to determine if they have persisted and if replacement or additional structures should be installed if the overall number and condition of the installed structures decreases.

## METHODS

Conduct an initial inventory of habitat structures following installation. Identify each structure on a site map. And prepare a brief description of each structure. In subsequent years revisit each structure to photograph the structures, note whether or not each still exists, and the condition of the structure if it does still exist.

## WILDLIFE HABITAT STRUCTURE SURVEY SPECIFIC FIELD EQUIPMENT

In addition to personal gear and safety equipment, the following specific equipment is required for this monitoring protocol:

- Site Map
- Camera and binoculars
- waders
- Data Sheet/pencil

## ANALYSIS

Compare data year to year to determine if replacement brush piles or additional wood is needed.

## EXAMPLE WILDLIFE HABITAT SURVEY DATA SHEET

| | |
|---|---|
| **Site Name:** | |
| **Field Crew:** | |
| **Date:** | |

| Feature ID | Present? y/n | Condition | Notes |
|---|---|---|---|
| | | | |
| | | | |
| | | | |

# 11. AMPHIBIAN BREEDING HABITAT MONITORING PROTOCOL

## TARGET SPECIES AND HABITATS

Documenting the use of seasonal/permanent lentic (non-flowing) pools by native amphibians will aid in informing habitat enhancement activities. Target species include the red-legged frog (native, sensitive-vulnerable), Pacific chorus frog (native), long-toed salamander (native), bullfrog (invasive), and the rough-skinned newt (native, prevalent). Ponded water in the early spring provides breeding habitat for a number of native amphibians, some of which are declining in Oregon. Coordinating with ODFW regarding timing and methods is recommended.

## METHODS

Metro has developed a straight-forward protocol for egg mass surveys (Metro 2013). The survey relies on systematically wading through ponded areas and visually inspecting the area for jelly-like egg masses which may be floating in the water or attached to vegetation. Egg mass and tadpole surveys should be conducted in late winter (February) to early spring (April). At least three site visits are recommended to account for variation in the breeding cycles of different species. Resources for identifying egg masses and/or tadpoles include *Amphibians of Oregon* (Corkran and Thoms, 2006).

## AMPHIBIAN SURVEY SPECIFIC FIELD EQUIPMENT

In addition to personal gear and safety equipment, the following specific equipment is required for this monitoring protocol:

- Site Map
- Waders and dip nets
- Data Sheet/pencil

## ANALYSIS

Determine presence/absence of native amphibians to inform habitat restoration activities.

## EXAMPLE AMPHIBIAN BREEDING HABITAT SURVEY DATA SHEET

| | | | |
|---|---|---|---|
| **Site Name:** | | | |
| **Field Crew:** | | | |
| **Date:** | | | |
| **Feature ID (egg mass or tadpole)** | **Present? y/n** | **Condition** | **Notes** |
| | | | |
| | | | |
| | | | |

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***SAMPLE***

**PERSONAL/PROFESSIONAL SERVICES CONTRACT**

This Personal/Professional Services Contract (this "Contract") is entered into between XXXX ("Contractor"), and Clackamas County Service District No. 1, a political subdivision of the State of Oregon ("District").

**ARTICLE I.**

**1. Effective Date and Duration.** This Contract shall become effective upon signature of both parties. Unless earlier terminated or extended, this Contract shall expire on December 31, 2018. However, such expiration shall not extinguish or prejudice the District's right to enforce this Contract with respect to: (a) any breach of a Contractor warranty; or (b) any default or defect in Contractor performance that has not been cured.

**2. Scope of Work.** Contractor will provide the following personal/professional services: Mt. Scott Creek-Oak Bluff Reach Water Resource Engineering Services ("Work"), further described in **Exhibit A.**

**3. Consideration.** The District agrees to pay Contractor, from available and authorized funds, a sum not to exceed $ , for accomplishing the Work required by this Contract. If any interim payments to Contractor are made, such payments shall be made only in accordance with the schedule and requirements in Exhibit A.

**4. Travel and Other Expense.** Authorized: ☐ Yes ☐ No

If travel expense reimbursement is authorized in this Contract, such expense shall only be reimbursed at the rates in the Clackamas County Contractor Travel Reimbursement Policy, hereby incorporated by reference and found at: http://www.clackamas.us/bids/terms.html. Travel expense reimbursement is not in excess of the not to exceed consideration.

**5. Contract Documents.** This Contract consists of the following documents which are listed in descending order of precedence and are attached and incorporated by reference, this Contract, Exhibits A, B, C, D, and E.

**6. Contractor Data.**

**Address:**
**Contractor Contract Administrator:**
**Phone No.:**
**Email:**
**MWESB Certification:** ☐ DBE # ☐ MBE # ☐ WBE # ☐ ESB #

Payment information will be reported to the Internal Revenue Service ("IRS") under the name and taxpayer ID number submitted. (See I.R.S. 1099 for additional instructions regarding taxpayer ID numbers.) Information not matching IRS records could subject Contractor to backup withholding.

**ARTICLE II.**

1. **ACCESS TO RECORDS.** Contractor shall maintain books, records, documents, and other evidence and accounting procedures and practices sufficient to reflect properly all costs of whatever nature claimed to have been incurred and anticipated to be incurred in the performance of this Contract. District and their duly authorized representatives shall have access to the books, documents, papers, and records of Contractor which are directly pertinent to this Contract for the purpose of making audit, examination, excerpts, and transcripts. Such books and records shall be maintained by Contractor for a minimum of three (3) years, or such longer period as may be required by applicable law, following final payment and termination of this Contract, or until the conclusion of any audit, controversy or litigation arising out of or related to this Contract, whichever date is later.

2. **AVAILABILITY OF FUNDS.** District certifies that sufficient funds are available and authorized for expenditure to finance costs of this Contract within its current annual appropriation or expenditure limitation, provided, however, that continuation of this Contract, or any extension, after the end of the fiscal period in which it is written, is contingent on a new appropriation or limitation for each succeeding fiscal period sufficient in amount, in the exercise of the District's reasonable administrative discretion, to continue to make payments under this Contract.

3. **CAPTIONS.** The captions or headings in this Contract are for convenience only and in no way define, limit, or describe the scope or intent of any provisions of this Contract.

4. **COMPLIANCE WITH APPLICABLE LAW.** Contractor shall comply with all federal, state, county, and local laws, ordinances, and regulations applicable to the Work to be done under this Contract. Contractor specifically agrees to comply with all applicable requirements of federal and state civil rights and rehabilitation statutes, rules, and regulations. Contractor shall also comply with the Americans with Disabilities Act of 1990 (Pub. L. No. 101-336), Title VI of the Civil Rights Act of 1964, Section V of the Rehabilitation Act of 1973, ORS 659A.142, and all regulations and administrative rules established pursuant to those laws. Contractor further agrees to make payments promptly when due, to all persons supplying to such Contractor, labor or materials for the prosecution of the Work provided in this Contract; pay all contributions or amounts due the Industrial Accident Funds from such Contractor responsibilities incurred in the performance of this Contract; not permit any lien or claim to be filed or prosecuted against the District on account of any labor or material furnished; pay to the Department of Revenue all sums withheld from employees pursuant to ORS 316.167. If Contractor fails or refuses to make any such payments required herein, the appropriate District official may pay such claim. Any payment of a claim in the manner authorized in this section shall not relieve the Contractor or Contractor's surety from obligation with respect to unpaid claims. Contractor shall promptly pay any person or entity that furnishes medical care to Contractor's employees those sums which Contractor agreed to pay for such services and all money Contractor collected or deducted from employee's wages to provide such services.

5. **EXECUTION AND COUNTERPARTS.** This Contract may be executed in several counterparts, each of which shall be an original, all of which shall constitute but one and the same instrument.

6. **GOVERNING LAW.** This Contract shall be governed and construed in accordance with the laws of the State of Oregon without regard to principles of conflicts of law. Any claim, action, or suit between District and Contractor that arises out of or relates to the performance of this Contract shall be brought and conducted solely and exclusively within the Circuit Court for Clackamas County, for the State of Oregon. Provided, however, that if any such claim, action, or suit may be brought in a federal forum, it shall be brought and conducted solely and exclusively within the United States District Court for the District of Oregon.

7. **HAZARD COMMUNICATION.** Contractor shall notify District prior to using products containing hazardous chemicals to which District employees may be exposed. Products containing hazardous chemicals are those products defined by Oregon Administrative Rules, Chapter 437. Upon District's request, Contractor shall immediately provide Material Safety Data Sheets for the products subject to this provision.

8. **INDEMNITY, RESPONSIBILITY FOR DAMAGES.** Contractor shall be responsible for all damage to property, injury to persons, and loss, expense, inconvenience, and delay which may be caused by, or result from, the conduct of Work, or from any act, omission, or neglect of Contractor, its subcontractors, agents, or employees. The Contractor agrees to indemnify, hold harmless and defend the District and Clackamas County, and their officers, elected officials, agents and employees from and against all claims and actions, and all expenses incidental to the investigation and defense thereof, arising out of or based upon damage or injuries to persons or property caused by the errors, omissions, fault or negligence of the Contractor or the Contractor's employees, subcontractors, or agents.

9. **INDEPENDENT CONTRACTOR STATUS.** The service(s) to be rendered under this Contract are those of an independent contractor. Although the District reserves the right to determine (and modify) the delivery schedule for the Work to be performed and to evaluate the quality of the completed performance, District cannot and will not control the means or manner of Contractor's performance. Contractor is responsible for determining the appropriate means and manner of performing the Work. Contractor is not to be considered an agent or employee of District for any purpose, including, but not limited to: (A) The Contractor will be solely responsible for payment of any Federal or State taxes required as a result of this Contract; (B) This Contract is not intended to entitle the Contractor to any benefits generally granted to District employees, including, but not limited to, vacation, holiday and sick leave, other leaves with pay, tenure, medical and dental coverage, life and disability insurance, overtime, Social Security, Workers' Compensation, unemployment compensation, or retirement benefits (except insofar as benefits are otherwise required by law if the Contractor is presently a member of the Oregon Public Employees Retirement System); and (C) If the Contractor has the assistance of other persons in the performance of this Contract, and the Contractor is a subject employer, the Contractor shall qualify and remain qualified for the term of this Contract as an insured employer under ORS Chapter 656. (Also see Exhibit C)

   At present, the Contractor certifies that he or she, if an individual is not a program, District or Federal employee. The Contractor, if an individual, certifies that he or she is not a member of the Oregon Public Employees Retirement System.

10. **INSURANCE.** Contractor shall provide insurance as indicated on **Exhibit B**, attached hereto and by this reference made a part hereof. Insurance policies, which cannot be excess to a self-insurance program, are to be issued by an insurance company authorized to do business in the State of Oregon.

11. **LIMITATION OF LIABILITIES.** Except for liability arising under or related to Section 14 or 21(B), neither party shall be liable for (i) any indirect, incidental, consequential or special damages under this Contract or (ii) any damages of any sort arising solely from the termination of this Contact in accordance with its terms. This Contract is expressly subject to the debt limitation of Oregon counties set forth in Article XI, Section 10, of the Oregon Constitution, and is contingent upon funds being appropriated therefore. Any provisions herein which would conflict with law are deemed inoperative to that extent.

12. **NOTICES.** Except as otherwise expressly provided in this Contract, any communications between the parties hereto or notices to be given hereunder shall be given in writing by personal

delivery, email, or mailing the same, postage prepaid, to the District at: Clackamas County Procurement, 2051 Kaen Road, Oregon City, OR 97045, or procurement@clackamas.us, or to Contractor or at the address or number set forth in Section 1 of this Contract, or to such other addresses or numbers as either party may hereafter indicate. Any communication or notice so addressed and mailed shall be deemed to be given five (5) days after mailing. Any communication or notice by personal delivery shall be deemed to be given when actually delivered.

13. **OWNERSHIP OF WORK PRODUCT.** All work product of Contractor that results from this Contract (the "Work Product") is the exclusive property of District. District and Contractor intend that such Work Product be deemed "work made for hire" of which District shall be deemed the author. If for any reason the Work Product is not deemed "work made for hire," Contractor hereby irrevocably assigns to District all of its right, title, and interest in and to any and all of the Work Product, whether arising from copyright, patent, trademark or trade secret, or any other state or federal intellectual property law or doctrine. Contractor shall execute such further documents and instruments as District may reasonably request in order to fully vest such rights in District. Contractor forever waives any and all rights relating to the Work Product, including without limitation, any and all rights arising under 17 USC § 106A or any other rights of identification of authorship or rights of approval, restriction or limitation on use or subsequent modifications.

14. **REPRESENTATIONS AND WARRANTIES.** Contractor represents and warrants to District that (A) Contractor has the power and authority to enter into and perform this Contract; (B) this Contract, when executed and delivered, shall be a valid and binding obligation of Contractor enforceable in accordance with its terms; (C) the Work under this Contract shall be performed in a good and workmanlike manner and in accordance with the highest professional standards; and (D) Contractor shall at all times during the term of this Contract, be qualified, professionally competent, and duly licensed to perform the Work. The warranties set forth in this section are in addition to, and not in lieu of, any other warranties provided.

15. **SURVIVAL.** All rights and obligations shall cease upon termination or expiration of this Contract, except for the rights and obligations set forth in Article II, Paragraphs 1, 6, 8, 11, 13, 14, 15, and 21.

16. **SEVERABILITY** If any term or provision of this Contract is declared by a court of competent jurisdiction to be illegal or in conflict with any law, the validity of the remaining terms and provisions shall not be affected, and the rights and obligations of the parties shall be construed and enforced as if the Contract did not contain the particular term or provision held to be invalid.

17. **SUBCONTRACTS AND ASSIGNMENTS.** Contractor shall not enter into any subcontracts for any of the Work required by this Contract, or assign or transfer any of its interest in this Contract by operation of law or otherwise, without obtaining prior written approval from the District. In addition to any provisions the District may require, Contractor shall include in any permitted subcontract under this Contract a requirement that the subcontractor be bound by this Article II, Paragraphs 1, 8, 13, 15, and 27 as if the subcontractor were the Contractor. District's consent to any subcontract shall not relieve Contractor of any of its duties or obligations under this Contract.

18. **SUCCESSORS IN INTEREST.** The provisions of this Contract shall be binding upon and shall inure to the benefit of the parties hereto, and their respective authorized successors and assigns.

19. **TAX COMPLIANCE CERTIFICATION.** Contractor must, throughout the duration of this Contract and any extensions, comply with all tax laws of this state and all applicable tax laws of any political subdivision of this state. Any violation of this section shall constitute a material breach of

this Contract. Further, any violation of Contractor's warranty in this Contract that Contractor has complied with the tax laws of this state and the applicable tax laws of any political subdivision of this state also shall constitute a material breach of this Contract. Any violation shall entitle District to terminate this Contract, to pursue and recover any and all damages that arise from the breach and the termination of this Contract, and to pursue any or all of the remedies available under this Contract, at law, or in equity, including but not limited to: (A) Termination of this Contract, in whole or in part; (B) Exercise of the right of setoff, and withholding of amounts otherwise due and owing to Contractor, in an amount equal to District's setoff right, without penalty; and (C) Initiation of an action or proceeding for damages, specific performance, declaratory or injunctive relief. District shall be entitled to recover any and all damages suffered as the result of Contractor's breach of this Contract, including but not limited to direct, indirect, incidental and consequential damages, costs of cure, and costs incurred in securing replacement performance. These remedies are cumulative to the extent the remedies are not inconsistent, and District may pursue any remedy or remedies singly, collectively, successively, or in any order whatsoever.

The Contractor represents and warrants that, for a period of no fewer than six calendar years preceding the effective date of this Contract, Contractor has faithfully complied with: (A) All tax laws of this state, including but not limited to ORS 305.620 and ORS Chapters 316, 317, and 318; (B) Any tax provisions imposed by a political subdivision of this state that applied to Contractor, to Contractor's property, operations, receipts, or income, or to Contractor's performance of or compensation for any Work performed by Contractor; (C) Any tax provisions imposed by a political subdivision of this state that applied to Contractor, or to goods, services, or property, whether tangible or intangible, provided by Contractor; and (D) Any rules, regulations, charter provisions, or ordinances that implemented or enforced any of the foregoing tax laws or provisions.

**20. TERMINATIONS.** This Contract may be terminated for the following reasons: (A) This Contract may be terminated at any time by mutual consent of the parties, or by the District for convenience upon thirty (30) days' written notice to the Contractor; (B) District may terminate this Contract effective upon delivery of notice to Contractor, or at such later date as may be established by the District, if (i) federal or state laws, rules, regulations, or guidelines are modified, changed, or interpreted in such a way that either the Work under this Contract is prohibited or the District is prohibited from paying for such Work from the planned funding source; or (ii) any license or certificate required by law or regulation to be held by the Contractor to provide the services required by this Contract is for any reason denied, revoked, or not renewed; (C) This Contract may also be immediately terminated by the District for default (including breach of Contract) if (i) Contractor fails to provide services or materials called for by this Contract within the time specified herein or any extension thereof; or (ii) Contractor fails to perform any of the other provisions of this Contract or so fails to pursue the Work as to endanger performance of this Contract in accordance with its terms, and after receipt of notice from the District, fails to correct such failure within ten (10) business days; or (D) If sufficient funds are not provided in future approved budgets of the District (or from applicable federal, state, or other sources) to permit the District in the exercise of its reasonable administrative discretion to continue this Contract, or if the program for which this Contract was executed is abolished, District may terminate this Contract without further liability by giving Contractor not less than thirty (30) days' notice.

**21. REMEDIES.** (A) In the event of termination pursuant to Article II Section 20(A), (B)(i), or (D), Contractor's sole remedy shall be a claim for the sum designated for accomplishing the Work multiplied by the percentage of Work completed and accepted by the District, less previous amounts paid and any claim(s) which the District has against Contractor. If previous amounts paid to Contractor exceed the amount due to Contractor under Section 21(A), Contractor shall pay any excess to District on demand. (B) In the event of termination pursuant to Sections

20(B)(ii) or 20(C), the District shall have any remedy available to it in law or equity. If it is determined for any reason that Contractor was not in default under Sections 20(B)(ii) or 20(C), the rights and obligations of the parties shall be the same as if the Contract was terminated pursuant to Section 20(A). (C) Upon receiving a notice of termination of this Contract, Contractor shall immediately cease all activities under this Contract, unless District expressly directs otherwise in such notice of termination. Upon termination of this Contract, Contractor shall deliver to District all documents, information, works-in-progress and other property that are or would be deliverables had the Contract Work been completed. Upon District's request, Contractor shall surrender to anyone District designates, all documents, research, objects or other tangible things needed to complete the Work.

22. **NO THIRD PARTY BENEFICIARIES.** District and Contractor are the only parties to this Contract and are the only parties entitled to enforce its terms. Nothing in this Contract gives, is intended to give, or shall be construed to give or provide any benefit or right, whether directly, indirectly or otherwise, to third persons unless such third persons are individually identified by name herein and expressly described as intended beneficiaries of the terms of this Contract.

23. **TIME IS OF THE ESSENCE.** Contractor agrees that time is of the essence in the performance this Contract.

24. **FOREIGN CONTRACTOR.** If the Contractor is not domiciled in or registered to do business in the State of Oregon, Contractor shall promptly provide to the Oregon Department of Revenue and the Secretary of State, Corporate Division, all information required by those agencies relative to this Contract. The Contractor shall demonstrate its legal capacity to perform these services in the State of Oregon prior to entering into this Contract.

25. **FORCE MAJEURE.** Neither District nor Contractor shall be held responsible for delay or default caused by fire, terrorism, riot, acts of God, or war where such cause was beyond, respectively, District's or Contractor's reasonable control. Contractor shall, however, make all reasonable efforts to remove or eliminate such a cause of delay or default and shall upon the cessation of the cause, diligently pursue performance of its obligations under this Contract.

26. **WAIVER.** The failure of District to enforce any provision of this Contract shall not constitute a waiver by District of that or any other provision.

27. **COMPLIANCE.** Pursuant to the requirements of ORS 279B.020 and 279B.220 through 279B.235 and Article XI, Section 10, of the Oregon Constitution, the following terms and conditions are made a part of this Contract:
(A) Contractor shall: (i) Make payments promptly, as due, to all persons supplying to the Contractor labor or materials for the prosecution of the Work provided for in this Contract; (ii) Pay all contributions or amounts due the Industrial Accident Fund from such Contractor or subcontractor incurred in the performance of this Contract; (iii) Not permit any lien or claim to be filed or prosecuted against the District on account of any labor or material furnished.
(B) If the Contractor fails, neglects or refuses to make prompt payment of any claim for labor or services furnished to the Contractor or a subcontractor by any person in connection with this Contract as such claim becomes due, the proper officer representing the District may pay such claim to the person furnishing the labor or services and charge the amount of the payment against funds due or to become due to the Contractor by reason of this Contract.
(C) The Contractor shall pay employees for Work in accordance with ORS 279B.020 and ORS 279B.235, which is incorporated herein by this reference. All subject employers working under the contract are either employers that will comply with ORS 656.017 or employers that are exempt under ORS 656.126.

(D) The Contractor shall promptly, as due, make payment to any person or co-partnership, association or corporation furnishing medical, surgical and hospital care, or other needed care and attention incident to sickness and injury to the employees of the Contractor, of all sums which the Contractor agrees to pay for such services and all moneys and sums which the Contractor collected or deducted from the wages of the Contractor's employees pursuant to any law, contract or agreement for the purpose of providing or paying for such services.

28. **KEY PERSONS.** Contractor acknowledges and agrees that a significant reason the District is entering into this Contract is because of the special qualifications of certain Key Persons set forth in the contract. Under this Contract, the District is engaging the expertise, experience, judgment, and personal attention of such Key Persons. Neither Contractor nor any of the Key Persons shall delegate performance of the management powers and responsibilities each such Key Person is required to provide under this Contract to any other employee or agent of the Contractor unless the District provides prior written consent to such delegation. Contractor shall not reassign or transfer a Key Person to other duties or positions such that the Key Person is no longer available to provide the District with such Key Person's services unless the District provides prior written consent to such reassignment or transfer.

29. **MERGER. THIS CONTRACT CONSTITUTES THE ENTIRE AGREEMENT BETWEEN THE PARTIES WITH RESPECT TO THE SUBJECT MATTER REFERENCED THEREIN. THERE ARE NO UNDERSTANDINGS, AGREEMENTS, OR REPRESENTATIONS, ORAL OR WRITTEN, NOT SPECIFIED HEREIN REGARDING THIS CONTRACT. NO AMENDMENT, CONSENT, OR WAIVER OF TERMS OF THIS CONTRACT SHALL BIND EITHER PARTY UNLESS IN WRITING AND SIGNED BY ALL PARTIES. ANY SUCH AMENDMENT, CONSENT, OR WAIVER SHALL BE EFFECTIVE ONLY IN THE SPECIFIC INSTANCE AND FOR THE SPECIFIC PURPOSE GIVEN. CONTRACTOR, BY THE SIGNATURE HERETO OF ITS AUTHORIZED REPRESENTATIVE, IS AN INDEPENDENT CONTRACTOR, ACKNOWLEDGES HAVING READ AND UNDERSTOOD THIS CONTRACT, AND CONTRACTOR AGREES TO BE BOUND BY ITS TERMS AND CONDITIONS.**

By their signatures below, the parties to this Contract agree to the terms, conditions, and content expressed herein.

| | |
|---|---|
| Company Name | Clackamas County Service District No. 1 |
| _____ | _____ |
| Authorized Signature Date | Greg Geist, Director Date |
| _____ | |
| Name / Title (Printed) | Approved as to Form: |
| _____ | _____ |
| Oregon Business Registry # | County Counsel Date |
| _____ | |
| Entity Type / State of Formation | |

**EXHIBIT A**
**PERSONAL/PROFESSIONAL SERVICES CONTRACT**

## SCOPE OF WORK

Contractor shall complete work as outlined in the Request for Quotes #2017-31, hereby included as **Exhibit D**; and the vendor response, hereby included as **Exhibit E**.

The District Contract administrator for this Contract is: Gail Shaloum and Kim Wollenburg.

## CONSIDERATION

a. Consideration Rates –T&M (list hourly rates and explain authorized expenses)

b. Payment for all Work performed under this Contract shall be subject to the provisions of ORS 293.462 and shall not exceed the total maximum sum of $[AMOUNT]. Invoices shall be submitted to:

c. Unless otherwise specified, Contractor shall submit monthly invoices for Work performed. Payments shall be made to Contractor following the District's review and approval of invoices submitted by Contractor. Contractor shall not submit invoices for, and the District will not pay, any amount in excess of the maximum compensation amount set forth above. If this maximum compensation amount is increased by amendment of this Contract, the amendment must be fully effective before Contractor performs Work subject to the amendment. The billings shall also include the total amount billed to date by Contractor prior to the current invoice.

d. Invoices shall describe all Work performed with particularity, by whom it was performed, and shall itemize and explain all expenses for which reimbursement is claimed. The billings shall also include the total amount billed to date by Contractor prior to the current invoice.

**EXHIBIT B**
**INSURANCE**

During the term of this Contract, Contractor shall maintain in full force at its own expense, each insurance noted below:

1. **Required by District of Contractor with one or more workers, as defined by ORS 656.027.**

   **Contractor, its subcontractors, if any, and all employers providing work, labor, or materials under this Contract are subject employers under the Oregon Workers' Compensation Law, and shall either comply with ORS 656.017, which requires said employers to provide workers' compensation coverage that satisfies Oregon law for all their subject workers, or shall comply with the exemption set out in ORS 656.126.**

2. ☒ **Required by District** ☐ **Not required by District**

   **Professional Liability** insurance with a combined single limit, or the equivalent, of not less than $1,000,000 for each claim, incident, or occurrence, with an annual aggregate limit of $2,000,000. This is to cover damages caused by error, omission or negligent acts related to the professional services to be provided under this Contract. The policy must provide extending reporting period coverage for claims made within two years after the contract is completed.

3. ☒ **Required by District** ☐ **Not required by District**

   **General Liability** insurance with a combined single limit, or the equivalent, of not less than $1,000,000 for each claim, incident, or occurrence, with an annual aggregate limit of $2,000,000 for Bodily Injury and Property Damage. It shall include contractual liability coverage for the indemnity provided under this Contract.

4. ☒ **Required by District** ☐ **Not required by District**

   **Automobile Liability** insurance with a combined single limit, or the equivalent, of not less than $1,000,000 for each accident for Bodily Injury and Property Damage, including coverage for owned, hired, or non-owned vehicles, as applicable.

5. **Certificates of Insurance**. Contractor shall furnish evidence of the insurance required in this Contract. The insurance for general liability and automobile liability most include an endorsement naming the County, its officers, elected officials, agents, and employees as additional insureds with respect to the Work under this Contract. Insuring companies or entities are subject to District acceptance. If requested, complete copies of insurance policies, trust agreements, etc. shall be provided to the District. The Contractor shall be financially responsible for all pertinent deductibles, self-insured retentions and/or self-insurance.

6. **Notice of cancellation or change**. There shall be no cancellation, material change, reduction of limits or intent not to renew the insurance coverage(s) without thirty (30) days written notice from the Contractor or its insurer(s) to the District at the following address: Clackamas County Procurement Division, 2051 Kaen Road, Oregon City, OR 97045 or purchasing@clackamas.us.

# EXHIBIT C
# CERTIFICATION STATEMENT FOR INDEPENDENT CONTRACTOR

(Contractor completes if Contractor is not a corporation or is a Professional Corporation)

Contractor certifies he/she is independent as defined in Oregon Revised Statutes 670.600 and meets the following standards that the Contractor is:

1. Free from direction and control, beyond the right of the District to specify the desired result; **AND**
2. Are licensed if licensure is required for the services; **AND**
3. Are responsible for other licenses or certificates necessary to provide the services **AND**
4. Are customarily engaged in an "independently established business."

To qualify under the law, an "independently established business" must meet three (3) out of the following five (5) criteria. C**heck as applicable**:

_____ A. Maintains a business location that is: (a) Separate from the business or work of the District; or (b) that is in a portion of their own residence that is used primarily for business.

_____ B. Bears the risk of loss, shown by factors such as: (a) Entering into fixed price contracts; (b) Being required to correct defective work; (c) Warranting the services provided; or (d) Negotiating indemnification agreements or purchasing liability insurance, performance bonds, or errors and omissions insurance.

_____ C. Provides contracted services for two or more different persons within a 12-month period, or routinely engages in business advertising, solicitation or other marketing efforts reasonably calculated to obtain new contracts to provide similar services.

_____ D. Makes significant investment in the business through means such as: (a) Purchasing tools or equipment necessary to provide the services; (b) Paying for the premises or facilities where the services are provided; or (c) Paying for licenses, certificates or specialized training required to provide the services.

_____ E. Has the authority to hire and fire other persons to provide assistance in performing the services.

Additional provisions:

1. A person who files tax returns with a Schedule F and also performs agricultural services reportable on a Schedule C is not required to meet the independently established business requirements.
2. Establishing a business entity such as a corporation or limited liability company, does not, by itself, establish that the individual providing services will be considered an independent contractor.

Contractor Signature_____ Date_____