DEVELOPMENT SERVICES DEPARTMENT
ENVIRONMENTAL COORDINATOR
450 110th Ave NE., P.O. BOX 90012
BELLEVUE, WA 98009-9012

OPTIONAL DETERMINATION OF NON-SIGNIFICANCE (DNS) NOTICE MATERIALS

The attached materials are being sent to you pursuant to the requirements for the Optional DNS Process (WAC 197-11-355). A DNS on the attached proposal is likely. This may be the only opportunity to comment on environmental impacts of the proposal. Mitigation measures from standard codes will apply. Project review may require mitigation regardless of whether an EIS is prepared. A copy of the subsequent threshold determination for this proposal may be obtained upon request.

File No. 16-148530-LN and 17-104366-LO

Project Name/Address: Li'l Lochwood Conservation Short Plat/4466 140th Ave NE

Planner: Drew Folsom

Phone Number: 425-452-4441

Minimum Comment Period: March 2, 2017

Materials included in this Notice:

☒ Blue Bulletin
☒ Checklist
☒ Vicinity Map
☒ ☐☐☐Plans
☒ ☐☐☐Other:

OTHERS TO RECEIVE THIS DOCUMENT:
☒ State Department of Fish and Wildlife / Sterwart.Reinbold@dfw.gov; Christa.Heller@dfw.wa.gov;
☒ State Department of Ecology, Shoreline Planner N.W. Region / Jobu461@ecy.wa.gov; sepaunit@ecy.wa.gov
☒ Army Corps of Engineers Susan.M.Powell@nws02.usace.army.mil
☒ Attorney General ecyolyef@atg.wa.gov
☒ Muckleshoot Indian Tribe Karen.Walter@muckleshoot.nsn.us; Fisheries.fileroom@muckleshoot.nsn.us

ENVIRONMENTAL CHECKLIST

10/9/2009

Thank you in advance for your cooperation and adherence to these procedures. If you need assistance in completing the checklist or have any questions regarding the environmental review process, please visit or call Development Services (425-452-6800) between 8 a.m. and 4 p.m., Monday through Friday (Wednesday, 10 to 4). Assistance for the hearing impaired: Dial 711 (Telecommunications Relay Service).

INTRODUCTION

Purpose of the Checklist:

The State Environmental Policy Act (SEPA), Chapter 43.21c RCW, requires all governmental agencies to consider the environmental impacts of a proposal before making decisions. An environmental impact statement (EIS) must be prepared for all proposals with probable significant adverse impacts on the quality of the environment. The purpose of this checklist is to provide information to help you and the City of Bellevue identify impacts from your proposal (and to reduce or avoid impacts from the proposal, if it can be done) and to help the City decide whether an EIS is required.

Instructions for Applicants:

This environmental checklist asks you to describe some basic information about your proposal. Answer the questions briefly, with the most precise information known, or give the best description you can. You must answer each question accurately and carefully, to the best of your knowledge. In most cases, you should be able to answer the questions from your own observations or project plans without the need to hire experts. If you really do not know the answer or if a question does not apply to your proposal, write "do not know" or "does not apply." Giving complete answers to the questions now may avoid unnecessary delays later.

Some questions ask about governmental regulations such as zoning, shoreline, and landmark designations. Answer these questions if you can. If you have problems, the Planner in the Permit Center can assist you.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. Include reference to any reports on studies that you are aware of which are relevant to the answers you provide. The City may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impacts.

Use of a Checklist for Nonproject Proposals: *A nonproject proposal includes plans, policies, and programs where actions are different or broader than a single site-specific proposal.*

For nonproject proposals, complete the Environmental Checklist even though you may answer "does not apply" to most questions. In addition, complete the Supplemental Sheet for Nonproject Actions available from Permit Processing.

For nonproject actions, the references in the checklist to the words *project*, *applicant*, and *property* or *site* should be read as *proposal*, *proposer*, and *affected geographic area*, respectively.

Attach an 8 ½" x 11 vicinity map which accurately locates the proposed site.

Received
JAN 25 2017
Permit Processing
DT 2/9/16

ENVIRONMENTAL CHECKLIST

4/11/2013

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BACKGROUND INFORMATION

Property Owner: **Karen, Michael and Robert Perry**

Proponent: **Mike Perry**

Contact Person: **Mike Perry**
(If different from the owner. All questions and correspondence will be directed to the individual listed.)

Address: **2820 Northup Way, #140, Bellevue, WA 98004**

Phone: **425.827.9293**

Proposal Title: **Lil' Lochwood Preliminary Conservation Short Subdivision**

Proposal Location: **4466 140th Avenue NE, Bellevue, WA 98005**
(Street address and nearest cross street or intersection) Provide a legal description if available.

Please attach an 8 ½" x 11" vicinity map that accurately locates the proposal site.

Give an accurate, brief description of the proposal's scope and nature:

General description: **Lil' Lochwood is a proposed 9 Lot Conservation Subdivision of the 12.8 acre site in the R-1 Zone of the City of Bellevue. The site is a single tax parcel; 1525059070. Access to the site is proposed as direct access to 140th Avenue NE, a new private road intersecting 140th Avenue SE, and also a new private road extension of 143rd Place NE. The site has an existing home and outbuildings and is landscaped as well as partially forested on the eastern portion of the site. Slope gradients generally vary from 10 to 20 percent with one small portion at approximately 30 percent.**

2. Acreage of site: **12.8 acres**.

3. Number of dwelling units/buildings to be demolished: **Two outbuildings will be removed.**

4. Number of dwelling units/buildings to be constructed: **8 single-family homes (existing home to remain).**

5. Square footage of buildings to be demolished: **Approximately 560 square feet.**

6. Square footage of buildings to be constructed: **Homes will be built following final subdivision approval. The project anticipates homes will be in the 4,000 square foot to 6,000 square foot range.**

7. Quantity of earth movement (in cubic yards): Approximately **6,000 cubic yards.**

8. Proposed land use: **Single-family residential.**

9. Design features, including building height, number of stories and proposed exterior materials: **The Applicant anticipates two story homes, maximum 35' height. Exterior materials to be made of wood, manufactured wood product, metal, brick, stone and/or stucco.**

DL 2/5/14

10. Other

Estimated date of completion of the proposal or timing of phasing:

Construction of the project is proposed to begin in the summer of 2017 with home construction following site development.

Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain:

No.

List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.

Wetland and Stream Delineation Report, The Watershed Company; March 10, 2016.
Updated Habitat Assessment for Lil' Lochwood Conservation Subdivision, AOA LLC; October 20, 2016.
Critical Areas Report, AOA LLC; December, 2016.
Buffer Enhancement Mitigation and Planting Plan, AOA LLC, December, 2016
Drainage Analysis and Preliminary Stormwater Control Plan, Goldsmith; December, 2016
Geotechnical Report, Terra Associates Inc.; December, 2016.

Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain. List dates applied for and file numbers, if known.

The applicant is not aware of any pending proposals that would affect the property.

List any government approvals or permits that will be needed for your proposal, if known. If permits have been applied for, list application date and file numbers, if known.

City of Bellevue: Preliminary Short Plat; Critical Areas Land Use Permit; Utility Extension; Clearing and Grading; Final Short Plat.
Washington State Department of Ecology: NPDES General Permit to Discharge Stormwater.
Puget Sound Energy: Electric and natural gas service.
Other: Dry utilities.

Please provide one or more of the following exhibits, if applicable to your proposal. (Please check appropriate box(es) for exhibits submitted with your proposal):

☐ Land Use Reclassification (rezone) Map of existing and proposed zoning

☒ Preliminary Plat or Planned Unit Development
Preliminary short plat map

☐ Clearing & Grading Permit
Plan of existing and proposed grading
Development plans

☐ Building Permit (or Design Review) Site plan
Clearing & grading plan

☐ Shoreline Management Permit
Site plan

A. ENVIRONMENTAL ELEMENTS

1. Earth

a. General description of the site: ☒ Flat ☐ Rolling ☒ Hilly ☐ Steep slopes ☐ Mountains ☐ Other

b. What is the steepest slope on the site (approximate percent slope)?

Generally the site slopes vary from about ten percent to twenty percent.

D.1 2/9/17

c. What general types of soil are found on the site (for example, clay, sand, gravel, peat, and muck)? If you know the classification of agricultural soils, specify them and note any prime farmland.

Advance Outwash (Qva) with Vashon Till (Qvt). See the Geotechnical Report by Terra Associates, Inc. included with the preliminary short plat application.

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

There are no indications or history of unstable soils in the immediate vicinity.

e. Describe the purpose, type, and approximate quantities of any filling or grading proposed. Indicate source of fill.

Approximately 6,000 cubic yards of earthwork / grading is proposed at the time of site improvement construction, pursuant to the preliminary grading and drainage plans. Grading is planned as on-site excavation and fill, and potentially imported structural fill if required. Excess cut will be utilized on site, exported soil, if any, will be disposed of at an approved location.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.

Erosion could occur as a result of clearing / grading and construction. However, site management during earth moving activities will include best management practices (BMPs) through an approved temporary erosion and sedimentation control plan (TESCP), prepared and approved as part of the engineering review. Also, a NPDES Permit will be required by the Washington State Department of Ecology.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

A maximum of 50% of the total site area can be covered with impervious surfaces per the requirements of a Conservation Subdivision, including paved roads, concrete sidewalks, driveway, rooftops and the stormwater vault.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

An approved TESC Plan will be followed during construction activities. BMP's will be utilized to reduce or control erosion and other impacts to earth, including silt fencing, straw bales, mulching or plastic covering, construction entrance, check dams, hydroseed, etc. All construction activities, site improvements and building construction will be consistent with the geotechnical recommendations and City of Bellevue requirements.

2. AIR

a. What types of emissions to the air would result from the proposal (i.e. dust, automobile odors, and industrial wood smoke) during construction and when the project is completed? If any, generally describe and give approximate quantities if known.

The primary source of air pollutants generated during infrastructure improvements and home construction would be attributable to vehicle emissions from construction equipment, dust from site grading operations, and trips to and from the project site by construction employees.

Emissions from the completed project would be those commonly associated with a single-family home, residential development.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

None known.

c. Proposed measures to reduce or control emissions or other impacts to the air, if any:

Emissions from construction equipment and trucks would be reduced by using well-maintained equipment. Avoiding prolonged periods of vehicle idling and engine-powered equipment would also reduce emissions. Dust abatement / dust control measures may be implemented during construction if necessary per the approved TESC plan. By implementing BMPs and following prescribed mitigation measures, on-site construction activities are not likely to substantially affect air quality in the project vicinity.

Dt 2/5/14

3. WATER

a. Surface

(1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.

There is a man-made pond on the site, included within Wetland C. Valley Creek (Stream A) also bisects the site within Wetland AB, near the center of the property. There is an additional man made pond north of the site identified as Wetland D, and an offsite drainage to the south identified as Stream B.

(2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If Yes, please describe and attach available plans.

No work is proposed within the above, described surface water. Work will be completed within 200 feet of the surface waters as the required buffers are less than 200 feet; Wetlands C and D have 60 foot buffers, Wetland AB has a 110 foot buffer. Streams A and B have fifty and twenty-five foot buffers, respectively. Minimal buffer intrusions are proposed for trail and utility purposes. The existing home footprint is excluded from the required buffer and a Critical Areas Land Use Permit is being process in conjunction with the preliminary short plat in order to modify critical area buffer in the vicinity of the existing home for proposed Lot 5.

(3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.

No fill or dredge material will be placed in, or removed from, surface water or wetlands.

(4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.

No.

(5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.

No.

(6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.

No.

b. Ground

(1) Will ground water be withdrawn, or will water be discharged to ground water? Give general description.

No.

(2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals...; agricultural; etc.) Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.

Not applicable.

DH 2/9/10

c. Water Runoff (Including storm water)

(1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.

Source of runoff is minor off-site flow and direct rainfall. Stormwater will be managed per City of Bellevue Surface Water Engineering Standards. Bio-retention swales will be utilized to collect runoff from the proposed private roadways for flow control and water quality treatment. Future lot / home development will utilize Low Impact Development (LID), Best Management Practices to infiltrate, retain, and disperse storm water onsite utilizing rain gardens or other approved LID facilities.

(2) Could waste materials enter ground or surface waters? If so, generally describe.

No. Sediment laden water (silts) will be controlled by project BMPs, the approved TESC plan and approved General Permit to Discharge Stormwater.

d. Proposed measures to reduce or control surface, ground, and runoff water impacts, if any:

The project will comply with City of Bellevue requirements including the City of Bellevue Surface Water Engineering Standards. See Goldsmith's Storm Drainage Report submitted with the preliminary short plat.

4. Plants

a. Check or circle types of vegetation found on the site:

☒ deciduous tree: **alder**, **maple**, aspen, **cherry**, **cottonwood**

☒ evergreen tree: **fir**, **cedar**, **hemlock**, **pine**, other

☒ shrubs

☒ grass

☐ pasture

☐ crop or grain

☒ wet soil plants: cattail, buttercup, bulrush, **skunk cabbage**, **stinging nettle**, **lady fern**, **creeping buttercup**

☒ water plants: **water lily**, eelgrass, milfoil, other: **yellow pond lilies**, **small fruited bulrush**

☒ other types of vegetation - **vine maple**, **Indian plum**, **salmonberry**, **huckleberry**, **salal**, **elderberry**, **bleeding heart**, **blackberry**

b. What kind and amount of vegetation will be removed or altered?

All vegetation will be removed from the proposed private roads, easements, and future planned homes. Vegetation will be retained and/or enhanced within the proposed critical area tracts per the Buffer Enhancement Mitigation and Planting Plans prepared by Altmann Oliver Associates, LLC. Non-native species will be removed, controlled, and areas replanted with native species as appropriate. Trees will be retained per the tree retention plan included in the preliminary short plat.

c. List threatened or endangered species known to be on or near the site.

No threatened or endangered plant species are known to be present on-site or in the immediate vicinity of the project site. See the Wildlife Habitat Study and Habitat Assessment Update prepared by Altmann Oliver Associates, LLC and included with the preliminary short plat application.

DA. 2/9/14

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:

The project will retain trees per the tree retention plan. As discussed above, vegetation will be retained and/or enhanced within the proposed critical area tracts per the Buffer Enhancement Mitigation and Planting Plans prepared by Altmann Oliver Associates, LLC. Non-native species will be removed, controlled, and areas replanted with native species as appropriate. Street trees will also be provided as required. Landscaping will also be provided within the planter strip along 140th Avenue NE.

5. ANIMALS

a. Check or circle any birds and animals which have been observed on or near the site or are known to be on or near the site:

☒ Birds: **hawk**, heron, eagle, **songbirds**, other: **Pileated Woodpecker**

☒ Mammals: deer, bear, elk, beaver, **other** **(small mammals: i.e. Squirrels, Moles, etc.)**

☒ Fish: bass, **salmon**, **trout**, herring, shellfish, other:

b. List any threatened or endangered species known to be on or near the site.
According to the WA Department of Fish and Wildlife's Priority Habitats and Species (PHS) database, Valley Creek is known to support Fall Chinook (Oncorhynchus tshawytscha), a federally threatened species.

c. Is the site part of a migration route? If so, explain.
The entire region is part of the Pacific Flyway migration route.

d. Proposed measures to preserve or enhance wildlife, if any:
A large portion of the site will be retained as Critical Area Tract C – 263,247 square feet, or 6.04 acres. Tract C will be enhanced per the Buffer Enhancement Mitigation and Planting Plans by Altmann Oliver Associates, LLC. This natural area will include tree retention and native vegetation enhancement which will provide improved critical area and functions per the Critical Areas Report.

6. Energy and Natural Resources

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy need? Describe whether it will be used for heating, manufacturing, etc.

Electric Power – power / heating and cooling.
Natural Gas – heating.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.

No adverse impact to potential use of solar power by adjacent property owners is anticipated.

c. What kinds of energy conservation features are included in the plans of the proposal? List other proposed measures to reduce or control energy impacts, if any:

Construction will comply with Federal, State and local energy requirements.

JL 2/5/14

7. Environmental Health

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste that could occur as a result of this proposal? If so, describe.

No environmental health hazards are expected as a result of this proposal.

(1) Describe special emergency services that might be required.

None.

(2) Proposed measures to reduce or control environmental health hazards, if any.

Construction contractors will follow standard safety practices for site development and home construction.

b. Noise

(1) What types of noise exist in the area which may affect your project (for example, traffic, equipment, operation, other)?

No known sources of noise exist in the area which would affect the project. Current noise at the project site is consistent with that associated with a residential neighborhood.

(2) What types and levels of noise would be created by or associated with the project on a short-term or long-term basis (for example, traffic, construction, operation, other)? Indicate what hours noise would come from the site.

Noise levels associated with site development (clearing and grading), and single family home construction would be expected for the short term. Noise levels associated with a single-family residential neighborhood would be expected for the long term. The City of Bellevue regulates noise associated with construction per the City Code.

(3) Proposed measures to reduce or control noise impacts, if any:

Construction noise will adhere to the requirements of the City of Bellevue City Code.

8. Land and Shoreline Use

a. What is the current use of the site and adjacent properties?

The project site is currently a large, single family home site. North of the site are existing single family homes on large lots, West of the site is 140th Avenue NE and additional single family homes on large lots beyond 140th Avenue NE. South of the site is property owned by the City of Bellevue and existing single family homes on large lots. East of the site is an existing, large apartment complex.

b. Has the site been used for agriculture? If so, describe.

The site currently has pastures with horses.

c. Describe any structures on the site.

There is a single family home on the site, approximately 3,290 square feet, and two outbuildings.

d. Will any structures be demolished? If so, what?

The existing outbuildings will be removed.

D1-2/1/14

e. What is the current zoning classification of the site?

The current zoning is R-1.

f. What is the current comprehensive plan designation of the site?

SF-L. Low Density – up to 1.8 units per acre (R-1 and R-1.8).

g. If applicable, what is the current shoreline master program designation of the site?

Not Applicable.

h. Has any part of the site been classified as an "environmentally sensitive" area? If so, specify.

Yes. There are two on-site wetlands, an on-site stream, an off-site wetland to the north and an off-site stream to the south. A Wetland and Stream Delineation Report by The Watershed Company, dated March 10, 2016 is included with the preliminary short plat application. As noted in the report: Wetland AB rates as a Category II wetland with a 110 foot buffer plus 20 foot structural setback; Wetlands C and D rate as Category III wetlands with a 60 foot buffer plus 15 foot structural setback; Stream A is classified as a Type F water with a 50 foot buffer plus a 50 foot structural setback. Stream B is classified as a Type N stream, with a 25 foot buffer and a 25 foot setback.

See the attached site plan (Site Plan B) from the preliminary short plat for the referenced critical areas.

i. Approximately how many people would reside or work in the completed project?

Assuming 2.6 people per household, approximately 24 people would reside in the completed project.

j. Approximately how many people would the completed project displace?

One property owner currently resides in the existing home.

k. Proposed measures to avoid or reduce displacement impacts, if any:

None.

l. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:

The proposal is a single-family residential development which is compatible with existing and projected land uses and plans per the City Zoning and the Comprehensive Plan.

9. Housing

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.

Eight high income housing units would be provided by the project (9 including the existing home).

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.

None.

c. Proposed measures to reduce or control housing impacts, if any:

None.

SF 2/5/16

10. Aesthetics

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?

The maximum height for the project is 30' for a flat roof, and 35' to the ridge of a pitched roof. Exterior building materials to be wood, manufactured wood product, metal, brick, stone and/or stucco.

b. What views in the immediate vicinity would be altered or obstructed?

Portions of the development may be visible from surrounding properties, but no known views will be altered or obstructed.

c. Proposed measures to reduce or control aesthetic impacts, if any:

The project will retain trees as required, and will also provide critical area tracts and street trees / landscaping as required.

11. Light and Glare

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

The completed neighborhood would produce lighting from housing, and street lights in the evening and early morning hours.

b. Could light or glare from the finished project be a safety hazard or interfere with views?

No.

c. What existing off-site sources of light or glare may affect your proposal?

There are no known existing off-site sources of light or glare that would affect the proposal.

d. Proposed measures to reduce or control light or glare impacts, if any:

None.

12. Recreation

a. What designated and informal recreational opportunities are in the immediate vicinity?

Bellevue Municipal Golf Course is located less than 500 feet north of the site.

Bridle Trails State Park is located approximately 0.52 miles west of the site.

North Bellevue Community Center is located approximately 0.7 miles southeast of the site.

Grass Lawn Community Park is located approximately 1.2 miles northeast of the site.

b. Would the proposed project displace any existing recreational uses? If so, describe.

No.

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:

There are no proposed measures to reduce or control impacts on recreation. The site did not provide recreational opportunities. There are recreational opportunities in the immediate vicinity as described above.

7-26-04

13. Historic and Cultural Preservation

a. Are there any places or objects listed on, or proposed for, national, state, or local preservation registers known to be on or next to the site? If so, generally describe.

No.

b. Generally describe any landmarks or evidence of historic, archeological, scientific, or cultural importance known to be on or next to the site.

Not applicable.

c. Proposed measures to reduce or control impacts, if any:

Not applicable.

14. Transportation

a. Identify public streets and highways serving the site, and describe proposed access to the existing street system. Show on site plans, if any.

The project site fronts on 140th Avenue NE. The proposal is to serve the westerly five lots by direct access and a planned private roadway intersecting with 140th Avenue NE. The easterly four lots will be served by a private road extension of 143rd Place NE from the south.

b. Is site currently served by public transit? If not, what is the approximate distance to the nearest transit stop?

Public transit is available: 0.87 miles from the site at NE 40th and 148th Avenue NE; 1.36 miles from the site at 140th Avenue NE and NE 24th Street, and; 0.98 miles from the site at 140th Avenue NE and NE Old Redmond Road (NE 70th Street).

c. How many parking spaces would be completed project have? How many would the project eliminate?

The project would provide a minimum of two parking spaces per unit, or 18 parking spaces. No parking spaces would be eliminated.

d. Will the proposal require any new roads or streets, or improvements to existing roads or streets, not including driveways? If so, generally describe (indicate whether public or private).

The project will provide required road frontage improvements to 140th Avenue NE including a paved trail separate from 140th Avenue NE. The five lots to the west will be served via direct access with driveway connections to 140th Avenue SE and also a new private road intersecting with 140th Avenue SE near the current driveway location. The easterly lots will be served via a new private road extension of 143rd Place NE from the south.

e. Will the project use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.

No.

f. How many vehicular trips per day would be generated by the completed project? If known, indicate when peak volumes would occur.

Assuming 11 trips per day, per household, the completed project will generate approximately 99 vehicle trips. Peak volumes would occur in the PM peak hours, approximately 4 to 6 PM.

g. Proposed measures to reduce or control transportation impacts, if any:

Transportation impact fees will be paid to the City of Bellevue at the time of building permit for each of the proposed homes.

DL 2/5/04

15. Public Services

a. Would the project result in an increased need for the public services (for example: fire protection, police protection, health care, schools, other)? If so, generally describe.

Yes. An additional need would result for those services associated with the construction / addition of 8 single family homes (9 homes total including the existing home).

b. Proposed measures to reduce or control direct impacts on public services, if any.

Measures to reduce or control direct impacts on public services include paying increased property taxes, as well as transportation impact fees, utility connection charges, and general government fees.

16. Utilities

a. Circle utilities currently available at the site: **electricity**, **natural gas**, **water**, **refuse service**, **telephone**, **sanitary sewer**, septic system, other.

b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.

New utility services will be constructed within the proposed private roads, driveways and easements. Sanitary sewer is already located onsite per an easement agreement provided to the City of Bellevue from the property owners. Water and sewer will be provided by the City of Bellevue. Electricity and Natural Gas will be provided by Puget Sound Energy. Cable will be provided by Comcast and/or Verizon. Telephone will be provided by Frontier and/or Comcast. Water, sanitary sewer and storm sewer connections are available within 140th Avenue NE, 143rd Place NE, and onsite. Water facilities will include an extension of the water system into the site from both 140th Avenue NE and 143rd Place NE.

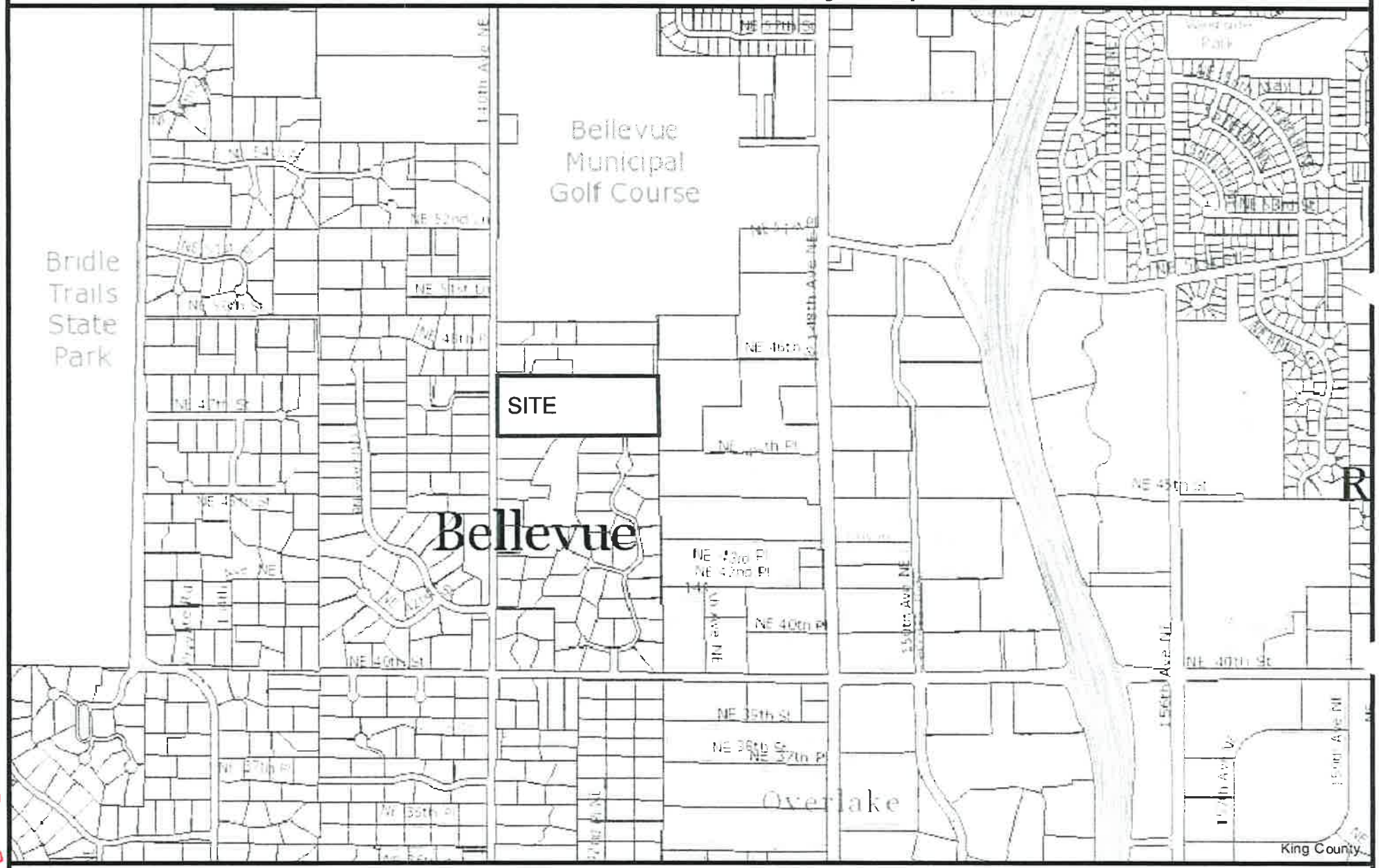
Signature

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature.....Michael Perry.....

Date Submitted.....12-7-2016.....

Lil' Lochwood - Vicinity Map



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Date: 12/6/2016 Notes:

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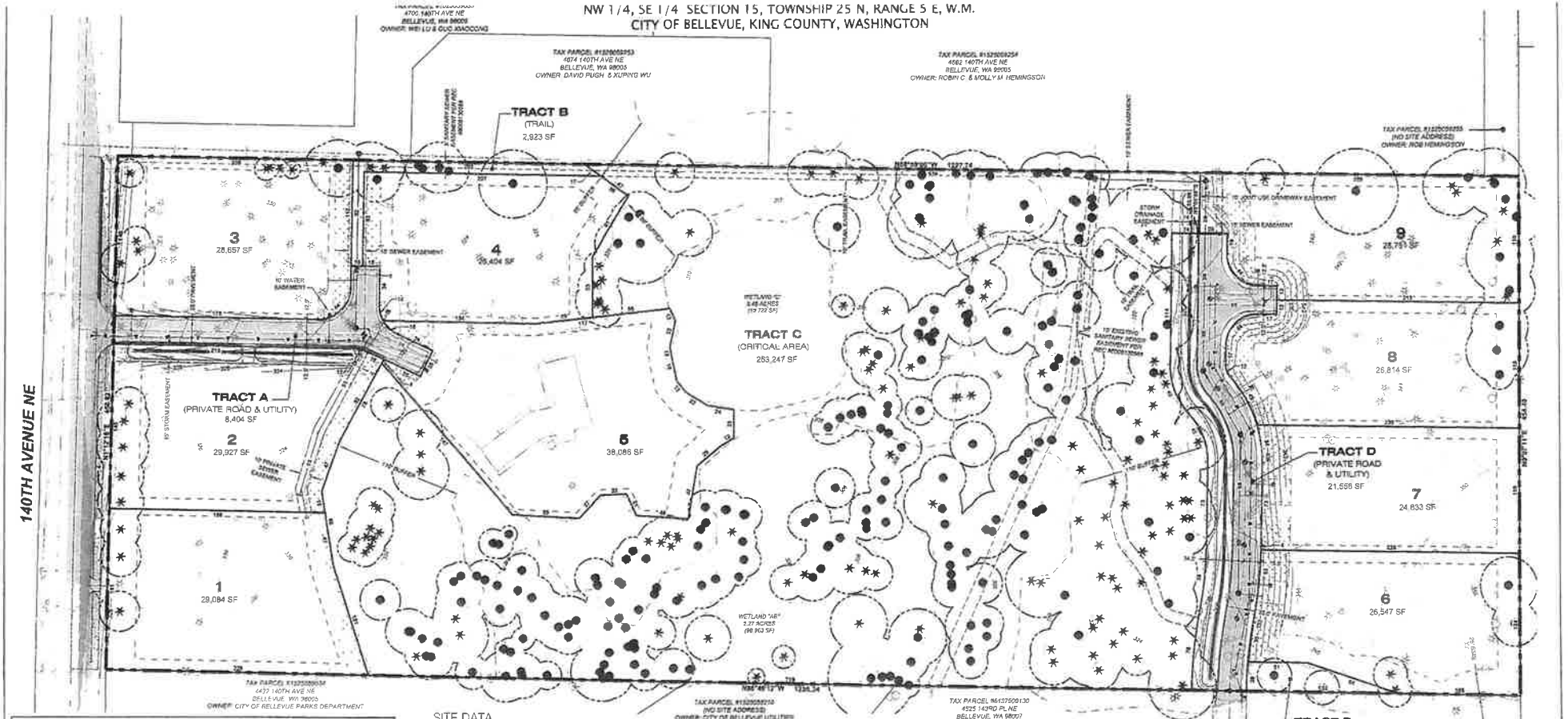
King County GIS CENTER

Dt. 2/9/16

NW 1/4, SE 1/4 SECTION 15, TOWNSHIP 25 N, RANGE 5 E, W.M.
CITY OF BELLEVUE, KING COUNTY, WASHINGTON



SITE DATA

SITE LOCATION	4456 140TH AVENUE NE, BELLEVUE 98005
TAX PARCEL	1325059070
TOTAL SITE AREA	12.6 ACRES
NUMBER OF LOTS PROPOSED	9
ZONING:	R-1
EXISTING USE	SINGLE FAMILY HOMESITE
PROPOSED USE:	SINGLE FAMILY RESIDENTIAL
SEWER / WATER	CITY OF BELLEVUE
POWER / GAS	PUGET SOUND ENERGY
TELEPHONE	COMCAST / FRONTIER
CABLE	COMCAST / VERIZON
FIRE DISTRICT	BELLEVUE
SCHOOL DISTRICT	BELLEVUE
OWNER	THE PERRY FAMILY ATTN: MIKE PERRY 2370 NORTHLIP WAY, #140 BELLEVUE, WA 98004 (425) 837 9233 / MPLAHY@PMLAWRESEARCH.COM
ENGINEER / SURVEYOR	GOLDSMITH LAND DEVELOPMENT SERVICES BRIAN FIELDS, P.E. / NYQUIST P.L.S. 1215 114TH AVENUE SE BELLEVUE, WA 98004 (425) 462-1080 BRIAN@GOLDSMITHENGINEERING.COM NYQUIST@GOLDSMITHENGINEERING.COM

EXISTING CONDITIONS LEGEND

AB	AS-BUILT	SAM	SANITARY SEWER MANHOLE
CB I	CATCH BASIN TYPE 1	STW	STEEL WRAPPED
CLF	CHAIN LINK FENCE	TER	TELEPHONE RISER
CONC	CONCRETE	TVB	CABLE TV BOX
CMP	CORRUGATED PLASTIC PIPE	UG	UNDERGROUND
DI	DUCTILE IRON PIPE	UP	UTILITY POLE
EP	EDGE OF PAVEMENT	WL	WETLAND FLAG
FH	FIRE HYDRANT	WM	WATER METER
GM	GAS METER	WSP	WATER SPIGOT
GV	GAS VALVE	WV	WATER VALVE
IBX	IRRIGATION BOX	YL	YARD LIGHT
IP	IRON PIPE		FENCE LINE
IWV	IRRIGATION WATER VALVE		GAS LINE
MB	MAILBOX		OVERHEAD UTILITY LINE
PRY	GOLDSMITH SURVEY CONTROL POINT		STORM LINE
REF	REBAR & CAP FOUND		SANITARY SEWER LINE
RCS	REBAR & CAP SET (LS 27077 JB270 JB284)		WATER LINE

DESIGN LEGEND

PROPOSED BIO-RETENTION ZONE SEE NOTE 4 FOR DETAIL	
PROPOSED 8" PVC SEWER	
PROPOSED 54" SANITARY SEWER MANHOLE	
PROPOSED SANITARY SEWER SERVICE	
PROPOSED 8" WATER MAIN	
PROPOSED WATER METER	
PROPOSED FIRE HYDRANT	
PROPOSED MAJOR CONTOUR	250
PROPOSED MINOR CONTOUR	248
EXIST. MAJOR CONTOUR	250
EXIST. MINOR CONTOUR	248

STREAM BUFFER AREA
ON-SITE= 2,931 SF

WETLAND BUFFER AREA
ON-SITE = 166,811 SF

SCALE 0 20 40 80 120 1" = 40'

City of Bellevue
PERMIT NO. XX-XXXXXX-XX

VICINITY MAP

N.T.S.

GOLDSMITH
LAND DEVELOPMENT SERVICES

PLOTTED	2019/12/09 14:07
DRAWN	HALM
DESIGNED	
APPROVED	NYQUIST

PRELIMINARY

KAREN, MICHAEL & ROBERT PERRY

SITE PLAN B
FOR
LIL' LOCHWOOD PRELIMINARY SHORT PLAT

4456 140TH AVENUE NE, CITY OF BELLEVUE — KING COUNTY, WASHINGTON

JOB NO 15206
SHEET 1/1

Altmann Oliver Associates, LLC

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

AOA

Environmental
Planning &
Landscape
Architecture

January 16, 2017

AOA-3844

Mike Perry
Dimensions Inc.
3006 Northup Way, #302
Bellevue, WA 98004

SUBJECT: **Critical Areas Report for Lil' Lochwood Conservation Subdivision**
Wetland/Stream Buffer Modifications
4466 140th Ave. NE, Bellevue (Parcel 152505-9070)
Original City of Bellevue File #09-113577-DB

Dear Mike:

We have prepared a wetland and stream buffer impact and mitigation plan for the proposed 9-Lot Lil' Lochwood Conservation Subdivision (**Drawings W1.1 and W1.2**). Wetlands and streams on the property were delineated by The Watershed Company (TWC) and subsequently surveyed. All of the existing conditions of the critical areas are fully described in the TWC "Wetland and Stream Delineation Report".

The purpose of this report is to address the proposed wetland and stream buffer impacts and mitigation. A separate habitat assessment as required in Bellevue LUC 20.25H.165.A has also been prepared.

1.0 PROPOSED BUFFER IMPACTS

Valley Creek and all of the wetlands on the site will be preserved and no direct impacts to critical areas are proposed under this project. A 110-foot buffer will be provided to the higher value wetlands on the site (Wetland A/B) and a 60-foot buffer will be provided to the landscape pond (Wetland C) adjacent proposed Lot 4.

Proposed buffer modifications on the site are limited to: 1) allowing the existing house (built in 1956), its driveway, and a portion of the maintained yard on Lot 5 to remain, 2) crossing of the Type Ns stream in the southeast corner of the site with an access road, 3) temporary disturbance for sewer connection in the northeast portion of the site, and 4) allowing existing small pervious pedestrian trails within buffer to remain.

Received
JAN 25 2017
Permit Processing

1.1 Lot 5 Buffer

As part of the proposed project, a total of 32,611 s.f. of the existing house, driveway, and a portion of the existing lawn and yard located within the wetland buffers on Lot 5 would be retained. These buffer areas are all entirely developed and maintained and do not currently provide any significant habitat, hydrologic, or screening functions to the wetlands.

1.2 Southeast Stream B Buffer Crossing

Access to the eastern portion of the site would occur across an existing culvert located at the terminus of 143rd Place NE in the southeast quadrant of the property. Utilization of the existing crossing would eliminate the need for direct stream impacts but would still unavoidably impact 1,302 s.f. of mostly forested buffer as part of the clearing and grading requirements.

1.3 Sewer Connection

An existing sanitary sewer line traverses the wetland and wetland buffer parallel to Valley Creek in the eastern portion of the site. The four proposed lots in the eastern portion of the property require access to this sewer line. The connection is proposed along the north property line where the least amount of temporary buffer impact would occur. All temporarily disturbed buffer areas would be restored with native plantings.

1.4 Pedestrian Trails to Remain

A network of existing trails is currently located throughout the central and eastern portions of the site. These trails are pervious and are for pedestrian use only. The trails would remain in their current location within the buffer to avoid the removal of significant vegetation.

2.0 PROPOSED MITIGATION

Mitigation for 32,611 s.f. of buffer modification within Lot 5 would occur through: 1) the restoration/enhancement of 33,913 s.f. of degraded buffer, 2) the restoration/enhancement of 7,185 s.f. of degraded wetland, and 3) the enhancement of 7,095 s.f. of degraded buffer with shrub plantings. All of the restoration/enhancement would occur within existing yard areas adjacent to the pond and within the horse pasture to the east of Lots 1 and 2. It was determined that enhancement of the highly degraded and non-functioning buffers would be the best mitigation alternative for increasing the habitat value and screening functions of the wetland. These enhancement areas are located throughout the central corridor of the site and are part of a contiguous habitat block adjacent the proposed impacts.

Enhancement measures include removing invasive species and re-planting with a wide variety of native tree, shrub, and emergent species. Enhancement of these areas will significantly increase the plant species and structural diversity within the wetlands and their buffers. This will also benefit those wildlife species utilizing the pond as well as create a larger cohesive and more valuable wildlife habitat block by providing a well-vegetated connection between the pond and the riparian corridor of the stream. In addition, the

plantings within the buffer to the east of Lots 1 and 2 will significantly increase the physical and visual screening to the wetland from the proposed development.

Mitigation for the 1,302 s.f. of buffer impact associated with the road crossing would occur through the replacement of 3,570 s.f. of additional forested buffer contiguous with the impact area. This is the preferred alternative for unavoidable buffer impacts per LUC 20.25H.105.A.2.a.

As part of a Critical Areas Report, the City of Bellevue requires "an analysis of the level of protection of critical area functions and values provided by the regulations or standards of this code, compared with the level of protection provided by the proposal. The analysis shall include:"

a. *A discussion of the functions and values currently provided by the critical area and critical area buffer on the site and their relative importance to the ecosystem in which they exist;*

Wetlands, in general, provide many valuable ecological and social functions, including stormwater storage, water quality protection, groundwater recharge and discharge, and wildlife habitat. The wetlands on the site have a relatively high value for many of these functions due to the large size of the overall wetland system and its association with an anadromous fish-bearing water. The wetlands provide stormwater storage areas that reduce downstream flooding while trapping sediments. The trapping of sediments and other pollutants within the wetlands maintains water quality in downstream areas and aids in the prevention of fish habitat degradation by limiting silt accumulation within spawning areas. The wetlands provide further benefit to fish and other wildlife by releasing water slowly during the dry summer months, thereby contributing to the base flow of the stream.

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

The on-site wetland does provide some cultural wetland functions as part of the overall open space associated with the Valley Creek riparian corridor. The wetland contains some passive recreational opportunities such as wildlife viewing.

The buffer in the eastern portion of the site is primarily forested and currently functions at a high level. The functions in the mid-western portion of the site are highly degraded, non-functioning, and include large areas of lawn around the pond, horse pasture, existing residence and access drive.

b. *A discussion of the functions and values likely to be provided by the critical area and critical area buffer on the site through application of the regulations and standards of this Code over the anticipated life of the proposed development; and*

The Land Use Code requires a standard 110-foot buffer from Wetland A/B and a standard 60-foot buffer from Wetland C. Much of the buffer in the western portion of the site currently is currently developed with the existing residence and its maintained lawn and yard. These developed buffer areas provide little functional value to the wetlands. If no modifications were proposed within the buffer and the existing lawn areas were to remain, there would be no functional lift associated with the implementation of a buffer enhancement plan.

Preservation of the existing degraded standard buffer will not increase the habitat value of the buffer and future recolonization of native plant species would be limited.

c. *A discussion of the functions and values likely to be provided by the critical area and critical area buffer on the site through the modifications and performance standards included in the proposal over the anticipated life of the proposed development;*

Implementation of the proposed critical area restoration and enhancement plan as mitigation for allowing the existing residence and a portion of mowed lawn to remain would significantly increase the habitat functions of the critical areas on the site over current conditions. The enhanced critical areas will also provide physical and visual screening to the riparian corridor from the proposed residences.

2.1 Goal, Objectives, and Performance Standards for Enhancement Areas

The primary goal of the enhancement plan is to increase the habitat and protective functions of the buffers on the site over current conditions. To meet this goal, the following objectives and performance standards have been incorporated into the design of the plan:

Objective A: Increase the structural and plant species diversity within the enhancement areas.
Performance Standard: Following every monitoring event for a period of at least 5 years, the enhancement area will contain at least 14 native plant species. In addition, there will be 100% survival of all woody planted species throughout the enhancement area at the end of the first year of planting. Following Year 1, success will be based on an 80% survival rate.

Areal coverage of plantings or native re-colonized species will be at least 15% at Year 1, 20% at Year 2, 40% at Year 3, and 60% at Year 5.

Objective B: Limit the amount of invasive and exotic species within the enhancement areas.
Performance Standard: After construction and following every monitoring event for a period of at least five years, exotic and invasive plant species will be maintained at levels below 10% total cover in all planted areas. These species include, but are not limited to, Himalayan and evergreen blackberry, reed canarygrass, Scot's broom, morning glory, Japanese knotweed, English ivy, thistle, and creeping nightshade.

2.2 Construction Management

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

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

2.3 Monitoring Methodology

As required, the monitoring program will be conducted for a period of five years with annual reports submitted to the City of Bellevue. Permanent vegetation sampling plots will be established to monitor the general appearance, health, mortality, colonization rates, percent cover, percent survival, volunteer plant species, and invasive weeds.

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

2.4 Maintenance Plan

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

Routine removal and control of non-native and other invasive plants shall be performed by manual means (i.e., no chemical use within riparian corridor). Weed removal includes hand grubbing all roots and exporting off-site. Undesirable and weedy exotic plant species shall be maintained at levels below 10% total cover within any given stratum at any time during the five-year monitoring period.

The following outlines specific treatment for reed canarygrass.

Reed Canarygrass Control
Areas with reed canarygrass patches 3' x 3' or smaller need to be hand-grubbed. Patches greater than 3'x 3' shall be weed-whacked. Areas shall be staked with Scouler willow (*Salix scouleriana*) cuttings (see Staking Specifications below). During April 1 through November 30, one-gallon plants (minimum height of 18") shall be used in place of cuttings.

Staking Specifications:
Cuttings can be purchased or gathered from approved mature sources. Cuttings shall be installed at 1' O.C. spacing over the infested reed canarygrass areas and extending 2' in each direction, unless otherwise specified. Cuttings shall be 2-year old wood, 4' length, ½" diameter, with all side branches removed and installed to a minimum depth of 12 inches.

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

2.6 As-Built Plan
Following completion of construction activities, an as-built plan for the enhancement area will be provided to the City of Bellevue. The plan will identify and describe any changes in relation to the original approved plan.

2.7 Financial Guarantee
A financial guarantee will be posted to ensure that the mitigation and monitoring program is fully implemented.

3.0 GENERAL CRITICAL AREAS REPORT DECISION CRITERIA (LUC 20.25H.255.A)
The Director may approve, or approve with modifications, a proposed buffer modification where the applicant demonstrates:

1. ***The modifications and performance standards included in the proposal lead to levels of protection of critical area functions and values at least as protective as application of the regulations and standards of this code;***

   Nearly all of the buffer proposed for modification currently consists of an existing residence and mowed lawn that does not provide any functional benefit to the wetlands. Although a small portion of forested buffer would be impacted by the road crossing, this impact is unavoidable and is the minimum necessary to allow access to the property. Furthermore, enhancement and buffer replacement is proposed at a

greater than 1:1 impact to mitigation ratio and implementation of the enhancement plan would significantly increase the habitat and protection functions of the entire wetland and riparian corridor system over current conditions.

2. ***Adequate resources to ensure completion of any required mitigation and monitoring efforts;***

   To ensure the success of the enhancement plan, a financial guarantee will be posted by the applicant for the duration of the 5-year mitigation and monitoring effort.

3. ***The modifications and performance standards included in the proposal are not detrimental to the functions and values of critical area and critical area buffers off-site; and***

   The modification to the on-site critical area buffer will not be detrimental to any off-site critical areas or buffers.

4. ***The resulting development is compatible with other uses and development in the same land use district.***

   The proposed single-family residential development is compatible with adjacent single-family residential land use.

4.0 DECISION CRITERIA TO REDUCE REGULATED BUFFER (LUC 20.25H.255.B)

The Director may approve, or approve with modifications, a proposal to reduce the regulated critical area buffer on a site where the applicant demonstrates:

1. ***The proposal includes plans for restoration of degraded critical area or critical area buffer functions which demonstrate a net gain in overall critical area or critical area buffer functions;***

A critical area restoration and enhancement plan has been prepared that would significantly increase the habitat functions of the critical areas on the site over current conditions. The plantings have been designed to connect the landscape pond to the riparian corridor and create a much higher value habitat block.

2. ***The proposal includes plans for restoration of degraded critical area or critical area buffer functions which demonstrate a net gain in the most important critical area or critical area buffer functions to the ecosystem in which they exist;***

Restoration and enhancement of the degraded buffer areas as proposed would increase the habitat value of the buffer over current conditions and would also provide improved water quality protection to downstream areas and additional opportunity for large woody debris recruitment. These functions are especially important within the riparian corridor of Valley Creek due to the presence of salmonids.

3. ***The proposal includes a net gain in stormwater quality function by the critical area buffer or by elements of the development proposal outside of the reduced regulated critical area buffer;***

Much of the existing buffer adjacent the landscape pond consists of mowed lawn that does not provide any meaningful opportunity for filtration of stormwater. The proposed plantings within the riparian corridor will increase the sediment control and filtration functions of the buffer over current conditions.

4. ***Adequate resources to ensure completion of any required restoration, mitigation and monitoring efforts;***

To ensure the success of the enhancement plan, a financial guarantee will be posted by the applicant for the duration of the 5-year mitigation and monitoring effort.

5. ***The modifications and performance standards included in the proposal are not detrimental to the functions and values of critical area and critical area buffers off-site; and***

Much of the on-site portion of the buffer from Wetland D off-site to the north would be enhanced with plantings as part of the proposal and the proposal would not be detrimental to the functions and values of the wetland and its buffer.

6. ***The resulting development is compatible with other uses and development in the same land use district. (Ord. 5680, 6-26-06, § 3)***

The proposed residential use of the property is consistent and compatible with the surrounding residential use.

5.0 DECISION CRITERIA PER LUC 20.30P.140

The Director may approve or approve with modifications an application for a Critical Areas Land Use Permit if:

A. ***The proposal obtains all other permits required by the Land Use Code; and***

It is our understanding that all other permits required by the Land Use Code will be obtained.

B. The proposal utilizes to the maximum extent possible the best available construction, design and development techniques which result in the least impact on the critical area and critical area buffer; and

The project will utilize all of the best available construction, design, and development techniques to ensure the least possible impact on the critical area and its buffer. A final erosion control plan will be prepared to prevent sediment from entering the wetlands during construction. Silt-fencing and tree protection fencing will be installed as part of this plan.

To minimize light impacts to the buffer, all outdoor lights from the new residences should contain low-wattage bulbs with narrow angles of illumination directed away from the buffers. Metal hoods should be added to all exterior lights to direct lighting down and not out from fixtures.

All plantings within the buffer will consist of native species and will installed and maintained only by a qualified landscape contractor familiar with work in sensitive environments.

C. The proposal incorporates the performance standards of Part 20.25H LUC to the maximum extent applicable; and

All of the performance standards in LUC 20.25H would be implemented to the maximum extent applicable (See Section 6.0).

D. The proposal will be served by adequate public facilities including streets, fire protection, and utilities; and

It is our understanding that the proposal will be served by adequate public facilities including streets, fire protection, and utilities.

E. The proposal includes a mitigation or restoration plan consistent with the requirements of LUC 20.25H.210; except that a proposal to modify or remove vegetation pursuant to an approved Vegetation Management Plan under LUC 20.25H.055.C.3.i shall not require a mitigation or restoration plan; and

A critical area restoration and enhancement plan has been prepared that is consistent with the requirements of LUC 20.25H.210.

F. The proposal complies with other applicable requirements of this code.

It is our understanding that all other applicable requirements of the Land Use Code will be met.

6.0 PERFORMANCE STANDARDS PER LUC 20.25H.100

Development on sites with a wetland or wetland critical area buffer shall incorporate the following performance standards in design of the development, as applicable:

A. Lights shall be directed away from the wetland.

To minimize light impacts to the buffer, all outdoor lights from the new residences should contain low-wattage bulbs with narrow angles of illumination directed away from the buffers. Metal hoods should be added to all exterior lights to direct lighting down and not out from fixtures.

B. Activity that generates noise such as parking lots, generators, and residential uses, shall be located away from the wetland, or any noise shall be minimized through use of design and insulation techniques.

All of the new residences will be developed outside of the required buffers as far as possible and all of the buffers will be well vegetated to minimize potential noise impact to the wetlands.

C. Toxic runoff from new impervious area shall be routed away from the wetlands.

No toxic runoff would be discharged into the wetlands

D. Treated water may be allowed to enter the wetland critical area buffer.

The proposed project will utilize bio-retention cells, rain gardens or equivalent LID BMPs for each lot. These stormwater treatment facilities would be designed and constructed as a part of building permit and home construction to ensure that no untreated water is discharged into the critical area buffers.

E. The outer edge of the wetland critical area buffer shall be planted with dense vegetation to limit pet or human use.

The outer edge of all proposed buffer areas will be well vegetated either through existing conditions or as part of the buffer enhancement plan.

F. Use of pesticides, insecticides and fertilizers within 150 feet of the edge of the stream buffer shall be in accordance with the City of Bellevue's "Environmental Best Management Practices," now or as hereafter amended. (Ord. 5680, 6-26-06, § 3)

The use of pesticides, insecticides and fertilizers within 150 feet of Valley Creek should only be conducted by contractors or personnel familiar with the City's applicable Best Management practices.

If you have any questions regarding the critical areas report or enhancement plan please call me at (425) 333-4535.

Sincerely,

ALTMANN OLIVER ASSOCIATES, LLC

John Altmann

John Altmann
Ecologist

Altmann Oliver Associates, LLC

PO Box 778 Carnation, WA 98014 Office (425) 333-4535 Fax (425) 333-4509

AOA

Environmental Planning & Landscape Architecture

October 20, 2016

AOA-3844

Mike Perry
Dimensions Inc.
3006 Northup Way, #302
Bellevue, WA 98004

SUBJECT: **Updated Habitat Assessment for:**
Lil' Lochwood Conservation Subdivision,
4466 140th Ave. NE, Bellevue (Parcel 152505-9070)
Original City of Bellevue File #09-113577-DB

Dear Mike:

This report is intended to meet the requirements of the City of Bellevue's Land Use Code for Habitat Assessments (LUC 20.25H.165.A). The proposed project is located at 4466 140th Ave. NE (**Figure 1**) and consists of a nine-lot short plat on a 12.81-acre site.

Field investigations for the habitat assessment were originally conducted on July 14, 2009. An updated site visit was conducted on September 22, 2016. Prior to the field investigations, the Washington Department of Fish and Wildlife's (WDFW) Priority Habitats and Species (PHS) data was reviewed for all areas in the vicinity of the site.

The following site- and proposal-related information is required for the habitat assessment:

1. ***Detailed description of vegetation on and adjacent to the site.***

The west-central portion of the project site is currently developed with a large existing single-family residence and free standing garage and landscaped areas. Additional maintained lawn and landscaped areas exist surrounding an excavated pond in the north central portion of the site. The remaining portion of the property is largely undeveloped and includes: 1) mixed upland forest throughout the eastern and northwestern portions of the site, 2) Valley Creek and an associated wetland system throughout the central portion of the property, and 3) actively grazed upland horse pasture with scattered trees in the southwestern portion of the site.

Received
JAN 25 2017
Permit Processing

Topography on the site generally slopes moderately down from east to west through the eastern portion of the site and from west to east through the western portion of the property.

Surrounding land use includes single-family residential and pasture to the north, multi-family residential to the east, single-family residential to the southeast and southwest, and 140th Ave. NE to the west. In addition, an undeveloped corridor associated with Valley Creek extends off-site to the south.

Based on the habitat classifications outlined in *Wildlife-Habitat Relationships in Oregon and Washington* (Johnson and O'Neil, 2001) the entire site would be classified as Urban and Mixed Environs – Medium to Low Density Zone. However, to further classify vegetation on the site, plant communities were divided into the following five general habitat types (**Figure 2**):

1) Westside Lowland Conifer-Hardwood Forest. This habitat type occurs throughout the eastern portion of the site and consists of an unevenly aged mixed forest with mature trees present (see tree survey prepared by Goldsmith Land Development Services). Canopy coverage was variable (open to nearly closed) and included Douglas fir (*Pseudotsuga menziesii*), western red cedar (*Thuja plicata*), big-leaf maple (*Acer macrophyllum*), red alder (*Alnus rubra*), western hemlock (*Tsuga heterophylla*), and cascara (*Rhamnus purshiana*).

   Understory and groundcover vegetation varied from moderately dense to dense and included salmonberry (*Rubus spectabilis*), vine maple (*Acer circinatum*), Indian plum (*Oemleria cerasiformis*), red elderberry (*Sambucus racemosa*), salal (*Gaultheria shallon*), red huckleberry (*Vaccinium ovatum*), sword fern (*Polystichum munitum*), trailing blackberry (*Rubus ursinus*), stinging nettle (*Urtica dioica*), and bleeding heart (*Dicentra formosa*).

   Habitat features in this area included numerous young to moderately aged (< 20" diameter at breast height) red alder snags. In addition, two larger conifer snags were observed within this habitat area. The first consists of an ~24" dbh western hemlock snag located about 20 feet south of surveyed big-leaf maple tree #1224 and the second consists of another ~24" western hemlock snag located about 25 feet west of surveyed Douglas fir tree #1504. Both of these snags are located within the 110-foot buffer of Wetland A/B (see *Wetland and Stream Delineation Study* prepared by The Watershed Company).

   Also included within this habitat type is a Douglas fir dominated forested area in the northwest portion of the property. At the time of the site visits this area was being actively grazed by horses and contained little understory and herbaceous vegetation with no significant habitat features observed.

2) Westside Riparian - Wetlands. This habitat type occurs throughout the central portion of the site and includes forested, scrub-shrub, emergent, and aquatic vegetation components. Common plant species included western red cedar, red alder, salmonberry, vine maple, stinging nettle, skunk cabbage (*Lysichiton americanum*), and lady fern (*Athyrium filix-femina*). Snags, downed logs, and other habitat features were observed within the wetland.

   Valley Creek, a tributary to Kelsey Creek which eventually drains to Lake Washington via Mercer Slough, flows from north to south through the eastern portion of the wetland. The vegetated riparian corridor along Valley Creek and its associated wetlands continues off-site to the south.

   See the *Wetland and Stream Delineation Study* prepared by The Watershed Company for a more detailed description of the wetlands delineated on the property.

3) Agriculture, Pasture and Mixed Environs. This habitat type occurs throughout the southwestern portion of the site and consists of horse pasture with scattered Douglas fir trees. At the time of the site visits vegetation consisted primarily of grasses, bracken fern (*Pteridium aquilinum*), and ox-eye daisy (*Chrysanthemum leucanthemum*). No significant habitat features were observed within this habitat area.

4) Developed/Mixed. This habitat type occupies the area in the vicinity of the existing residence and consisted primarily of lawn and ornamental areas. Also included within this habitat area was the existing maintained lawn surrounding the excavated pond.

5) Pond. This habitat type consist of a pond that was apparently historically excavated within a wetland. This pond has been identified by the Watershed Company as Wetland C and consists primarily of open water with a narrow perimeter of periodically mowed herbaceous vegetation.

2. Identification of any species of local importance that have a primary association with habitat on or adjacent to the site, and assessment of potential impacts to the use of the site by the species;

Twenty three (23) species have been designated by the City of Bellevue as species of local importance (LUC 20.25H.150). The potential of site utilization by each species is briefly described below:

- Bald eagle (*Haliaeetus leucocephalus*): site not located within Bald Eagle Buffer Management Zone per PHS data. Some potential occasional perching opportunity within larger on-site trees possible, but does not have a primary association with habitat on or immediately adjacent site. Primary Association: no.

- Peregrine falcon (*Falco peregrinus*): generally associated with coastal cliffs and shorelines, but also use large buildings in city center. Falcon eyrie has been identified on PHS data for downtown Bellevue, but use of project site unlikely. Primary Association: no.

- Common Loon (*Gavia immer*): unlikely presence – highly aquatic species associated with large water bodies, not small ponds. Primary Association: no.

- Pileated woodpecker (*Dryocopus pileatus*): pileated woodpecker feeding cavities were observed on several snags in the eastern portion of the site and within the wetlands. Pileated woodpeckers inhabit mature and old-growth forests, and second-growth forests with large snags and fallen trees. The range of the species encompasses all of the forested areas of the state. Although typically found in larger forested tracts, they are known to occur in suburban habitats as well. Their key breeding habitat need is the presence of large snags or decaying live trees for nesting, as this species generally excavates a new nest cavity each year. The breeding and nesting periods of the pileated woodpecker extends from late March to early July. No pileated woodpecker nests were observed on the site during the field investigation and the lack of a significant concentration of large snags limits the nesting potential of this species. Primary Association: no.

- Vaux's swift (*Chaetura vauxi*): Vaux's swifts are strongly associated with old growth and mature forests throughout the state and are highly dependent on large hollow trees and snags for breeding and roosting. Although some potential for foraging, unlikely nesting or primary association on the site due to lack of large snag concentration or habitat block. Primary Association: no.

- Merlin (*Falco columbarius*): unlikely presence – generally require coastal or high elevation forests. Primary Association: no.

- Purple martin (*Progne subis*): unlikely presence – generally require cavities near or over water for nesting. No large snags along pond edge. Primary Association: no.

- Western grebe (*Aechmophorus occidentalis*): unlikely presence – highly aquatic species associated with large water bodies, not small ponds. Primary Association: no.

- Great blue heron (*Ardea herodias*): potential foraging possible within pond and adjacent wetland, but no roosts observed on or adjacent site. Primary Association: no.

- Osprey (*Pandion haliaetus*): some potential occasional perching opportunity within larger on-site trees possible, but unlikely frequent utilization of project site since perch availability not near large water body. Primary Association: no.

- Green heron (*Butorides striatus*): potential foraging possible within pond and adjacent wetland, but no nests observed on or adjacent site. Primary Association: no.

- Red-tailed hawk (*Buteo jamaicensis*): potential utilization of site (especially southwest pasture) for occasional perching and hunting, although no nests observed and not near significant open expanse. Primary Association: no.

- Western big-eared bat (*Plecotus townsendii*): potential presence, but no known nearby hibernacula or caves so not considered a habitat of primary association. Primary Association: no.

- Keen's myotis (*Myotis keenii*): potential presence, but generally associated with larger coniferous forests not remnant forest within moderate density residential areas so not considered a habitat of primary association. Primary Association: no.

- Long-legged myotis (*Myotis volans*): potential presence, but generally associated with larger coniferous forests not remnant forest within moderate density residential areas so not considered a habitat of primary association. Primary Association: no.

- Long-eared myotis (*Myotis evotis*): potential presence, but generally associated with larger coniferous forests not remnant forest within moderate density residential areas so not considered a habitat of primary association. Primary Association: no.

- Oregon spotted frog (*Rana pretiosa*): unlikely presence since believed to be extirpated from nearly all of western Washington. Confirmed presence of bull frogs within pond further reduces likelihood of presence. Primary Association: no.

- Western toad (*Bufo boreas*): presence possible but no known breeding and not considered habitat of primary association. Primary Association: no.

- Western pond turtle (*Clemmys marmorata*): unlikely presence, no known nearby populations. Primary Association: no.

- Chinook (*Oncorhynchus tshawytscha*): the WDFW PHS data indicates the presence of Fall Chinook within Valley Creek on the project site. Primary Association: yes.

- Bull trout (*Salvelinus confluentus*): no known presence and not listed on WDFW database. Primary Association: no.

- Coho salmon (*Oncorhynchus kisutch*): the WDFW PHS data indicates the presence of Coho salmon within Valley Creek on the project site. Primary Association: yes.

- River lamprey (*Lampetra ayresi*): no known presence, but potential presence within Valley Creek. Primary Association: no.

Of the 23 species of local importance, two (Fall Chinook and Coho salmon) were positively identified by the WDFW as being present in the vicinity of the project site and determined to therefore have a primary association with habitat on the property. In addition, although pileated woodpecker feeding cavities were observed within the wetlands and eastern mixed forest, the site was not considered habitat of primary association for this species due to the relatively small size of the overall forested area in the vicinity of the site and a general paucity of large snags for nesting.

Other species of local importance which were not considered to have a primary association with habitat on the site, but which may potentially utilize the property on at least an occasional basis include: bald eagle, Vaux's swift, great blue heron, osprey, green heron, red-tailed hawk, western big-eared bat, Keen's myotis, long-legged myotis, long-eared myotis, western toad, and river lamprey.

Under the proposed project, Valley Creek and all of the wetlands on the site would be preserved (see site plan). In addition, a 110-foot buffer would be provided to the higher value wetlands on the site and a 60-foot buffer would be provided to the landscape pond adjacent proposed Lot 4. A critical area restoration and mitigation plan (**Drawings W1.1 and W1.2**) has been developed for the existing house and yard currently located within the buffer on Lot 5 (see #5 below).

The project should not have a significant impact on entirely aquatic species such as Fall Chinook, Coho salmon, or river lamprey, or those species such as great blue heron and green heron likely to be found in the wetland. However, the removal of existing native vegetation, including large trees in the eastern portion of the site, would likely further reduce the potential that the site is utilized by raptors, woodpeckers, or bats.

3. ***A discussion of any federal, state, or local special management recommendations, including Washington Department of Fish and Wildlife habitat management recommendations, that have been developed for species or habitats located on or adjacent to the site.***

Fall Chinook and Coho Salmon
Valley Creek and its associated wetlands have been delineated, surveyed, and rated per LUC 20.25H (see The Watershed Company's *Wetland and Stream Delineation Study*). No significant vegetation would be removed from the protected riparian corridor of the stream as part of the project.

Pileated Woodpecker Habitat Management Plan
Since the forested portions of the site do provide potential habitat for several species of local importance, it is our understanding that these forested areas would be considered a critical area and subject to the habitat performance standard outlined in LUC 20.25H.160. Per discussions with City staff, the Habitat Management Plan should focus on the pileated woodpecker since it would be considered a keystone species for the forested portions of the property.

Although pileated woodpeckers are not protected by the Endangered Species Act, the Washington Department of Fish and Wildlife's *Management Recommendations for Washington's Priority Species Volume IV: Birds (2004)* does provide management recommendations for pileated woodpeckers in suburban areas.

These recommendations include:

- Conserving larger forest patches with large trees and snags
- Retaining forest in the largest patches available (>74 acres would be considered large). Where large patches are unavailable, smaller patches should be retained; where the average size of smaller patches should be no less than approximately 7 acres.
- Retaining or creating snags as well as retaining live trees in the largest size classes available in the stand.

Since it is not feasible to preserve 7 acres of unfragmented forested area on this 12.81-acre site development, it is my recommendation that the following measures be implemented to continue to allow for the potential use of the forested portions of the site by pileated woodpeckers:

- All existing significant trees and habitat features located within the wetlands and protected riparian corridor of the stream should be retained.

- Although I do not believe it necessary to create snags from any of the existing live healthy trees on the property, if any trees within the critical area tracts on the site are deemed hazardous and must be removed for safety concerns, then it is my recommendation that a snag be created from that tree at the tallest appropriate point.
- A field survey should be conducted to locate any potential active pileated woodpecker nest sites prior to clearing, and if a nest site is observed during the site review, delay the clearing in the vicinity of the nest to protect the nest and allow time for any young to fledge.

4. ***A detailed discussion of the direct and indirect potential impacts on habitat by the project, including potential impacts to water quality.***

The primary impact to habitat from the proposed project will be removal of significant trees and understory vegetation, mostly within the eastern portion of the site. Additional trees would also be lost within the northwest portion of the site and scattered within the southwest pasture. Indirect impacts from the tree removal also include the potential for blow down of proposed trees to be saved.

Although unknown at this time, temporary impacts to the wetland and buffer could occur during connection to the existing sewer line that runs from north to south through the property just east of the stream.

It is my understanding that the project would utilize all applicable erosion control methods during construction to minimize potential water quality impacts on off-site areas during construction. Long term water quality protection would be provided by placing the existing well-vegetated wetlands and their buffers into Critical Area Tracts and through implementation of the critical area mitigation planting plan.

5. ***A discussion of measures, including avoidance, minimization, and mitigation, proposed to preserve existing habitats and restore any habitat that was degraded prior to the current proposed use or activity and to be conducted in accordance with the mitigation sequence set forth in LUC 20.25H.215.***

The proposed project is designed to avoid the critical areas on the site, and all well-vegetated wetland areas will be preserved within the Critical Area Tract. It is also my understanding that the proposed project will meet all of the tree retention requirements of the City and that perimeter vegetation surrounding the proposed project, as well as selected specimen trees, will also be preserved wherever possible.

It is my recommendation that prior to clearing, all trees proposed to be retained be reviewed for the probability of survival or blow down. If additional trees must be removed and in the unlikely case that the tree retention requirement is no longer met, additional mitigation measures should be implemented.

If connection to the existing sewer line within the wetland and/or its buffer is required, all significant trees should be avoided to the extent feasible and all temporarily disturbed areas should be restored with native vegetation.

Lot 5 Buffer Mitigation

As part of the proposed project, the existing house and a portion of the existing lawn and yard located within the wetland buffers on Lot 5 would be retained. Mitigation for retaining this existing land use would occur through the restoration and enhancement of currently degraded wetland and buffer areas adjacent the pond and within the existing horse pasture to the east of Lots 1 and 2.

Enhancement of these areas would significantly increase the plant species and structural diversity within the wetland and buffers and would benefit those wildlife species utilizing the pond as well as create a larger more valuable wildlife habitat block by providing a well-vegetated connection between the pond and the riparian corridor of the stream. In addition, the plantings within the buffer to the east of Lots 1 and 2 would significantly increase the physical and visual screening to the wetland from the proposed development.

6. ***A discussion of ongoing management practices that will protect habitat after the site has been developed, including proposed monitoring and maintenance programs.***

As previously discussed, the stream and all of the wetlands and their associated well-vegetated buffers will be placed in a permanently protected Critical Areas Tract to ensure long-term protection. This tract is located adjacent to additional critical areas off-site to the south and would therefore create a larger preserved contiguous habitat area.

In addition, a 5-year monitoring and maintenance program has been developed for all of the restored and enhanced critical areas (see **Drawing W1.2**). A financial guarantee will be posted to ensure that the mitigation and monitoring program is fully implemented.

Draft Functional Assessment Tool for Upland Habitat

The project site has a numerical score of 50.5 based on the City of Bellevue's *Draft Functional Assessment Tool for Upland Habitat* (**Attachment A**). In general, sites with scores in excess of 40 "are indicative of high value exurban areas, where wildlife use, including that of species of local importance, can be expected both on the site" and in the surrounding area.

The property received high scores for the presence of critical areas including Valley Creek, a mixed forest with large trees, and a relatively high vegetative species richness and interspersion of habitat types. Limiting factors consisted primarily of the degree of existing degraded habitat conditions associated with the house, lawn, and pasture areas and the site's relative isolation from other large habitat corridors.

CONCLUSION

The site plan is designed to avoid impacting the critical areas on the site, including the habitat of those species of local importance known to have a primary association with habitat found on the property. Under the proposed project, the stream (mapped habitat for Fall Chinook and Coho salmon) and all of the wetlands and their associated well-vegetated buffers would be preserved and protected within a Critical Area Tract.

Although several of the species of local importance could potentially occasionally utilize the property, the site was not considered a likely habitat of primary association for these species due to the relatively small size and isolated condition of the surrounding habitat area.

If you have any questions regarding the Habitat Assessment, please give me a call.

Sincerely,

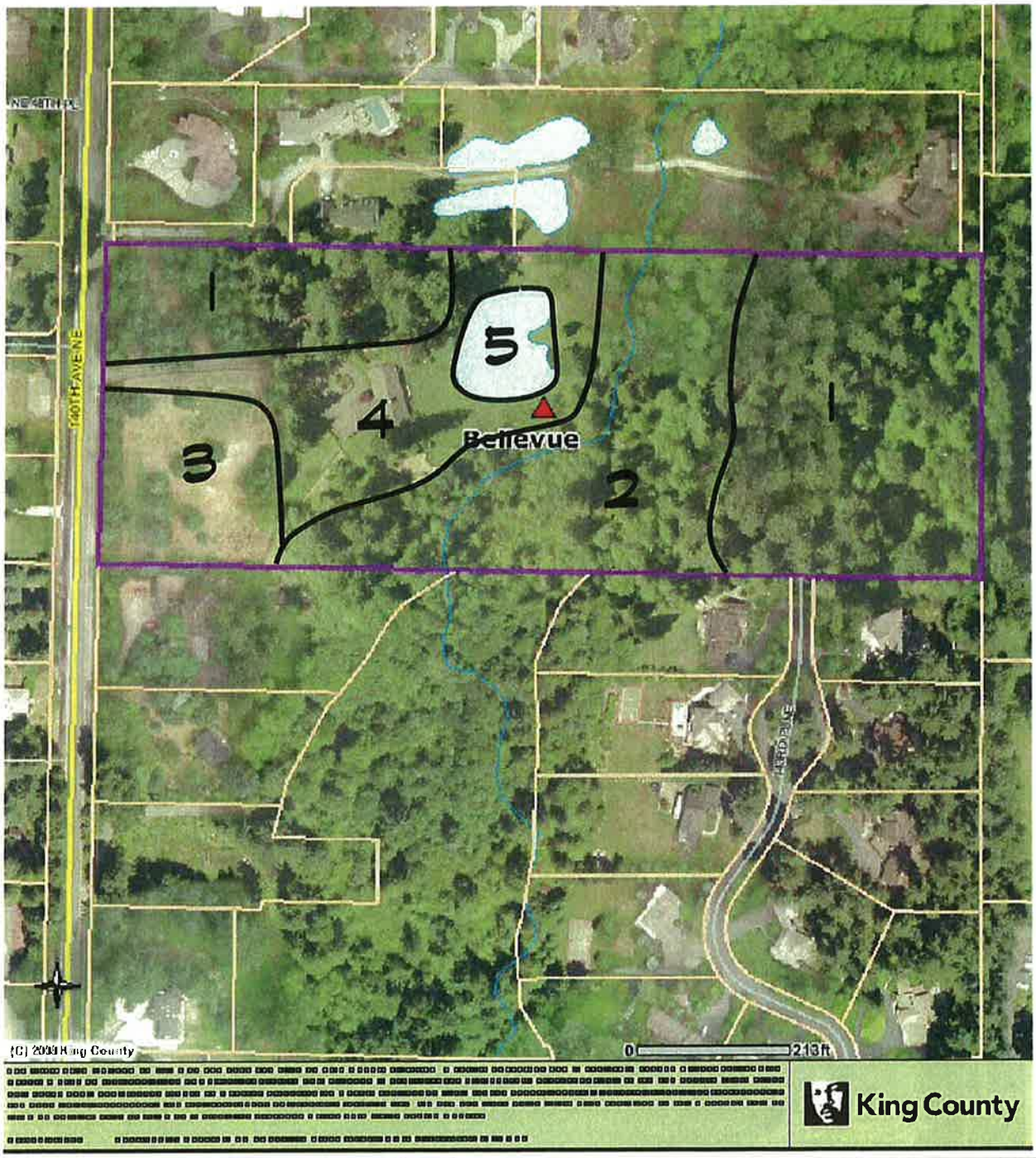
ALTMANN OLIVER ASSOCIATES, LLC

John Altmann

John Altmann
Ecologist

LEGEND

1 WESTSIDE LOWLAND CONIFER HARDWOOD FOREST
2 WESTSIDE RIPARIAN WETLANDS
3 AGRICULTURE, PASTURE AND MIXED ENVIRONS
4 DEVELOPED / MIXED
5 POND



Altmann Oliver Associates, LLC
PO Box 578 Carnation, WA 98014 Office (425) 333-4535 Fax (425) 333-4509
AOA Environmental Planning & Landscape Architecture

FIGURE 2. HABITAT MAP
PERRY PROPERTY
4466 140th AVE NE
PARCEL 152505-9070

DRAWN	PROJECT
SO	3844
SCALE	
SEE MAP	
DATE	
8-7-09	2
REVISED	

Figure 1

The information included on this map has been compiled by King County staff from a variety of sources and is subject to change without notice. King County makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. This document is not intended for use as a survey product. King County shall not be liable for any general, special, indirect, incidental, or consequential damages including, but not limited to, lost revenues or lost profits resulting from the use or misuse of the information contained on this map. Any sale of this map or information on this map is prohibited except by written permission of King County.

Date: 10/19/2016 Notes:

N

King County
GIS Center

ATTACHMENT A
DRAFT FUNCTIONAL ASSESSMENT TOOL

City of Bellevue

DRAFT FUNCTIONAL ASSESSMENT TOOL

for Upland Habitat

Property address 4466 - 140th AVE NE

Location SE Range 25N Township 15 Section

Parcel number 152505-9070

Property owner MIKE PERRY

Telephone number (425) - 827 - 9293

Project name LIL' LOCHWOOD

Project contact JOHN ALTMANN

Telephone number (425) - 333 - 4535

Address PO BOX 578 CARNATION, WA 98014

Staff JOHN ALTMANN

Date(s) of site visit(s) 07/14/09 AND 09/22/16

Washington Department of Fish and Wildlife Priority Habitat and Species (PHS) data obtained? Y/N YES

1.0	PROPERTY DESIGNATION	Zone A	Zone B	Zone C	Zone D		Zone
1.1	Existing impervious surface	>90%	50-90%	20-50%	0-20%		D
2.0	**LANDSCAPE PARAMETERS**	**No points**	**1 point**	**2 points**	**3 points**	**Additional points**	**Total**
2.1	Land use/development density	Zone A	Zone B	Zone C	Zone D		3
2.2	*Occurrence (number) of habitat types	0	1	2	3+		3
2.3	**Proximity of known critical areas (distance to edge)	>2,500 ft	<2,500 ft	<1,200 ft	<100 ft	+1 point if contiguous with critical area	4
2.4	Habitat connectivity and corridors	No connection to other habitat areas	≥50-foot-wide connection to vegetated areas of at least 1 acre	≥50-foot-wide connection to vegetated areas of at least 50 acres but not listed parks***	≥50-foot-wide connection King County wildlife network or listed parks***	+1 point for ≥150-foot-wide connection King County wildlife network or listed parks***	1
2.5	Patch size	<0.-1.0 ac	1.0-5.0 ac	>5-10 ac	10-42 acres	>42 acres = 4 points	3

City of Bellevue

DRAFT FUNCTIONAL ASSESSMENT TOOL

for upland habitat

2.0	LANDSCAPE PARAMETERS	No points	1 point	2 points	3 points	Additional points	Total
2.6	***Interspersion of habitat patches (excluding patches <1 ac in area)**	No or isolated patch (no others within 0.5-ac circle)	Low	Moderate	High	+1 point if wildlife network or listed park is included	3
3.0	**LOCAL PARAMETERS**	**No points**	**1 point**	**2 points**	**3 points**	**Additional points**	**Total**
3.1	**Size of native trees on site**	No significant trees on site	6-12" dbh tree(s) present	12-20" dbh tree(s) present	>20" dbh tree(s) present	+1 point if tree(s) >30" dbh are present	4
3.2	**Coniferous component**	No conifers on site	Conifers very sparse or present in understory only	Conifers co- or sub-dominant in overstory ✓	Conifers dominant	+1 point if conifers >30" dbh are present ✓	3
3.3	**Percent cover (sample vegetated areas only)**						
	Ground layer (0-2.3 ft) (5-ft radius)	0%	0-25%	25-50%	50%+	+1 point for cover >75%; -1 point if mowed grass is >50%	3
	Shrub layer (2.3-25 ft) (10-ft radius)	0%	0-25%	25-50%	50%+	+1 point for cover >75%	3
	Canopy (>25 ft) (30-ft radius)	0%	0-25%	25-50%	50%+	+1 point for cover >75%	3
3.4	**Vegetative vertical structural diversity (foliage height diversity)**	FHD = 0	FHD < 0.70	FHD = 0.70-0.90	FHD > 0.90		3
3.5	**Vegetative species richness**	0-1 species	2-5 species	6-19 species	20+ species		3
3.6	**Invasive species component**	>75% cover	25-75% cover	10-25%cover	<10% cover		2

City of Bellevue

DRAFT FUNCTIONAL ASSESSMENT TOOL

for Upland Habitat

3.0	LOCAL PARAMETERS	No points	1 point	2 points	3 points	Additional points	Total
3.7	**Proximity to year-round water**	>1.0 mi or artificial feature with maintained /invasive buffer present within 0.3-1 mi	0.3-1.0 mi or artificial feature with maintained/ invasive buffer present within <0.3 mi	<0.3 mi or artificial feature with maintained/ invasive buffer present within patch	Natural water feature present within patch with native buffer		3
3.8	**Snags (≥4 in dbh)**	No snags on site	1/ac or fewer	2-6/ac ✓	>7/ac	3 x >20" Add 0.5 point for each >20 in dbh and 1 point for each >30 in dbh	3.5
3.9	**Other habitat features**	None	1	2-4	5 or more ✓ DOWN LOGS		3
Landscape parameters points							17
Local parameters points							33.5
TOTAL POINTS							50.5

* Use circle of the appropriate size for the property's zone:

Zone A – 0.5 ac
Zone B – 5.0 ac
Zone C – 100 ac
Zone D – 250 ac

** PHS data required for sites in Zone D

***Parks: Mercer Slough, Phantom Lake wetland complex, Larson Lake wetland complex, Cougar Mountain Regional Wildland Park, Weowna Park; King County wildlife network

Altmann Oliver Associates, LLC

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AOA

Environmental
Planning &
Landscape
Architecture

January 16, 2017

AOA-3844

Mike Perry
Dimensions Inc.
3006 Northup Way, #302
Bellevue, WA 98004

SUBJECT: **Critical Areas Report for Lil' Lochwood Conservation Subdivision**
Wetland/Stream Buffer Modifications
4466 140th Ave. NE, Bellevue (Parcel 152505-9070)
Original City of Bellevue File #09-113577-DB

Dear Mike:

We have prepared a wetland and stream buffer impact and mitigation plan for the proposed 9-Lot Lil' Lochwood Conservation Subdivision (**Drawings W1.1 and W1.2**). Wetlands and streams on the property were delineated by The Watershed Company (TWC) and subsequently surveyed. All of the existing conditions of the critical areas are fully described in the TWC "Wetland and Stream Delineation Report".

The purpose of this report is to address the proposed wetland and stream buffer impacts and mitigation. A separate habitat assessment as required in Bellevue LUC 20.25H.165.A has also been prepared.

1.0 PROPOSED BUFFER IMPACTS

Valley Creek and all of the wetlands on the site will be preserved and no direct impacts to critical areas are proposed under this project. A 110-foot buffer will be provided to the higher value wetlands on the site (Wetland A/B) and a 60-foot buffer will be provided to the landscape pond (Wetland C) adjacent proposed Lot 4.

Proposed buffer modifications on the site are limited to: 1) allowing the existing house (built in 1956), its driveway, and a portion of the maintained yard on Lot 5 to remain, 2) crossing of the Type Ns stream in the southeast corner of the site with an access road, 3) temporary disturbance for sewer connection in the northeast portion of the site, and 4) allowing existing small pervious pedestrian trails within buffer to remain.

Received
JAN 25 2017
Permit Processing

1.1 Lot 5 Buffer
As part of the proposed project, a total of 32,611 s.f. of the existing house, driveway, and a portion of the existing lawn and yard located within the wetland buffers on Lot 5 would be retained. These buffer areas are all entirely developed and maintained and do not currently provide any significant habitat, hydrologic, or screening functions to the wetlands.

1.2 Southeast Stream B Buffer Crossing
Access to the eastern portion of the site would occur across an existing culvert located at the terminus of 143rd Place NE in the southeast quadrant of the property. Utilization of the existing crossing would eliminate the need for direct stream impacts but would still unavoidably impact 1,302 s.f. of mostly forested buffer as part of the clearing and grading requirements.

1.3 Sewer Connection
An existing sanitary sewer line traverses the wetland and wetland buffer parallel to Valley Creek in the eastern portion of the site. The four proposed lots in the eastern portion of the property require access to this sewer line. The connection is proposed along the north property line where the least amount of temporary buffer impact would occur. All temporarily disturbed buffer areas would be restored with native plantings.

1.4 Pedestrian Trails to Remain
A network of existing trails is currently located throughout the central and eastern portions of the site. These trails are pervious and are for pedestrian use only. The trails would remain in their current location within the buffer to avoid the removal of significant vegetation.

2.0 PROPOSED MITIGATION
Mitigation for 32,611 s.f. of buffer modification within Lot 5 would occur through: 1) the restoration/enhancement of 33,913 s.f. of degraded buffer, 2) the restoration/enhancement of 7,185 s.f. of degraded wetland, and 3) the enhancement of 7,095 s.f. of degraded buffer with shrub plantings. All of the restoration/enhancement would occur within existing yard areas adjacent to the pond and within the horse pasture to the east of Lots 1 and 2. It was determined that enhancement of the highly degraded and non-functioning buffers would be the best mitigation alternative for increasing the habitat value and screening functions of the wetland. These enhancement areas are located throughout the central corridor of the site and are part of a contiguous habitat block adjacent the proposed impacts.

Enhancement measures include removing invasive species and re-planting with a wide variety of native tree, shrub, and emergent species. Enhancement of these areas will significantly increase the plant species and structural diversity within the wetlands and their buffers. This will also benefit those wildlife species utilizing the pond as well as create a larger cohesive and more valuable wildlife habitat block by providing a well-vegetated connection between the pond and the riparian corridor of the stream. In addition, the

plantings within the buffer to the east of Lots 1 and 2 will significantly increase the physical and visual screening to the wetland from the proposed development.

Mitigation for the 1,302 s.f. of buffer impact associated with the road crossing would occur through the replacement of 3,570 s.f. of additional forested buffer contiguous with the impact area. This is the preferred alternative for unavoidable buffer impacts per LUC 20.25H.105.A.2.a.

As part of a Critical Areas Report, the City of Bellevue requires "an analysis of the level of protection of critical area functions and values provided by the regulations or standards of this code, compared with the level of protection provided by the proposal. The analysis shall include:"

a. *A discussion of the functions and values currently provided by the critical area and critical area buffer on the site and their relative importance to the ecosystem in which they exist;*

Wetlands, in general, provide many valuable ecological and social functions, including stormwater storage, water quality protection, groundwater recharge and discharge, and wildlife habitat. The wetlands on the site have a relatively high value for many of these functions due to the large size of the overall wetland system and its association with an anadromous fish-bearing water. The wetlands provide stormwater storage areas that reduce downstream flooding while trapping sediments. The trapping of sediments and other pollutants within the wetlands maintains water quality in downstream areas and aids in the prevention of fish habitat degradation by limiting silt accumulation within spawning areas. The wetlands provide further benefit to fish and other wildlife by releasing water slowly during the dry summer months, thereby contributing to the base flow of the stream.

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

The on-site wetland does provide some cultural wetland functions as part of the overall open space associated with the Valley Creek riparian corridor. The wetland contains some passive recreational opportunities such as wildlife viewing.

The buffer in the eastern portion of the site is primarily forested and currently functions at a high level. The functions in the mid-western portion of the site are highly degraded, non-functioning, and include large areas of lawn around the pond, horse pasture, existing residence and access drive.

b. *A discussion of the functions and values likely to be provided by the critical area and critical area buffer on the site through application of the regulations and standards of this Code over the anticipated life of the proposed development; and*

The Land Use Code requires a standard 110-foot buffer from Wetland A/B and a standard 60-foot buffer from Wetland C. Much of the buffer in the western portion of the site currently is currently developed with the existing residence and its maintained lawn and yard. These developed buffer areas provide little functional value to the wetlands. If no modifications were proposed within the buffer and the existing lawn areas were to remain, there would be no functional lift associated with the implementation of a buffer enhancement plan.

Preservation of the existing degraded standard buffer will not increase the habitat value of the buffer and future recolonization of native plant species would be limited.

c. *A discussion of the functions and values likely to be provided by the critical area and critical area buffer on the site through the modifications and performance standards included in the proposal over the anticipated life of the proposed development;*

Implementation of the proposed critical area restoration and enhancement plan as mitigation for allowing the existing residence and a portion of mowed lawn to remain would significantly increase the habitat functions of the critical areas on the site over current conditions. The enhanced critical areas will also provide physical and visual screening to the riparian corridor from the proposed residences.

2.1 Goal, Objectives, and Performance Standards for Enhancement Areas

The primary goal of the enhancement plan is to increase the habitat and protective functions of the buffers on the site over current conditions. To meet this goal, the following objectives and performance standards have been incorporated into the design of the plan:

Objective A: Increase the structural and plant species diversity within the enhancement areas.
Performance Standard: Following every monitoring event for a period of at least 5 years, the enhancement area will contain at least 14 native plant species. In addition, there will be 100% survival of all woody planted species throughout the enhancement area at the end of the first year of planting. Following Year 1, success will be based on an 80% survival rate.

Areal coverage of plantings or native re-colonized species will be at least 15% at Year 1, 20% at Year 2, 40% at Year 3, and 60% at Year 5.

Objective B: Limit the amount of invasive and exotic species within the enhancement areas.
Performance Standard: After construction and following every monitoring event for a period of at least five years, exotic and invasive plant species will be maintained at levels below 10% total cover in all planted areas. These species include, but are not limited to, Himalayan and evergreen blackberry, reed canarygrass, Scot's broom, morning glory, Japanese knotweed, English ivy, thistle, and creeping nightshade.

2.2 Construction Management

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

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

2.3 Monitoring Methodology

As required, the monitoring program will be conducted for a period of five years with annual reports submitted to the City of Bellevue. Permanent vegetation sampling plots will be established to monitor the general appearance, health, mortality, colonization rates, percent cover, percent survival, volunteer plant species, and invasive weeds.

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

2.4 Maintenance Plan

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

Routine removal and control of non-native and other invasive plants shall be performed by manual means (i.e., no chemical use within riparian corridor). Weed removal includes hand grubbing all roots and exporting off-site. Undesirable and weedy exotic plant species shall be maintained at levels below 10% total cover within any given stratum at any time during the five-year monitoring period.

The following outlines specific treatment for reed canarygrass.

Reed Canarygrass Control
Areas with reed canarygrass patches 3' x 3' or smaller need to be hand-grubbed. Patches greater than 3'x 3' shall be weed-whacked. Areas shall be staked with Scouler willow (*Salix scouleriana*) cuttings (see Staking Specifications below). During April 1 through November 30, one-gallon plants (minimum height of 18") shall be used in place of cuttings.

Staking Specifications:
Cuttings can be purchased or gathered from approved mature sources. Cuttings shall be installed at 1' O.C. spacing over the infested reed canarygrass areas and extending 2' in each direction, unless otherwise specified. Cuttings shall be 2-year old wood, 4' length, ½" diameter, with all side branches removed and installed to a minimum depth of 12 inches.

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

2.6 As-Built Plan
Following completion of construction activities, an as-built plan for the enhancement area will be provided to the City of Bellevue. The plan will identify and describe any changes in relation to the original approved plan.

2.7 Financial Guarantee
A financial guarantee will be posted to ensure that the mitigation and monitoring program is fully implemented.

3.0 GENERAL CRITICAL AREAS REPORT DECISION CRITERIA (LUC 20.25H.255.A)
The Director may approve, or approve with modifications, a proposed buffer modification where the applicant demonstrates:

1. ***The modifications and performance standards included in the proposal lead to levels of protection of critical area functions and values at least as protective as application of the regulations and standards of this code;***

   Nearly all of the buffer proposed for modification currently consists of an existing residence and mowed lawn that does not provide any functional benefit to the wetlands. Although a small portion of forested buffer would be impacted by the road crossing, this impact is unavoidable and is the minimum necessary to allow access to the property. Furthermore, enhancement and buffer replacement is proposed at a

greater than 1:1 impact to mitigation ratio and implementation of the enhancement plan would significantly increase the habitat and protection functions of the entire wetland and riparian corridor system over current conditions.

2. ***Adequate resources to ensure completion of any required mitigation and monitoring efforts;***

   To ensure the success of the enhancement plan, a financial guarantee will be posted by the applicant for the duration of the 5-year mitigation and monitoring effort.

3. ***The modifications and performance standards included in the proposal are not detrimental to the functions and values of critical area and critical area buffers off-site; and***

   The modification to the on-site critical area buffer will not be detrimental to any off-site critical areas or buffers.

4. ***The resulting development is compatible with other uses and development in the same land use district.***

   The proposed single-family residential development is compatible with adjacent single-family residential land use.

4.0 DECISION CRITERIA TO REDUCE REGULATED BUFFER (LUC 20.25H.255.B)

The Director may approve, or approve with modifications, a proposal to reduce the regulated critical area buffer on a site where the applicant demonstrates:

1. ***The proposal includes plans for restoration of degraded critical area or critical area buffer functions which demonstrate a net gain in overall critical area or critical area buffer functions;***

A critical area restoration and enhancement plan has been prepared that would significantly increase the habitat functions of the critical areas on the site over current conditions. The plantings have been designed to connect the landscape pond to the riparian corridor and create a much higher value habitat block.

2. ***The proposal includes plans for restoration of degraded critical area or critical area buffer functions which demonstrate a net gain in the most important critical area or critical area buffer functions to the ecosystem in which they exist;***

Restoration and enhancement of the degraded buffer areas as proposed would increase the habitat value of the buffer over current conditions and would also provide improved water quality protection to downstream areas and additional opportunity for large woody debris recruitment. These functions are especially important within the riparian corridor of Valley Creek due to the presence of salmonids.

3. ***The proposal includes a net gain in stormwater quality function by the critical area buffer or by elements of the development proposal outside of the reduced regulated critical area buffer;***

Much of the existing buffer adjacent the landscape pond consists of mowed lawn that does not provide any meaningful opportunity for filtration of stormwater. The proposed plantings within the riparian corridor will increase the sediment control and filtration functions of the buffer over current conditions.

4. ***Adequate resources to ensure completion of any required restoration, mitigation and monitoring efforts;***

To ensure the success of the enhancement plan, a financial guarantee will be posted by the applicant for the duration of the 5-year mitigation and monitoring effort.

5. ***The modifications and performance standards included in the proposal are not detrimental to the functions and values of critical area and critical area buffers off-site; and***

Much of the on-site portion of the buffer from Wetland D off-site to the north would be enhanced with plantings as part of the proposal and the proposal would not be detrimental to the functions and values of the wetland and its buffer.

6. ***The resulting development is compatible with other uses and development in the same land use district. (Ord. 5680, 6-26-06, § 3)***

The proposed residential use of the property is consistent and compatible with the surrounding residential use.

5.0 DECISION CRITERIA PER LUC 20.30P.140

The Director may approve or approve with modifications an application for a Critical Areas Land Use Permit if:

A. ***The proposal obtains all other permits required by the Land Use Code; and***

It is our understanding that all other permits required by the Land Use Code will be obtained.

B. The proposal utilizes to the maximum extent possible the best available construction, design and development techniques which result in the least impact on the critical area and critical area buffer; and

The project will utilize all of the best available construction, design, and development techniques to ensure the least possible impact on the critical area and its buffer. A final erosion control plan will be prepared to prevent sediment from entering the wetlands during construction. Silt-fencing and tree protection fencing will be installed as part of this plan.

To minimize light impacts to the buffer, all outdoor lights from the new residences should contain low-wattage bulbs with narrow angles of illumination directed away from the buffers. Metal hoods should be added to all exterior lights to direct lighting down and not out from fixtures.

All plantings within the buffer will consist of native species and will installed and maintained only by a qualified landscape contractor familiar with work in sensitive environments.

C. The proposal incorporates the performance standards of Part 20.25H LUC to the maximum extent applicable; and

All of the performance standards in LUC 20.25H would be implemented to the maximum extent applicable (See Section 6.0).

D. The proposal will be served by adequate public facilities including streets, fire protection, and utilities; and

It is our understanding that the proposal will be served by adequate public facilities including streets, fire protection, and utilities.

E. The proposal includes a mitigation or restoration plan consistent with the requirements of LUC 20.25H.210; except that a proposal to modify or remove vegetation pursuant to an approved Vegetation Management Plan under LUC 20.25H.055.C.3.i shall not require a mitigation or restoration plan; and

A critical area restoration and enhancement plan has been prepared that is consistent with the requirements of LUC 20.25H.210.

F. The proposal complies with other applicable requirements of this code.

It is our understanding that all other applicable requirements of the Land Use Code will be met.

6.0 PERFORMANCE STANDARDS PER LUC 20.25H.100

Development on sites with a wetland or wetland critical area buffer shall incorporate the following performance standards in design of the development, as applicable:

A. Lights shall be directed away from the wetland.

To minimize light impacts to the buffer, all outdoor lights from the new residences should contain low-wattage bulbs with narrow angles of illumination directed away from the buffers. Metal hoods should be added to all exterior lights to direct lighting down and not out from fixtures.

B. Activity that generates noise such as parking lots, generators, and residential uses, shall be located away from the wetland, or any noise shall be minimized through use of design and insulation techniques.

All of the new residences will be developed outside of the required buffers as far as possible and all of the buffers will be well vegetated to minimize potential noise impact to the wetlands.

C. Toxic runoff from new impervious area shall be routed away from the wetlands.

No toxic runoff would be discharged into the wetlands

D. Treated water may be allowed to enter the wetland critical area buffer.

The proposed project will utilize bio-retention cells, rain gardens or equivalent LID BMPs for each lot. These stormwater treatment facilities would be designed and constructed as a part of building permit and home construction to ensure that no untreated water is discharged into the critical area buffers.

E. The outer edge of the wetland critical area buffer shall be planted with dense vegetation to limit pet or human use.

The outer edge of all proposed buffer areas will be well vegetated either through existing conditions or as part of the buffer enhancement plan.

F. Use of pesticides, insecticides and fertilizers within 150 feet of the edge of the stream buffer shall be in accordance with the City of Bellevue's "Environmental Best Management Practices," now or as hereafter amended. (Ord. 5680, 6-26-06, § 3)

The use of pesticides, insecticides and fertilizers within 150 feet of Valley Creek should only be conducted by contractors or personnel familiar with the City's applicable Best Management practices.

If you have any questions regarding the critical areas report or enhancement plan please call me at (425) 333-4535.

Sincerely,

ALTMANN OLIVER ASSOCIATES, LLC

John Altmann

John Altmann
Ecologist

GEOTECHNICAL REPORT

Lil Lochwood
4466 – 140th Avenue NE
Bellevue, Washington

Project No. T-7282

Terra Associates, Inc.

Prepared for:

Dimensions, Inc.
Bellevue, Washington

December 9, 2016

Received
JAN 25 2017
Permit Processing

TERRA ASSOCIATES, Inc.

Consultants in Geotechnical Engineering, Geology
and
Environmental Earth Sciences

December 9, 2016
Project No. T-7282

Mr. Mike Perry
Dimensions, Inc.
2820 Northup Way, #140
Bellevue, Washington 98004

Subject: Geotechnical Report
Lil Lochwood
4466 – 140th Avenue NE
Bellevue, Washington

Dear Mr. Perry:

As requested, we have conducted a geotechnical engineering study for the subject project. The attached report presents our findings and recommendations for the geotechnical aspects of project design and construction.

Our field exploration indicates the soil conditions at the site can be divided into two sections. The east side of the site (Test Pits TP-1, TP-2, and TP-3) generally consisted of 8 to 12 inches of organic topsoil overlying 4 to 5 ½ feet of medium dense to dense silty sand with gravel (weathered and unweathered till-like) over interbedded cemented silty sand with gravel and sand with silt and gravel to the termination of the test pits.

The west side of the site (Test Pits TP-4, TP-5, TP-6, and TP-7) generally consisted of five to six inches of organic topsoil overlying loose to medium dense sand with varying amounts of silt and gravel interbedded with six-inch to three-foot layers/lenses of silt. We observed minor to heavy groundwater seepage in 2 of the test pits at 7.5 and 10 feet below current site grades.

In our opinion, soil conditions observed at the site will be suitable for support of the proposed development provided the recommendations present in this report are incorporated into project design and construction.

We trust the information presented in this report is sufficient for your current needs. If you have any questions or require additional information, please call.

Sincerely yours,
TERRA ASSOCIATES, INC.

12-9-16

Carolyn S. Decker, P.E.
Project Engineer

12220 113th Avenue NE, Ste. 130, Kirkland, Washington 98034
Phone (425) 821-7777 • Fax (425) 821-4334

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Geotechnical Report
Lil Lochwood
4466 – 140th Avenue NE
Bellevue, Washington

1.0 PROJECT DESCRIPTION

The project consists of redeveloping an approximately 13.3-acre parcel with 9 residential building lots and associated access and utilities. Based on the preliminary site plan prepared by Goldsmith Land Development Services, dated November 29, 2016 four of the building lots will be on the east side of the site and the remaining five will be on the west side. The two sections of development are divided by a mapped wetland and will not be connected by a roadway. Access to the west building lots is off 140th Avenue NE and access to the east building lots is off a private access tract that will connect to an existing roadway. Grading plans indicated grading will be moderate with cuts and fills from 2 to 12 feet.

We expect that the residential structures constructed on the lots will be two- to three-story, wood-framed buildings with their main floor levels framed over a crawl space. Attached garage floors will be constructed at grade. Structural loading should be relatively light; with bearing walls carrying loads of 2 to 3 kips per foot and isolated columns carrying maximum loads of 30 to 40 kips.

The recommendations in the following sections of this report are based on our understanding of the preceding design features. We should review final design drawings as they become available to verify that our recommendations have been properly interpreted and to supplement them, if required.

2.0 SCOPE OF WORK

Our work was completed in accordance with our authorized proposal dated August 19, 2015. Accordingly, on September 15, 2015, we observed soil conditions at 7 test pits excavated between 10 and 11 feet below existing site grades. Using the information obtained from the subsurface exploration and laboratory testing, we performed analyses to develop geotechnical recommendations for project design and construction. Specifically, this report addresses the following:

- Soil and groundwater conditions
- Seismic design parameters per 2015 International Building Code (IBC)
- Geologic hazards per City of Bellevue Land Use Code
- Site preparation and grading
- Excavations
- Foundations

- Floor slabs at grade
- Low Impact Development (LID)
- Utilities
- Drainage
- Pavement

It should be noted that recommendations outlined in this report regarding drainage are associated with soil strength, design earth pressures, erosion, and stability. Design and performance issues with respect to moisture as it relates to the structure environment are beyond Terra Associates' purview. A building envelope specialist or contractor should be consulted to address these issues, as needed.

3.0 SITE CONDITIONS

3.1 Surface

The project site is a rectangular approximately 13.3-acre tax parcel located at 4466 – 140th Avenue NE in Bellevue, Washington. The approximate site location is shown on Figure 1.

The project site can be divided into three sections. The western portion of the site is currently developed with a single-family home, associated access, and two horse pastures. Site topography of this section consists of a slight slope that descends from 140th Avenue NE to the existing residence with an overall relief of approximately 10 feet.

The central portion of the site is mapped as a wetland and is generally flat with slight slopes that ascend from the mapped wetland pond to the east and west.

The eastern portion of the site is currently undeveloped and covered with a moderate forest and associated understory. There is a walking trail that runs around the perimeter of the forest and connects the east and west sides of the property. Site topography consists of a moderate slope that descends from the east to the west with an overall relief of approximately 40 feet. Slope gradients generally vary from 10 percent to 20 percent with one small portion at approximately 33 percent.

3.2 Subsurface

Soil conditions at the site can be divided into two sections. The east side of the site (Test Pits TP-1, TP-2, and TP-3) generally consisted of 8 to 12 inches of organic topsoil overlying 4 to 5 ½ feet of medium dense to dense silty sand with gravel (weathered and unweathered till-like) over interbedded cemented silty sand with gravel and sand with silt and gravel to the termination of the test pits.

The west side of the site (Test Pits TP-4, TP-5, TP-6, and TP-7) generally consisted of five to six inches of organic topsoil overlying loose to medium dense sand with varying amounts of silt and gravel interbedded with six-inch to three-foot layers/lenses of silt.

The *Geologic Map of the Kirkland Quadrangle, Washington,* by J.P. Minard (1983), maps the site as Advance Outwash (Qva) with Vashon Till (Qvt) mapped directly to the east. Soil conditions observed in the test pits are generally consistent with the mapped geology.

The preceding discussion is intended to be a general review of the soil conditions encountered. For more detailed descriptions, please refer to the Test Pit Logs in Appendix A.

3.3 Groundwater

We observed minor groundwater seepage in Test Pit TP-4 at approximately 7.5 feet below current site grades and groundwater in Test Pit TP-5 at approximately 10 feet below current site grades. We also observed wet to saturated soils in Test Pits TP-6 and TP-7 at approximately 10 to 11 feet. Based on the soil conditions observed and the presence of a wetland pond, it is our opinion that the groundwater table likely resides at approximately 10 to 12 feet below the existing site grades. We also observed mottling of the silt layers in the upper portions of the western test pits indicating a shallow groundwater table develops at these contacts during the wet winter months. Based on the time of year of our site exploration, it is our opinion, that the groundwater observed likely represents the seasonal low levels.

4.0 GEOLOGICAL HAZARDS

4.1 Seismic Considerations

Liquefaction is a phenomenon where there is a reduction or complete loss of soil strength due to an increase in water pressure induced by vibrations. Liquefaction mainly affects geologically recent deposits of fine-grained sand that is below the groundwater table. Soils of this nature derive their strength from intergranular friction. The generated water pressure or pore pressure essentially separates the soil grains and eliminates this intergranular friction; thus, eliminating the soil's strength.

The till and advance outwash deposits observed at the site are older deposits that have been well consolidated by the glacial ice sheet. The relative density of the soils combined with the fines content is sufficient to offset cyclic shear stresses induced by an earthquake. Therefore, it is our opinion that the hazard for soil liquefaction during an earthquake and the associated risk or impact is negligible.

Based on soil conditions observed in the test pits and our knowledge of the area geology, per Chapter 16 of the 2015 International Building Code (IBC), site class "C" should be used in structural design. Based on this site class, in accordance with the 2015 IBC, the following parameters should be used in computing seismic forces:

Seismic Design Parameters (IBC 2015)

Spectral response acceleration (Short Period), S_{ms}	1.263
Spectral response acceleration (1 – Second Period), S_{m1}	0.637
Five percent damped .2 second period, S_{Ds}	0.842
Five percent damped 1.0 second period, S_{D1}	0.425

These values were determined using the latitude/longitude coordinates 47.65163/-122.151065 and the United States Geological Survey (USGS) Ground Motion Parameter Calculator accessed on December 7, 2016 at the web site http://earthquake.usgs.gov/designmaps/us/application.php.

4.2 Landslide Hazard Areas

Section 20.25H.120.A.1 of the Bellevue Land Use Code (BLUC) defines a landslide hazard as "Areas of slopes of 15 percent or more with more than 10 feet of rise, which also display any of the following characteristics:

a. Areas of historic failures, including those areas designated as quaternary slumps, earthflows, mudflows, or landslides.

b. Areas that have shown movement during the Holocene Epoch (past 13,500 years) or that are underlain by landslide deposits.

c. Slopes that are parallel or subparallel to planes of weakness in subsurface materials.

d. Slopes exhibiting geomorphological features indicative of past failures, such as hummocky ground and back-rotated benches on slopes.

e. Areas with seeps indicating a shallow groundwater table on or adjacent to the slope face.

f. Areas of potential instability because of rapid stream incision, stream bank erosion, and undercutting by wave action."

Although there are portions of the site where the slope gradient exceeds 15 percent, we did not observe any of the conditions listed in a through f. Therefore, it is our opinion, that the site does not contain a landslide hazard as defined by the BLUC.

4.3 Steep Slopes

Section 20.25H.120.A.2 of the BLUC defines a steep slope area as "Slopes of 40 percent or more that have a rise of at least 10 feet and exceed 1,000 square feet in area."

None of the slopes on the site exceed 40 percent. Therefore, it is our opinion, that the site does not contain a steep slope hazard.

4.4 Coal Mine Hazards

Section 20.25H.120.A.3 of the BLUC defines a coal mine hazard area as "Areas designated on the Coal Mine Area Maps or in the City's coal mine area regulations, LUC20.25H.130, as potentially affected by abandoned coal mines; provided, that compliance with the coal mine area regulations shall constitute compliance with the requirements of this chapter in regard to coal mines."

We used the King County Imap sensitive area map to determine if any coal mine workings are within the site. Based on our review, the King County Imap sensitive area map shows the nearest coal mine hazard to be over seven miles south of the project site. We did not observe any evidence of underground tunnels or shafts during our site exploration. Based on this review, in our opinion, the site does not contain any coal mine hazard areas as defined by the BLUC.

5.0 DISCUSSION AND RECOMMENDATIONS

5.1 General

Based on our study, there are no geotechnical considerations that would preclude development of the site as currently planned. Residences can be supported on conventional spread footings bearing on competent native soils observed below the upper 6 to 12 inches of organic surface soil or on structural fill placed and compacted above these native soils. Pavement and floor slabs can be similarly supported.

Most of the native soils encountered at the site contain a significant amount of fines and will be difficult to compact as structural fill when too wet. The ability to use native soil from site excavations as structural fill will depend on its moisture content and the prevailing weather conditions at the time of construction. If grading activities will take place during winter, the owner should be prepared to import clean granular material for use as structural fill and backfill. The clean outwash sand and gravel observed over much of the western portion of the site has a low percentage of soil fines and should be suitable for use as structural fill in most weather conditions.

The following sections provide detailed recommendations regarding the preceding issues and other geotechnical design considerations. These recommendations should be incorporated into the final design drawings and construction specifications.

5.2 Site Preparation and Grading

To prepare the site for construction, all vegetation, organic surface soils, and other deleterious material should be stripped and removed from the site. Surface stripping depths of about 6 to 12 inches should be expected to remove the organic surface soils. In the developed portion of the site, demolition of existing structures should include removal of existing foundations, floor slabs, underground septic systems, and other buried utilities. Abandoned utility pipes that fall outside of new building areas can be left in place provided they are sealed to prevent intrusion of groundwater seepage and soil. Organic topsoil will not be suitable for use as structural fill, but may be used for limited depths in nonstructural areas.

Once clearing and stripping operations are complete, cut and fill operations can be initiated to establish desired grades. Prior to placing fill, all exposed bearing surfaces should be observed by a representative of Terra Associates to verify soil conditions are as expected and suitable for support of new fill. Our representative may request a proofroll using heavy rubber-tired equipment to determine if any isolated soft and yielding areas are present. If excessively yielding areas are observed, and they cannot be stabilized in place by compaction, the affected soils should be excavated and removed to firm bearing and grade restored with new structural fill. Beneath embankment fills or roadway subgrade if the depth of excavation to remove unstable soils is excessive, the use of geotextile fabrics, such as Mirafi 500X, or an equivalent fabric, can be used in conjunction with clean granular structural fill. Our experience has shown that, in general, a minimum of 18 inches of a clean, granular structural fill placed and compacted over the geotextile fabric should establish a stable bearing surface.

The native soils encountered at the site contain a sufficient amount of soil fines that will make them difficult to compact as structural fill when too wet or too dry. The ability to use native soils from site excavations as structural fill will depend on its moisture content and the prevailing weather conditions at the time of construction. When wet soils are encountered, the contractor will need to dry the soils by aeration during dry weather conditions. Alternatively, the use of an additive such as Portland cement, cement kiln dust (CKD), or lime to stabilize the soil moisture can be considered. If the soil is amended, additional Best Management Practices (BMPs) addressing the potential for elevated pH levels will need to be included in the Storm Water Pollution Prevention Program (SWPPP) prepared with the Temporary Erosion and Sedimentation Control (TESC) plan. The cleaner sand should be suitable to reuse as structural fill in most weather conditions.

If grading activities are planned during the wet winter months, or if they are initiated during the summer and extend into fall and winter, the owner should be prepared to import wet weather structural fill. For this purpose, we recommend importing a granular soil that meets the following grading requirements:

U.S. Sieve Size	Percent Passing
6 inches	100
No. 4	75 maximum
No. 200	5 maximum*

* Based on the 3/4-inch fraction.

Prior to use, Terra Associates, Inc. should examine and test all materials imported to the site for use as structural fill.

Structural fill should be placed in uniform loose layers not exceeding 12 inches and compacted to a minimum of 95 percent of the soil's maximum dry density, as determined by American Society for Testing and Materials (ASTM) Test Designation D-698 (Standard Proctor). The moisture content of the soil at the time of compaction should be within minus one to plus three percent of its optimum, as determined by this ASTM standard. In nonstructural areas, the degree of compaction can be reduced to 90 percent.

5.3 Excavation

All excavations at the site associated with confined spaces, such as utility trenches, must be completed in accordance with local, state, and federal requirements. Based on regulations outlined in the Washington Industrial Safety and Health Act (WISHA), the loose to medium dense native sand soils would be classified as Type C soil. The dense soils observed at depth on the east side of the site would be classified as Type B soil.

Accordingly, temporary excavations in Type C soils should have their slopes laid back at an inclination of 1.5:1 (Horizontal:Vertical) or flatter, from the toe to the crest of the slope. Temporary excavations in Type B soils should have their slopes laid back at an inclination of 1:1 or flatter, from the toe to the crest of the slope. All temporary exposed slope faces that will remain open for more than seven days should be covered with a durable reinforced plastic membrane during construction to prevent slope raveling and rutting during periods of precipitation.

Groundwater will be encountered within excavations extending below depths of eight feet from current surface grades. For shallow excavations that extend to depths of nine or ten feet, we expect that the volume of water and rate of flow into the excavation would be low and should be able to be controlled using conventional sump-pumping procedures along with a system of collection trenches. Deeper excavations will likely require dewatering using closely spaced well points. The excavating/utility subcontractor should be prepared to implement excavation dewatering as needed.

The above information is provided solely for the benefit of the owner and other design consultants, and should not be construed to imply that Terra Associates, Inc. assumes responsibility for job site safety. It is understood that job site safety is the sole responsibility of the project general contractor.

5.4 Foundation Support

The residences can be supported on conventional spread footing foundations bearing on competent native soils or on structural fills placed above competent native soils. Foundation subgrade should be prepared as recommended in Section 5.2 of this report. Perimeter foundations exposed to the weather should bear a minimum depth of 1.5 feet below final exterior grades for frost protection. Interior foundations can be constructed at any convenient depth below the floor slab.

The native soils that will be exposed at the expected foundation elevations are moisture sensitive and will be easily disturbed by normal construction activity when wet. As a measure to protect the soils from disturbance during construction, consideration should be given to placing a four-inch layer of clean crushed rock or lean mix concrete over the foundation subgrade to serve as a working surface.

Foundations bearing on competent undisturbed native soils or on compacted structural fill can be dimensioned for a net allowable bearing capacity of 2,500 pounds per square foot (psf). For short-term loads, such as wind and seismic, a one-third increase in this allowable capacity can be used. With structural loading as anticipated and this bearing stress applied, estimated total settlements are between one-quarter and one-half inch.

For designing foundations to resist lateral loads, a base friction coefficient of 0.35 can be used. Passive earth pressures acting on the side of the footing and buried portion of the foundation stem wall can also be considered. We recommend calculating this lateral resistance using an equivalent fluid weight of 300 pcf. We recommend not including the upper 12 inches of soil in this computation because they can be affected by weather or disturbed by future grading activity. This value assumes the foundation will be constructed neat against competent native soil or backfilled with structural fill as described in Section 5.2 of this report. The values recommended include a safety factor of 1.5.

5.5 Floor Slab-on-Grade

Slab-on-grade floors may be supported on subgrade prepared as recommended in Section 5.2 of this report. Immediately below the floor slab, we recommend placing a four-inch thick capillary break layer composed of clean, coarse sand or fine gravel that has less than three percent passing the No. 200 sieve. This material will reduce the potential for upward capillary movement of water through the underlying soil and subsequent wetting of the floor slab.

The capillary break layer will not prevent moisture intrusion through the slab caused by water vapor transmission. Where moisture by vapor transmission is undesirable, such as covered floor areas, a common practice is to place a durable plastic membrane on the capillary break layer and then cover the membrane with a layer of clean sand or fine gravel to protect it from damage during construction, and to aid in uniform curing of the concrete slab. It should be noted that if the sand or gravel layer overlying the membrane is saturated prior to pouring the slab, it will not be effective in assisting uniform curing of the slab and can actually serve as a water supply for moisture bleeding through the slab, potentially affecting floor coverings. Therefore, in our opinion, covering the membrane with a layer of sand or gravel should be avoided if floor slab construction occurs during the wet winter months and the layer cannot be effectively drained. We recommend floor designers and contractors refer to the current American Concrete Institute (ACI) Manual of Concrete Practice for further information regarding vapor barrier installation below slab-on-grade floors.

5.6 Stormwater Infiltration Feasibility

Preliminary stormwater management plans were available at the time of this report. On the eastern half of the site, we observed primarily silty sand with gravel, till-like material, layered with some sand. Due to the high soil fines content and degree of consolidation, these soils exhibit relatively low permeability. On the western half of the site, we observed sand with silt, advance outwash that had several layers of impermeable silt. Although the sand would allow for infiltration, the water would not be able to penetrate the cemented silt layers. Based on the amount of impermeable material and the groundwater seepage observed, it is our opinion, that the use of retention facilities for discharge of development stormwater by infiltration is not feasible. Stormwater management using conventional water quality/detention and controlled release design will be required.

The sandy till-like and sand soils observed would support the use of low impact development (LID) techniques such as permeable pavement or rain gardens to reduce the volume of water conveyed to the conventional detention facilities. On a preliminary basis, an infiltration rate of one-inch per hour could be used to evaluate these elements and determine their effectiveness in reducing runoff volumes.

5.7 Drainage

Surface

Final exterior grades should promote free and positive drainage away from the site at all times. Water must not be allowed to pond or collect adjacent to foundations or within the immediate building areas. We recommend providing a positive drainage gradient away from the building perimeters. If this gradient cannot be provided, surface water should be collected adjacent to the structures and disposed to appropriate storm facilities.

Subsurface

We recommend installing perimeter foundation drains adjacent to shallow foundations. The drains can be laid to grade at an invert elevation equivalent to the bottom of footing grade. The drains can consist of four-inch diameter perforated PVC pipe that is enveloped in washed pea gravel-sized drainage aggregate. The aggregate should extend six inches above and to the sides of the pipe. Roof and foundation drains should be tightlined separately to the storm drains. All drains should be provided with cleanouts at easily accessible locations.

5.8 Utilities

Utility pipes should be bedded and backfilled in accordance with American Public Works Association (APWA) or the City of Bellevue specifications. As a minimum, trench backfill should be placed and compacted as structural fill, as described in Section 5.2 of this report. As noted, depending on the soil moisture when excavated most inorganic native soils on the site should be suitable for use as backfill material during dry weather conditions. The contractor should be prepared to aerate soils to reduce moisture and facilitate proper compaction. However, if utility construction takes place during the wet winter months, it will likely be necessary to import suitable wet weather fill for utility trench backfilling.

5.9 Pavement

Pavement subgrade should be prepared as described in the Section 5.2 of this report. Regardless of the degree of relative compaction achieved, the subgrade must be firm and relatively unyielding before paving. The subgrade should be proofrolled with heavy rubber-tire construction equipment such as a loaded 10-yard dump truck to verify this condition.

The pavement design section is dependent upon the supporting capability of the subgrade soils and the traffic conditions to which it will be subjected. For residential access, with traffic consisting mainly of light passenger vehicles with only occasional heavy traffic, and with a stable subgrade prepared as recommended, we recommend the following pavement sections:

- Two inches of hot mix asphalt (HMA) over six inches of crushed rock base (CRB)
- Four inches full depth HMA

The paving materials used should conform to the Washington State Department of Transportation (WSDOT) specifications for ½-inch class HMA and CRB.

Long-term pavement performance will depend on surface drainage. A poorly-drained pavement section will be subject to premature failure as a result of surface water infiltrating into the subgrade soils and reducing their supporting capability. For optimum pavement performance, we recommend surface drainage gradients of at least two percent. Some degree of longitudinal and transverse cracking of the pavement surface should be expected over time. Regular maintenance should be planned to seal cracks when they occur.

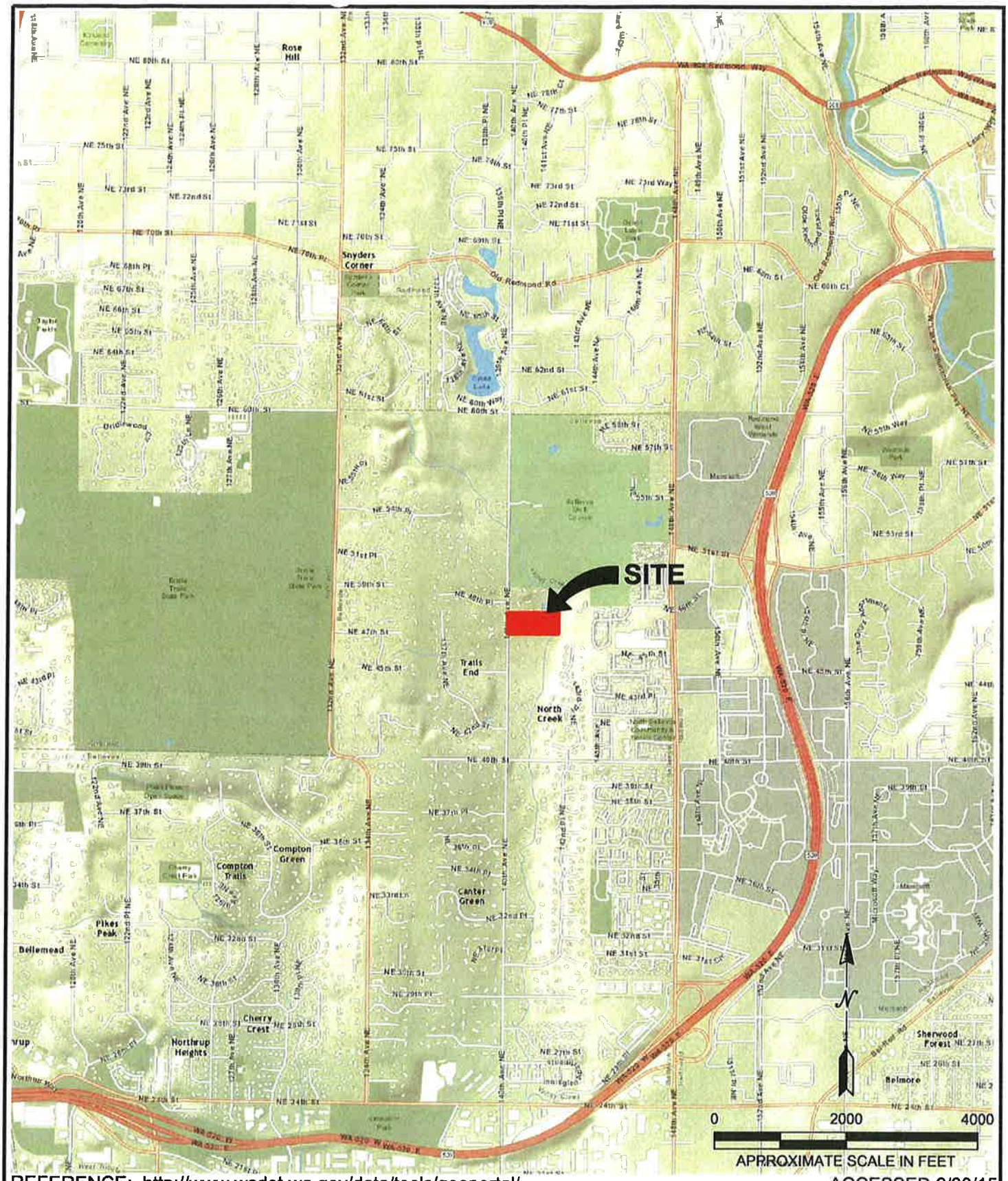
6.0 ADDITIONAL SERVICES

Terra Associates, Inc. should review the final design drawings and specifications in order to verify that earthwork and foundation recommendations have been properly interpreted and implemented in project design. We should also provide geotechnical service during construction to observe compliance with our design concepts, specifications, and recommendations. This will allow for design changes if subsurface conditions differ from those anticipated prior to the start of construction.

7.0 LIMITATIONS

We prepared this report in accordance with generally accepted geotechnical engineering practices. No other warranty, expressed or implied, is made. This report is the copyrighted property of Terra Associates, Inc. and is intended for specific application to the Lil Lochwood project. This report is for the exclusive use of Dimensions, Inc. and its authorized representatives.

The analyses and recommendations present in this report are based on data obtained from the subsurface exploration done on-site. Variations in soil conditions can occur, the nature and extent of which may not become evident until construction. If variations appear evident, Terra Associates, Inc. should be requested to reevaluate the recommendations in this report prior to proceeding with construction.



REFERENCE: http://www.wsdot.wa.gov/data/tools/geoportal/ ACCESSED 9/30/15

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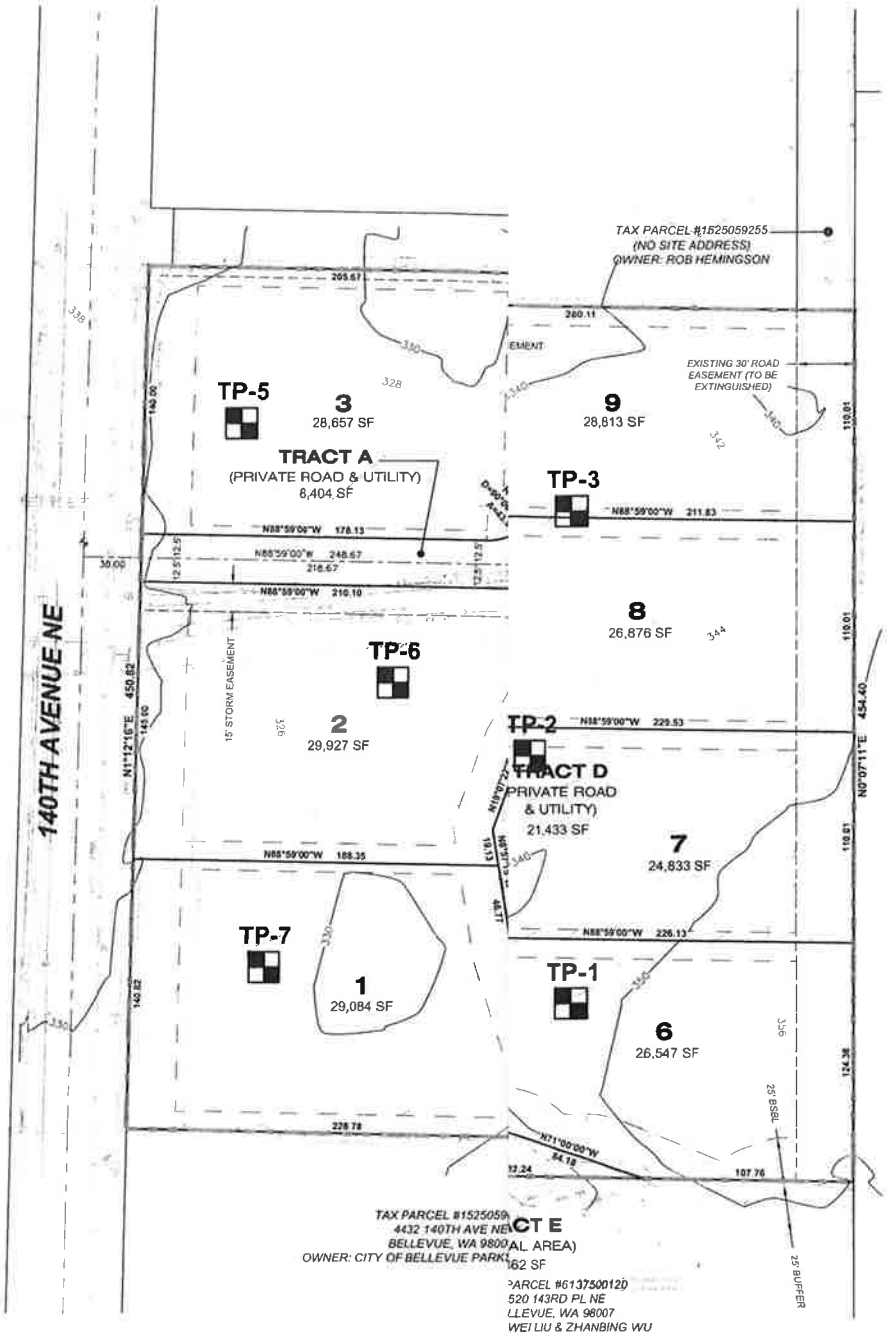
VICINITY MAP
LIL LOCHWOOD
BELLEVUE, WASHINGTON

Proj. No.T-7282	Date DEC 2016	Figure 1



NOTE:

THIS SITE PLAN IS SCHEMATIC. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE. IT IS INTENDED FOR REFERENCE ONLY AND SHOULD NOT BE USED FOR DESIGN OR CONSTRUCTION PURPOSES.

REFERENCE: SITE PLAN PROVIDED BY GOLDSMITH.

EXPLORATION LOCATION PLAN
LIL LOCHWOOD
BELLEVUE, WASHINGTON

Proj. No.T-7282	Date DEC 2016	Figure 2

APPENDIX A
FIELD EXPLORATION AND LABORATORY TESTING

Lil Lochwood
Bellevue, Washington

On September 15, 2015, we completed our site exploration by observing soil conditions at 7 test pits. The test pits were excavated using a track-mounted excavator to a maximum depth of 11 feet below existing site grades. Test pit locations were determined in the field by measurements from existing site features. The approximate location of the test pits is shown on the attached Exploration Location Plan, Figure 2. Test Pit Logs are attached as Figures A-2 through A-8.

A geotechnical engineer from our office conducted the field exploration. Our representative classified the soil conditions encountered, maintained a log of each test pit, obtained representative soil samples, and recorded water levels observed during excavation. All soil samples were visually classified in accordance with the Unified Soil Classification System (USCS) described on Figure A-1.

Representative soil samples obtained from the test pits were placed in closed containers and taken to our laboratory for further examination and testing. The moisture content of each sample was measured and is reported on the individual Test Pit Logs. Grain size analyses were performed on selected samples. The results of the grain size analyses are shown on Figures A-9 through A-11.

MAJOR DIVISIONS			LETTER SYMBOL	TYPICAL DESCRIPTION
COARSE GRAINED SOILS More than 50% material larger than No. 200 sieve size	**GRAVELS** More than 50% of coarse fraction is larger than No. 4 sieve	Clean Gravels (less than 5% fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines.
			GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines.
		Gravels with fines	GM	Silty gravels, gravel-sand-silt mixtures, non-plastic fines.
			GC	Clayey gravels, gravel-sand-clay mixtures, plastic fines.
	SANDS More than 50% of coarse fraction is smaller than No. 4 sieve	Clean Sands (less than 5% fines)	SW	Well-graded sands, sands with gravel, little or no fines.
			SP	Poorly-graded sands, sands with gravel, little or no fines.
		Sands with fines	SM	Silty sands, sand-silt mixtures, non-plastic fines.
			SC	Clayey sands, sand-clay mixtures, plastic fines.
FINE GRAINED SOILS More than 50% material smaller than No. 200 sieve size	**SILTS AND CLAYS** Liquid Limit is less than 50%		ML	Inorganic silts, rock flour, clayey silts with slight plasticity.
			CL	Inorganic clays of low to medium plasticity. (Lean clay)
			OL	Organic silts and organic clays of low plasticity.
	SILTS AND CLAYS Liquid Limit is greater than 50%		MH	Inorganic silts, elastic.
			CH	Inorganic clays of high plasticity. (Fat clay)
			OH	Organic clays of high plasticity.
HIGHLY ORGANIC SOILS			PT	Peat.

DEFINITION OF TERMS AND SYMBOLS

COHESIONLESS

Density	Standard Penetration Resistance in Blows/Foot
Very Loose	0-4
Loose	4-10
Medium Dense	10-30
Dense	30-50
Very Dense	>50

COHESIVE

Consistancy	Standard Penetration Resistance in Blows/Foot
Very Soft	0-2
Soft	2-4
Medium Stiff	4-8
Stiff	8-16
Very Stiff	16-32
Hard	>32

I	2" OUTSIDE DIAMETER SPILT SPOON SAMPLER
II	2.4" INSIDE DIAMETER RING SAMPLER OR SHELBY TUBE SAMPLER
▼	WATER LEVEL (Date)
Tr	TORVANE READINGS, tsf
Pp	PENETROMETER READING, tsf
DD	DRY DENSITY, pounds per cubic foot
LL	LIQUID LIMIT, percent
PI	PLASTIC INDEX
N	STANDARD PENETRATION, blows per foot

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UNIFIED SOIL CLASSIFICATION SYSTEM
LIL LOCHWOOD
BELLEVUE, WASHINGTON

Proj. No.T-7282	Date DEC 2016	Figure A-1

LOG OF TEST PIT NO. TP-1

FIGURE A-2

PROJECT NAME: Lil Lochwood **PROJ. NO:** T-7282 **LOGGED BY:** CSD

LOCATION: Bellevue, Washington **SURFACE CONDS:** Tall Brush/Weeds **APPROX. ELEV:** 349 Feet

DATE LOGGED: September 15, 2015 **DEPTH TO GROUNDWATER:** N/A **DEPTH TO CAVING:** N/A

DEPTH (FT.)	SAMPLE NO.	DESCRIPTION	CONSISTENCY/ RELATIVE DENSITY	W (%)	POCKET PEN. (TSF)	REMARKS
		Brown silty SAND, fine to medium grained, dry, heavy organic inclusions. (SM) (Topsoil)	Loose			
1						
	1			10.0		
2						
3		Brown to gray silty SAND with gravel, fine to medium grained, moist, roots. (SM)	Medium Dense			
4						
5				5.0		
	2					
6						
7				7.4		
	3					
8		Brown SAND with silt, fine to medium grained, dry to moist, some cementation, occasional pocket of cemented silty sand with gravel. (SP-SM)	Dense			
9						
10						
11	4			12.7		
		Test pit terminated at approximately 11 feet. No groundwater seepage observed.				
12						
13						
14						
15						

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

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LOG OF TEST PIT NO. TP-2

FIGURE A-3

PROJECT NAME: Lil Lochwood **PROJ. NO:** T-7282 **LOGGED BY:** CSD

LOCATION: Bellevue, Washington **SURFACE CONDS:** Forest Duff **APPROX. ELEV:** 342 Feet

DATE LOGGED: September 15, 2015 **DEPTH TO GROUNDWATER:** N/A **DEPTH TO CAVING:** N/A

DEPTH (FT.)	SAMPLE NO.	DESCRIPTION	CONSISTENCY/ RELATIVE DENSITY	W (%)	POCKET PEN. (TSF)	REMARKS
		Brown silty SAND, fine to medium grained, dry, heavy organic inclusions. (SM) (Topsoil)	Loose			
1	1	Brown silty SAND with gravel, fine to medium grained, dry, roots. (SM)	Medium Dense	10.7		
2						
3						
4	2	Gray silty SAND, fine to medium grained, dry, highly cemented. (SM) (Sandy till)	Dense	8.5		
5						
6			Dense			
7						
8	3	Gray interbedded silty SAND with gravel and SAND with silt, fine to medium grained, moist, silty sand with gravel highly cemented. (SM/SP-SM)	Very Dense	11.0		
9						
10		Test pit terminated at approximately 10 feet. No groundwater seepage observed.				
11						
12						
13						
14						
15						

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site

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LOG OF TEST PIT NO. TP-3

FIGURE A-4

PROJECT NAME: Lil Lochwood **PROJ. NO:** T-7282 **LOGGED BY:** CSD

LOCATION: Bellevue, Washington **SURFACE CONDS:** Forest Duff **APPROX. ELEV:** 344 Feet

DATE LOGGED: September 15, 2015 **DEPTH TO GROUNDWATER:** N/A **DEPTH TO CAVING:** N/A

DEPTH (FT.)	SAMPLE NO.	DESCRIPTION	CONSISTENCY/ RELATIVE DENSITY	W (%)	POCKET PEN. (TSF)	REMARKS
		Brown silty SAND, fine to medium grained, dry, heavy organic inclusions. (SM) (Topsoil)	Loose			
1	1	Brown silty SAND with gravel, fine to medium grained, dry, roots. (SM)	Medium Dense	10.0		
2						
3	2			5.9		
4		Gray silty SAND with gravel, fine to medium grained, dry to moist, highly cemented. (SM) (Sandy till)	Dense			
5						
6						
7	3			7.5		
8		Gray interbedded silty SAND with gravel and SAND with silt, fine to medium grained, moist, silty sand with gravel highly cemented. (SM/SP-SM)	Dense			
9						
10						
11		Test pit terminated at approximately 11 feet. No groundwater seepage observed.				
12						
13						
14						
15						

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

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LOG OF TEST PIT NO. TP-4

FIGURE A-5

PROJECT NAME: Lil Lochwood PROJ. NO: T-7282 LOGGED BY: CSD

LOCATION: Bellevue, Washington SURFACE CONDS: Low Weeds APPROX. ELEV: 324 Feet

DATE LOGGED: September 15, 2015 DEPTH TO GROUNDWATER: 7.5 Feet DEPTH TO CAVING: 0 to 11 Feet

DEPTH (FT.)	SAMPLE NO.	DESCRIPTION	CONSISTENCY/ RELATIVE DENSITY	W (%)	POCKET PEN. (TSF)	REMARKS
		(5 inches ORGANICS)				
1	1	Brownish-gray SAND with silt, fine to medium grained, dry to moist. (SP-SM)	Loose	7.3		
2						
3						
4	2			16.0		
5		Gray SAND with silt, fine to medium grained, moist. (SP-SM)	Loose			
6						
7						
8	3			12.5		
9		Gray SAND, fine to coarse grained, wet to saturated, occasional silt lense. (SP)	Medium Dense			
10						
11		Test pit terminated at approximately 11 feet. Minor to moderate groundwater seepage observed at 7.5 feet. Minor caving observed throughout the test pit.				
12						
13						
14						
15						

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

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LOG OF TEST PIT NO. TP-5

FIGURE A-6

PROJECT NAME: Lil Lochwood **PROJ. NO:** T-7282 **LOGGED BY:** CSD

LOCATION: Bellevue, Washington **SURFACE CONDS:** Low Weeds **APPROX. ELEV:** 327 Feet

DATE LOGGED: September 15, 2015 **DEPTH TO GROUNDWATER:** 10 Feet **DEPTH TO CAVING:** N/A

DEPTH (FT.)	SAMPLE NO.	DESCRIPTION	CONSISTENCY/ RELATIVE DENSITY	W (%)	POCKET PEN. (TSF)	REMARKS
		(5 inches ORGANICS)				
1	1	Brown SAND with silt, fine to medium grained, dry, roots. (SP-SM)	Medium Dense	6.3		
2						
3						
4	2	Gray SAND with silt, fine to coarse grained, moist. (SP-SM)	Medium Dense	4.4		
5						
6		Gray SAND, fine to coarse grained, moist. (SP)	Medium Dense			
7						
8	3	Gray SILT, fine grained, mottled. (ML)	Stiff	24.1		
9		Brown GRAVEL with silt and sand, fine to coarse grained, wet to saturated. (GP-GM)	Medium Dense			
10	4			8.7		
11		Test pit terminated at approximately 10 feet. Groundwater observed at 10 feet.				
12						
13						
14						
15						

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

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LOG OF TEST PIT NO. TP-6

FIGURE A-7

PROJECT NAME: Lil Lochwood **PROJ. NO:** T-7282 **LOGGED BY:** CSD

LOCATION: Bellevue, Washington **SURFACE CONDS:** Grass **APPROX. ELEV:** 323 Feet

DATE LOGGED: September 15, 2015 **DEPTH TO GROUNDWATER:** N/A **DEPTH TO CAVING:** N/A

DEPTH (FT.)	SAMPLE NO.	DESCRIPTION	CONSISTENCY/ RELATIVE DENSITY	W (%)	POCKET PEN. (TSF)	REMARKS
		(6 inches ORGANICS)				
1	1			9.0		
2		Red-brown to brown SAND with silt and gravel, fine to medium grained, dry to moist. (SP)	Medium Dense			
3						
4	2			13.6		
5		Gray SILT with sand to silty SAND, fine grained, moist, mottled. (ML/SM)	Medium Dense			
6						
7				4.5		
8	3					
9		Brown SAND with gravel and silt, fine to coarse grained, moist to saturated. (SP-SM)	Medium Dense			
10						
11	4			10.6		
		Test Pit terminated at approximately 11 feet. No groundwater seepage observed.				
12						
13						
14						
15						

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site

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LOG OF TEST PIT NO. TP-7

FIGURE A-8

PROJECT NAME: Lil Lochwood **PROJ. NO:** T-7282 **LOGGED BY:** CSD

LOCATION: Bellevue, Washington **SURFACE CONDS:** Grass **APPROX. ELEV:** 328 Feet

DATE LOGGED: September 15, 2015 **DEPTH TO GROUNDWATER:** N/A **DEPTH TO CAVING:** N/A

DEPTH (FT.)	SAMPLE NO.	DESCRIPTION	CONSISTENCY/ RELATIVE DENSITY	W (%)	POCKET PEN. (TSF)	REMARKS
		(6 inches ORGANICS)				
1	1	Brown SAND with gravel, fine to coarse grained, dry. (SP)	Medium Dense	4.8		
2						
3						
4	2			3.0		
5						
6	3			3.2		
7		Gray SAND with silt, fine to medium grained, dry to moist, some cementation. (SP-SM)	Medium Dense			
8						
9						
10						
11	4			2.5		
12		Test pit terminated at approximately 11 feet. No groundwater seepage observed.				
13						
14						
15						

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.

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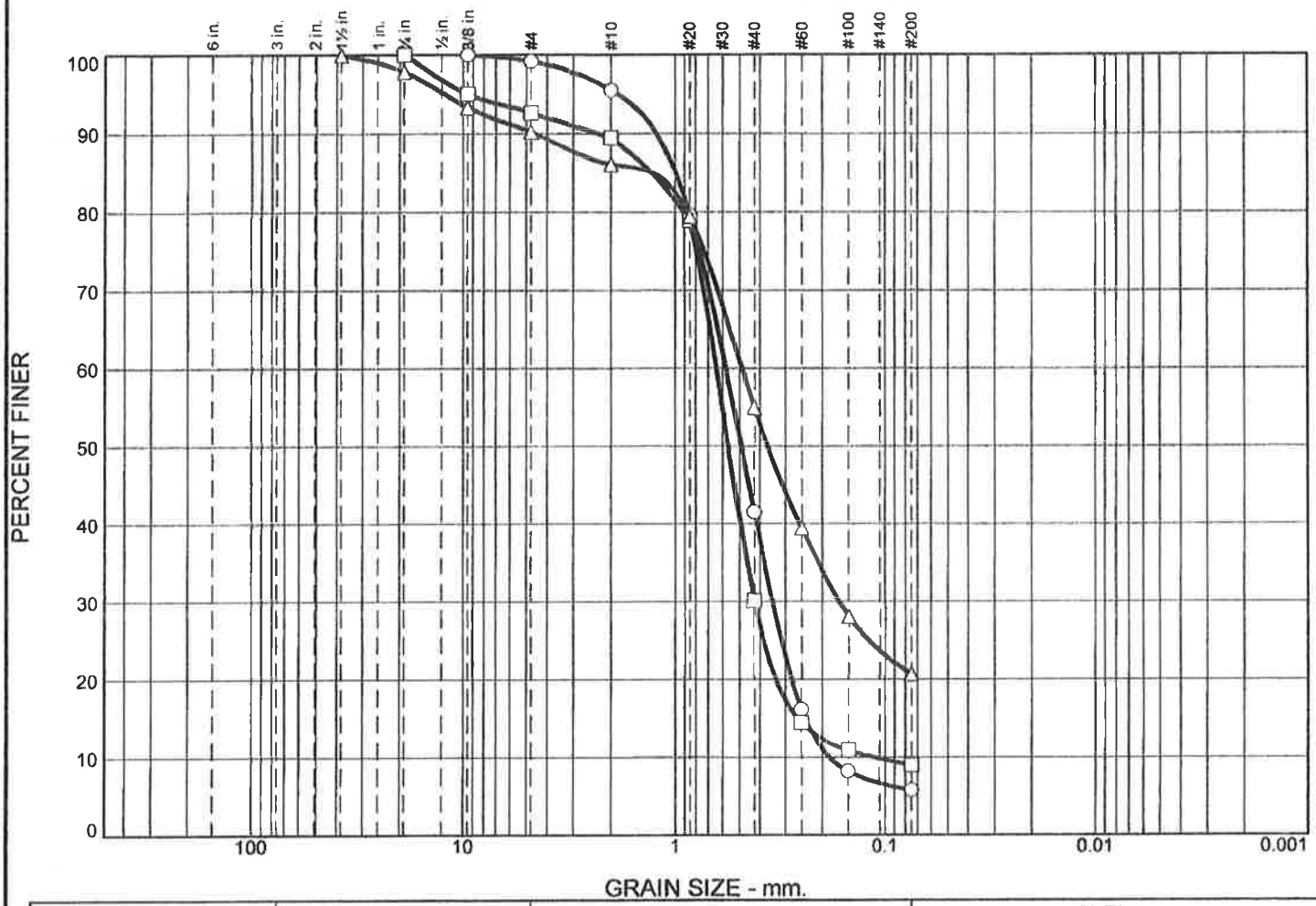
Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.8	3.7	54.0	35.7	5.8	
□	0.0	0.0	7.4	3.1	59.4	21.1	9.0	
△	0.0	2.2	7.6	4.1	31.2	34.2	20.7	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			0.9921	0.5791	0.4899	0.3461	0.2408	0.1853	1.12	3.12
□			1.2896	0.6415	0.5647	0.4242	0.2618	0.1129	2.49	5.68
△			1.2749	0.4876	0.3666	0.1664				

Material Description	USCS	AASHTO
○ Poorly graded SAND with silt	SP-SM	
□ Poorly graded SAND with silt	SP-SM	
△ Silty SAND	SM	

Project No. T-7282 **Client:** Dimensions, Inc.

Project: Lil Lochwood

Bellevue, Washington

○ **Location:** Test Pit TP-1 **Depth:** -5' **Sample Number:** 2

□ **Location:** Test Pit TP-1 **Depth:** -11' **Sample Number:** 3

△ **Location:** Test Pit TP-2 **Depth:** -4.5' **Sample Number:** 2

Remarks:

○ Tested on 9/17/2015

□ Tested on 9/17/2015

△ Tested on 9/17/2015

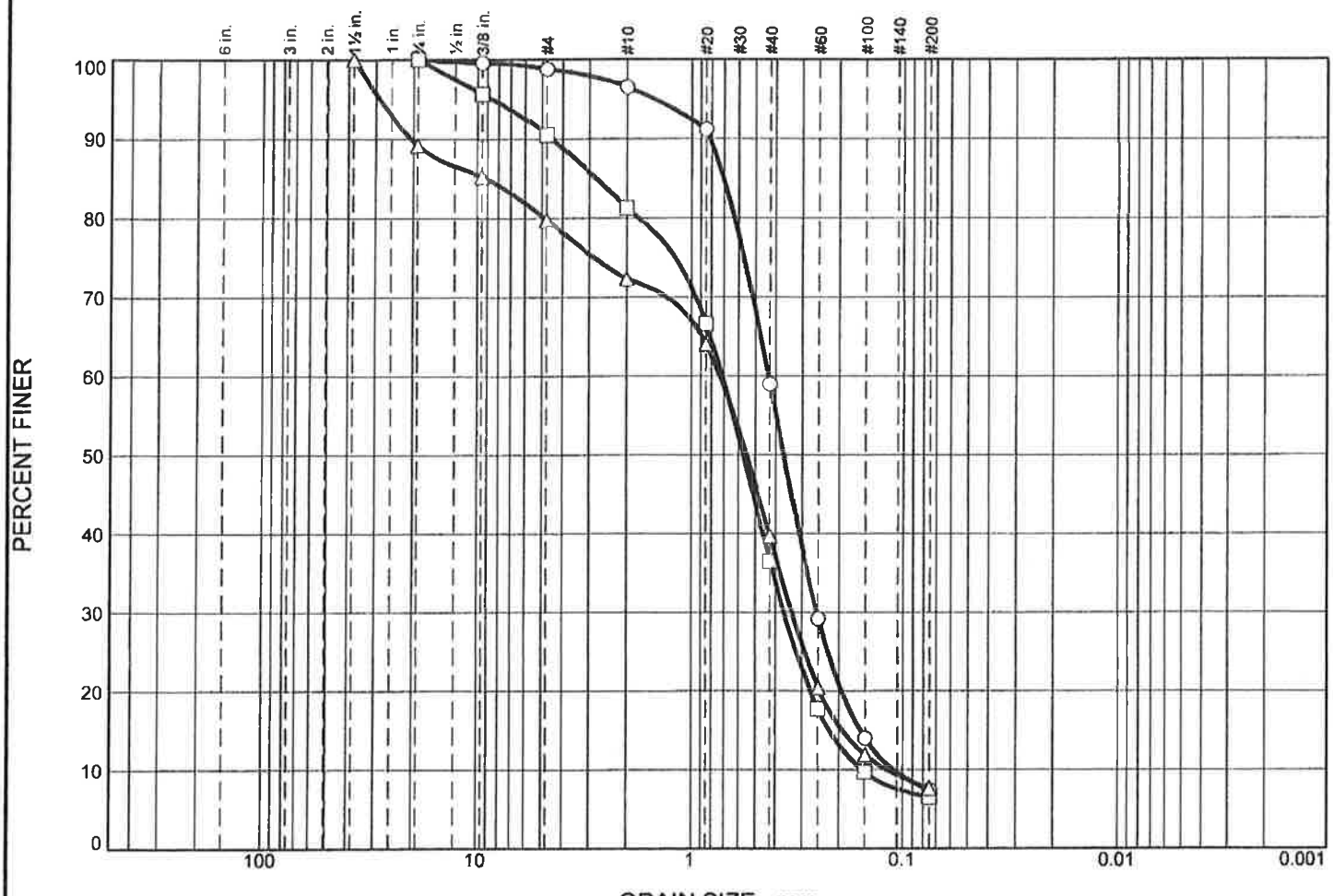
Terra Associates, Inc.

Kirkland, WA

Figure A-9

Tested By: FQ

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	1.2	2.3	37.5	51.6	7.4	
□	0.0	0.0	9.5	9.2	44.8	30.0	6.5	
△	0.0	10.8	9.4	7.5	32.6	32.1	7.6	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			0.7051	0.4322	0.3659	0.2544	0.1583	0.1104	1.36	3.91
□			2.8139	0.7129	0.5693	0.3640	0.2216	0.1551	1.20	4.60
△			9.1787	0.7314	0.5488	0.3337	0.1931	0.1185	1.28	6.17

Material Description	USCS	AASHTO
○ Poorly graded SAND with silt	SP-SM	
□ Poorly graded SAND with silt	SP-SM	
△ Well graded SAND with silt and gravel	SW-SM	

Project No. T-7282 **Client:** Dimensions, Inc.

Project: Lil Lochwood

Bellevue, Washington

○ **Location:** Test Pit TP-4 **Depth:** -4' **Sample Number:** 2

□ **Location:** Test Pit TP-5 **Depth:** -1.5' **Sample Number:** 1

△ **Location:** Test Pit TP-6 **Depth:** -1' **Sample Number:** 1

Remarks:

○ Tested on 9/17/2015

□ Tested on 9/17/2015

△ Tested on 9/17/2015

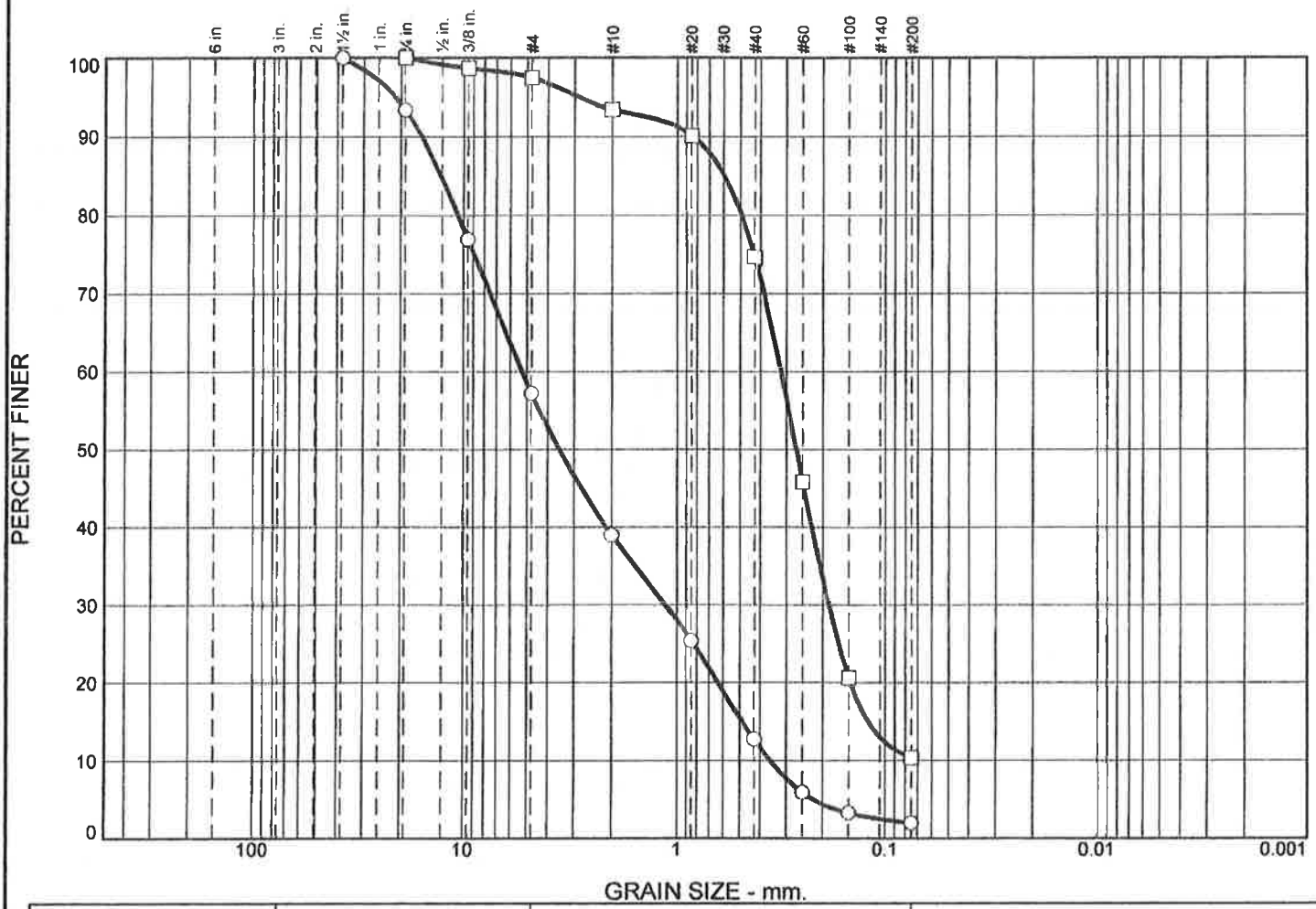
Terra Associates, Inc.

Kirkland, WA

Figure A-10

Tested By: FQ

Particle Size Distribution Report



	% +3"	% Gravel Coarse	% Gravel Fine	% Sand Coarse	% Sand Medium	% Sand Fine	% Fines Silt	% Fines Clay
○	0.0	6.6	36.2	18.2	26.3	10.7	2.0	
□	0.0	0.0	2.6	4.0	18.8	64.2	10.4	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			12.8342	5.2775	3.5232	1.1249	0.4854	0.3569	0.67	14.79
□			0.5941	0.3186	0.2685	0.1874	0.1209			

Material Description	USCS	AASHTO
○ Poorly graded SAND with gravel	SP	
□ Poorly graded SAND with silt	SP-SM	

Project No. T-7282 **Client:** Dimensions, Inc.
Project: Lil Lochwood
Bellevue, Washington
○ **Location:** Test Pit TP-7 **Depth:** -1' **Sample Number:** 1
□ **Location:** Test Pit TP-7 **Depth:** -6' **Sample Number:** 3

Remarks:
○ Tested on 9/17/2015
□ Tested on 9/17/2015

Terra Associates, Inc.

Kirkland, WA

Figure A-11

Tested By: FQ

THE WATERSHED COMPANY

March 10, 2016

Mike Perry
(425) 827-9293
Via email: perry@dimensionsarch.com

Re: 4466 140th Avenue NE– 2015 Wetland and Stream Delineation Report
The Watershed Company Reference Number: 080601

Dear Mike:

On August 24 and 25, 2015, Ecologists Ryan Kahlo and Rose Whitson visited the 12.81-acre property located at 4466 140th Avenue NE in the City of Bellevue (Parcel # 1525059070). A subsequent visit to the adjacent private properties to the north and south of the subject property was conducted on February 19, 2016. These visits were conducted to update and expand a wetland and stream delineation study originally completed in 2008. This letter summarizes the findings of this study and details applicable federal, state, and local regulations. The following attachments are included:

- Delineation Sketch
- Wetland Determination Forms
- Ecology 2004 Wetland Rating Forms

Methods

Public-domain information on the subject property was reviewed for this reconnaissance study. These sources include USDA Natural Resources Conservation Service (NRCS) Soil maps, U.S. Fish and Wildlife Service National Wetland Inventory maps, Washington Department of Natural Resources interactive mapping program (FPARS), Washington Department of Fish and Wildlife interactive mapping programs (PHS on the Web and SalmonScape), and King County's interactive GIS map (iMAP). The critical area mapping resources from the City of Bellevue, and the 2008 delineation and habitat assessment studies performed by The Watershed Company were also referenced.

The ordinary high water mark (OHWM) of the onsite stream was determined based on the definition provided by the Washington Department of Fish and Wildlife and WAC 173-22-030(5). The OHWM is located by examining the bed and bank physical characteristics and vegetation to ascertain the water elevation for mean annual floods.

750 Sixth Street South Kirkland, WA 98033
p 425.822.5242 f 425.827.8136 watershedco.com

Received
JAN 25 2017
Permit Processing

Two streams, Valley Creek and Stream B (see below) were identified in the study area. Valley Creek was not delineated, as it is located entirely within wetland areas, and only the encumbering (north) OHWM of Stream B was delineated, since the stream is located on adjacent properties.

The study area was evaluated for wetlands using methodology from the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region Version 2.0* (Regional Supplement) (US Army Corps of Engineers [Corps] May 2010). Wetland boundaries were determined on the basis of an examination of vegetation, soils, and hydrology. Four data points were taken. The wetland boundaries were then demarcated with pink- and black-striped flagging. Wetland AB has 42 flags along the western boundary (A-line) and 22 flags along the eastern boundary (B-line). Wetland C is marked with 27 flags. The encumbering (south) boundary of Wetland D is marked with 15 flags. All three wetlands were rated using the *Western Washington Wetland Rating System* (Ecology, Aug 2004, version 2). The encumbering (north/right) bank of Stream B was marked with 17 blue- and white-striped flags.

Findings

The subject parcel zoned as Rural Single Family. It is in the Kelsey Creek drainage basin of the Cedar River watershed (HUC 171100120302) within the Cedar-Sammamish Water Resource Inventory Area (WRIA 8). It is partially developed as a single family residence with an area in the southwest corner used as horse pasture. The eastern third of the property remains undeveloped except for a series of foot trails. This eastern section consists of a mature forest with Western red cedar, western hemlock, Douglas-fir, and bigleaf maple trees with a dense understory of salmonberry, red huckleberry, vine maple, and salal, among other species. Two wetlands (Wetlands AB and C) and one stream (Valley Creek) are on the premises. There is also one wetland off-site to the north (Wetland D) and one off-site stream to the south that have encumbering buffers and are also briefly described below.

Wetland AB

Wetland AB is a riverine/depressional wetland that extends beyond the property to the north and south. Its primary hydrology sources are groundwater, runoff, and precipitation, with overbank flooding from Valley Creek in some areas. During peak flows, flooding from the pond in Wetland C is also piped into Wetland AB. Wetland AB is dominated by palustrine forested and palustrine scrub-shrub Cowardin classes, with occasional patches of emergent and aquatic bed. Dominant vegetation includes red alder, western red cedar, vine maple, and lady fern. Water parsley and skunk cabbage are abundant near the stream and the ponded areas. There is also a robust community of yellow pond lilies and small-fruited bulrush in the ponded area adjacent to Wetland

C. The soil is a dark 10YR 2/2 silt loam from zero to four inches below ground surface with seven percent redoximorphic concentrations. Below that layer to twelve inches below ground surface, is a dark 7.5YR 2.5/1 sandy clay loam with 20 percent redoximorphic concentrations in the matrix. As determined in the rating form, the wetland has high habitat function due to the prevalence of vertical and horizontal habitat structures within the forested area and its connectivity with Valley Creek. Water quality and hydrologic function are moderate due to the proximity of the wetland to residential areas and potential for flood attenuation.

Wetland C

Wetland C is a depressional wetland. It was constructed as a pond on a historic wetland (The Watershed Company 2008). Dominant vegetation include bluegrass, small-fruited bulrush, spike rush, Eurasian watermilfoil, and water-starwort. The hydrologic regime is primarily permanently flooded, with water piped in from Wetland D and from precipitation and groundwater. The maximum water level is managed via an overflow pipe that directs flow south to Wetland AB. The soils are dark sandy loam with redoximorphic features (hydric soil indicator F6- dark surface, data points 2 and 3). The soils closest to the ponding also have a depleted layer (F3-depleted matrix, data point 2). Along the periphery of the pond, the wetland meets hydrology with the presence of oxidized rhizospheres (C3). The wetland provides low water quality function based on the inability of the area to provide much nutrient deposition due to a lack of persistent vegetation. Habitat function and hydrologic function are moderate.

Wetland D (off-site)

Wetland D is located off-site on the adjacent property to the north. Much of Wetland D is a man-made pond with an outlet that pipes water into Wetland C. Wetland D supports palustrine emergent, aquatic bed, and open water components. Common vegetation includes yellow pond lily, small-fruited bulrush, soft rush, lady fern, and creeping buttercup. The soils in Wetland D satisfy the criteria for the hydric soil indicator, sandy redox (S5). The soil was saturated to the surface, and groundwater was present six inches below the surface at the time of the February 2016 inspection.

Valley Creek

Valley Creek is a perennial stream that is a tributary to Kelsey Creek. Within the study area, Valley Creek is located entirely within the boundaries of Wetland AB and contributes hydrology to the wetland in the form of overbank flooding. The riparian zone consisted of forested areas with Western red cedar, red alder trees, and a dense understory of vine maple, lady fern, and skunk cabbage. Chinook, coho, and coastal cutthroat salmonids are documented in the creek (WDFW PHS 2012, Bellevue Critical Areas Update Streams Inventory 2003).

Stream B (off-site)

Stream B is a seasonal tributary to Valley Creek. Stream B originates at the outfall of two stormwater pipes located on the adjacent apartment complex property to the east (Parcel #1525059027). Both pipes convey stormwater from a condominium development southeast of the subject property (Parcel #7102600000). While both pipes contribute flow to Stream B, the primary source of flow is the outfall for the detention pond that provides stormwater control for the condominiums. From the outfalls, the stream flows north for a short distance and then westward along the southern boundary of the subject property, through Wetland AB, eventually connecting with Valley Creek approximately 700 feet west of the detention pond. Stream B flows through two culverts between the off-site detention pond and its confluence with Valley Creek. The upstream culvert is located on Parcel #6137500120, directly south of the subject property. The downstream culvert is located beneath the terminus of 143rd Place SE along the southern property boundary. The downstream culvert is a vertical corrugated metal pipe (CMP) just east of the road terminus that serves as a flood control mechanism. The vertical CMP then conveys flow beneath 143rd Place SE, discharging into an open channel segment west of the road. A secondary CMP, which conveys stormwater collected in a catch basin at the terminus of 143rd Place SE, discharges at this same location. Stream B was completely dry at the time of the August 2015 inspection, and it contained approximately two inches of flow for most of its length during the February 2016 inspection, which coincided with near mean high water levels.

Stream B is not mapped by WDFW SalmonScape, the City of Bellevue, FPARS, or by King County iMAP. As such, there is limited data on fish use in Stream B. Based on the guidance under WAC 222-16-031, fish use is presumed in streams two feet wide or greater with a gradient less than 16 percent. In addition to the vertical CMP, which functions as a complete fish passage barrier, Stream B averages less than two feet wide downstream of 143rd Place SE. Based on a survey provided by Goldsmith Land Development Services for the 2008 wetland delineation study, an approximately 75-foot long segment of Stream B just upstream of the vertical CMP flows on a gradient of approximately 18 percent. While likely a natural stream channel historically, Stream B presently functions almost entirely as a stormwater conveyance feature, which presumably results in poor water quality. This, combined with the small channel size and length; the fish impassible vertical CMP; the steep gradient upstream of the CMP; the shallow, seasonal flows; and the lack of connectivity to upstream fish habitat, support the conclusion that Stream B is a non-fish-bearing, seasonal stream.

Local Regulations

Critical areas in the City of Bellevue are regulated under Part 20.25H *Critical Areas Overlay District* in the Bellevue City Code (BCC). Per BCC 20.25H.095, for the purpose of wetlands, the site is considered undeveloped due to the lack of a NGPE or NGPA prior

to August 1, 2006. However, for the purpose of streams, the site is presently considered developed because there is an existing primary structure (BCC 20.25H.75).

Wetland AB rates as a Category II wetland. It receives 53 points total, with 16 points for water quality function, 16 points for hydrologic function, and 21 points for habitat function. Per BCC 20.25H.095.C.1.a.i, Wetland AB receives a buffer of 110 feet. It also requires a 20-foot structural setback (BCC 20.25H.095.D.2.).

Wetland C rates as a Category III wetland. It receives 33 points total, with 4 points for water quality function, 16 points for hydrologic function, and 13 points for habitat function. Per BCC 20.25H.095.C.1.a.i, Wetland C receives a buffer of 60 feet. It also requires a 15-foot structural setback (BCC 20.25H.095.D.2.).

Wetland D rates as a Category III wetland. It receives 33 points total, with 4 points for water quality function, 16 points for hydrologic function, and 12 points for habitat function. Per BCC 20.25H.095.C.1.a.i, Wetland D receives a buffer of 60 feet. It also requires a 15-foot structural setback (BCC 20.25H.095.D.2.).

Per BCC 20.25H.075.B.2, Valley Creek is classified as a Type F water because it contains fish habitat. Stream B is classified as a Type N stream, because it does not contain fish habitat. Because the site is developed, Streams A and B presently have 50-ft and 25-ft buffers, respectively (BCC 20.25H.075.C.1.a.ii). A 50-foot structural set-back is also required for Valley Creek, and a 25-ft setback is required for Stream B (BCC 20.25H.075.D.2.ii).

Wetland and stream critical area buffers may be averaged per the requirements listed in BCC 20.25H.095.C.2 and BCC 20.25H.075.C.2; a Critical Areas Land Use would be required. Structure setback modifications would require a critical areas report (BCC 20.25H.095.D.4 and BCC 20.25H.075.D.4).

State and Federal Regulations

Wetlands and streams are also regulated by the U.S. Army Corps under Section 404 of the Clean Water Act. Any filling of Waters of the U.S., including wetlands (except isolated wetlands), would require notification and permits from the Corps. Wetlands A and B would not be considered isolated, due to surface water connections. Federally permitted actions that could affect endangered species (i.e. salmon or bull trout) may also require a biological assessment study and consultation with the U.S. Fish and Wildlife Service and/or the National Marine Fisheries Service. Application for Corps permits may also require an individual 401 Water Quality Certification and Coastal Zone Management Consistency determination from Ecology. A Cultural Resource Study in accordance with Section 106 of the National Historic Preservation Act may also be required if federal permits are necessary.

In general, neither the Corps nor Ecology regulates wetland or stream buffers, unless direct impacts are proposed to the jurisdictional wetlands or streams. When direct impacts are proposed, mitigated wetlands may require buffers based on Corps and Ecology joint regulatory guidance.

Corps and Ecology currently use an updated version of the Rating System while the City of Bellevue is requiring use of the 2004 edition. If direct impacts to wetlands anticipated, the 2004 Rating System forms will need to be converted to the 2014 version for use in state and federal permit applications.

Disclaimer

The information contained in this letter or report is based on the application of technical guidelines currently accepted as the best available science and in conjunction with the manuals and criteria outlined in the methods section. All discussions, conclusions and recommendations reflect the best professional judgment of the author(s) and are based upon information available to us at the time the study was conducted. All work was completed within the constraints of budget, scope, and timing. The findings of this report are subject to verification and agreement by the appropriate local, State and Federal regulatory authorities. No other warranty, expressed or implied, is made.

Please call if you have any questions or if we can provide you with any additional information.

Sincerely,

Rose Whitson

Rose Whitson, WPIT
Ecologist

Hugh Mortensen

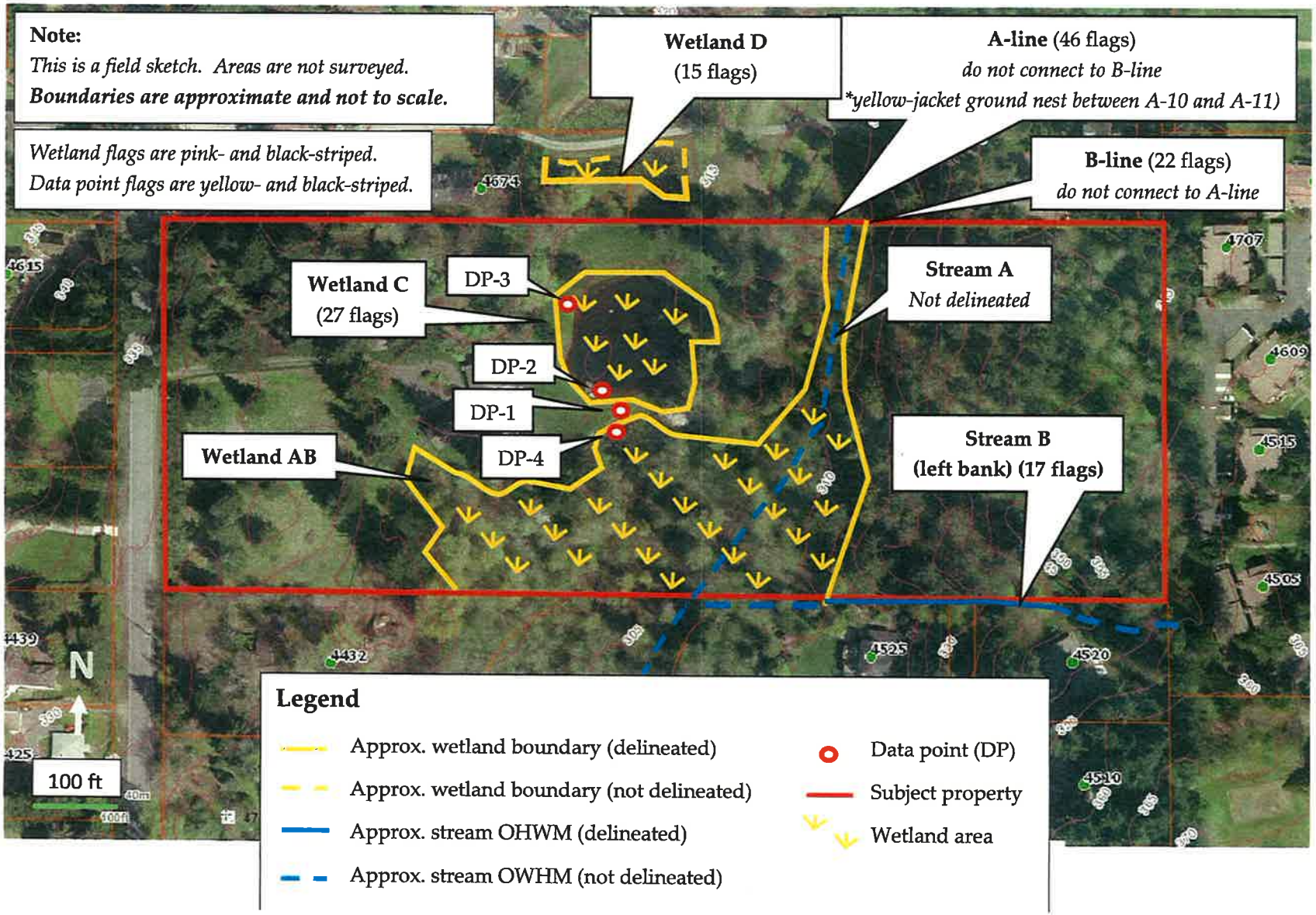
Hugh Mortensen, PWS
Senior Ecologist

Ryan Kahlo, PWS
Ecologist

Wetland & Stream Delineation Sketch
Mike Perry
King County Parcel # 1525059070,
4466 140th Avenue NE, Bellevue, WA 98005

Site Visit: August 24 & 25, 2015; February 19, 2016
TWC Ref. No. 080601

THE WATERSHED COMPANY
750 Sixth Street South | Kirkland | WA 98033
p 425.822.5242 f 425.827.8136



WETLAND DETERMINATION DATA FORM

Western Mountains, Valleys, and Coast Supplement to the 1987 COE Wetlands Delineation Manual

DP- 1

750 Sixth Street South
Kirkland, Washington 98033
(425) 822-5242
watershedco.com

Project Site:	Parcel 1525059070; 4466 140th Ave NE	Sampling Date:	8/24/2015
Applicant/Owner:	Mike Perry	Sampling Point:	DP- 1
Investigator:	R. Whitson, R. Kahlo	City/County:	Bellevue / King
Sect., Township, Range:	S 15 T 25N R 05E	State:	WA
Landform (hillslope, terrace, etc): embankment/berm*	Slope (%): 2	Local relief (concave, convex, none):	convex
Subregion (LRR): A	Lat:	Long:	Datum:
Soil Map Unit Name: Everett gravelly sandy loam, 5-15 percent slopes		NWI classification:	none listed

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

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

Hydrophytic Vegetation Present?	Yes ☒	No ☐	
Hydric Soils Present?	Yes ☐	No ☒	Is the Sampling Point within a Wetland? Yes ☐ No ☒
Wetland Hydrology Present?	Yes ☐	No ☒	

Remarks: ***located on the berm between ponds**

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 5m diam.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
		= Total Cover	

Sapling/Shrub Stratum (Plot size: 3m diam.)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Herb Stratum (Plot size: 1m diam.)			
1. *Poa sp.***	90	Y	FAC
2. *Lamium purpureum*	15	N	UPL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	105	= Total Cover	

Woody Vine Stratum (Plot size:)			
1.			
2.			
		= Total Cover	

% Bare Ground in Herb Stratum:

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	1	(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 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column totals	(A)	(B)

Prevalence Index = B / A =

Hydrophytic Vegetation Indicators

- ☒ Dominance test is > 50%
- ☐ Prevalence test is ≤ 3.0 *
- ☐ Morphological Adaptations * (provide supporting data in remarks or on a separate sheet)
- ☐ Wetland Non-Vascular Plants *
- ☐ Problematic Hydrophytic Vegetation * (explain)

* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks: ****presumed FAC**

SOIL

Sampling Point – DP-1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-4	**10YR 3/3**	**70**	**7.5YR 3/4**	**30**	**C**	**M**	**Sandy loam**	
4-9	**2.5Y 4/2** **7.5YR 3/2**	**60** **40**					**Sandy loam**	**Mixed matrix**
9-12	**7.5YR ¾** **10YR 4/2**	**60** **40**					**Sandy loam**	**Mixed matric**

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Loc: PL=Pore Lining, M=Matrix

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]

- ☐ 2cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ 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: **Disturbed soil (berm)**

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 (**except MLRA 1, 2, 4A & 4B**) (B9)
- ☐ 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 & 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

Field Observations

Surface Water Present?	Yes ☐	No ☒	Depth (in):
Water Table Present?	Yes ☐	No ☒	Depth (in):
Saturation Present? (includes capillary fringe)	Yes ☐	No ☒	Depth (in):

Wetland Hydrology Present? Yes ☐ No ☒

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

Remarks: **dry**

WETLAND DETERMINATION DATA FORM

Western Mountains, Valleys, and Coast Supplement to the 1987 COE Wetlands Delineation Manual

DP- 2

THE WATERSHED COMPANY
750 Sixth Street South
Kirkland, Washington 98033
(425) 822-5242
watershedco.com

Project Site:	Parcel 1525059070; 4466 140th Ave NE	Sampling Date:	8/24/2015
Applicant/Owner:	Mike Perry	Sampling Point:	DP- 2
Investigator:	R. Whitson, R. Kahlo	City/County:	Bellevue / King
Sect., Township, Range:	S 15 T 25N R 05E	State:	WA
Landform (hillslope, terrace, etc): Depression	Slope (%): 3	Local relief (concave, convex, none): concave	
Subregion (LRR): A	Lat:	Long:	Datum:
Soil Map Unit Name: Everett gravelly sandy loam, 5-15 percent slopes		NWI classification: PUBHh	

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

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

Hydrophytic Vegetation Present?	Yes ☒	No ☐	Is the Sampling Point within a Wetland? Yes ☒ No ☐
Hydric Soils Present?	Yes ☒	No ☐	
Wetland Hydrology Present?	Yes ☒	No ☐	

Remarks: Click here to enter text.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 5m diam.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
		= Total Cover	

Sapling/Shrub Stratum (Plot size: 3m diam.)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Herb Stratum (Plot size: 1m diam.)			
1. *Scirpus microcarpus*	70	Y	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	70	= Total Cover	

Woody Vine Stratum (Plot size:)			
1.			
2.			
		= Total Cover	

% Bare Ground in Herb Stratum: 30%

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	1	(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 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column totals	(A)	(B)

Prevalence Index = B / A =

Hydrophytic Vegetation Indicators

- ☒ Dominance test is > 50%
- ☐ Prevalence test is ≤ 3.0 *
- ☐ Morphological Adaptations * (provide supporting data in remarks or on a separate sheet)
- ☐ Wetland Non-Vascular Plants *
- ☐ Problematic Hydrophytic Vegetation * (explain)

* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks:

SOIL

Sampling Point – DP-2

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-5	**10YR 4/1**	**75**	**10YR 4/6 N4***	**20 5**	**C (inclusions)**	**M, PL M**	**Coarse sand Clay inclusions**	
5-15	**10YR 2/1**	**75**	**5YR 3/4**	**25**	**C**	**M, PL**	**Sandy clay loam**	**Organic inclusions**

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains

[2]Loc: PL=Pore Lining, M=Matrix

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]

- ☐ 2cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ 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)
- ☐ 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 (**except MLRA 1, 2, 4A & 4B**) (B9)
- ☐ 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 & 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

Field Observations

Surface Water Present?	Yes ☐	No ☒	Depth (in):
Water Table Present?	Yes ☐	No ☒	Depth (in):
Saturation Present? (includes capillary fringe)	Yes ☒	No ☐	Depth (in): **0" BGS**

Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks: **BGS = below ground surface**

WETLAND DETERMINATION DATA FORM

Western Mountains, Valleys, and Coast Supplement to the 1987 COE Wetlands Delineation Manual

DP- 3

THE WATERSHED COMPANY
750 Sixth Street South
Kirkland, Washington 98033
(425) 822-5242
watershedco.com

Project Site:	**Parcel 1525059070; 4466 140th Ave NE**	Sampling Date:	**8/24/2015**
Applicant/Owner:	**Mike Perry**	Sampling Point:	DP- **3**
Investigator:	**R. Whitson, R. Kahlo**	City/County:	**Bellevue / King**
Sect., Township, Range:	S **15** T **25N** R **05E**	State:	**WA**
Landform (hillslope, terrace, etc): **hillslope**	Slope (%): **2**	Local relief (concave, convex, none): **concave**	
Subregion (LRR): **A**	Lat:	Long:	Datum:
Soil Map Unit Name: **Everett gravelly sandy loam, 5-15 percent slopes**		NWI classification: **none listed**	

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

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

Hydrophytic Vegetation Present?	Yes ☒	No ☐	**Is the Sampling Point within a Wetland?**	Yes ☒ No ☐
Hydric Soils Present?	Yes ☒	No ☐		
Wetland Hydrology Present?	Yes ☒	No ☐		

Remarks: **Wetland C in lawn area, not previously delineated as wetland**

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 5m diam.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
		= Total Cover	

Sapling/Shrub Stratum (Plot size: 3m diam.)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Herb Stratum (Plot size: 1m diam.)			
1. ***Holcus lanatus***	**30**	**Y**	**FAC**
2. ***Scirpus microcarpus***	**30**	**Y**	**OBL**
3. ***Poa* sp. ***	**30**	**Y**	**FAC**
4. ***Trifolium repens***	**40**	**Y**	**FAC**
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	130	= Total Cover	

Woody Vine Stratum (Plot size:)			
1.			
2.			
		= Total Cover	

% Bare Ground in Herb Stratum:

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 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column totals	(A)	(B)

Prevalence Index = B / A =

Hydrophytic Vegetation Indicators

- ☒ Dominance test is > 50%
- ☐ Prevalence test is ≤ 3.0 *
- ☐ Morphological Adaptations * (provide supporting data in remarks or on a separate sheet)
- ☐ Wetland Non-Vascular Plants *
- ☐ Problematic Hydrophytic Vegetation * (explain)

* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks: ***Presumed FAC**

SOIL

Sampling Point – DP-3

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-12	**10YR 2/2**	**90**	**5YR 3/4**	**10**	**C**	**M**	**Sandy loam**	
12-14	**10YR 2/2**	**80**	**2.5Y 4/1** **10YR 4/6**	**10** **10**	**(inclusion)** **C**	**M** **PL, M**	**Sandy loam**	**Mixed with inclusions**

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Loc: PL=Pore Lining, M=Matrix

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]

- ☐ 2cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ 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: **Inclusion in 2nd layer has higher clay content**

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 **(except MLRA 1, 2, 4A & 4B)** (B9)
- ☐ 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 & 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

Field Observations

Surface Water Present?	Yes ☐	No ☒	Depth (in):
Water Table Present?	Yes ☐	No ☒	Depth (in):
Saturation Present? (includes capillary fringe)	Yes ☐	No ☒	Depth (in):

Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks: **Dry season; based on strong redox and veg, assumed hydrology during wet portion of growing season**

THE WATERSHED COMPANY

WETLAND DETERMINATION DATA FORM

Western Mountains, Valleys, and Coast Supplement to the 1987 COE Wetlands Delineation Manual

DP- 4

750 Sixth Street South
Kirkland, Washington 98033
(425) 822-5242
watershedco.com

Project Site:	Parcel 1525059070; 4466 140th Ave NE	Sampling Date:	8/24/2015
Applicant/Owner:	Mike Perry	Sampling Point:	DP- 4
Investigator:	R. Whitson, R. Kahlo	City/County:	Bellevue / King
Sect., Township, Range:	S 15 T 25N R 05E	State:	WA
Landform (hillslope, terrace, etc): Depression	Slope (%): 5	Local relief (concave, convex, none): concave	
Subregion (LRR): A	Lat:	Long:	Datum:
Soil Map Unit Name: Everett gravelly sandy loam, 5-15 percent slopes		NWI classification: none listed	

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

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

Hydrophytic Vegetation Present?	Yes ☒	No ☐	Is the Sampling Point within a Wetland?	Yes ☒ No ☐
Hydric Soils Present?	Yes ☒	No ☐		
Wetland Hydrology Present?	Yes ☒	No ☐		

Remarks: Click here to enter text.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 5m diam.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
		= Total Cover	
Sapling/Shrub Stratum (Plot size: 3m diam.)			
1. *Rubus spectabilis*	2	N	FAC
2.			
3.			
4.			
5.			
	2	= Total Cover	
Herb Stratum (Plot size: 1m diam.)			
1. *Athyrium cyclosorum*	15	N	FAC
2. *Scirpus microcarpus*	40	Y	OBL
3. *Juncus effusus*	75	Y	FACW
4. *Rubus ursinus*	2	N	FACU
5. *Poa sp.*	25	N	FAC
6. *Geum macrophyllum*	5	N	FAC
7.			
8.			
9.			
10.			
11.			
	162	= Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
		= Total Cover	
% Bare Ground in Herb Stratum:			

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 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column totals	(A)	(B)

Prevalence Index = B / A =

Hydrophytic Vegetation Indicators

- ☒ Dominance test is > 50%
- ☐ Prevalence test is ≤ 3.0 *
- ☐ Morphological Adaptations * (provide supporting data in remarks or on a separate sheet)
- ☐ Wetland Non-Vascular Plants *
- ☐ Problematic Hydrophytic Vegetation * (explain)

* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks:

SOIL

Sampling Point – DP-4

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-4	**10YR 2/2**	**93**	**5YR 3/4**	**7**	**C**	**M, PL**	**Silt loam**	
4-12	**7.5YR 2.5/1**	**80**	**7.5YR 2.5/3**	**20**	**C**	**M**	**Sandy clay loam**	**Some random inclusions <1%**

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Loc: PL=Pore Lining, M=Matrix

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]

- ☐ 2cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ 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)
- ☐ 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 (**except MLRA 1, 2, 4A & 4B**) (B9)
- ☐ 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 & 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

Field Observations

Surface Water Present?	Yes ☐	No ☒	Depth (in):	
Water Table Present?	Yes ☐	No ☒	Depth (in):	
Saturation Present? (includes capillary fringe)	Yes ☒	No ☐	Depth (in):	**4" BGS**

Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks: **BGS = below ground surface; inundation 6ft away**

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users
Updated Oct 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): Wetland AB Date of site visit: 8/25/2015

Rated by: R. Whitson R. Kahlo Trained by Ecology? Yes ☒ No ☐ Date of Training 03/2015

SEC: 15 TWNSHP: 25N RNGE: 05E Is S/T/R in Appendix D? Yes ☐ No ☒

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I ☐ II ☒ III ☐ IV ☐

Category I = Score ≥70
Category II = Score 51-69
Category III = Score 30-50
Category IV = Score < 30

Score for Water Quality Functions	16
Score for Hydrologic Functions	16
Score for Habitat Functions	21
TOTAL score for functions	**53**

Category based on SPECIAL CHARACTERISTICS of wetland

I ☐ II ☐ Does not Apply ☒

Final Category (choose the "highest" category from above) **II**

Check the appropriate type and class of wetland being rated.

Wetland Type		Wetland Class	
Estuarine	☐	**Depressional**	☒
Natural Heritage Wetland	☐	**Riverine**	☒
Bog	☐	**Lake-fringe**	☐
Mature Forest	☐	**Slope**	☐
Old Growth Forest	☐	**Flats**	☐
Coastal Lagoon	☐	**Freshwater Tidal**	☐
Interdunal	☐		
None of the above	☒	Check if unit has multiple HGM classes present	☒

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

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

Check List for Wetlands That May Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered* ***animal*** *or* ***plant*** *species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X*
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered* ***animal*** *species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category I Natural Heritage Wetlands (see p. 19 of data form).		X*
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*	X*	
SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

***The study area was reviewed for the presence of endangered, threatened, and priority species using WDFW online Priority Habitat and Species Data, PHS on the Web (http://wdfw.wa.gov/mapping/phs/).**

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

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

Classification of Wetland Units in Western Washington

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in Questions 1-7 apply, and go to Question 8.

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

☒ NO – go to 2 ☐☐**YES** – the wetland class is **Tidal Fringe**

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? **YES – Freshwater Tidal Fringe NO – Saltwater Tidal Fringe (Estuarine)**

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

2. The entire wetland unit is flat and precipitation is only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit

☒ NO – go to 3 ☐ **YES** – The wetland class is **Flats**

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

3. Does the entire wetland unit **meet both** of the following criteria?

☐ The vegetated part of the wetland is on the shores of a body of open water (without any vegetation on the surface) at least 20 acres (8 ha) in size;

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

☒NO – go to 4 ☐**YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland unit **meet all** of the following criteria?

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

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

☐ The water leaves the wetland **without being impounded**?
NOTE: *Surface water does not pond in these types of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3ft diameter and less than a foot deep).*

☒ NO – go to 5 ☐ **YES** – The wetland class is **Slope**

5. Does the entire wetland unit **meet all** of the following criteria?

☐ The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river.

☐ The overbank flooding occurs at least once every two years

NOTE: The riverine unit can contain depressions that are filled with water when the river is not flooding.

☒ NO - go to 6 ☐ **YES** – The wetland class is **Riverine**

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

☒ NO – go to 7 ☐ **YES** – The wetland class is **Depressional**

7. Is the entire wetland unit located in a very flat area with no obvious depression and no overbank flooding. The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

☒ NO – go to 8 ☐ **YES** – The wetland class is **Depressional**

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit, classify the wetland using the class that represents more than 90% of the total area.

HGM classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

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

D	Depressional and Flats Wetlands	Points
	WATER QUALITY FUNCTIONS - Indicators that wetland functions to improve water quality	
D	**D 1. Does the wetland have the potential to improve water quality?**	*(see p. 38)*
D	D 1.1 Characteristics of surface water flows out of the wetland: Unit is a depression with no surface water leaving it (no outlet) .....points = 3 Unit has an intermittently flowing, or highly constricted permanently flowing outlet .....points = 2 Unit has an unconstricted, or slightly constricted, surface outlet *(permanently flowing)*..points = 1 Unit is a "flat" depression (Q.7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet**, and/or outlet is a man-made ditch .....points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")*	1
D	D 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (*use NRCS definitions*). YES points = 4 NO points = 0	0
D	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class): Wetland has persistent, ungrazed, vegetation > = 95% of area.....points = 5 Wetland has persistent, ungrazed, vegetation > = 1/2 of area .....points = 3 Wetland has persistent, ungrazed vegetation > = 1/10 of area .....points = 1 Wetland has persistent, ungrazed vegetation <1/10 of area .....points = 0	5
D	D1.4 Characteristics of seasonal ponding or inundation. *This is the area of the wetland unit that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 yrs.* Area seasonally ponded is > ½ total area of wetland .....points = 4 Area seasonally ponded is > ¼ total area of wetland .....points = 2 Area seasonally ponded is < ¼ total area of wetland .....points = 0 NOTE: *See text for indicators of seasonal and permanent inundation.*	2
D	**Total for D 1** *Add the points in the boxes above*	8
D	**D 2. Does the wetland unit have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* ☐ Grazing in the wetland or within 150 ft ☐ Untreated stormwater discharges to wetland ☐ Tilled fields or orchards within 150 ft of wetland ☒ A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging ☒ Residential, urban areas, golf courses are within 150 ft of wetland ☐ Wetland is fed by groundwater high in phosphorus or nitrogen ☐ Other_____ **YES** multiply score in D 1. **by 2** **NO** multiply score in D 1. **by 1**	*(see p. 44)* multiplier 2
D	**TOTAL - Water Quality Functions** Multiply the score from D1 by D2 ***Add score to table on p. 1***	**16**

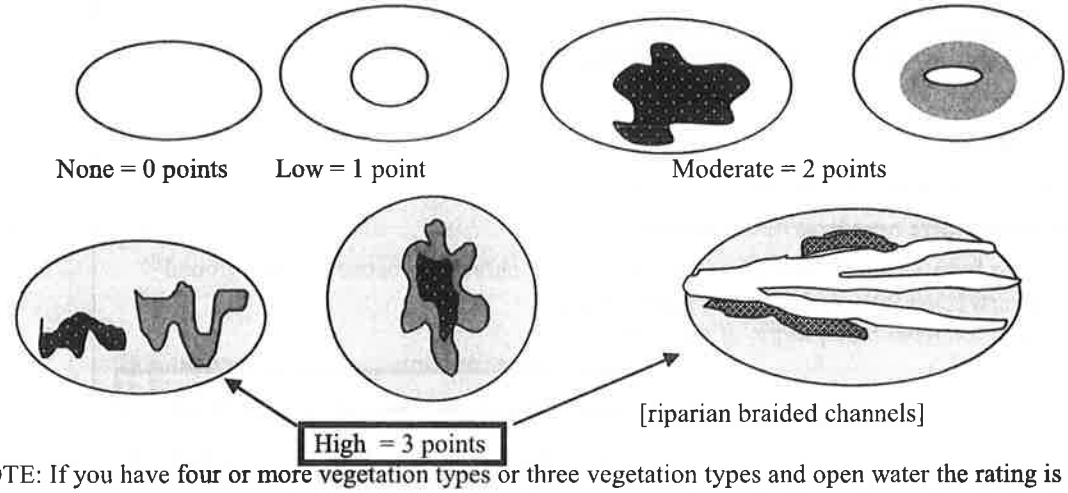
D	Depresssional and Flats Wetlands	
	HYDROLOGIC FUNCTIONS - Indicators that wetland functions to reduce flooding and stream degradation	
	D 3. Does the wetland have the potential to reduce flooding and erosion?	*(see p. 46)*
D	D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet) .....points = 4 Unit has an intermittently flowing, or highly constricted permanently flowing outlet .....points = 2 Unit is a "flat" depression (Q.7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet**, and/or outlet is a man-made ditch .....points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*)..points = 0	0
D	D 3.2 Depth of storage during wet periods *Estimate the height of ponding above the bottom of the outlet For units with no outlet measure from the surface of permanent water or deepest part (if dry).* Marks of ponding are at least 3 ft or more above the surface or bottom of outlet .....points = 7 The wetland is a "headwater" wetland" .....points = 5 Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet .....points = 5 Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet.....points = 3 Unit is flat (yes to Q.2 or Q.7 on key) but has small depressions on the surface that trap water.....points = 1 Marks of ponding less than 0.5 ft .....points = 0	5
D	D 3.3 Contribution of wetland unit to storage in the watershed *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* The area of the basin is less than 10 times the area of the unit.....points = 5 The area of the basin is 10 to 100 times the area of the unit.....points = 3 The area of the basin is more than 100 times the area of the unit.....points = 0 Entire unit is in the FLATS class.....points = 5	3
D	**Total for D 3** *Add the points in the boxes above*	8
D	**D 4. Does the wetland unit have the opportunity to reduce flooding and erosion?** Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following conditions apply.* ☐ Wetland is in a headwater of a river or stream that has flooding problems ☒ Wetland drains to a river or stream that has flooding problems ☐ Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems ☐ Other _____ ☐ **YES** multiplier is **2** ☐ **NO** multiplier is **1**	*(see p. 49)* multiplier 2
D	**TOTAL - Hydrologic Functions** Multiply the score from D 3 by D 4 ***Add score to table on p. 1***	**16**

These questions apply to wetlands of all HGM classes.

HABITAT FUNCTIONS - Indicators that wetland functions to provide important habitat

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

H 1.1 Vegetation structure ***(see p. 72)*** *Check the types of vegetation classes present (as defined by Cowardin) if the class is ¼ acre or covers more than 10% of the area of the wetland if unit smaller than 2.5 acres.* ☐ Aquatic bed ☐ Emergent plants ☒ Scrub/shrub (areas where shrubs have >30% cover) ☒ Forested (areas where trees have >30% cover) ☒ Forested areas have 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon *Add the number of vegetation types that qualify. If you have:* 4 structures or more ..... points = 4 **3 structures ..... points = 2** 2 structures ..... points = 1 1 structure ..... points = 0	2
H 1.2. Hydroperiods ***(see p. 73)*** *Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ acre to count. (see text for descriptions of hydroperiods)* ☐ Permanently flooded or inundated — 4 or more types present ..... points = 3 ☒ Seasonally flooded or inundated — **3 types present ..... points = 2** ☒ Occasionally flooded or inundated — 2 types present ..... points = 1 ☐ Saturated only — 1 types present ..... points = 0 ☒ Permanently flowing stream or river in, or adjacent to, the wetland ☐ Seasonally flowing stream in, or adjacent to, the wetland ☐ ***Lake-fringe wetland*** **= 2 points** ☐ ***Freshwater tidal wetland*** **= 2 points**	2
H 1.3. Richness of Plant Species ***(see p. 75)*** Count the number of plant species in the wetland that cover at least 10 ft^2. (*different patches of the same species can be combined to meet the size threshold)* *You do not have to name the species.* *Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle* If you counted: **> 19 species ..... points = 2** 5 - 19 species ..... points = 1 < 5 species ..... points = 0 *List species below if you want to:* POBA, ALRU, THPL, PISI, FRPU. RUSP, ACCI, LOIN, SARA, OECE, Rosa sp., RUUR, SCMI, LYAM, JUEF, GLEL, ATCY, POMU, GEMA, TOME, RARE, Poa sp., RUCR, NULU, BLSP, DREX, OESA	2

H 1.4. Interspersion of habitats *(see p. 76)* Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  NOTE: If you have four or more vegetation types or three vegetation types and open water the rating is always "high".	3
H 1.5. Special Habitat Features: *(see p. 77)* *Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.* ☒ Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long). ☒ Standing snags (diameter at the bottom > 4 inches) in the wetland ☒ Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream for at least 33 ft (10m) ☐ Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present ☐ At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated. *(structures for egg-laying by amphibians)* ☒ Invasive plants cover less than 25% of the wetland area in each stratum of plants *Note: The 20% stated in early printings of the manual on page 78 is an error.*	4
H 1. TOTAL Score - potential for providing habitat *Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5*	13

H 2. Does the wetland have the opportunity to provide habitat for many species?	
H 2.1 Buffers ***(see p. 80)*** *Choose the description that best represents condition of buffer of wetland. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."* ☐ 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No developed areas within undisturbed part of buffer. (relatively undisturbed also means no-grazing) ..... Points = 5 ☐ 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. ..... Points = 4 ☐ 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. ..... Points = 4 ☐ 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference ..... Points = 3 ☐ 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference ..... Points = 3 **If buffer does not meet any of the criteria above** ☐ No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK ..... Points = 2 ☐ No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK ..... Points = 2 ☐ Heavy grazing in buffer. ..... Points = 1 ☐ Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland ..... Points = 0 ☒ Buffer does not meet any of the criteria above ..... Points = 1	1
H 2.2 Corridors and Connections ***(see p. 81)*** H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (*dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor*). YES = **4 points** (*go to H 2.3*) **NO** = go to H 2.2.2 H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR** a **Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? YES = **2 points** (*go to H 2.3*) **NO** = H 2.2.3 H 2.2.3 Is the wetland: within 5 mi (8km) of a brackish or salt water estuary OR within 3 mi of a large field or pasture (>40 acres) OR within 1 mi of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	0

H 2.3 Near or adjacent to other priority habitats listed by WDFW ***(see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report http://wdfw.wa.gov/hab/phslist.htm)*** Which of the following priority habitats are within 330ft (100m) of the wetland? *(NOTE: the connections do not have to be relatively undisturbed)* ☐ **Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acres). ☐ **Biodiversity Areas and Corridors:** Areas of habitat that are relatively important to various species of native fish and wildlife (*full description in WDFW PHS report p. 152*) ☐ **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock. ☒ **Old-growth/Mature forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. (Mature forests.) Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest. ☐ **Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158.)* ☒ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. ☐ **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161*) ☒ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources. ☐ **Nearshore:** Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. *(full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A.)* ☐ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human. ☐ **Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft. ☐ **Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs. ☒ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of >51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30cm (12 in) in diameter at the largest end, and > 6m (20 ft) long. If wetland has **3 or more** priority habitats = **4 points** If wetland has **2** priority habitats = **3 points** If wetland has **1** priority habitat = **1 point** No habitats = **0 points** *Note: All vegetated wetland are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H2.4.*	4

H 2.4 Wetland Landscape *(choose the **one** description of the landscape around the wetland that best fits)* ***(see p. 84)*** There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development.....points = 5 The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile.....points = 5 There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed.....points = 3 The wetland is Lake-fringe on a lake with disturbance and there are 3 other lake-fringe wetland within ½ mile.....points = 3 There is at least 1 wetland within ½ mile.....points = 2 There are no wetlands within ½ mile.....points = 0	3
H 2. TOTAL Score - opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*	8
TOTAL for H1 from page 14	13
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	21

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

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

Wetland Type *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	**Category**
SC 1.0 Estuarine wetlands (*see p. 86*) Does the wetland unit meet the following criteria for Estuarine wetlands? ☐ The dominant water regime is tidal, ☐ Vegetated, and ☐ With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO ☒	
SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-151? ☐ YES = Category I ☐ NO = go to SC 1.2	**Cat. I**
SC 1.2 Is the wetland unit at least 1 acre in size and meets at least two of the following three conditions? ☐ YES = Category I ☐ NO = Category II ☐ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native Spartina spp. are the only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II) The are aof Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. ☐ At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed wetland. ☐ The wetland has at least 2 or the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual rating I/II**

SC 2.0 Natural Heritage Wetlands ***(see p. 87)*** Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a Natural Heritage wetland? *(this question is used to screen out most sites before you need to contact WNHP/DNR)* S/T/R information from Appendix D ☒ or accessed from WNHP/DNR web site ☐ YES ☐ – contact WNHP/DNR (see p. 79) and go to SC 2.2 NO ☒ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as or as a site with state threatened or endangered plant species? YES = Category I NO ☐ Not a Heritage Wetland	**Cat. I**
SC 3.0 Bogs ***(see p. 87)*** Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? *Use the key below to identify if the wetland is a bog. If you answer yes, you will still need to rate the wetland based on its functions.* 1. Does the wetland have organic soils horizons (i.e. layers of organic soil), either peats or mucks, that compose 16" or more of the first 32 inches of the soil profile? (See Appendix B for a field key to identify organic soils.) Yes - go to Q.3 NO - go to Q.2 2. Does the wetland have organic soils, either peats or mucks, that are less than 16 inches deep over bedrock or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? Yes - go to Q.3 NO ☒ is not a bog for purpose of rating 3. Does the wetland have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists species in Table 3)? Yes – Is a bog for purpose of rating NO - go to Q.4 *NOTE: If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog.* 4. Is the wetland forested (>30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover (*>30% coverage of the total shrub/herbaceous* cover)? YES = Category I NO ☐ is not a bog for purpose of rating	**Cat. I**

SC 4.0 Forested Wetlands ***(see p. 90)*** Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its functions.* ☐ Old growth forests: (west of Cascade crest) Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm) or more. *Note: The criterion for dbh is based on measurements for upland forests. Two hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter.* ☐ Mature forests: (west of the Cascade crest) Stands where the largest trees are 80-200 years old OR have average diameters (dbh) exceeding 21 in (53 cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quanitity of large downed material is generally less than that found in old-growth YES = Category 1 NO ☒ not a forested wetland with special characteristics	**Cat. I**
SC 5.0 Wetlands in Coastal Lagoons (see p. 91) Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? ☐ The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks. ☐ The lagoon in which the wetland is located contains surgace water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon (*needs to be measured near the bottom*) YES – Go to SC 5.1 NO ☒ not a wetland in a coastal lagoon SC 5.1 Does the wetland meet all of the following three conditions? ☐ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of invasive plant species (see list of invasive species on p. 74). ☐ At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. ☐ The wetalnd is larger than 1/10 acre (4350 square feet) YES = Category I NO = Category II	**Cat. I** **Cat. II**

SC 6.0 Interdunal Wetlands (see p. 93) Is the wetalnd unit west of the 1889 line (also called the Westarn Boundary of Upland Ownership or WBUO)? YES – go to SC 6.1 NO ☒ not an interdunal wetland for rating *If you answer yes you will still need to rate the wetland based on its functions.* In practical terms that means the following geographic areas: – Long Beach Peninsula – lands west of SR 103 – Grayland-Westport – lands west of SR 105 – Ocean Shores-Copalis – lands west of SR 115 and SR 109 SC 6.1 Is the wetland 1 acre or larger, or is it in a mosaic of wetlands that is 1 acre or larger? YES = Category II NO – go to SC 6.2 SC 6.2 Is the unit between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
Category of wetland based on Special Characteristics *Choose the "highest" rating if wetland falls into several categorie, and record on p. 1 .* If you answered NO for all types enter "Not Applicable" on p.1.	**N/A**

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users
Updated Oct 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): Wetland C Date of site visit: 8/24/2015

Rated by: R. Whitson R. Kahlo Trained by Ecology? Yes ☒ No ☐ Date of Training 03/2015

SEC: 15 TWNSHP: 25N RNGE: 05E Is S/T/R in Appendix D? Yes ☐ No ☒

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I ☐ II ☐ III ☒ IV ☐

Category I = Score ≥70
Category II = Score 51-69
Category III = Score 30-50
Category IV = Score < 30

Score for Water Quality Functions	4
Score for Hydrologic Functions	16
Score for Habitat Functions	13
TOTAL score for functions	**33**

Category based on SPECIAL CHARACTERISTICS of wetland

I ☐ II ☐ Does not Apply ☒

Final Category (choose the "highest" category from above) **III**

Check the appropriate type and class of wetland being rated.

Wetland Type		Wetland Class	
Estuarine	☐	**Depressional**	☒
Natural Heritage Wetland	☐	**Riverine**	☐
Bog	☐	**Lake-fringe**	☐
Mature Forest	☐	**Slope**	☐
Old Growth Forest	☐	**Flats**	☐
Coastal Lagoon	☐	**Freshwater Tidal**	☐
Interdunal	☐		
None of the above	☒	Check if unit has multiple HGM classes present	☐

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

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

Check List for Wetlands That May Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered* ***animal*** *or* ***plant*** *species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X*
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered* ***animal*** *species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category I Natural Heritage Wetlands (see p. 19 of data form).		X*
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X*
SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

***The study area was reviewed for the presence of endangered, threatened, and priority species using WDFW online Priority Habitat and Species Data, PHS on the Web (http://wdfw.wa.gov/mapping/phs/).**

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

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

Classification of Wetland Units in Western Washington

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in Questions 1-7 apply, and go to Question 8.

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

☒ NO – go to 2 ☐☐**YES** – the wetland class is **Tidal Fringe**

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? **YES – Freshwater Tidal Fringe NO – Saltwater Tidal Fringe (Estuarine)**

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

2. The entire wetland unit is flat and precipitation is only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit

☒ NO – go to 3 ☐ **YES** – The wetland class is **Flats**

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

3. Does the entire wetland unit **meet both** of the following criteria?

☐ The vegetated part of the wetland is on the shores of a body of open water (without any vegetation on the surface) at least 20 acres (8 ha) in size;

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

☒NO – go to 4 ☐**YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland unit **meet all** of the following criteria?

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

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

☐ The water leaves the wetland **without being impounded**?
NOTE: *Surface water does not pond in these types of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3ft diameter and less than a foot deep).*

☒ NO – go to 5 ☐ **YES** – The wetland class is **Slope**

5. Does the entire wetland unit **meet all** of the following criteria?

☐ The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river.

☐ The overbank flooding occurs at least once every two years

NOTE: The riverine unit can contain depressions that are filled with water when the river is not flooding.

☒ NO - go to 6 ☐ **YES** – The wetland class is **Riverine**

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

☐ NO – go to 7 ☒ **YES** – The wetland class is **Depressional**

7. Is the entire wetland unit located in a very flat area with no obvious depression and no overbank flooding. The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

☒ NO – go to 8 ☐ **YES** – The wetland class is **Depressional**

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit, classify the wetland using the class that represents more than 90% of the total area.

HGM classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

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

D	Depressional and Flats Wetlands	Points
	WATER QUALITY FUNCTIONS - Indicators that wetland functions to improve water quality	
D	**D 1. Does the wetland have the potential to improve water quality?**	*(see p. 38)*
D	D 1.1 Characteristics of surface water flows out of the wetland: Unit is a depression with no surface water leaving it (no outlet) ..... points = 3 Unit has an intermittently flowing, or highly constricted permanently flowing outlet ..... points = 2 Unit has an unconstricted, or slightly constricted, surface outlet *(permanently flowing)*.. points = 1 Unit is a "flat" depression (Q.7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet**, and/or outlet is a man-made ditch ..... points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")*	2
D	D 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (*use NRCS definitions*). YES points = 4 NO points = 0	0
D	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class): Wetland has persistent, ungrazed, vegetation > = 95% of area ..... points = 5 Wetland has persistent, ungrazed, vegetation > = 1/2 of area ..... points = 3 Wetland has persistent, ungrazed vegetation > = 1/10 of area ..... points = 1 Wetland has persistent, ungrazed vegetation <1/10 of area ..... points = 0	0
D	D1.4 Characteristics of seasonal ponding or inundation. *This is the area of the wetland unit that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 yrs.* Area seasonally ponded is > ½ total area of wetland ..... points = 4 Area seasonally ponded is > ¼ total area of wetland ..... points = 2 Area seasonally ponded is < ¼ total area of wetland ..... points = 0 NOTE: *See text for indicators of seasonal and permanent inundation.*	0
D	**Total for D 1** *Add the points in the boxes above*	2
D	**D 2. Does the wetland unit have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* ☐ Grazing in the wetland or within 150 ft ☐ Untreated stormwater discharges to wetland ☐ Tilled fields or orchards within 150 ft of wetland ☒ A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging ☒ Residential, urban areas, golf courses are within 150 ft of wetland ☐ Wetland is fed by groundwater high in phosphorus or nitrogen ☐ Other_____ **YES** multiply score in D 1. **by 2** **NO** multiply score in D 1. **by 1**	*(see p. 44)* multiplier 2
D	**TOTAL - Water Quality Functions** Multiply the score from D1 by D2 ***Add score to table on p. 1***	**4**

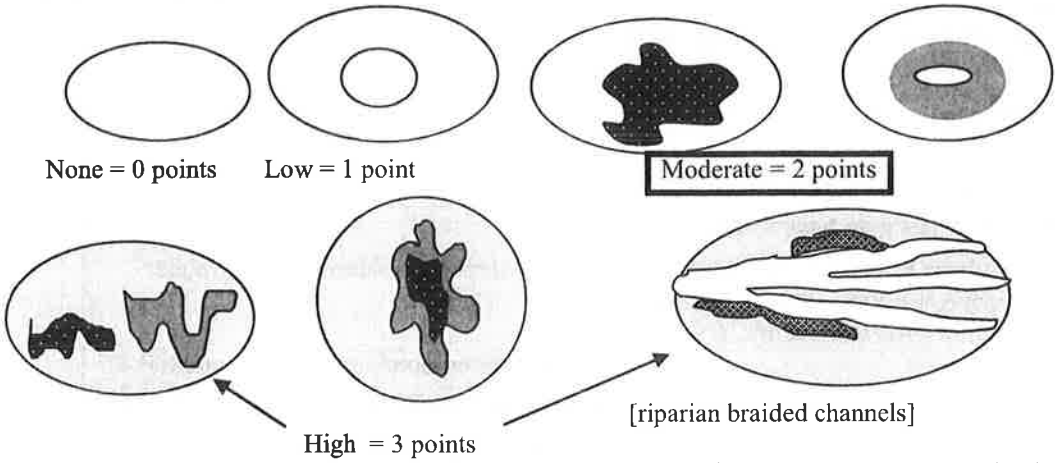
D	Depresssional and Flats Wetlands	
	HYDROLOGIC FUNCTIONS - Indicators that wetland functions to reduce flooding and stream degradation	
	D 3. Does the wetland have the potential to reduce flooding and erosion?	*(see p. 46)*
D	D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet) ..... points = 4 ☐ Unit has an intermittently flowing, or highly constricted permanently flowing outlet ..... points = 2 Unit is a "flat" depression (Q.7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet**, and/or outlet is a man-made ditch ..... points = 1 (*If ditch is not permanently flowing treat unit as "intermittently flowing"*) Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*).. points = 0	2
D	D 3.2 Depth of storage during wet periods *Estimate the height of ponding above the bottom of the outlet For units with no outlet measure from the surface of permanent water or deepest part (if dry).* Marks of ponding are at least 3 ft or more above the surface or bottom of outlet ..... points = 7 The wetland is a "headwater" wetland" ..... points = 5 Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet ..... points = 5 ☐ Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet ..... points = 3 Unit is flat (yes to Q.2 or Q.7 on key) but has small depressions on the surface that trap water ..... points = 1 Marks of ponding less than 0.5 ft ..... points = 0	3
D	D 3.3 Contribution of wetland unit to storage in the watershed *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* The area of the basin is less than 10 times the area of the unit ..... points = 5 ☐ The area of the basin is 10 to 100 times the area of the unit ..... points = 3 The area of the basin is more than 100 times the area of the unit ..... points = 0 Entire unit is in the FLATS class ..... points = 5	3
D	**Total for D 3** *Add the points in the boxes above*	8
D	**D 4. Does the wetland unit have the opportunity to reduce flooding and erosion?** Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following conditions apply.* ☐ Wetland is in a headwater of a river or stream that has flooding problems ☒ Wetland drains to a river or stream that has flooding problems ☐ Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems ☐ Other _____ ☐ **YES** multiplier is **2** ☐ **NO** multiplier is **1**	*(see p. 49)* multiplier 2
D	**TOTAL - Hydrologic Functions** Multiply the score from D 3 by D 4 ***Add score to table on p. 1***	**16**

These questions apply to wetlands of all HGM classes.

HABITAT FUNCTIONS - Indicators that wetland functions to provide important habitat

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

H 1.1 Vegetation structure ***(see p. 72)*** *Check the types of vegetation classes present (as defined by Cowardin) if the class is ¼ acre or covers more than 10% of the area of the wetland if unit smaller than 2.5 acres.* ☒ Aquatic bed ☒ Emergent plants ☐ Scrub/shrub (areas where shrubs have >30% cover) ☐ Forested (areas where trees have >30% cover) ☐ Forested areas have 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon *Add the number of vegetation types that qualify. If you have:* 4 structures or more.....points = 4 3 structures.....points = 2 **2 structures.....points = 1** 1 structure.....points = 0	1
H 1.2. Hydroperiods ***(see p. 73)*** *Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ acre to count. (see text for descriptions of hydroperiods)* ☒ Permanently flooded or inundated — 4 or more types present .....points = 3 ☐ Seasonally flooded or inundated — 3 types present.....points = 2 ☐ Occasionally flooded or inundated — 2 types present .....points = 1 ☐ Saturated only — **1 types present.....points = 0** ☐ Permanently flowing stream or river in, or adjacent to, the wetland ☐ Seasonally flowing stream in, or adjacent to, the wetland ☐ ***Lake-fringe wetland* = 2 points** ☐ ***Freshwater tidal wetland* = 2 points**	0
H 1.3. Richness of Plant Species ***(see p. 75)*** Count the number of plant species in the wetland that cover at least 10 ft^2. (*different patches of the same species can be combined to meet the size threshold)* *You do not have to name the species.* *Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle* If you counted: > 19 species.....points = 2 *List species below if you want to:* **5 - 19 species.....points = 1** < 5 species.....points = 0 POBA, ALRU, THPL, PISI, FRPU. RUSP, ACCI, LOIN, SARA, OECE, Rosa sp., RUUR, SCMI, LYAM, JUEF, GLEL, ATCY, POMU, GEMA, TOME, RARE, Poa sp., RUCR, NULU, BLSP, DREX, OESA	1

H 1.4. Interspersion of habitats *(see p. 76)* Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  NOTE: If you have four or more vegetation types or three vegetation types and open water the rating is always "high".	2
H 1.5. Special Habitat Features: *(see p. 77)* *Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.* ☐ Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long). ☐ Standing snags (diameter at the bottom > 4 inches) in the wetland ☐ Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream for at least 33 ft (10m) ☐ Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present ☐ At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated. *(structures for egg-laying by amphibians)* ☐ Invasive plants cover less than 25% of the wetland area in each stratum of plants *Note: The 20% stated in early printings of the manual on page 78 is an error.*	0
H 1. TOTAL Score - potential for providing habitat *Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5*	4

H 2. Does the wetland have the opportunity to provide habitat for many species?	
H 2.1 Buffers *(see p. 80)* *Choose the description that best represents condition of buffer of wetland. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."* ☐ 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No developed areas within undisturbed part of buffer. (relatively undisturbed also means no-grazing) ..... Points = 5 ☐ 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. ..... Points = 4 ☐ 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. ..... Points = 4 ☐ 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference ..... Points = 3 ☐ 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. ..... Points = 3 **If buffer does not meet any of the criteria above** ☐ No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK ..... Points = 2 ☒ No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK ..... Points = 2 ☐ Heavy grazing in buffer. ..... Points = 1 ☐ Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland ..... Points = 0 ☐ Buffer does not meet any of the criteria above ..... Points = 1	2
H 2.2 Corridors and Connections *(see p. 81)* H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (*dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor*). YES = **4 points** (*go to H 2.3*) **NO** = go to H 2.2.2 H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR** a **Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? YES = **2 points** (*go to H 2.3*) **NO** = H 2.2.3 H 2.2.3 Is the wetland: within 5 mi (8km) of a brackish or salt water estuary OR within 3 mi of a large field or pasture (>40 acres) OR within 1 mi of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	0

H 2.3 Near or adjacent to other priority habitats listed by WDFW ***(see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report http://wdfw.wa.gov/hab/phslist.htm)*** Which of the following priority habitats are within 330ft (100m) of the wetland? *(NOTE: the connections do not have to be relatively undisturbed)* ☐ **Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acres). ☐ **Biodiversity Areas and Corridors:** Areas of habitat that are relatively important to various species of native fish and wildlife (*full description in WDFW PHS report p. 152*) ☐ **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock. ☒ **Old-growth/Mature forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. (Mature forests.) Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest. ☐ **Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158.)* ☒ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. ☐ **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161*) ☒ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources. ☐ **Nearshore:** Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. *(full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A.)* ☐ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human. ☐ **Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft. ☐ **Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs. ☒ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of >51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30cm (12 in) in diameter at the largest end, and > 6m (20 ft) long. If wetland has **3 or more** priority habitats = **4 points** If wetland has **2** priority habitats = **3 points** If wetland has **1** priority habitat = **1 point** No habitats = **0 points** *Note: All vegetated wetland are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H2.4.*	4

Wetland C – Bellevue Perry

H 2.4 Wetland Landscape *(choose the **one** description of the landscape around the wetland that best fits)* ***(see p. 84)*** There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development.....points = 5 The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile.....points = 5 There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed.....points = 3 The wetland is Lake-fringe on a lake **with** disturbance and there are 3 other lake-fringe wetland within ½ mile.....points = 3 There is at least 1 wetland within ½ mile.....points = 2 There are no wetlands within ½ mile.....points = 0	3
H 2. TOTAL Score - opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*	9
TOTAL for H1 from page 14	4
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	13

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

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

Wetland Type *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	**Category**
SC 1.0 Estuarine wetlands (*see p. 86*) Does the wetland unit meet the following criteria for Estuarine wetlands? ☐ The dominant water regime is tidal, ☐ Vegetated, and ☐ With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO ☒	
SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-151? ☐ YES = Category I ☐ NO = go to SC 1.2	**Cat. I**
SC 1.2 Is the wetland unit at least 1 acre in size and meets at least two of the following three conditions? ☐ YES = Category I ☐ NO = Category II ☐ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native Spartina spp. are the only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II) The are aof Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. ☐ At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed wetland. ☐ The wetland has at least 2 or the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual rating I/II**

SC 2.0 Natural Heritage Wetlands ***(see p. 87)*** Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a Natural Heritage wetland? *(this question is used to screen out most sites before you need to contact WNHP/DNR)* S/T/R information from Appendix D ☒ or accessed from WNHP/DNR web site ☐ YES ☐ – contact WNHP/DNR (see p. 79) and go to SC 2.2 NO ☒ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as or as a site with state threatened or endangered plant species? YES = Category I NO ☐ Not a Heritage Wetland	**Cat. I**
SC 3.0 Bogs ***(see p. 87)*** Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? *Use the key below to identify if the wetland is a bog. If you answer yes, you will still need to rate the wetland based on its functions.* 1. Does the wetland have organic soils horizons (i.e. layers of organic soil), either peats or mucks, that compose 16" or more of the first 32 inches of the soil profile? (See Appendix B for a field key to identify organic soils.) Yes - go to Q.3 NO - go to Q.2 2. Does the wetland have organic soils, either peats or mucks, that are less than 16 inches deep over bedrock or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? Yes - go to Q.3 NO ☒ is not a bog for purpose of rating 3. Does the wetland have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists species in Table 3)? Yes – Is a bog for purpose of rating NO - go to Q.4 *NOTE: If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog.* 4. Is the wetland forested (>30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover (*>30% coverage of the total shrub/herbaceous* cover)? YES = Category I NO ☐ is not a bog for purpose of rating	**Cat. I**

SC 4.0 Forested Wetlands ***(see p. 90)*** Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its functions.* ☐ Old growth forests: (west of Cascade crest) Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm) or more. *Note: The criterion for dbh is based on measurements for upland forests. Two hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter.* ☐ Mature forests: (west of the Cascade crest) Stands where the largest trees are 80-200 years old OR have average diameters (dbh) exceeding 21 in (53 cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quanitity of large downed material is generally less than that found in old-growth YES = Category 1 NO ☒ not a forested wetland with special characteristics	**Cat. I**
SC 5.0 Wetlands in Coastal Lagoons (see p. 91) Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? ☐ The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks. ☐ The lagoon in which the wetland is located contains surgace water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon (*needs to be measured near the bottom*) YES – Go to SC 5.1 NO ☒ not a wetland in a coastal lagoon SC 5.1 Does the wetland meet all of the following three conditions? ☐ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of invasive plant species (see list of invasive species on p. 74). ☐ At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. ☐ The wetalnd is larger than 1/10 acre (4350 square feet) YES = Category I NO = Category II	**Cat. I** **Cat. II**

SC 6.0 Interdunal Wetlands (see p. 93) Is the wetalnd unit west of the 1889 line (also called the Westarn Boundary of Upland Ownership or WBUO)? YES – go to SC 6.1 NO ☒ not an interdunal wetland for rating *If you answer yes you will still need to rate the wetland based on its functions.* In practical terms that means the following geographic areas: – Long Beach Peninsula – lands west of SR 103 – Grayland-Westport – lands west of SR 105 – Ocean Shores-Copalis – lands west of SR 115 and SR 109 SC 6.1 Is the wetland 1 acre or larger, or is it in a mosaic of wetlands that is 1 acre or larger? YES = Category II NO – go to SC 6.2 SC 6.2 Is the unit between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
Category of wetland based on Special Characteristics *Choose the "highest" rating if wetland falls into several categorie, and record on p. 1* . If you answered NO for all types enter "Not Applicable" on p.1.	**N/A**

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users
Updated Oct 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): Wetland D (off-site) Date of site visit: 8/24/2015, 2/19/2016

Rated by: R. Whitson R. Kahlo Trained by Ecology? Yes ☒ No ☐ Date of Training 03/2015

SEC: 15 TWNSHP: 25N RNGE: 05E Is S/T/R in Appendix D? Yes ☐ No ☒

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I ☐ II ☐ III ☒ IV ☐

Category I = Score ≥70
Category II = Score 51-69
Category III = Score 30-50
Category IV = Score < 30

Score for Water Quality Functions	4
Score for Hydrologic Functions	16
Score for Habitat Functions	12
TOTAL score for functions	**32**

Category based on SPECIAL CHARACTERISTICS of wetland

I ☐ II ☐ Does not Apply ☒

Final Category (choose the "highest" category from above) **III**

Check the appropriate type and class of wetland being rated.

Wetland Type		Wetland Class	
Estuarine	☐	**Depressional**	☒
Natural Heritage Wetland	☐	**Riverine**	☐
Bog	☐	**Lake-fringe**	☐
Mature Forest	☐	**Slope**	☐
Old Growth Forest	☐	**Flats**	☐
Coastal Lagoon	☐	**Freshwater Tidal**	☐
Interdunal	☐		
None of the above	☒	Check if unit has multiple HGM classes present	☐

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

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

Check List for Wetlands That May Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered* ***animal*** *or* ***plant*** *species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X*
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered* ***animal*** *species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category I Natural Heritage Wetlands (see p. 19 of data form).		X*
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X*
SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

***The study area was reviewed for the presence of endangered, threatened, and priority species using WDFW online Priority Habitat and Species Data, PHS on the Web (http://wdfw.wa.gov/mapping/phs/).**

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

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

Classification of Wetland Units in Western Washington

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in Questions 1-7 apply, and go to Question 8.

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

☒ NO – go to 2 ☐☐**YES** – the wetland class is **Tidal Fringe**

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? **YES – Freshwater Tidal Fringe NO – Saltwater Tidal Fringe (Estuarine)**

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

2. The entire wetland unit is flat and precipitation is only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit

☒ NO – go to 3 ☐ **YES** – The wetland class is **Flats**

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

3. Does the entire wetland unit **meet both** of the following criteria?

☐ The vegetated part of the wetland is on the shores of a body of open water (without any vegetation on the surface) at least 20 acres (8 ha) in size;

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

☒NO – go to 4 ☐**YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland unit **meet all** of the following criteria?

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

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

☐ The water leaves the wetland **without being impounded**?
NOTE: *Surface water does not pond in these types of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3ft diameter and less than a foot deep).*

☒ NO – go to 5 ☐ **YES** – The wetland class is **Slope**

5. Does the entire wetland unit **meet all** of the following criteria?
   - ☐ The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river.
   - ☐ The overbank flooding occurs at least once every two years

   NOTE: The riverine unit can contain depressions that are filled with water when the river is not flooding.

   ☒ NO - go to 6 ☐ **YES** – The wetland class is **Riverine**

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

   ☐ NO – go to 7 ☒ **YES** – The wetland class is **Depressional**

7. Is the entire wetland unit located in a very flat area with no obvious depression and no overbank flooding. The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

   ☒ NO – go to 8 ☐ **YES** – The wetland class is **Depressional**

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit, classify the wetland using the class that represents more than 90% of the total area.

HGM classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

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

D	Depressional and Flats Wetlands	Points
	WATER QUALITY FUNCTIONS - Indicators that wetland functions to improve water quality	
D	**D 1. Does the wetland have the potential to improve water quality?**	*(see p. 38)*
D	D 1.1 Characteristics of surface water flows out of the wetland: Unit is a depression with no surface water leaving it (no outlet) ..... points = 3 Unit has an intermittently flowing, or highly constricted permanently flowing outlet ..... points = 2 Unit has an unconstricted, or slightly constricted, surface outlet *(permanently flowing)* .. points = 1 Unit is a "flat" depression (Q.7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet**, and/or outlet is a man-made ditch ..... points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")*	2
D	D 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (*use NRCS definitions*). YES points = 4 NO points = 0	0
D	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class): Wetland has persistent, ungrazed, vegetation > = 95% of area ..... points = 5 Wetland has persistent, ungrazed, vegetation > = 1/2 of area ..... points = 3 Wetland has persistent, ungrazed vegetation > = 1/10 of area ..... points = 1 Wetland has persistent, ungrazed vegetation <1/10 of area ..... points = 0	0
D	D1.4 Characteristics of seasonal ponding or inundation. *This is the area of the wetland unit that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 yrs.* Area seasonally ponded is > ½ total area of wetland ..... points = 4 Area seasonally ponded is > ¼ total area of wetland ..... points = 2 Area seasonally ponded is < ¼ total area of wetland ..... points = 0 NOTE: *See text for indicators of seasonal and permanent inundation.*	0
D	**Total for D 1** *Add the points in the boxes above*	2
D	**D 2. Does the wetland unit have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* ☐ Grazing in the wetland or within 150 ft ☐ Untreated stormwater discharges to wetland ☐ Tilled fields or orchards within 150 ft of wetland ☒ A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging ☒ Residential, urban areas, golf courses are within 150 ft of wetland ☐ Wetland is fed by groundwater high in phosphorus or nitrogen ☐ Other_____ **YES** multiply score in D 1. **by 2** **NO** multiply score in D 1. **by 1**	*(see p. 44)* multiplier 2
D	**TOTAL - Water Quality Functions** Multiply the score from D1 by D2 ***Add score to table on p. 1***	**4**

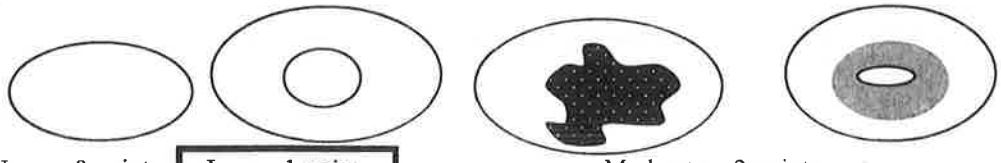
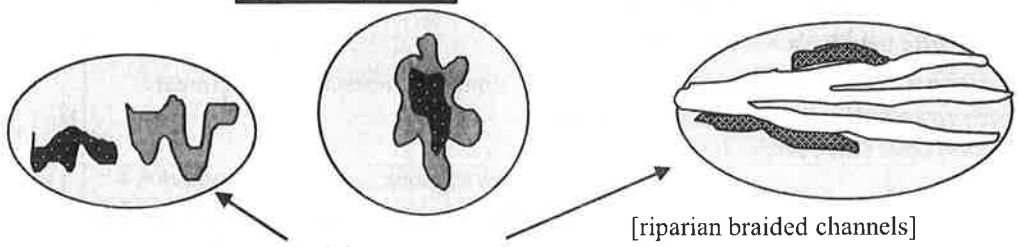
D	Depresssional and Flats Wetlands	
	HYDROLOGIC FUNCTIONS - Indicators that wetland functions to reduce flooding and stream degradation	
	D 3. Does the wetland have the potential to reduce flooding and erosion?	*(see p. 46)*
D	D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet) ..... points = 4 Unit has an intermittently flowing, or highly constricted permanently flowing outlet ..... points = 2 Unit is a "flat" depression (Q.7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet**, and/or outlet is a man-made ditch ..... points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*).. points = 0	2
D	D 3.2 Depth of storage during wet periods *Estimate the height of ponding above the bottom of the outlet For units with no outlet measure from the surface of permanent water or deepest part (if dry).* Marks of ponding are at least 3 ft or more above the surface or bottom of outlet ..... points = 7 The wetland is a "headwater" wetland" ..... points = 5 Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet ..... points = 5 Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet ..... points = 3 Unit is flat (yes to Q.2 or Q.7 on key) but has small depressions on the surface that trap water ..... points = 1 Marks of ponding less than 0.5 ft ..... points = 0	3
D	D 3.3 Contribution of wetland unit to storage in the watershed *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* The area of the basin is less than 10 times the area of the unit ..... points = 5 The area of the basin is 10 to 100 times the area of the unit ..... points = 3 The area of the basin is more than 100 times the area of the unit ..... points = 0 Entire unit is in the FLATS class ..... points = 5	3
D	**Total for D 3** *Add the points in the boxes above*	8
D	**D 4. Does the wetland unit have the opportunity to reduce flooding and erosion?** Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following conditions apply.* ☐ Wetland is in a headwater of a river or stream that has flooding problems ☒ Wetland drains to a river or stream that has flooding problems ☐ Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems ☐ Other _____ ☐ **YES** multiplier is **2** ☐ **NO** multiplier is **1**	*(see p. 49)* multiplier 2
D	**TOTAL - Hydrologic Functions** Multiply the score from D 3 by D 4 ***Add score to table on p. 1***	**16**

These questions apply to wetlands of all HGM classes.

HABITAT FUNCTIONS - Indicators that wetland functions to provide important habitat

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

H 1.1 Vegetation structure ***(see p. 72)*** *Check the types of vegetation classes present (as defined by Cowardin) if the class is ¼ acre or covers more than 10% of the area of the wetland if unit smaller than 2.5 acres.* ☒ Aquatic bed ☒ Emergent plants ☐ Scrub/shrub (areas where shrubs have >30% cover) ☐ Forested (areas where trees have >30% cover) ☐ Forested areas have 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon *Add the number of vegetation types that qualify. If you have:* 4 structures or more.....points = 4 3 structures.....points = 2 **2 structures.....points = 1** 1 structure.....points = 0	1
H 1.2. Hydroperiods ***(see p. 73)*** *Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ acre to count. (see text for descriptions of hydroperiods)* ☒ Permanently flooded or inundated — 4 or more types present .....points = 3 ☐ Seasonally flooded or inundated — 3 types present.....points = 2 ☐ Occasionally flooded or inundated — 2 types present .....points = 1 ☐ Saturated only — **1 types present.....points = 0** ☐ Permanently flowing stream or river in, or adjacent to, the wetland ☐ Seasonally flowing stream in, or adjacent to, the wetland ☐ ***Lake-fringe wetland* = 2 points** ☐ ***Freshwater tidal wetland* = 2 points**	0
H 1.3. Richness of Plant Species ***(see p. 75)*** Count the number of plant species in the wetland that cover at least 10 ft^2. (*different patches of the same species can be combined to meet the size threshold)* *You do not have to name the species.* *Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle* If you counted: > 19 species.....points = 2 *List species below if you want to:* **5 - 19 species.....points = 1** < 5 species.....points = 0 POBA, ALRU, THPL, PISI, FRPU. RUSP, ACCI, LOIN, SARA, OECE, Rosa sp., RUUR, SCMI, LYAM, JUEF, GLEL, ATCY, POMU, GEMA, TOME, RARE, Poa sp., RUCR, NULU, BLSP, DREX, OESA	1

H 1.4. Interspersion of habitats *(see p. 76)* Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  None = 0 points **Low = 1 point** Moderate = 2 points  [riparian braided channels] High = 3 points NOTE: If you have four or more vegetation types or three vegetation types and open water the rating is always "high".	1
H 1.5. Special Habitat Features: *(see p. 77)* *Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.* ☐ Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long). ☐ Standing snags (diameter at the bottom > 4 inches) in the wetland ☐ Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream for at least 33 ft (10m) ☐ Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present ☐ At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated. *(structures for egg-laying by amphibians)* ☐ Invasive plants cover less than 25% of the wetland area in each stratum of plants *Note: The 20% stated in early printings of the manual on page 78 is an error.*	0
H 1. TOTAL Score - potential for providing habitat *Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5*	3

H 2. Does the wetland have the opportunity to provide habitat for many species?	
H 2.1 Buffers ***(see p. 80)*** *Choose the description that best represents condition of buffer of wetland. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."* ☐ 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No developed areas within undisturbed part of buffer. (relatively undisturbed also means no-grazing) ..... Points = 5 ☐ 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. ..... Points = 4 ☐ 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. ..... Points = 4 ☐ 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference ..... Points = 3 ☐ 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference..... Points = 3 **If buffer does not meet any of the criteria above** ☐ No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK..... Points = 2 ☒ No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK..... Points = 2 ☐ Heavy grazing in buffer. ..... Points = 1 ☐ Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland ..... Points = 0 ☐ Buffer does not meet any of the criteria above..... Points = 1	2
H 2.2 Corridors and Connections ***(see p. 81)*** H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (*dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor*). YES = **4 points** (*go to H 2.3*) **NO** = go to H 2.2.2 H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR** a **Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? YES = **2 points** (*go to H 2.3*) **NO** = H 2.2.3 H 2.2.3 Is the wetland: within 5 mi (8km) of a brackish or salt water estuary OR within 3 mi of a large field or pasture (>40 acres) OR within 1 mi of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	0

H 2.3 Near or adjacent to other priority habitats listed by WDFW ***(see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report http://wdfw.wa.gov/hab/phslist.htm)*** Which of the following priority habitats are within 330ft (100m) of the wetland? *(NOTE: the connections do not have to be relatively undisturbed)* ☐ **Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acres). ☐ **Biodiversity Areas and Corridors:** Areas of habitat that are relatively important to various species of native fish and wildlife (*full description in WDFW PHS report p. 152*) ☐ **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock. ☒ **Old-growth/Mature forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. (Mature forests.) Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest. ☐ **Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158.)* ☒ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. ☐ **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161*) ☒ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources. ☐ **Nearshore:** Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. *(full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A.)* ☐ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human. ☐ **Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft. ☐ **Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs. ☒ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of >51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30cm (12 in) in diameter at the largest end, and ≥ 6m (20 ft) long. **If wetland has 3 or more priority habitats = 4 points** If wetland has 2 priority habitats = **3 points** If wetland has **1** priority habitat = **1 point** No habitats = **0 points** *Note: All vegetated wetland are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H2.4.*	4

H 2.4 Wetland Landscape *(choose the **one** description of the landscape around the wetland that best fits)* ***(see p. 84)*** There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development.....points = 5 The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile.....points = 5 There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed.....points = 3 The wetland is Lake-fringe on a lake **with** disturbance and there are 3 other lake-fringe wetland within ½ mile.....points = 3 There is at least 1 wetland within ½ mile.....points = 2 There are no wetlands within ½ mile.....points = 0	3
H 2. TOTAL Score - opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*	9
TOTAL for H1 from page 14	3
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	12

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

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

Wetland Type *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	**Category**
SC 1.0 Estuarine wetlands (*see p. 86*) Does the wetland unit meet the following criteria for Estuarine wetlands? ☐ The dominant water regime is tidal, ☐ Vegetated, and ☐ With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO ☒	
SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-151? ☐ YES = Category I ☐ NO = go to SC 1.2	**Cat. I**
SC 1.2 Is the wetland unit at least 1 acre in size and meets at least two of the following three conditions? ☐ YES = Category I ☐ NO = Category II ☐ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native Spartina spp. are the only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II) The are aof Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. ☐ At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed wetland. ☐ The wetland has at least 2 or the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual rating I/II**

SC 2.0 Natural Heritage Wetlands ***(see p. 87)*** Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a Natural Heritage wetland? *(this question is used to screen out most sites before you need to contact WNHP/DNR)* S/T/R information from Appendix D ☒ or accessed from WNHP/DNR web site ☐ YES ☐ – contact WNHP/DNR (see p. 79) and go to SC 2.2 NO ☒ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as or as a site with state threatened or endangered plant species? YES = Category I NO ☐ Not a Heritage Wetland	**Cat. I**
SC 3.0 Bogs ***(see p. 87)*** Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? *Use the key below to identify if the wetland is a bog. If you answer yes, you will still need to rate the wetland based on its functions.* 1. Does the wetland have organic soils horizons (i.e. layers of organic soil), either peats or mucks, that compose 16" or more of the first 32 inches of the soil profile? (See Appendix B for a field key to identify organic soils.) Yes - go to Q.3 NO - go to Q.2 2. Does the wetland have organic soils, either peats or mucks, that are less than 16 inches deep over bedrock or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? Yes - go to Q.3 NO ☒ is not a bog for purpose of rating 3. Does the wetland have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists species in Table 3)? Yes – Is a bog for purpose of rating NO - go to Q.4 *NOTE: If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog.* 4. Is the wetland forested (>30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover (*>30% coverage of the total shrub/herbaceous* cover)? YES = Category I NO ☐ is not a bog for purpose of rating	**Cat. I**

SC 4.0 Forested Wetlands ***(see p. 90)*** Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its functions.* ☐ Old growth forests: (west of Cascade crest) Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm) or more. *Note: The criterion for dbh is based on measurements for upland forests. Two hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter.* ☐ Mature forests: (west of the Cascade crest) Stands where the largest trees are 80-200 years old OR have average diameters (dbh) exceeding 21 in (53 cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quanitity of large downed material is generally less than that found in old-growth YES = Category 1 NO ☒ not a forested wetland with special characteristics	**Cat. I**
SC 5.0 Wetlands in Coastal Lagoons (see p. 91) Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? ☐ The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks. ☐ The lagoon in which the wetland is located contains surgace water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon (*needs to be measured near the bottom*) YES – Go to SC 5.1 NO ☒ not a wetland in a coastal lagoon SC 5.1 Does the wetland meet all of the following three conditions? ☐ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of invasive plant species (see list of invasive species on p. 74). ☐ At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. ☐ The wetalnd is larger than 1/10 acre (4350 square feet) YES = Category I NO = Category II	**Cat. I** **Cat. II**

SC 6.0 Interdunal Wetlands (see p. 93) Is the wetalnd unit west of the 1889 line (also called the Westarn Boundary of Upland Ownership or WBUO)? YES – go to SC 6.1 NO ☒ not an interdunal wetland for rating *If you answer yes you will still need to rate the wetland based on its functions.* In practical terms that means the following geographic areas: – Long Beach Peninsula – lands west of SR 103 – Grayland-Westport – lands west of SR 105 – Ocean Shores-Copalis – lands west of SR 115 and SR 109 SC 6.1 Is the wetland 1 acre or larger, or is it in a mosaic of wetlands that is 1 acre or larger? YES = Category II NO – go to SC 6.2 SC 6.2 Is the unit between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
Category of wetland based on Special Characteristics *Choose the "highest" rating if wetland falls into several categorie, and record on p. 1 .* If you answered NO for all types enter "Not Applicable" on p.1.	**N/A**