SENSITIVE AREAS DETERMINATION
for Devon Lane
KIRKLAND, WASHINGTON

Prepared For:
Terra Firma
Ralph Krutsinger

4201 Lougheed Hwy
Burnaby, BC V5C 3Y6

Phone: (360) 652-5992
Fax: (360) 652-7962

Prepared By:

THE JAY GROUP INC.

Carolyn Prentice
1927 Fifth Street
Marysville, WA 98270

Phone: (360) 659-8159
Fax: (360) 651-7252

RECEIVED
NOV 17 2005
_____AM_____PM
PLANNING DEPARTMENT
BY_____

November 11, 2005
Jay Group Project #: 050245

Contents

1.0 INTRODUCTION **3**

2.0 STUDY METHODOLOGY **3**

2.1 OFFICE RESEARCH 3
2.2 SITE INVESTIGATION 4
2.3 WETLAND DETERMINATION 4
2.3.1 Vegetation *4*
2.3.2 Hydrology *4*
2.3.3 Soil *5*

3.0 COWARDIN WETLAND HABITAT DESCRIPTIONS **5**

4.0 NESTING, DENNING, AND BREEDING AREAS **5**

5.0 LANDSCAPE CHARACTERIZATION **5**

5.1 PLANTS 6
5.2 WILDLIFE 6

6.0 SITE HISTORY **6**

7.0 WETLAND CLASSIFICATIONS **6**

8.0 WETLAND FIELD DATA FORM **6**

9.0 REFERENCES **7**

APPENDIX **8**

PLANT SPECIES 8
WILDLIFE SPECIES 9
WETLAND FIELD DATA FORM 12
WETLAND SKETCH 15
SITE SURVEY 16

1.0 Introduction

At the request of Terra Firma, a Sensitive Areas delineation was conducted by The Jay Group, Inc. to characterize wetlands, streams, and their buffers on the subject property in Kirkland, Washington (Tax Account number: 0120000120). The approximately 0.5-acre project site is located west of 10th Street S and north of 9th Avenue S in the northwestern quarter of Section 08, Township 25N, and Range 05E (Figure 1, page 3).

This report complies with the requirements of the City of Kirkland's Zoning Code (KZC) 90.40, which has provisions for the Planning Official to evaluate and determine whether a wetland exists on a site, as well as its boundaries, habitat classes, and rating.

Figure 1: Vicinity map

2.0 Study Methodology

2.1 Office Research

Public resource documents have been reviewed to provide initial site information regarding hydrology, soils, and vegetation. Sources include:

- **Aerial photographs**: USGS, 1990
- **Topographic maps**: USGS Digital Raster Graphic Program, 1995
- **Water Type Classification Map**: King County GIS Division
- **Soil Survey of King County Area, Washington**: USDA, Natural Resource Conservation Service (NRCS), 1999; Soil Survey Geographic Database for King County Area

- **NWI Map**: U.S. Fish & Wildlife Service, 2003; National Wetlands Inventory (NWI) website, US Department of the Interior, Fish & Wildlife Service, St. Petersburg, FL; Snohomish County, 2003, Snohomish County Stream & Wetlands Atlas PWSWM Drainage Needs Report

2.2 Site Investigation

Site investigations were conducted to identify wetlands on the basis of observed hydrology, hydric soils, and hydrophytic vegetation as described in the *Corps of Engineers Wetlands Delineation Manual* (Tech. Report Y-87-1, 1987). The ACOE assisted in the development of this manual and currently uses this methodology for wetland determination. Critical Areas on-site and within 100' of the subject property were also visually assessed. Photos were taken that were representative of each critical area and it's buffer.

The field crew dug one wetland and one upland soil log hole, and recorded the data, to determine the initial extent of the wetland boundary; these data points were marked with flagging or wire whips. Then the wetland boundary was marked with flagging. Where the wetland boundary was indistinct, additional soil log holes were dug to confirm wetland presence. Streams were identified and classified according to WAC 222-16-031 and SMC 16.80.030.

2.3 Wetland Determination

When all three parameters (vegetation, hydrology, and soils) have been examined at an observation point, a wetland determination can be made. A positive determination requires that all three parameters be positive for wetland. If any one of the three is not positive, the observation point is not within a wetland. If all three parameters are met at all observation points, then the entire area is a wetland. If one or more parameters are not met at some observation points, then some of the area is wetland and some is not, and the boundary must be determined by additional sampling.

2.3.1 Vegetation

Under normal circumstances the 1987 ACOE Manual requires hydrophytic vegetation (vegetation that has adapted to life in saturated soil conditions) to be present for a location to be considered a wetland. For each soil log hole, dominant vegetation was determined by recording the percent cover of herbaceous vegetation within a 5-foot radius of the soil log hole and a 30-foot radius for sapling/shrubs and trees. Plants were divided into strata layers that included herb, shrub, and tree layers.

Plants were identified according to Pojar (1994) and Cooke (1997). The wetland met the hydrophytic criteria when greater than 50% of the dominant vegetation within a plant community had an indicator status of obligate wetland (OBL), facultative wetland (FACW), or facultative (FAC) according to the U.S. Fish and Wildlife Service (1997) wetland indicator status list (WIS).

2.3.2 Hydrology

Wetland hydrology is assumed to be present when a site is continuously inundated or saturated (within 12" of the surface) for greater than 12.5% of the growing season. An area that is inundated or saturated for 5% to 12.5% of the growing season may or may not have wetland hydrology. Consistent with the 1997 State Manual, the presence of wetland hydrology was determined by evaluating a variety of direct and indirect indicators. Primary indicators include inundation, saturation in the upper 12", water marks, drift lines, sediment deposits, and drainage patterns in wetlands. Secondary indicators include oxidized root channels in upper 12", water stained leaves, local soil survey data, FAC-Neutral test. One primary indicator or two secondary indicators are necessary for a positive hydrology result.

Observations were made to determine water inlets/outlets and other drainage patterns, as well as indications of ponding and saturation.

2.3.3 Soil

The presence of hydric soils, which is necessary for a positive wetland determination, was investigated in accordance with the 1997 State Manual. Hydric soils are formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part of the soil profile (USDA_NRCS, 1995). Hydric soil indicators, which included the presence of mottling, organic streaking and sulfidic odors, must be present directly below the A Horizon, or 10 inches, whichever is shallower. Hydric indicators for non-sandy soils include organic soils (histosols), histic epipedons, sulfidic material, aquic or periaquic moisture regimes, reducing soil conditions, and soil color (gleyed soils, or non-gleyed soils with matrix chroma ≤2 containing mottles or matrix chroma = 1 without mottles). Munsell Color Charts (2000) were used to determine the matrix and mottle colors. Soil log holes were dug up to 20 inches deep.

3.0 Cowardin Wetland Habitat Descriptions

The freshwater wetland (on-site and off-site) Cowardin vegetation community classes consist of Palustrine Forested seasonally flooded (PFOC) dominated by red alder (FAC) and Palustrine Scrub-shrub seasonally flooded/saturated (PFOE) dominated by salmonberry (FAC) and willow species (FAC). There is skunk cabbage present in the understory but the emergent vegetation does not qualify as a Cowardin class.

4.0 Nesting, Denning, and Breeding Areas

Since the site is within an urban area, habitat for nesting, denning, and breeding is restricted to animals that can tolerate disturbance and activities associated with development. However, a moderate abundance of nesting, denning, and breeding areas are available in the wetland and surrounding area. The habitat characteristics that support this assertion include:

- Vertical stratification of vegetation for nesting birds
- Armored vegetation that restricts intrusion by humans. For example, blackberry species and salmonberry
- Undulating, juxtaposed wetland/buffer edge for creatures to easily access and disperse in upland and wetland areas that are required for different life cycle stages
- Snags, cavities, and wood decay
- Downed logs and hibernacula for invertebrates, reptiles, amphibians, birds, and small mammals
- Stagnant water for invertebrate and amphibian breeding

5.0 Landscape Characterization

The subject property is situated on the west side of I-405 in the Moss Bay sub-basin drainage area at the base of a steep slope. The surrounding area is characterized by residential homes on the west and south borders, and relatively undisturbed vegetation on the east and north borders. It is relatively flat, vegetated, and is accessed by pedestrians who use the dirt trail along the east property boundary. The wetland continues off-site to the east and north.

The geomorphology of the surrounding area suggests overland drainage flow from the slope onto the site. Groundwater discharge is likely an additional source of hydrology for the wetland. Two small streams, which convey water into the wetland, are located off-site to the east and north. The stream

closest to the site is a Class B stream with a 50' buffer that may extend on-site. Flow is to the northeast and fish were not observed during the site visit.

5.1 Plants

Observed plant species are listed in the Appendix in Table 1, page 8. A diversity of fungus and mushroom species were also noted during the site investigation, but individual species were not recorded. No ESA plant species were recorded for the subject property.

5.2 Wildlife

A comprehensive wildlife survey was not conducted for the site. Included in this report is a compiled list (Table 2, page 9) of wildlife species that are expected to use the site for breeding, nesting, or foraging based on ecologically accepted habitat/species relationships for a location consisting of Moderate Density Urban, 30% to 60% Impervious Surface criteria (Reference). No Significant Habitat Areas, as defined in the KZC 90.30, exist on the subject property.

6.0 Site History

The history of the site is unknown, however, the young vegetation on the site suggests that it has probably been cleared within the past twenty to thirty years. Other hydrologic, vegetative, and topographic modifications were not obvious. The soils have been disturbed, as indicated by mixed and inconsistent soil layers throughout the site.

7.0 Wetland Classifications

The proposed classification for Wetland A is a Type 2 wetland based on the results of completing the City of Kirkland *Determination of Significant Wetland* Form (Figure 2, page 15). This wetland did not meet the criteria for a Type 1 wetland and received a score greater than 22 points on the rating form. The required buffer for Type 2 Wetlands within secondary basins (Moss Bay Urban Drainage Basin) in the City of Kirkland is 50' with a standard 10' Building Setback.

The wetland was flagged with pink "wetland boundary" ribbon numbered A1-A18 moving clockwise from the northeast corner to the middle of the western property boundary. In the middle of the eastern portion of the property the wetland was flagged with pink "wetland boundary" ribbon numbered AA1-AA7 moving clockwise, starting and ending on the eastern property boundary. See Figure 3, page 16.

8.0 Wetland Field Data Form

The complete Wetland Field Data Form is included on pages 12 – 14.

9.0 References

Cooke, S.S. 1997. *Field Guide to the Common Wetland Plants of Western Washington and Northwestern Oregon*. Seattle, WA, Seattle Audubon Society.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States.* FWS/OBS-79/31. Office of Biological Services, Fish and Wildlife Service, US Department of the Interior, Washington DC.

Kollmorgen Corporation. 1988. Munsell soil color charts. Baltimore, Maryland.

Johnson, D.H. and T. A. O'Neil. 2001. *Wildlife-Habitat Relationships in Oregon and Washington.* Corvallis, OR. Oregon State University Press. 736 pp.

Reed, P.B., Jr. 1993. Supplement to National *List of Plant Species that Occur in Wetlands: Northwest* (Region 9). U.S. F.W.S. Biol. Rep.

Reed, P.B., Jr. 1988. *National list of plant species that occur in wetlands: Northwest* (Region 9). U.S. Fish Wildlife Service Biol. Rep. 88(26.9).

Washington Department of Ecology. 1997. *Washington State Wetlands Identification and Delineation Manual.* Publication 96-94. Washington State Department of Ecology. Olympia, WA.

Appendix

Plant Species

Table 1 : Plant species found on/near the site and their WIS rating (Table 1; Reed, 1989)

COMMON NAME	SCIENTIFIC NAME	WIS
TREES:		
big-leaf maple	*Acer macrophyllum*	FACU
black cottonwood	*Populus balsamifera*	FAC
cascara	*Rhamnus purshiana*	FACU
Douglas fir	*Pseudotsuga menziesii*	FACU
red alder	*Alnus rubra*	FAC
Pacific willow	*Salix lucida*	FACW
western hemlock	*Tsuga heterophylla*	FAC-
western red cedar	*Thuja plicata*	FAC
SHRUBS:		
beaked hazelnut	*Corylus cornuta*	FACU
black twinberry	*Lonicera involucrata*	FAC
evergreen blackberry	*Rubus laciniatus*	FACU+
hardhack	*Spirea douglasii*	FACW
Himalayan blackberry	*Rubus discolor*	FACU
holly	*Ilex aquifolium*	FACU
Indian plum	*Oemleria cerasiformis*	FACU
mountain ash	*Sorbus sitchensis*	NI
red elderberry	*Sambucus racemosa*	FACU
red-osier dogwood	*Cornus sericea*	FAC
salmonberry	*Rubus spectabilis*	FAC+
Scouler's willow	*Salix scouleriana*	FAC
Sitka willow	*Salix sitchensis*	FACW
snowberry	*Symphoricarpos albus*	FACU
trailing blackberry	*Rubus ursinus*	FACU
vine maple	*Acer circinatum*	FAC-
HERBS:		
bentgrass	*Agrostis sp.*	FAC
clover	*Trifolium sp.*	FAC – FACU
Cooley's hedge nettle	*Stachys cooleyae*	FACW
creeping buttercup	*Ranunculus repens*	FACW
dandelion, common	*Taraxacum officinale*	FACU
dock	*Rumex crispus*	FAC
giant horsetail	*Equisetum telmateia*	FAC
soft rush	*Juncus effusus*	FACW
lady fern	*Athyrium filix-femina*	FACW
large leaf avens	*Geum macrophyllum*	FAC
piggy-back plant	*Tolmiea menziesii*	FAC
reed canary grass	*Phalaris arundinacea*	FACW
rib plantain	*Plantago lanceolata*	FAC
skunk cabbage	*Lysichiton americanum*	OBL
stinging nettle	*Urtica dioica*	FAC

Devon Road Sensitive Areas Determination

COMMON NAME	SCIENTIFIC NAME	WIS
Sword fern	*Polystichum munitum*	FACU
tall fescue	*Festuca arundinacea*	FACU
velvet grass	*Holcus lanatus*	FAC

Wildlife Species

Table 2: Common and scientific names of animal species that may use the project site

Common Name	Species Name
Reptiles	
Snapping Turtle	*Chelydra serpentina*
Painted Turtle	*Chrysemys picta*
Western Pond Turtle	*Clemmys marmorata*
Red-eared Slider Turtle	*Trachemys scripta*
Western Skink	*Eumeces skiltonianus*
Western Terrestrial Garter Snake	*Thamnophis elegans*
Northwestern Garter Snake	*Thamnophis ordinoides*
Common Garter Snake	*Thamnophis sirtalis*
Amphibians	
Long-toed Salamander	*Ambystoma macrodactylum*
Great Basin Spadefoot	*Spea intermontana*
Pacific Treefrog	*Pseudacris regilla*
Rough-skinned Newt	*Taricha granulosa*
Bullfrog	*Rana catesbeiana*
Birds	
Great Blue Heron	*Ardea herodia*
Turkey Vulture	*Cathartes aura*
Mallard	*Anas platyrhunchos*
Osprey	*Pandion haliaetus*
Bald Eagle	*Haliaeetus leucocephalus*
Sharp-shinned Hawk	*Accipiter striatus*
Cooper's Hawk	*Accipiter cooperi*
Red-tailed Hawk	*Buteo jamaicensis*
Rough-legged Hawk	*Buteo lagopus*
American Kestrel	*Falco sparverius*
Merlin	*Falco columbiarius*
Peregrine Falcon	*Falco peregrinus*
Ring-necked Pheasant	*Phasianus colchicus*
American Coot	*Fulica americana*
Killdeer	*Charadrius vociferus*
Heermann's Gull	*Larus heermanni*
Ring-billed Gull	*Larus delawarensis*
Herring Gull	*Larus argentatus*
Thayer's Gull	*Larus thayeri*
Western Gull	*Larus occidentalis*
Glaucous-winged Gull	*Larus glaucenscens*

Devon Road Sensitive Areas Determination

Glaucous Gull	*Larus hyperboreus*
Rock Dove	*Columba livia*
Band-tailed Pigeon	*Columba fasciata*
Mourning Dove	*Zenaida macroura*
Barn Owl	*Tyto alba*
Western Screech-owl	*Otus kennicottii*
Great Horned Owl	*Bubo virginianus*
Common Nighthawk	*Chordeiles minor*
Vaux's Swift	*Chaetura vauxi*
Anna's Hummingbird	*Calypte anna*
Rufous Hummingbird	*Selasphorus rufus*
Allen's Hummingbird	*Selasphorus sasin*
Downy Woodpecker	*Picoides pubescens*
Hairy Woodpecker	*Picoides villosus*
Northern Flicker	*Colaptes auratus*
Pileated Woodpecker	*Dryocopus pileatus*
Western Wood-pewee	*Contopus sordidulus*
Ash-throated Flycatcher	*Myiarchus cinerascens*
Steller's Jay	*Cyanocitta stelleri*
Northwestern Crow	*Corvus brachyrhynchos*
Common Raven	*Corvus corax*
Purple Martin	*Progne subis*
Tree Swallow	*Tachycineta bicolor*
Violet-green Swallow	*Tachycineta thalassina*
Barn Swallow	*Riparia riparia*
Black-capped Chickadee	*Parus atricappilus*
Chestnut-backed Chickadee	*Poecile rufescens*
Bushtit	*Psaltriparus minimus*
Red-breasted Nuthatch	*Sitta canadensis*
Bewick's Wren	*Thryomanes bewickii*
Winter Wren	*Troglodytes troglodytes*
Ruby-crowned Kinglet	*Regulus calendula*
Hermit Thrush	*Catharus guttatus*
American Robin	*Turdus migratorius*
European Starling	*Sturnus vulgaris*
Bohemian Waxwing	*Bombycilla garrulus*
Cedar Waxwing	*Bombycilla cedrorum*
Yellow-rumped Warbler	*Dendroica coronata*
Townsend's Warbler	*Dendroica townsendi*
Spotted Towhee	*Pipilo maculates*
Chipping Sparrow	*Spizella passerina*
Savannah Sparrow	*Passerculus sandwichensis*
Fox Sparrow	*Passerella iliaca*
Song Sparrow	*Melospiza melodia*
White-throated Sparrow	*Zonotrichia albicollis*
Harris's Sparrow	*Zonotrichia querula*
White-crowned Sparrow	*Zonotrichia leucophrys*

Devon Road Sensitive Areas Determination

Golden-crowned Sparrow	*Zonotirchia atricapilla*
Dark-eyed Junco	*Junco hyemalis*
Black-headed Grosbeak	*Pheucticus melanocephalus*
Red-winged Blackbird	*Agelaius phoeniceus*
Brewer's Blackbird	*Euphagus cyanocephalus*
Brown-headed Cowbird	*Molothrus ater*
House Finch	*Carpodacus mexicanus*
Common Redpoll	*Carduelis flammea*
Pine Siskin	*Carduelis pinus*
American Goldfinch	*Carduelis tristis*
Evening Grosbeak	*Coccothraustes vespertinus*
House Sparrow	*Passer domesticus*
Mammals	
Virginia Opossum	*Didelphis virginiana*
Townsend's Mole	*Scapanus townsendii*
Coast Mole	*Scapanus orarius*
Broad-footed Mole	*Scapanus latimanus*
California Myotis	*Myotis californicus*
Little Brown Myotis	*Myotis lucifugus*
Big Brown Bat	*Eptesicus fuscus*
Hoary Bat	*Lasiurus cinereus*
Eastern Cottontail	*Sylvilagus floridanus*
European Rabbit	*Oryctolagus cuniculus*
Least Chipmunk	*Tamias minimus*
Eastern Gray Squirrel	*Sciurus carolinensis*
Deer Mouse	*Peromyscus maniculatus*
Muskrat	*Ondatra zibethicus*
Black Rat	*Rattus rattus*
Norway Rat	*Rattus norvegicus*
House Mouse	*Mus musculus*
Coyote	*Canis latrans*
Red Fox	*Vulpes vulpes*
Raccoon	*Procyon lotor*
Striped Skunk	*Mephitis mephitis*
Black-tailed Deer	*Odocoileus hemionus*

Devon Road Sensitive Areas Determination

Wetland Field Data Form

WETLAND FIELD DATA FORM

BEGIN BY CHECKING ANY OF THE FOLLOWING (a. – e.) THAT APPLY:

a. The wetland is contiguous to Lake Washington;

b. The wetland contains at least 1/4 acre of organic soils, such as peat bogs or mucky soils;

c. The wetland is equal to or greater than 10 acres in size and having three or more wetland classes, as defined by the U.S. Fish & Wildlife Service (Cowardin et al., 1979), one of which is open water;

d. The wetland has significant habitat value to state or federally listed threatened or endangered wildlife species; or

e. The wetland contains state or federally listed threatened or endangered plant species.

IF ANY OF THE CRITERIA LISTED ABOVE ARE MET, THEN THE WETLAND IS CONSIDERED TO BE TYPE 1. IF THAT IS THE CASE, PLEASE CONTINUE TO COMPLETE THE ENTIRE FORM, BUT DO NOT ASSIGN POINTS.

IF THE WETLAND DOES NOT MEET THE CRITERIA LISTED ABOVE FOR TYPE 1, COMPLETE THE ENTIRE FORM, USING THE ASSIGNED POINTS TO DETERMINE IF IT IS A TYPE 2 OR TYPE 3 WETLAND.

Type 2 wetlands typically have at least two wetland vegetation classes, are at least partially surrounded by buffers of native vegetation, connected by surface water flow (perennial or intermittent) to other wetlands or streams, and contain or are associated with forested habitat.

1. Total wetland area

Estimate wetland area and score from choices Acres Point Value Points

>20.00 = 6
10-19.99 = 5
5-9.99 = 4
1-4.99 = 3
0.1-0.99 = 2
<0.1 = 1

2

2. Wetland classes: Determine the number of wetland classes that qualify, and score according to the table.

	# of Classes		Points
Open Water: if the area of open water is >1/3 acre or >10% of the total wetland area	1	=	1
Aquatic Beds: if the area of aquatic beds is >10% of the **open water area or** >1/2 acre	2	=	3
Emergent: if the area of emergent class is >1/2 acre **or** >10% of the total wetland area	3	=	5
Scrub-Shrub: if the area of scrub-shrub class is >1/2 acre **or** >10% of the total wetland area	4	=	7
Forested: if the area of forested class is >1/2 acre or >10% of the total wetland area	5	=	10

Devon Road Sensitive Areas Determination

3. Plant species diversity.

For all wetland classes which qualified in 2 above, count the number of different plant species and score according to the table below. You do not have to name them.

e.g., if a wetland has an aquatic bed class with 3 species, and emergent class with 4 species and a scrub-shrub class with 2 species, you would circle 2, 2, and 1 in the second column (below).

Class # of Species Point Value Class # of Species Point Value
Aquatic Bed 1-2 = 1 Scrub-Shrub 1-2 = 1
3 = 2 3-4 = 2
>3 = 3 >4 = 3
Emergent 1-2 = 1 Forested 1-2 = 1
3-4 = 2 3-4 = 2
>4 = 3 >4 = 3

4. Structural diversity.

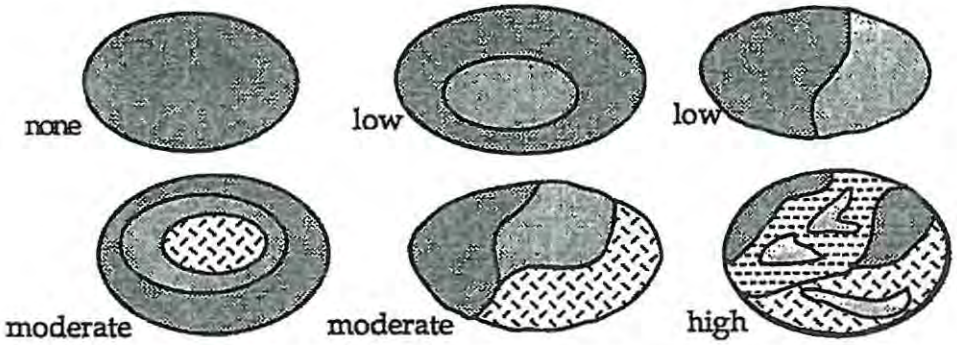
If the wetland has a forested class, add 1 point for each of the following attributes present:

Trees >50ɔ tall = 1
Trees 20ɔ to 49ɔ tall = 1
shrubs = 1
Herbaceous ground cover = 1

5. Interspection between wetland classes.

Decide from the diagrams below whether interspection between wetland classes is high, moderate, low or none

3 = High
2 = Moderate
1 = Low
0 = None



6. Habitat features

Add points associated with each habitat feature listed:

Is there evidence of current use by beavers? = 3
Is a heron rookery located within 300'? = 2
Are raptor nest(s) located within 300'? = 1
Are there at least 2 standing dead trees (snags) per acre? = 1

Devon Road Sensitive Areas Determination

Are there any other perches (wires, poles, or posts)? = 1

Are there at least 3 downed logs per acre? = 1

7. Connection to streams

Is the wetland connected at any time of the year via surface water? **(score one answer only)**

Is the wetland connected at any time of the year via surface water?

To a perennial stream or a seasonal stream *with* fish = 5

To a seasonal stream *without* fish = 3

Is not connected to any stream = 0

8. Buffers

Step 1: Estimate (to the nearest 5%) the percentage of each buffer or land-use type (below) that adjoins the wetland boundary. Then multiply these percentages by the factor(s) below and enter result in the column to the right.

% of Buffer Step 1 Width Factor Step 2

Roads, buildings or parking lots 25% X 0 = 0 = 1 = 0

Lawn, grazed pasture, vineyards or annual crops 25% X 1 = 25 = 1 = 25

Ungrazed grassland or orchards 0% X 2 = 0 = _ = 0

Open water or native grasslands 0% X 3 = 0 = _ = 0

Forest or shrub 50% X 4 = 200 = 3 = 600

Add buffer total 625

Step 2: Multiply result(s) of step 1:

By 1 if buffer width is 25-50э

By 2 if buffer width is 50-100э

By 3 if buffer width is >100э

Enter results and add subscores

Step 3: Score points according to the following table:

Buffer Total

900-1200 = 4

600-899 = 3

300-599 = 2

100-299 = 1

9. Connection to other habitat areas:

Is there a riparian corridor to other wetlands within 0.25 of a mile, or a corridor >100' wide with good forest or shrub cover to any other habitat area? = 5

Is there a narrow corridor <100' wide with good cover or a wide corridor >100' wide with low cover to any other habitat area? = 3

Is there a narrow corridor <100' wide with low cover or a significant habitat area within 0.25 mile but no corridor? = 1

Is the wetland and buffer completely isolated by development and/or cultivated agricultural land? = 0

10. Scoring

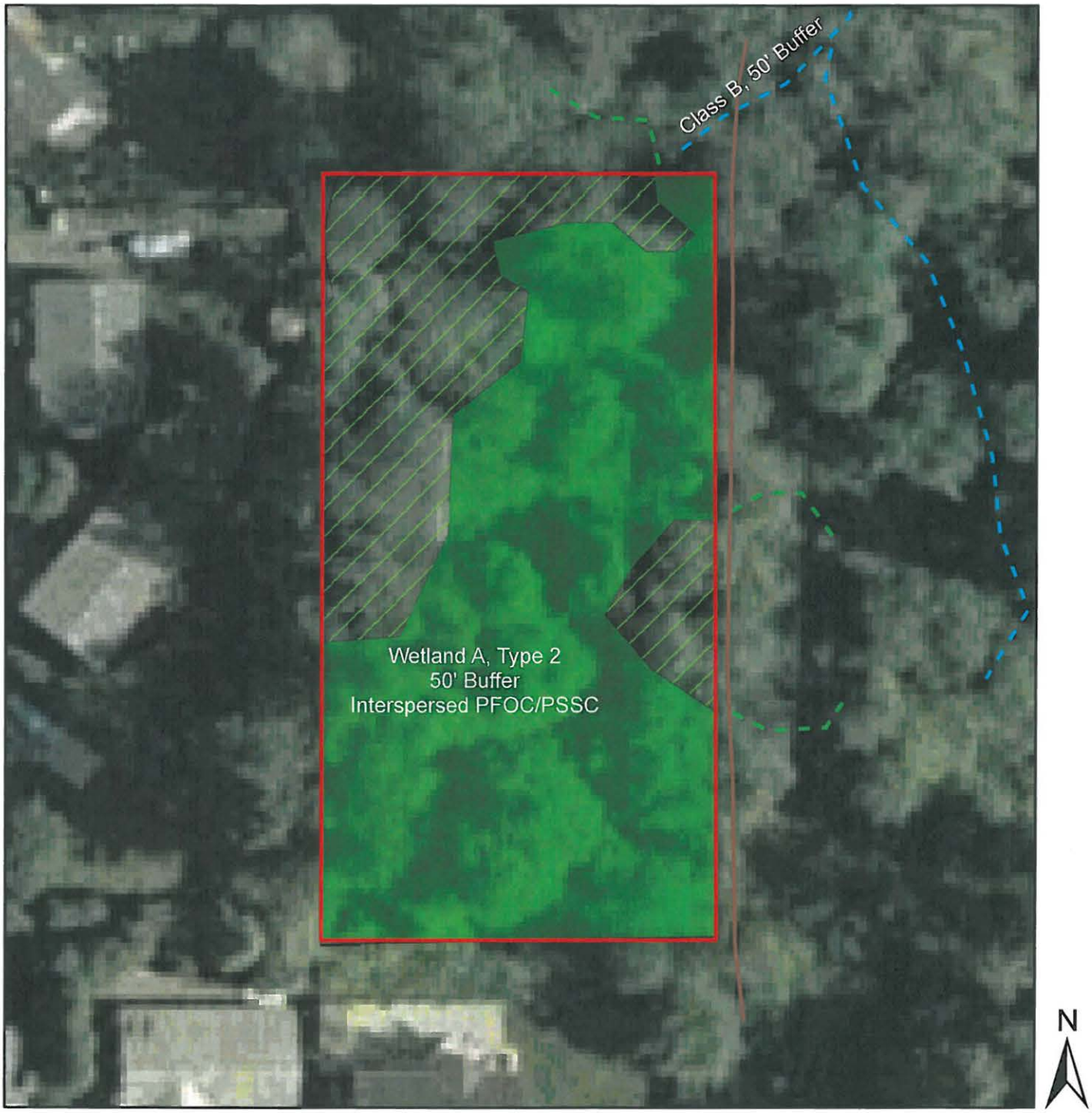
Add the scores to get a total: 30

Question: Is the total greater than or equal to 22 points?

Answer:

Yes = Type 2

No = Type 3



Feet
0 510 20 30 40

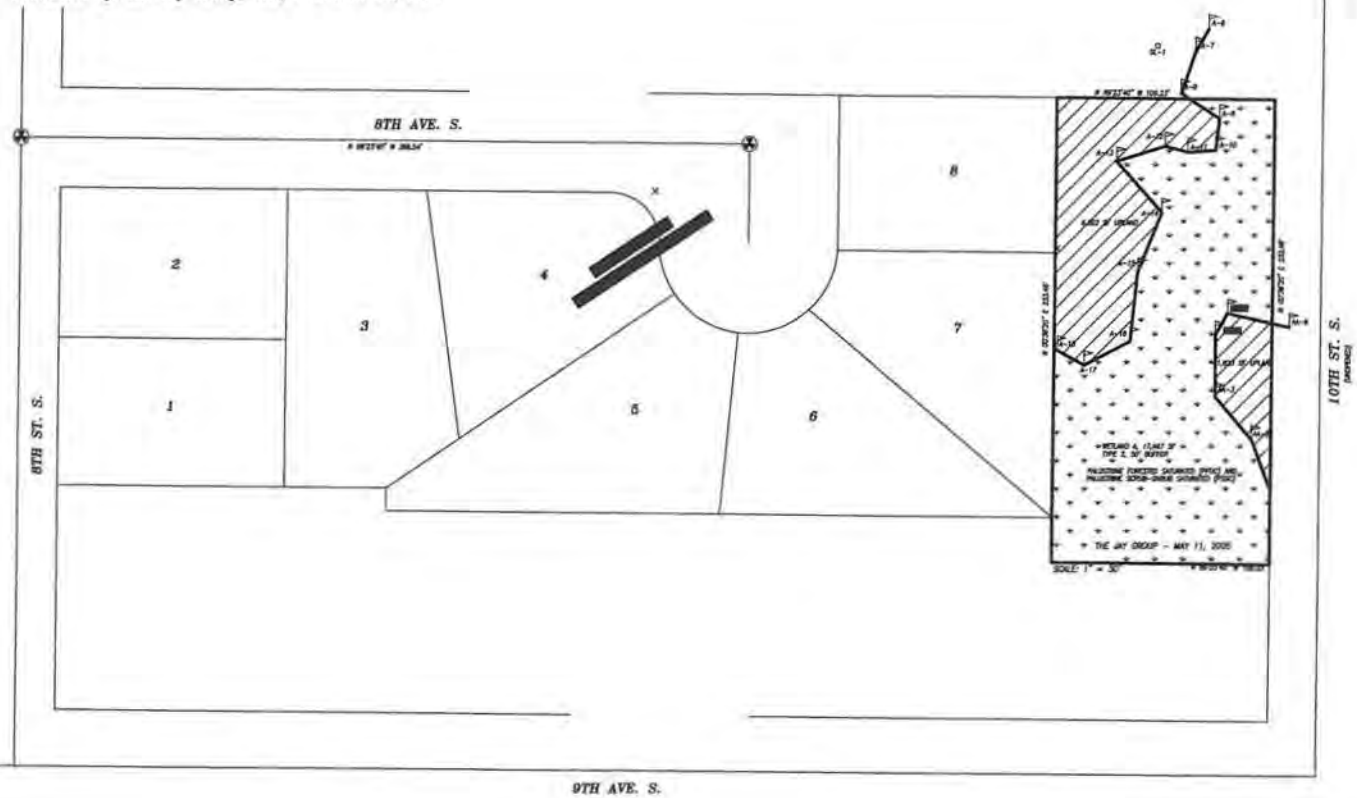
Devon Road
Sensitive Areas Sketch
November 2, 2005

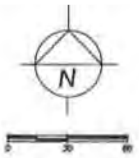
Legend

- Subject Property
- Wetland
- Wetland Buffer
- Offsite Wetlands
- Offsite Streams
- Trail

Disclaimer: This sketch of Sensitive Area locations does not represent a survey and should be considered for feasibility purposes only.

Devon Road Sensitive Areas Determination
Submitted by: The Jay Group, Inc.; November 11, 2005





EQUIPMENT & PROCEDURES

METHOD OF SURVEY:
SURVEY PERFORMED BY FIELD TRAVERSE
INSTRUMENTATION:
LEICA TCRA 1105 ROBOTIC ELECTRONIC TOTAL STATION
PROCEDURE:
MEETS OR EXCEEDS STATE STANDARDS WAC 332-130-090
BASIS OF BEARING:
THE MONUMENTED CENTERLINE OF 8TH AVE. SOUTH
AS THE BEARING OF N 89°23'44" W.

LEGAL DESCRIPTION

TRACT B, GARLAND (LA #L-89-31) RECORDED UNDER RECORDING NO. [illegible]

NOTE: WETLAND FLAG #A-1 WAS NOT RECORDED. LINE SHOWN IS A BEST FIT PATH BY THE WALSH.

LEGEND

- SET 1/2" X 24" REBAR W/CAP STAMPED "L.S. 37536"
- EXISTING REBAR W/CAP, AS NOTED
- FOUND CONCRETE MONUMENT AS NOTED
- RIGHT OF WAY CENTERLINE
- STORM DRAIN MANHOLE
- WINGY/CLEANOUT
- CATCH BASIN
- WATER VALVE
- FIRE HYDRANT
- SANITARY SEWER MANHOLE
- MAILBOX
- SIGN POST
- UTILITY/POWER POLE
- GUY ANCHOR
- POWER VAULT

NOTES

1.) THIS SURVEY WAS WERE PREPARED FOR THE EXCLUSIVE USE OF PARTIES WHOSE NAMES APPEAR HEREON ONLY, AND DOES NOT EXTEND TO ANY UNNAMED THIRD PARTIES WITHOUT EXPRESS RECERTIFICATION BY THE LAND SURVEYOR.

2.) THIS IS NOT A BOUNDARY SURVEY; LINES SHOWN HEREON WERE CALCULATED FROM AVAILABLE RECORDS.

Pacific Coast Surveys, Inc.
PROFESSIONAL LAND SURVEYING
P.O. BOX 3286
EVERETT, WA 98213
PH. 425.508.4951 FAX 425.357.3577
Pcs-Inc@Comcast.net

TOPOGRAPHIC SURVEY FOR:
TERRA FIRMA DEV.
SEC.08, T.25N., R.05 E., W.M.

DRAWN BY	DATE	DRAWING FILE NAME	SCALE	JOB NO.
DJR	5.12.05	05170-CABLDWG	1" = 30'	05-170

THE WATERSHED COMPANY

SCIENCE & DESIGN

July 21, 2015

Sean LeRoy
City of Kirkland, Planning Department
123 Fifth Avenue
Seattle, WA 98033

Re: Devon Lane Wetland Review Letter

The Watershed Company Reference Number: 140622.15

Dear Sean:

On July 15, 2015, I visited the Devon Lane (Terra Firma) property located just north of the terminus of 9th Avenue S. in Kirkland (Parcel #0120000120). The purpose of the visit was to conduct a review of the recently relocated wetland boundary on the property and to reassess the wetland classification. This letter summarizes the results of my inspection.

The following attachment is included:

- *City of Kirkland Wetland Field Data Form*

Project History

The wetland was previously delineated by The Jay Group in November 2005, and the boundary and wetland classification were confirmed by The Watershed Company shortly thereafter. Recently, the previously-delineated wetland boundary was relocated and flagged by surveyors based on the original wetland boundary survey. The wetland boundary was not re-delineated by a wetland biologist, nor was it reclassified per the *City of Kirkland Wetland Field Data Form* (Rating System).

Results

The wetland area crosses the center of the property diagonally, leaving non-wetland areas in the northwest and southeast portions of the lot. The southeast wetland boundary (flags A1-A6) was confirmed as accurate. However, portions of the northwestern wetland boundary are incorrect. In its current configuration and based on the current wetland delineation manual (*Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region Version 2.0*), the wetland is slightly smaller than as delineated in 2005. Specifically, flags AA12 and AA13 appear to be entirely within non-wetland areas that are dominated by a non-

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

hydrophytic plant community composed of osoberry, beaked hazelnut, Himalayan blackberry, and Pacific dewberry. Based on the relative plant assemblages, it appears that flags AA12 and AA13 can be removed. Additionally, flags AA15 and AA16 appear to be located farther west than the actual wetland boundary. Similar to above, an area dominated by non-hydrophytic plants, including osoberry, Pacific dewberry, and sword fern, appears to have been included inside the delineated wetland boundary. These locations are particularly relevant, since they are proposed to be partially filled per the "Impact Areas" figure dated March 4, 2008. We recommend that the applicant have the northwestern boundary re-delineated by a qualified wetland biologist. A more accurate boundary will reduce the proposed wetland impacts.

The wetland was re-classified per the Kirkland Rating System. The wetland does not satisfy any of the criteria for Type 1 wetlands. Therefore, the wetland, including off-site areas, was scored based on the functions it provides. The wetland received a total of 32 points, which qualifies it as a Type 2 wetland. While minor scoring discrepancies are noted between our current classification and the previous classification (30 points), the overall wetland category is unchanged.

The wetland was not rated per the current state/federal classification system (2014 Ecology Wetland Rating System), but it is likely to be considered a Category II or III wetland, based on the overall structure and landscape positioning. This rating system will need to be completed in preparation for state and federal permits needed to authorize any wetland impacts under a development scenario. While there is some wetland enhancement potential on-site, it is not likely to be sufficient to satisfy wetland mitigation requirements at the state or federal level, according to current guidance. Therefore, the applicant will likely need to explore off-site mitigation options, including the potential use of the King County Mitigation Reserves Program.

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

Sincerely,

Ryan Kahlo, PWS
Ecologist

Enclosures

WETLAND FIELD DATA FORM – Devon Lane/Terra Firma property located at Parcel #0120000120 Kirkland, WA 98033.

Rating done on July 15, 2015 by The Watershed Company.

WETLAND FIELD DATA FORM

BEGIN BY CHECKING ANY OF THE FOLLOWING (a. – e.) THAT APPLY:

a. The wetland is contiguous to Lake Washington;

b. The wetland contains at least 1/4 acre of organic soils, such as peat bogs or mucky soils;

c. The wetland is equal to or greater than 10 acres in size and having three or more wetland classes, as defined by the U.S. Fish & Wildlife Service (Cowardin et al., 1979), one of which is open water;

d. The wetland has significant habitat value to state or federally listed threatened or endangered wildlife species; or

e. The wetland contains state or federally listed threatened or endangered plant species.

IF ANY OF THE CRITERIA LISTED ABOVE ARE MET, THEN THE WETLAND IS CONSIDERED TO BE TYPE 1. IF THAT IS THE CASE, PLEASE CONTINUE TO COMPLETE THE ENTIRE FORM, BUT DO NOT ASSIGN POINTS.

IF THE WETLAND DOES NOT MEET THE CRITERIA LISTED ABOVE FOR TYPE 1, COMPLETE THE ENTIRE FORM, USING THE ASSIGNED POINTS TO DETERMINE IF IT IS A TYPE 2 OR TYPE 3 WETLAND.

Type 2 wetlands typically have at least two wetland vegetation classes, are at least partially surrounded by buffers of native vegetation, connected by surface water flow (perennial or intermittent) to other wetlands or streams, and contain or are associated with forested habitat.

1. Total wetland area

Estimate wetland area and score from choices	Acres		Point Value	**Points**
	>20.00	=	6	
	10-19.99	=	5	
	5-9.99	=	4	
	1-4.99	=	3	**3**
	0.1-0.99	=	2	
	<0.1	=	1	

(3 points)

2. Wetland classes: Determine the number of wetland classes that qualify, and score according to the table.

	# of Classes		Points
Open Water: if the area of open water is >1/3 acre or >10% of the total wetland area	1	=	1
Aquatic Beds: if the area of aquatic beds is >10% of the **open water** area **or** >1/2 acre	2	=	3
Emergent: if the area of emergent class is >1/2 acre **or** >10% of the total wetland area	3	=	5
Scrub-Shrub: if the area of scrub-shrub class is >1/2 acre **or** >10% of the total wetland area	4	=	7
Forested: if the area of forested class is >1/2 acre or >10% of the total wetland area	5	=	10

(3 points)

3. Plant species diversity.

For all wetland classes which qualified in 2 above, count the number of different plant species and score according to the table below. You do not have to name them.

e.g., if a wetland has an aquatic bed class with 3 species, and emergent class with 4 species and a scrub-shrub class with 2 species, you would circle 2, 2, and 1 in the second column (below).

Class	# of Species	Point Value	Class	# of Species	Point Value
Aquatic Bed	1-2	= 1	Scrub-Shrub	1-2	= 1
	3	= 2		3-4	= 2
	>3	= 3		>4	= 3
Emergent	1-2	= 1	Forested	1-2	= 1
	3-4	= 2		3-4	= 2
	>4	= 3		>4	= 3

(6 points)

4. Structural diversity.

If the wetland has a forested class, add 1 point for each of the following attributes present:

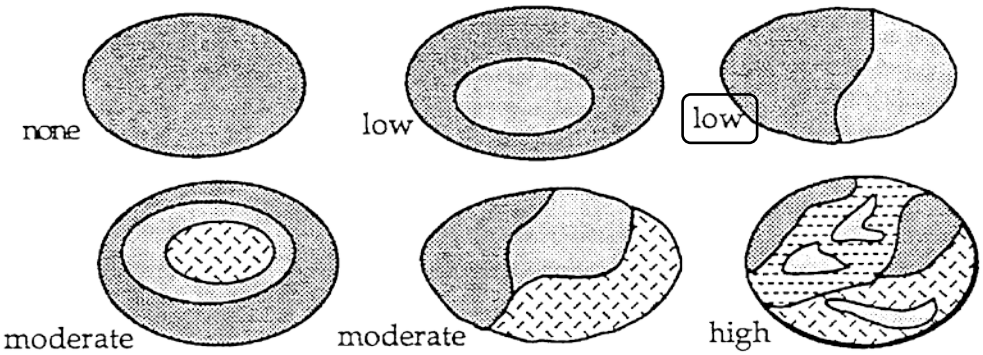
Trees >50′ tall	= 1
Trees 20′ to 49′ tall	= 1
shrubs	= 1
Herbaceous ground cover	= 1

(4 points)

5. Intersperesion between wetland classes.

Decide from the diagrams below whether interspection between wetland classes is high, moderate, low or none

3 = High
2 = Moderate
1 = Low
0 = None



(1 points)

6. Habitat features

Add points associated with each habitat feature listed:

Is there evidence of current use by beavers?	= 3
Is a heron rookery located within 300′?	= 2
Are raptor nest(s) located within 300′?	= 1
Are there at least 2 standing dead trees (snags) per acre?	= 1
Are there any other perches (wires, poles, or posts)?	= 1
Are there at least 3 downed logs per acre?	= 1

(2 points)

7. Connection to streams

Is the wetland connected at any time of the year via surface water? **(score one answer only)**

Is the wetland connected at any time of the year via surface water?

To a **<u>perennial stream</u>** or a seasonal stream *with* fish	= 5
To a seasonal stream *without* fish	= 3
Is not connected to any stream	= 0

(5 points)

8. Buffers

Step 1: Estimate (to the nearest 5%) the percentage of each buffer or land-use type (below) that adjoins the wetland boundary. Then multiply these percentages by the factor(s) below and enter result in the column to the right.

	% of Buffer		Step 1	Width Factor		Step 2
Roads, buildings or parking lots	30 %	X 0 =	_____	_____	=	0
Lawn, grazed pasture, vineyards or annual crops	_____ %	X 1 =	_____	_____	=	_____
Ungrazed grassland or orchards	_____ %	X 2 =	_____	_____	=	_____
Open water or native grasslands	_____ %	X 3 =	_____	_____	=	_____
Forest or shrub	70 %	X 4 =	280	3	=	840
				Add buffer total:		840

Step 2: Multiply result(s) of step 1:

By 1 if buffer width is 25-50′

By 2 if buffer width is 50-100′

By 3 if buffer width is >100′

Enter results and add subscores

Step 3: Score points according to the following table:

Buffer Total

900-1200 = 4

600-899 = 3

300-599 = 2

100-299 = 1

(3 points)

9. Connection to other habitat areas:

Is there a riparian corridor to other wetlands within 0.25 of a mile, or a corridor >100′ wide with
good forest or shrub cover to any other habitat area? = 5

Is there a narrow corridor <100′ wide with good cover or a wide corridor >100′ wide with low cover
to any other habitat area? = 3

Is there a narrow corridor <100′ wide with low cover or a significant habitat area within 0.25 mile
but no corridor? = 1

Is the wetland and buffer completely isolated by development and/or cultivated agricultural land? = 0

(5 points).

10. Scoring

Add the scores to get a total: 32

Question: Is the total greater than or equal to 22 points?

Answer:

Yes = Type 2

No = Type 3

Sean LeRoy

From: Susan Busch <s_busch@frontier.com>
Sent: Monday, August 15, 2016 8:24 AM
To: Sean LeRoy
Subject: SAR16-01828

Hi Sean,
I tried to look up this permit on My BuildingPermit and it doesn't come up. Is there another way to access the documents on line?
We use the path that runs past this property. I assume it's on a city right of way? We're wondering how access to the lot works regarding this through path and what the ROW improvements will be if any.
Thanks, Susan Busch

Sent from my iPhone

From: Frost, Chris [mailto:chris.frost@zgf.com]
Sent: Tuesday, August 16, 2016 9:10 PM
To: Sean LeRoy
Subject: Schlau reasonable use

Please make a condition that the pedestrian access along the Slater Street S continuation public ROW be kept open during construction and permanently. The pedestrian/bike path is an important community connector.

Thank-you,

Chris Frost

Sean LeRoy

From: leighful@comcast.net
Sent: Tuesday, August 09, 2016 1:16 PM
To: Sean LeRoy
Subject: SCHLAU Reasonable Use Permit, Case No. SAR16-01828

Dear Mr. LeRoy,

I am interested in this permit application because I live on property that abuts the wetland surrounding it. Much of the wetland, particularly on this Schlau property end, is not particularly "high quality," meaning that it has been taken over in some places by invasive non-native species, including ivy and blackberries. That said, over the past few years I have counted 21 species of birds in this area (including one large owl of unidentified species), as well as bats, bees and dragonfly. The area provides a good noise and visual buffer to the west of the freeway, as well as performing the usual functions of natural wetland and greenbelt. The subject property will remove a noticeable chunk of it. I therefore write to ask that as a condition of the applied-for permit that you require some measure of restoration to the immediately surrounding area, as a mitigating compensation for loss of the wetland and habitat. Some clearing of non-native species and replanting with native ones, to support the wildlife and water-containing function of the area, would go a long way toward replacing the value lost to development.

Thank you for your consideration.

Leigh Fulwood

Scott and Christine Heinrich
856 9th Ave S
Kirkland, WA 98033
Scottheinrich@yahoo.com

August 16, 2016

Sean LeRoy & Hearing Examiner
City of Kirkland
Planning and Building Department
123 5th Ave
Kirkland, WA 98033

Dear Sean LeRoy & Hearing Examiner:

This letter pertains to the Schlau reasonable use request, Case NO. SAR16-01828, for Parcel No. 0120000120.

The lot at issue for this permit and new home construction is a natural wetland. It is incomprehensible to understand how the invasive process associated with new home construction won't forever impact this sensitive area including but not limited to the natural plant and animal life. While we have been assured the lot will be kept as natural as possible and the wetland "recharged", it seems unlikely considering the quantity of trees and shrubs that will be disturbed in order to construct a driveway across the property, along with the dwelling itself.

Our residence was built as a part of a 1987 development by a prior owner of the subject property (Terra Firma). Despite the continued increasing value of Kirkland property, it is noteworthy that this particular lot has remained untouched due to its Wetland status. From talking with City of Kirkland planners in 2001 during the purchase of our own property (which is adjacent and shares a property line) we were led to believe this particular lot was specifically set aside as protected Wetland in conjunction with the Terra Firma development in 1987. But now, with real estate prices skyrocketing in the city of Kirkland, we are not surprised but disappointed to see that the city of Kirkland is somehow entertaining approval to develop this environmentally sensitive and wildlife-abundant property.

The Schlau request for Reasonable Use exception approval does not comply with Kirkland code. The City of Kirkland Code 90.140 clearly states "which does not exceed a total of 3,000 square feet of site disturbance, and does not encroach into the sensitive area." (Full text included in Enclosure 1). The proposed development site encroaches on the sensitive areas located both on the subject lot and required for access to the lot. Furthermore, the site disturbance is 3000 sqft on the lot and requires another approximately 2954 sqft of disturbance as part of the access road construction which does not comply with Kirkland exception code. I have found no indication that an exception to the reasonable use exception requirements (exception to the exception) is allowed by Kirkland code. The reasonable use clause allows only for 3000 sqft disturbance of the buffer. These facts alone should be enough to bar further development of this property.

Also, the Schlau proposal for Reasonable Use Exception does not comply with federal and state approval requirements. Development that encroaches on sensitive areas and buffers must be reviewed and approved by federal and state authorities including the Washington State Department of Ecology.

The reasonable use exception code 90.140 states its purpose to "provide the City with a mechanism to approve limited use and disturbance of a sensitive area and sensitive area buffer when strict application of this chapter would deny all economically viable use of the property." To bring this into perspective, the property owner has been paying taxes on a $13,000 property value. This valuation is a clear indication of the economic value of the property and should be used in determining economically viable options. The property owner is now attempting to sell this Wetland property for $600,000+ pending approval by the City of Kirkland. There are likely other economically viable options including compensation from the city of Kirkland, the Everest Park neighborhood association, or neighboring land owners – especially when considering the $13,000 taxable property value.

There are no other developments in the immediate vicinity of the subject property. King County reasonable use exception approval requirements state criteria including "The proposal is compatible in design, scale and use with other development or potential development in the immediate vicinity of the subject property in the same zone and with similar site constraints" .

To further emphasize the fact that this property is class 2 Wetlands, a map of the subject property is included in the enclosure to clearly show the overlay on the subject property in both Enclosures 2 and 3. The map in Enclosure 3 was copied from document "SAR15-01225_Sensitive Areas Determination for Devon Lane" which was contained in City of Kirkland's file for this proposal. This property is clearly Wetlands and several maps including those provided by City of Kirkland show this property within a Wetland area.

We are concerned for the environment and understand this may be our only opportunity to voice our concern. We have had the immense pleasure to enjoy all kinds of birds and creatures over the years and are concerned the removal of and disturbance of their habitat will negatively impact their ability to thrive or survive at all. There are numerous hawks, blue jays, hummingbirds, woodpeckers, finches, doves, owls, starlings, crows and many more. We are concerned the features of this wetland will be dramatically changed, and the sounds and visual aspects of the property will be changed forever. We have observed aggressive construction in our neighborhood in the last year and know once the damage is done, it is done, and attempts to remediate will be challenging if even possible at all.

In conclusion, this proposal does not comply with specified requirements for Reasonable Use Exception. The proposal has not been approved by state and federal departments which will be legally required for Wetland development. We also ask that the City of Kirkland consider the impacts to wildlife habitat, neighborhood recreation trails, and natural buffers for both sight and sound that would be destroyed through approval of this proposal. This is not a case where someone paid $600,000 for property and now can only sell it for $13,000 without approval of this permit. It is quite the opposite and motivated by profit. The Wetland status would have been obvious at purchase. We hope the City of Kirkland will do the right thing in support of its citizens rather than supporting the extreme profits that will be reaped from outside developers who would develop every Wetland if given the chance.

We appreciate your consideration.

Sincerely,

Scott & Christine Heinrich

Enclosures 1, 2, 3

Enclosure 1

90.140 Reasonable Use Exception

1. Purpose of the Reasonable Use Exception – The purpose of the reasonable use exception is to:

   a. Provide the City with a mechanism to approve limited use and disturbance of a sensitive area and sensitive area buffer when strict application of this chapter would deny all economically viable use of the property;

   b. Establish guidelines and standards for the exercise of this authority adjusted to the specific conditions of each site; and

   c. Protect public health, welfare and safety of the citizens of Kirkland.

2. "Reasonable Use" – is a legal concept that has been articulated by federal and state courts in regulatory takings cases. In a takings case, the decision-maker must balance the public benefit against the owner's interests by considering the nature of the harm the regulation is intended to prevent, the availability and effectiveness of alternative measures, and the economic loss borne by the owner. Public benefit factors include the seriousness of the harm to be prevented, the extent to which the land involved contributes to the harm, the degree to which the regulation solves the problem, and the feasibility of less oppressive solutions.

3. Reasonable Use Process – If the strict application of this chapter would preclude all reasonable use of a site, an owner of real property may apply for a reasonable use exception to this chapter. The application shall be considered under Process IIA of Chapter 150 KZC; provided, that for a single-family development proposal which does not exceed a total of 3,000 square feet of site disturbance, and does not encroach into the sensitive area, but only the associated buffer, the application shall be considered pursuant to subsection (7) of this section, Reasonable Use Process: Administrative Alternative.

4. Submittal Requirements – As part of the reasonable use request, in addition to submitting an application, the applicant shall submit a report prepared by a qualified professional and fund a review of this report by the City's qualified professional. The report shall include the following:

a. A determination and delineation of the sensitive area and sensitive area buffer containing all the information specified in KZC 90.40(3) for a wetland or based on the definitions contained in this chapter for a stream;

b. An analysis of whether any other reasonable use with less impact on the sensitive area and sensitive area buffer is possible;

c. Sensitive site design and construction staging of the proposal so that the development will have the least practicable impact on the sensitive area and sensitive area buffer;

d. A description of the area of the site which is within the sensitive area or within the setbacks or buffers required by this chapter;

e. A description of protective measures that will be undertaken such as siltation curtains, hay bales and other siltation prevention measures, and scheduling the construction activity to avoid interference with wildlife and fisheries rearing, nesting or spawning activities;

f. An analysis of the impact that the amount of development proposed would have on the sensitive area and the sensitive area buffer;

g. How the proposal minimizes to the greatest extent possible net loss of sensitive area functions;

h. Whether the improvement is located away from the sensitive area and the sensitive area buffer to the greatest extent possible; and

i. Such other information or studies as the Planning Official may reasonably require.

5. Decisional Criteria – The City shall grant applications for reasonable use exceptions only if all of the following criteria are met:

a. That no permitted type of land use for the property with less impact on the sensitive area and associated buffer is feasible and reasonable, which in a residential zone shall be one (1) single-family dwelling and in a commercial or industrial zone shall be an office use;

b. That there is no feasible on-site alternative to the proposed activities, including reduction in size, density or intensity, phasing of project implementation, change in timing of activities, revision of road and lot layout, and/or related site planning considerations, that would allow a reasonable economic use with less adverse impacts to the sensitive area and buffer;

c. Unless the applicant can demonstrate unique circumstances related to the subject property, the amount of site area that will be disturbed by structure placement or other land alteration, including but not limited to grading, utility installation, decks, driveways, paving, and landscaping, shall not exceed the following limits:

i. If the subject property contains 6,000 square feet of area or less, no more than 50 percent of the site may be disturbed.

ii. If the subject property contains more than 6,000 square feet but less than 30,000 square feet, no more than 3,000 square feet may be disturbed.

iii. For properties containing 30,000 square feet or more, the maximum allowable site disturbance shall be between 3,000 square feet and 10 percent of the lot area, to be determined by the City on a case-by-case basis.

iv. The amount of allowable disturbance shall be that which will have the least practicable impact on the sensitive area and the sensitive area buffer given the characteristics and context of the subject property, sensitive area, and buffer.

The applicant shall pay for a qualified professional to help with the City's determination of the appropriate limit for disturbance;

d. The proposal is compatible in design, scale and use with other legally established development in the immediate vicinity of the subject property in the same zone and with similar site constraints;

e. The proposal utilizes to the maximum extent possible innovative construction, design, and development techniques, including pervious surfaces, which minimize to the greatest extent possible net loss of sensitive area functions and values;

f. The proposed development does not pose an unacceptable threat to the public health, safety, or welfare on or off the property;

g. The proposal meets the mitigation, maintenance, and monitoring requirements of this chapter;

h. The inability to derive reasonable use is not the result of actions by the applicant after the effective date of the ordinance codified in this chapter or its predecessor; and

i. The granting of the exception will not confer on the applicant any special privilege that is denied by this chapter to other lands, buildings, or structures under similar circumstances.

6. Modifications and Conditions – The City may approve reduction in required yards or buffer setbacks and may allow the maximum height of structures to be increased up to five (5) feet to reduce the impact on the sensitive area and sensitive area buffer. The City shall include in the written decision any conditions and restrictions that the City determines are necessary to eliminate or minimize any undesirable effects of approving the exception.

7. Reasonable Use Process: Administrative Alternative – If, in order to provide reasonable use of a site, the standards of this chapter need to be modified and the proposed improvement does not exceed a total of 3,000 square feet of site impact, including but not limited to structures, paved areas, landscaping, decks, driveways, utility installation, and grading, the Planning Director is authorized to approve a reasonable use exception subject to subsections (4) and (5) of this section and considered under Process I of Chapter 145 KZC. Administrative approval shall also be subject to the following limitations:

a. The required front yard may be reduced by up to 50 percent where the applicant demonstrates that the development cannot meet the City's code requirements without encroaching into the sensitive area buffer.

b. The encroachment of the proposed development shall only be into the sensitive area buffer, not the sensitive area.

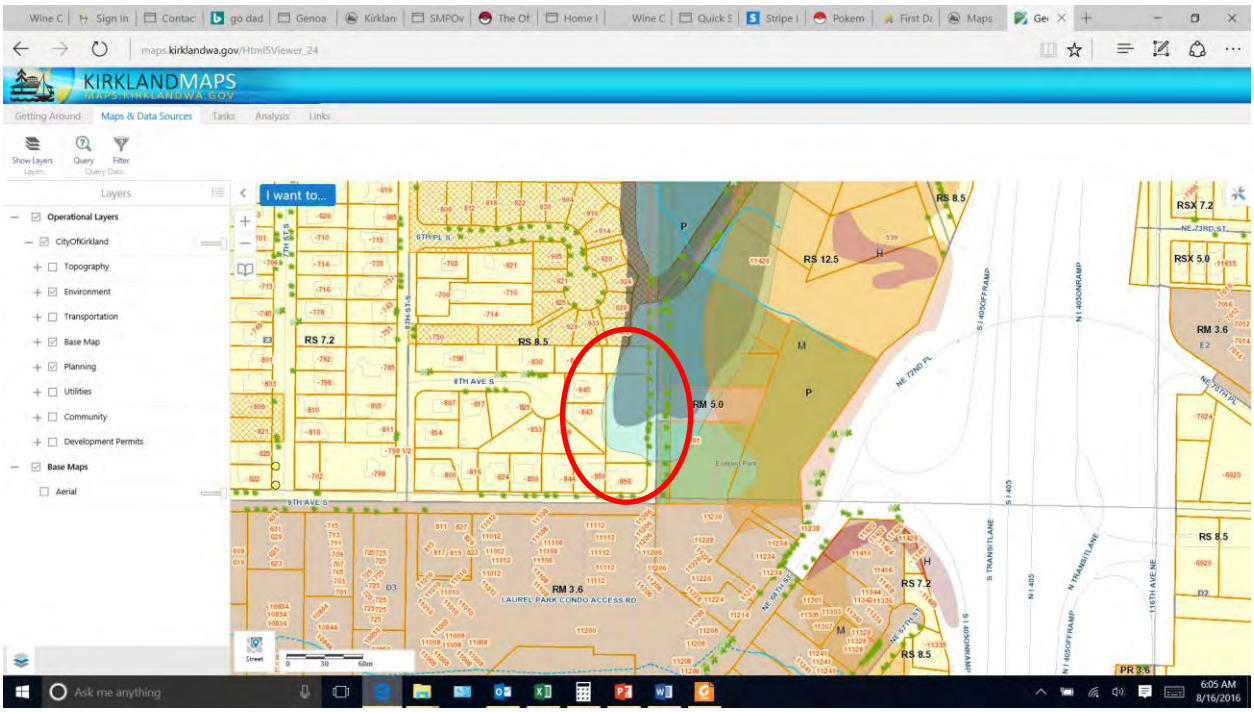
8. Lapse of Approval

a. The reasonable use exception approval expires and is void if the applicant fails to file a complete building permit application within one (1) year of the final decision granting or approving the exception, unless the applicant has received an extension for the exception from the decision-maker 30 days prior to expiration. "Final decision" means the final decision of the Planning Director or City Council.

b. The applicant may apply for a one-time extension of up to one (1) year. The application must be submitted by letter to the Planning Official and, along with any other supplemental documentation, must demonstrate that the applicant is making substantial progress toward developing the subject property consistent with the approval and that circumstances beyond his/her control prevent compliance with the time limit under this section.

c. The lapse of approval period provided in this section is shorter than the lapse of approval period in KZC 150.135 generally applicable to Process IIA approvals and this shorter period shall control for reasonable use exception approvals.

Enclosure 2 – Kirkland Map with Wetland Overlay referenced on August 16, 2016



Enclosure 3: *Sensitive Areas Determination – November 11, 2005 by The Jay Group* (Included in the City of Kirkland's file related to this proposal)

Devon Road
Sensitive Areas Sketch
November 2, 2005

Legend
- Subject Property
- Wetland
- Wetland Buffer
- Offsite Wetlands
- Offsite Streams
- Trail

Disclaimer: This sketch of Sensitive Area locations does not represent a survey and should be considered for feasibility purposes only.

From: Linda Lambert [mailto:chipandlinda@gmail.com]
Sent: Sunday, July 31, 2016 6:51 PM
To: Sean LeRoy
Subject: Parcel No. 0120000120

Hi Sean,

Thank you for your notice regarding a reasonable use permit for a single family home in the Everest Neighborhood. I live in the cul-de-sac on 8th Avenue South.

We have water issues in our backyard during the fall/winter months when it has been raining. Our back yard is swampy.

Hopefully, you will keep the impacts to the neighbors in the near vicinity when it comes to cutting down trees in that parcel. The trees help keep the water in-check so our back yard does not become a swamp.

Thank you,

Linda Lambert

825 - 8th Avenue South

Kirkland, WA 98033

(425) 827-3882

Sean LeRoy

From: Scott Reber <scott@sqlsite.com>
Sent: Monday, August 01, 2016 7:26 PM
To: Sean LeRoy
Subject: Permit #SAR16–01828 comment due 8/15/2016

Dear Sean, (425) 587-3260

Thank you for notifying us about the new house development on the undeveloped portion of Slater Ave in the woods just off the end of 9th Ave., South in Houghton. Parcel #0120000120

It appears the new house driveway will impact the "Slater Avenue Trail" that leads to and from Everest Park.

Do you know if we will still have trail access to the park? I know the city maintains the trail with annual weed mowing, gravel placement, and they even built two bridges with culverts near the wetlands before the park tee.

We live at 11230 NE 68th St for 30 years and frequently use the trail along with dozens of other condo owners and dog walkers.

Please help and share the hearing date.

Thank you kindly!
...Scott & Joan Reber
(425) 822-8741

Sean LeRoy

From: Roger Townsend <rogertownsend44@gmail.com>
Sent: Wednesday, August 10, 2016 7:12 AM
To: Sean LeRoy
Subject: Re permit number SAR16-01828

Dear Mr. LeRoy,
I am GR Townsend, residing at 521 Alexander Ave Kirkland WA 98033, my phone number is 2064992611.
I have examined the proposed permit graphics and while I have no objection to the construction of the dwelling on the site, I must object in the strongest possible terms to the proposed driveway configuration. It would impact use of a common pathway which has been in use for generations and runs from the foot of Slater Street to the north, through the proposed driveway to intersect the roadway. The proposed project would also be in close proximity to numerous springs and the wetlands through which the city has previously denied or prohibited construction. If this project is approved, I must object if the city also proposes to vacate any public land for any purpose in aid of this project.
Sincerely,
George R Townsend
Address indicated above

Sent from my iPhone

CITY OF KIRKLAND
Planning and Building Department
123 Fifth Avenue, Kirkland, WA 98033
www.kirklandwa.gov ~ 425.587.3600

DETERMINATION OF NON-SIGNIFICANCE (DNS)

Case No.: SEP16-01580 **DATE ISSUED:**

Project Name: ENVIRONMENTAL CHECKLIST FOR SCHLAU REASONABLE USE EXCEPTION

Project Location: VACANT; PARCEL NO. 0120000120

Project Description: REASONABLE USE EXCEPTION FOR THE CONSTRUCTION OF ONE SINGLE FAMILY RESIDENCE

Proponent: JAY SCHALU

Project Planner: Sean LeRoy

Lead Agency: City of Kirkland

The lead agency for this proposal has determined that it does not have a probable significant adverse impact on the environment. An environmental impact statement (EIS) is not required under RCW 43.21.030 (2)(c). This decision was made after review of a completed environmental checklist and other information on file with the lead agency. This information is available to the public upon request.

☒ This DNS is issued under WAC 197-11-340(2); the lead agency will not act on this proposal for 14 days from the date issued. Comments must be submitted to Sean LeRoy, project planner at sleroy@kirklandwa.gov by 5:00 PM on **@ (date)**. Please reference case number SEP16-01580.

Responsible official: March 30, 2017

Eric R. Shields, AICP, Director Date
City of Kirkland
Planning & Building Department
123 Fifth Avenue, Kirkland, WA 98033 - (425) 587-3225

☒ You may appeal this determination to the Planning & Building Department at City of Kirkland, 123 Fifth Avenue, Kirkland, WA 98033 no later than 5:00 PM on **@** (date, 14 days from date issued) by a Written Notice of Appeal. You should be prepared to make specific factual objections and reference case number SEP16-01580. Contact Sean LeRoy, project planner in the Planning & Building Department at 425.587.3260 to ask about the procedures for SEPA appeals. See also KMC 24.02.230 Administrative Appeals.

Publish in The Seattle Times on: @

Distribute this notice with a copy of the Environmental Checklist to:

AGENCIES WITH JURISDICTION, AFFECTED AGENCIES, AND/OR INTERESTED PARTIES

- Department of Ecology - Environmental Review Department of Fish and Wildlife – Olympia
- Department of Natural Resources – SEPA Center
- Finn Hill Neighborhood Association
- Muckleshoot Tribal Council - Environmental Division, Fisheries Division Habitat Program
- U.S. Army Corps of Engineers - Seattle District

cc: Applicant

Distributed by: _____

Date

Altmann Oliver Associates, LLC

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

AOA

Environmental Planning & Landscape Architecture

June 24, 2016

AOA-4811

Jay Schlau
jayschlau@gmail.com

SUBJECT: Devon Lane – Parcel 012000-0120, Kirkland, WA
Reasonable Use and Wetland/Buffer Mitigation Report

Dear Jay:

The purpose of this report is to identify impacts to the wetland and buffer from the proposed single-family residence and to describe the measures that will be implemented to mitigate these impacts. This report has been revised to reflect the comments in the February 16, 2016 memo from Ryan Kahlo with The Watershed Company (TWC), peer review consultants for the City of Kirkland. This report has also been revised to include the Reasonable Use Exception submittal requirements and decision criteria outlined in KZC 90.140.4 and 5.

It is my understanding that the wetland boundary as depicted on the updated wetland survey has been approved by TWC. In addition, TWC has confirmed that the wetland on the property is a Type 2 wetland located in a secondary basin and would therefore require a standard 50-foot buffer plus 10-foot structure setback per KZC 90.45. This wetland and buffer encumbers nearly the entire parcel.

1.0 PROJECT IMPACTS

The proposed project consists of the development of a single-family residence. Since there is no realistic developable area located outside of the buffer, the project will require a Reasonable Use Exception per KZC 90.140. As part of the reasonable use process, no more than 3,000 s.f. of site disturbance is allowed.

The proposed project would directly impact 137 s.f. of Type 2 wetland for the driveway to the residence. The project also requires the clearing of 2,851 s.f. of buffer area and 12 s.f. of non-buffer area for a total of 3,000 s.f. of site disturbance. In addition, 2,954

s.f. of off-site buffer would be impacted within the 10th St. S. right-of-way as part of the proposed access drive.

Wetland Functions and Values
Wetlands, in general, provide many valuable ecological and social functions, including stormwater storage, water quality protection, groundwater recharge and discharge, and wildlife habitat. The wetland on the project site appears to generally have a moderate value for most wetland functions.

Although gently sloped, the on-site wetland does provide a small stormwater storage area that helps reduce downstream flooding and traps sediments. The trapping of sediments and other pollutants within the wetland maintains water quality in downstream areas. The overall wetland may also provide some further benefit to down gradient areas by releasing water slowly during the drier months, thereby contributing to the base flow of streams located within the wetland complex off-site to the north.

In addition to its hydrologic functions, the wetland also provides biological functions. As a component of a remnant isolated forested area, the on-site wetland provides habitat for a variety of wildlife species typical of similar habitats within suburban areas of western Washington.

Although privately owned, the on-site wetland does provide some cultural wetland functions as part of the overall open space associated with the wetland complex. The wetland contains some limited passive recreational opportunities such as wildlife viewing.

2.0 WETLAND AND BUFFER MITIGATION

Mitigation for the 137 s.f. of wetland impact includes the creation of 103 s.f. of new wetland and the enhancement of the remaining degraded wetlands on the property. KZC 90.55.4 requires a 1.5:1 mitigation ratio for direct impacts to Type 2 wetlands in a secondary basin. Of the total mitigation area no more than ½ of the mitigation requirement may consist of enhancement (137 x 1.5 divided by 2 = 103).

Enhancement calculations were conducted utilizing the assumption that approximately 20% of the areas deemed suitable for enhancement contain native vegetation that would be preserved. Even with this assumption, enhancement for buffer impacts would be well over a 1:1 impact to mitigation ratio for buffer impacts (see **Figures 1 through 5**).

The proposed mitigation plan should increase the habitat functions of the wetland and buffer over current conditions. Under this plan, invasive species would be removed and degraded buffer areas would be planted with a variety of native trees and shrubs to increase the plant species and structural diversity of the wetland and buffer. These plantings would also provide increased physical and visual screening to the wetland from the proposed development.

2.1 Goal, Objectives, and Performance Standards for Mitigation Area
The primary goal of the mitigation plan is to increase the habitat functions of the wetland and buffer on the site. 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 mitigation area.
Performance Standard: There will be 100% survival of all woody planted species throughout the mitigation area at the end of the first year of planting. Following Year 1, success will be based on an 80% survival rate. In addition, areal cover of planted or recolonized native species within the mitigation area will be a minimum of 15% after Year 1, 20% after Year 2, 30% after Year 3, and 50% after Year 5

Objective B: Limit the amount of invasive and exotic species within the mitigation area.
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.

Objective C: Provide wetland hydrology within the proposed wetland creation area.
Performance Standard: After construction and following every monitoring event for a period of at least five years, the proposed wetland creation area will meet the hydrology requirements for wetlands as outlined in the May 2010 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0).*

2.2 Construction Management
Prior to commencement of any work in the mitigation area, 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 mitigation 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 Kirkland and the consultant prior to their implementation.

2.3 Monitoring Methodology
The vegetation monitoring program will be conducted twice a year for a period of five years, with annual reports submitted to the City of Kirkland. Three permanent 50 foot long by 10 foot wide vegetation sampling transects will be established during the baseline monitoring assessment. Two in the southern portion of the site and one in the northeast portion of the site. During monitoring events, woody vegetation will be

evaluated through the use of the point-intercept sampling methodology within each of these sampling locations. Herbaceous cover will be visually estimated.

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 mitigation area. Review of the photos over time will provide a visual representation of success of the plan.

A shallow groundwater monitoring well will be installed within the 103 s.f. wetland creation area. Hydrology within the created wetland will be monitored at least twice a year during the spring. Site visits will be conducted early in the growing season with a follow up visit conducted in mid-spring. Since the adjacent wetland contains a seasonally high groundwater table with little ponding, wetland hydrology will be achieved if soil saturation is observed within 10 inches of the surface for a period of at least one month during the growing season.

3.0 MAINTENANCE PLAN

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

3.1 Weed Control

Routine removal and control of non-native and other invasive plants (e.g., reed canarygrass, Himalayan and evergreen blackberry, Japanese knotweed, Scot's broom, English ivy, morning glory, thistle and creeping nightshade) shall be performed by manual means whenever possible. Chemical means (Rodeo or Roundup) will only be used if necessary. Undesirable and weedy exotic plant species shall be maintained at levels below 10% total cover within any given stratum at any time during the three-year monitoring period.

3.2 General Maintenance Items

Routine maintenance of planted trees shall be performed. Measures include resetting plants to proper grades and upright positions. Weed control should be performed by; hand removal whenever possible. If weed-whacking is performed, great care shall be taken to prevent damage to desired native species either planted or re-colonized.

4.0 CONTINGENCY PLAN

All dead plants will be replaced with the same species or an approved substitute species that meets the goal of the mitigation 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 Kirkland, or the owner.

5.0 AS-BUILT PLAN

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

6.0 REASONABLE USE EXCEPTION SUBMITTAL REQUIREMENTS

Projects requesting a reasonable use in the City of Kirkland must include the following submittal requirements:

a. *A determination and delineation of the sensitive area and sensitive area buffer containing all the information specified in KZC 90.40(3) for a wetland or based on the definitions contained in this chapter for a stream;*

The wetland on the property has been delineated and surveyed. The surveyed boundary has been approved by the City's peer review consultant.

b. *An analysis of whether any other reasonable use with less impact on the sensitive area and sensitive area buffer is possible;*

The project site is located within a single-family residential neighborhood and this is the intended use for the property. There is no other use for this property that would have less impact on the wetland and buffer and still meet the goal of the property owner for a reasonable use of the site. Impacts have been minimized to the extent feasible and only one relatively small structure would be constructed.

c. *Sensitive site design and construction staging of the proposal so that the development will have the least practicable impact on the sensitive area and sensitive area buffer;*

Due to the wetland and buffer constraints it is not possible to develop the property without impacting sensitive areas to some degree. However, the proposed residence would be constructed within the largest area of available upland on the site and the project has been designed to impact the smallest amount of buffer possible. In addition, the required driveway crossing to the residence would be located in the narrowest portion of the wetland to minimize the wetland impact.

d. *A description of the area of the site which is within the sensitive area or within the setbacks or buffers required by this chapter;*

Nearly the entire property is encumbered by Wetland A and its associated buffer. Wetland A on the site is primarily forested and included black cottonwood (*Populus trichocarpa*) western red cedar (*Thuja plicata*), red alder (*Alnus rubra*), salmonberry (*Rubus spectabilis*), vine maple (*Acer circinatum*), Himalayan blackberry (*Rubus armeniacus*), lady fern (*Athyrium filix-femina*), and horsetail (*Equisetum* sp.).

Hydrologic support to the wetland appears to be primarily from a seasonally high groundwater table and there is typically little inundation within the wetland.

The plant community within the buffer is similar to the wetland but transitionally includes more mesic species such as hazelnut (*Corylus cornuta*), Indian plum (*Oemleria cerasiformis*), sword fern (*Polystichum munitum*), and trailing blackberry (*Rubus ursinus*).

e. *A description of protective measures that will be undertaken such as siltation curtains, hay bales and other siltation prevention measures, and scheduling the construction activity to avoid interference with wildlife and fisheries rearing, nesting or spawning activities;*

To minimize impacts to the wetland and buffer to the extent feasible, a six-foot high construction-phase chain link fence with silt screen fabric shall be installed at the clearing limits per City of Kirkland standards during construction. The chain link construction fence shall be removed and replaced with a split-rail fence after construction of the house is complete.

f. *An analysis of the impact that the amount of development proposed would have on the sensitive area and the sensitive area buffer;*

The proposed project would directly impact 137 s.f. of Type 2 wetland for the driveway to the residence. The project also requires the clearing of 2,851 s.f. of buffer area and 12 s.f. of non-buffer area for a total of 3,000 s.f. of site disturbance. In addition, 2,954 s.f. of off-site buffer would be impacted within the 10th St. S. right-of-way as part of the proposed access drive.

g. *How the proposal minimizes to the greatest extent possible net loss of sensitive area functions;*

The proposed residence has been designed to minimize impacts to the wetland and associated buffer to the greatest extent feasible. The house would be constructed in the largest available upland and the length of the access driveway has been minimized to be as short as possible. Impacts to sensitive areas are unavoidable but the overall project has been designed to limit impacts to the buffer rather than the wetland to maintain as much wetland function as possible.

h. *Whether the improvement is located away from the sensitive area and the sensitive area buffer to the greatest extent possible; and*

As previously stated, the project has been designed to minimize impacts to the wetland and buffer to the extent feasible by: 1) placing the house in the largest available upland possible, 2) minimizing the length of the driveway, and 3) crossing the wetland at its narrowest point.

i. *Such other information or studies as the Planning Official may reasonably require.*

No other studies appear to be required.

7.0 REASONABL USE DECISION CRITERIA

The City of Kirkland shall grant applications for reasonable use exceptions only if all of the following criteria per KZC 90.140.5 are met:

a. *That no permitted type of land use for the property with less impact on the sensitive area and associated buffer is feasible and reasonable, which in a residential zone shall be one (1) single-family dwelling and in a commercial or industrial zone shall be an office use;*

Only one single-family residence is proposed.

b. *That there is no feasible on-site alternative to the proposed activities, including reduction in size, density or intensity, phasing of project implementation, change in timing of activities, revision of road and lot layout, and/or related site planning considerations, that would allow a reasonable economic use with less adverse impacts to the sensitive area and buffer;*

As discussed above, the proposed residence and associated driveway have been minimized to the extent feasible and there is no other alternative that would allow a reasonable economic use of the property and would have less adverse impact on the wetland and its buffer.

c. *Unless the applicant can demonstrate unique circumstances related to the subject property, the amount of site area that will be disturbed by structure placement or other land alteration, including but not limited to grading, utility installation, decks, driveways, paving, and landscaping, shall not exceed the following limits:*

i. If the subject property contains 6,000 square feet of area or less, no more than 50 percent of the site may be disturbed.

Property is greater than 6,000 s.f. so does not apply.

ii. If the subject property contains more than 6,000 square feet but less than 30,000 square feet, no more than 3,000 square feet may be disturbed.

Since the parcel is 25,501 s.f. in size, this section applies. As part of the proposal, only 3,000 s.f. of total on-site disturbance is proposed.

iii. For properties containing 30,000 square feet or more, the maximum allowable site disturbance shall be between 3,000 square feet and 10 percent of the lot area, to be determined by the City on a case-by-case basis.

Does not apply.

> *iv. The amount of allowable disturbance shall be that which will have the least practicable impact on the sensitive area and the sensitive area buffer given the characteristics and context of the subject property, sensitive area, and buffer.*

As described above the 3,000 s.f. of maximum on-site disturbance has been located to minimize impacts to the wetland and buffer to the extent feasible.

> *The applicant shall pay for a qualified professional to help with the City's determination of the appropriate limit for disturbance;*

Understood.

d. The proposal is compatible in design, scale and use with other legally established development in the immediate vicinity of the subject property in the same zone and with similar site constraints;

The project site has more constraints than the adjacent developed properties and as such the scale of the proposed residence and impact area is less than on surrounding properties.

e. The proposal utilizes to the maximum extent possible innovative construction, design, and development techniques, including pervious surfaces, which minimize to the greatest extent possible net loss of sensitive area functions and values;

It is my understanding that the project will be developed using best management practices and the most recent innovative construction techniques possible.

f. The proposed development does not pose an unacceptable threat to the public health, safety, or welfare on or off the property;

The proposed residence does not pose an unacceptable threat to the public health, safety, or welfare on or off the property.

g. The proposal meets the mitigation, maintenance, and monitoring requirements of this chapter;

A mitigation, maintenance, and monitoring plan that meets City requirements has been developed for all impacts to sensitive areas.

h. The inability to derive reasonable use is not the result of actions by the applicant after the effective date of the ordinance codified in this chapter or its predecessor; and

The applicant has not created the wetland or buffer that require the reasonable use provisions nor has the applicant created the legal lot that is now the subject of the reasonable use provisions.

i. The granting of the exception will not confer on the applicant any special privilege that is denied by this chapter to other lands, buildings, or structures under similar circumstances.

The reasonable use exception requested is not a special privilege and would apply to any other property with similar circumstances.

8.0 REQUEST FOR STRUCTURE HEIGHT MODIFICATION

The City of Kirkland may approve the reduction in required yards or buffer setbacks and may allow the maximum height of structures to be increased up to five (5) feet to reduce the impact on the sensitive area and sensitive area buffer per KZC 90.140.6.

As part of the project, the applicant is proposing to increase the height of the residence by 5 feet using this provision. It was determined by the project civil engineer and architect that constructing an underground basement level on this site would require excavating the building area down approximately 12-14 feet below the existing grades. This type of excavation typically requires temporary excavation cut slopes as steep as 1:1 in inclination that would create a 12-15 foot horizontal footprint around the perimeter of the building pad. Therefore creating a basement rather than increasing the building height would significantly increase the impact to surrounding wetland, buffer, and trees on the site. In addition, excavating a basement would draw groundwater from the surrounding area into the basement drainage system, thereby potentially de-watering the wetland.

Due to the required driveway turn around, the building footprint is limited to about 1200 s.f. This house size is inconsistent with typical new construction in the same zone and vicinity. It is my understanding that increasing the residence by 5 feet would allow for a 3-story structure that would increase the living area to be more consistent with new construction homes in the same zone and vicinity. It is also my understanding that no views of any kind would be affected by granting an additional 5 feet of building height for this lot.

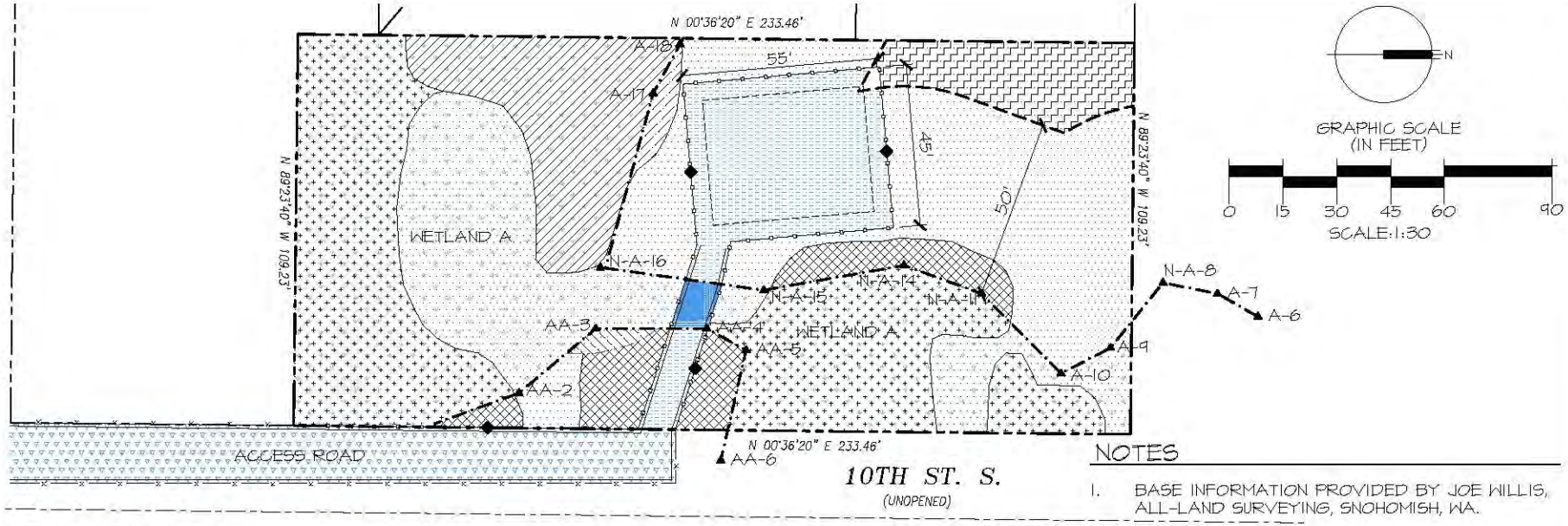
If you have any questions, please give me a call.

Sincerely,

ALTMANN OLIVER ASSOCIATES, LLC

John Altmann
Ecologist

Attachment



8" Water Line need to verify cleanout

NOTES

1. BASE INFORMATION PROVIDED BY JOE WILLIS, ALL-LAND SURVEYING, SNOHOMISH, WA.

PLAN LEGEND

- PROPERTY LINE
- WETLAND BOUNDARY
- WETLAND CREATION BOUNDARY
- WETLAND FLAG LOCATION
- 50' WETLAND BUFFER
- PROPOSED BUFFER/CLEARING LIMITS/FENCE LOCATION - SEE NOTE 1 BELOW
- OFFSITE CLEARING LIMITS (SILT FENCE PER CITY OF KIRKLAND STANDARDS)
- 5' BSBL
- NATIVE MIXED FOREST - NO PLANTING BUFFER REPLACEMENT - 1,290 SF

NOTES:
PER KZC 90.50 A 6' HIGH CONSTRUCTION-PHASE CHAIN LINK FENCE WITH SILT SCREEN FABRIC SHALL BE INSTALLED PER CITY OF KIRKLAND STANDARDS DURING CONSTRUCTION AT THE CLEARING LIMITS ONSITE. THE CHAIN LINK CONSTRUCTION FENCE SHALL BE REMOVED AND REPLACED WITH A SPLIT-RAIL FENCE PER DETAIL 4 ON FIGURE 3 ON THIS DRAWING SET AFTER CONSTRUCTION OF THE HOUSE IS COMPLETE AND PRIOR TO FINAL APPROVAL OF THE MITIGATION AREA.

IMPACT LEGEND

WETLAND IMPACT	137 SF
BUFFER IMPACT	2,851 SF
TOTAL ONSITE IMPACT	3,000 SF*
OFF-SITE BUFFER IMPACT	2,954 SF

*3,000 SF TOTAL SITE IMPACT INCLUDE 12 SF OF NON-BUFFER

MITIGATION LEGEND

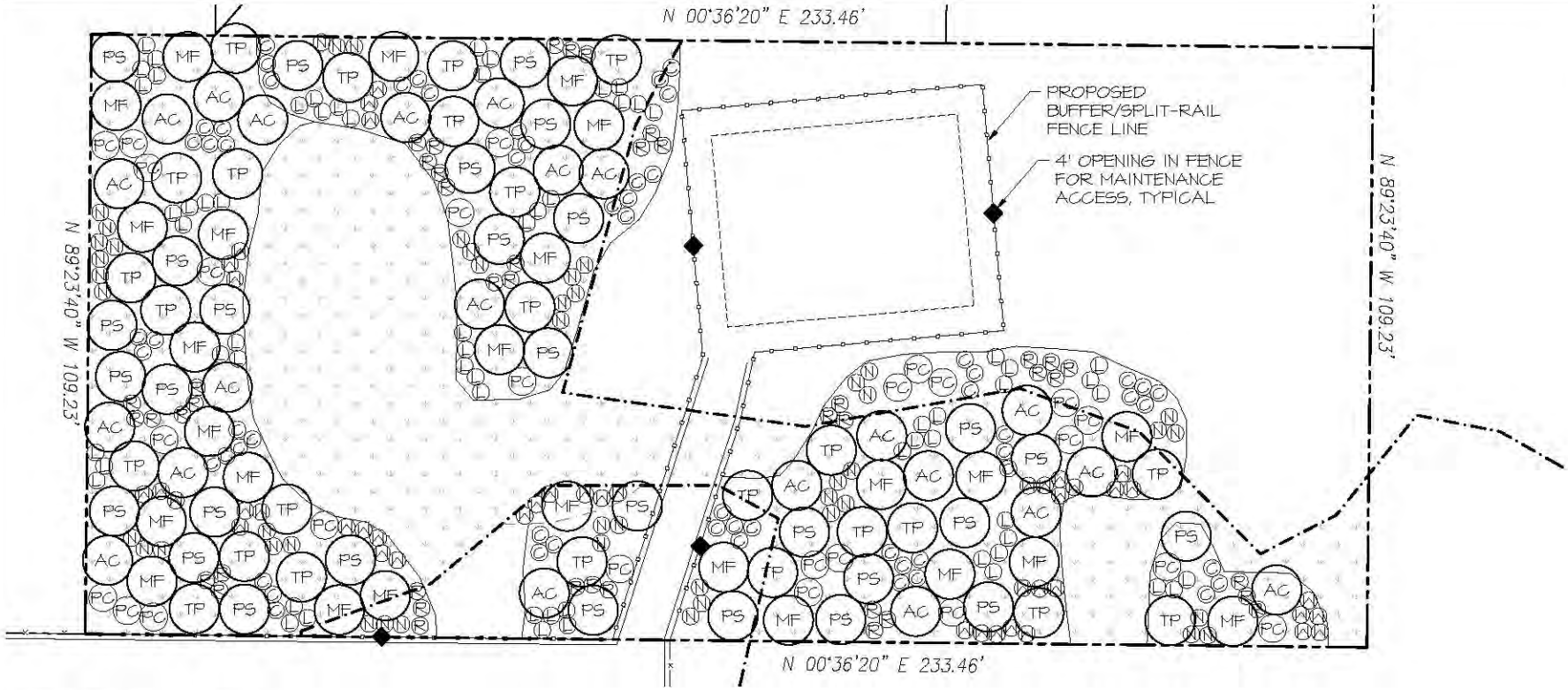
WETLAND CREATION - REMOVE AND STOCKPILE TOPSOIL, EXCAVATE ~3-9" TO BE AT SAME ELEVATION AS ADJACENT WETLAND, REPLACE TOPSOIL AND PLANT AT 100% DENSITY. AOA TO REVIEW WETLAND CREATION PRIOR TO TOPSOIL REPLACEMENT	103 SF
WETLAND ENHANCEMENT - COTTONWOOD BRANCHES OVER BLACKBERRY - CHIP BRANCHES, LEAVE LOGS AS WOODY DEBRIS, REMOVE BLACKBERRY AND REPLANT AT 80% DENSITY	2,503 SF
BUFFER ENHANCEMENT - COTTONWOOD BRANCHES OVER BLACKBERRY - CHIP BRANCHES, LEAVE LOGS AS WOODY DEBRIS, REMOVE BLACKBERRY AND REPLANT AT 80% DENSITY	195 SF
WETLAND ENHANCEMENT - 80% BLACKBERRY AND OTHER INVASIVES - REMOVE BLACKBERRY AND REPLANT AT 80% DENSITY	6,966 SF
BUFFER ENHANCEMENT - 80% BLACKBERRY AND OTHER INVASIVES - REMOVE BLACKBERRY AND REPLANT AT 80% DENSITY	1,565 SF
TOTAL MITIGATION	11,332 SF (9,094 SF CREDIT)

DRAWN SO | PROJECT 4811 | SCALE AS NOTED | DATE 10-28-15 | REVISED 03-04-16 | 1/5

FIGURE 1: DEVON LANE REASONABLE USE BUFFER MITIGATION PLAN
PARCEL 012000-0120
KIRKLAND, WASHINGTON

Altmann Oliver Associates, LLC
AOA Environmental Planning & Landscape Architecture
PO Box 578 Cowiche, WA 98923 Office (425) 233-4120 Fax (425) 233-4120

4811-MIT-03-04-16.dwg



PLANT SCHEDULE

TREES

KEY	SCIENTIFIC NAME	COMMON NAME	SPACING	QTY.	SIZE (MIN.)	NOTES
AC	ACER CIRCINATUM	VINE MAPLE	9' O.C.	22	2 GAL.	MULTI-STEM (3 MIN.)
MF	MALUS FUSCA	WESTERN CRABAPPLE	9' O.C.	25	2 GAL.	SINGLE TRUNK, WELL BRANCHED
PS	PICEA SITCHENSIS	SITKA SPRUCE	9' O.C.	29	2 GAL.	FULL & BUSHY
TP	THUJA PLICATA	WESTERN RED CEDAR	9' O.C.	25	2 GAL.	FULL & BUSHY

SHRUBS

KEY	SCIENTIFIC NAME	COMMON NAME	SPACING	QTY.	SIZE (MIN.)	NOTES
C	CORNUS SERICEA	RED-OSIER DOGWOOD	3' O.C.	60	1 GAL.	MULTI-STEM (3 MIN.)
L	LONICERA INVOLUCRATA	BLACK TWIN-BERRY	3' O.C.	64	1 GAL.	MULTI-STEM (3 MIN.)
PC	PHYSOCARPUS CAPITATUS	PACIFIC NINEBARK	5' O.C.	25	1 GAL.	MULTI-STEM (3 MIN.)
N	ROSA NUTKANA	NOOTKA ROSE	3' O.C.	47	1 GAL.	MULTI-STEM (3 MIN.)
R	RUBUS SPECTABILIS	SALMONBERRY	3' O.C.	43	1 GAL.	FULL & BUSHY
W	SALIX SITCHENSIS	SITKA WILLOW	3' O.C.	*132	4' CUTTING	1/2" DIA., MIN., BARK INTACT

*3 WILLOW CUTTINGS PER SYMBOL

GRAPHIC SCALE (IN FEET)

0 10 20 30 40 60

SCALE: 1:20

N

NOTES

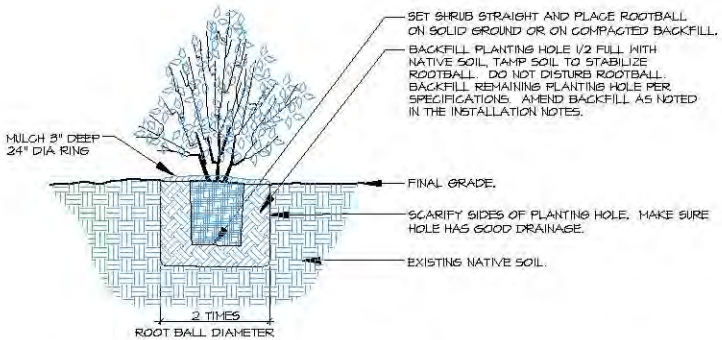
1. BASE INFORMATION PROVIDED BY JOE WILLIS, ALL-LAND SURVEYING, SNOHOMISH, WA.

DRAWN SO
PROJECT 4811
SCALE AS NOTED
DATE 10-28-15
REVISED 03-04-16
2/5

FIGURE 2: PLANTING PLAN
BUFFER MITIGATION PLAN
PARCEL 012000-0120
KIRKLAND, WASHINGTON

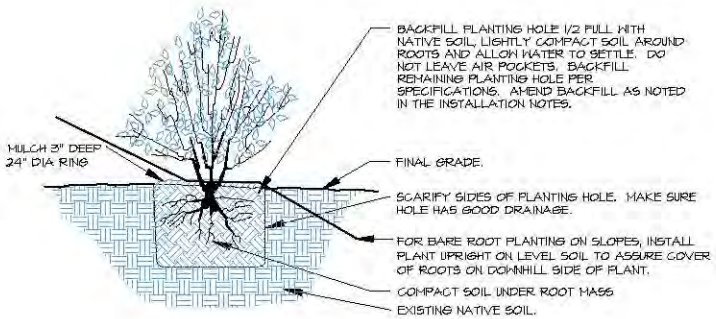
Altmann Oliver Associates, LLC
AOA Environmental Planning & Landscape Architecture
PO Box 578 Cosmopolis, WA 98614 Office: (425) 333-4535 Fax: (425) 333-4536

4811-MIT-03-04-16.dwg



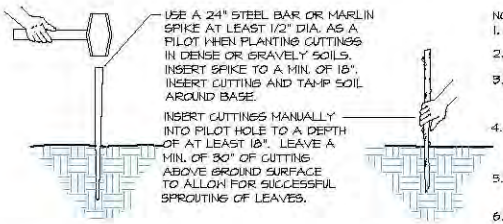
1 CONTAINER PLANTING DETAIL (TYP.)

SCALE: NTS



2 BARE-ROOT PLANTING DETAIL (TYP.)

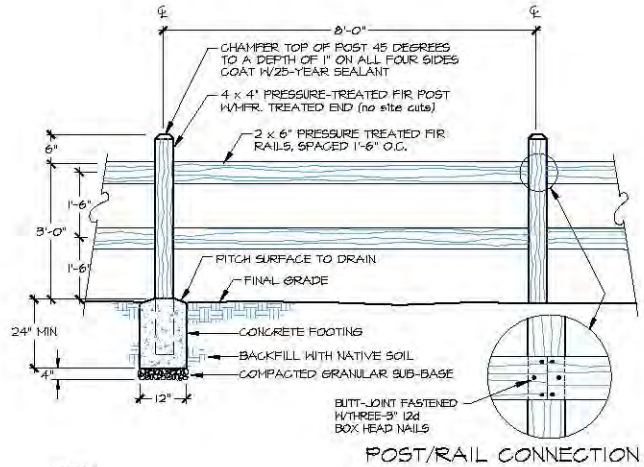
SCALE: NTS



NOTES:
1. CUTTINGS SHALL BE SPECIES AS NOTED IN THE PLANT SCHEDULE.
2. CUTTINGS SHALL BE AT LEAST 1/2" DIA. AND 4' (min.) IN LENGTH.
3. CUTTINGS MUST BE ALIVE WITH SIDE BRANCHES CLEARLY REMOVED AND BARK INTACT. CUTTINGS SHALL BE PLANTED WITHIN 24 HOURS OF CUTTING.
4. THE BUTT ENDS SHOULD BE CLEANLY CUT AT AN ANGLE FOR EASY INSERTION INTO THE SOIL. THE TOP SHOULD BE CUT SQUARE OR BLUNT.
5. CUTTINGS MUST BE FRESH AND KEPT MOIST AFTER CUTTING. THEY SHOULD BE PRUNED AND INSTALLED THE SAME DAY.
6. DIP BOTTOM OF CUTTING IN A PLANT ROOTING HORMONE PRIOR TO INSERTION INTO THE SOIL.

3 CUTTING INSTALLATION (TYP.)

SCALE: NTS



NOTES:
1. RAIL FENCE TO ALIGN WITH LAND GRADIENT.
2. TREAT WITH CLEAR PRESERVATIVE UPON COMPLETION OF INSTALLATION.
3. ALL FASTENERS TO BE GALVANIZED STEEL.

4 SPLIT-RAIL FENCE

SCALE: NTS

DRAWN	SO
SCALE	AS NOTED
DATE	10-28-15
REVISED	03-04-16
PROJECT	4811

3/5

FIGURE 3: PLANTING DETAILS
BUFFER MITIGATION PLAN
PARCEL 012000-0120
KIRKLAND, WASHINGTON

Altmann Oliver Associates, LLC
AOA Environmental Planning & Landscape Architecture
PO Box 578 Gig Harbor, WA 98335 Office (253) 858-8116 Fax (253) 858-8117

4811-MIT-03-04-16.dwg

SPECIFICATIONS

1. CONTRACTOR INFORMATION. WHEN IT IS AVAILABLE, CONTACT INFORMATION SHALL BE PROVIDED TO THE CITY OF KIRKLAND THAT INCLUDES NAMES, ADDRESSES AND PHONE NUMBERS OF PERSONS/FIRMS THAT WILL BE RESPONSIBLE FOR INSTALLING REQUIRED PLANTS AND PERFORMING REQUIRED MAINTENANCE.
2. CONTRACTOR'S QUALIFICATIONS. ALL WORK SHALL BE PERFORMED BY A LICENSED LANDSCAPE CONTRACTOR REGISTERED IN THE STATE OF WASHINGTON. CONTRACTOR MUST BE EXPERIENCED IN MITIGATION AND RESTORATION WORK. THE CONTRACTOR SHALL PROVIDE THAT THERE IS ONE PERSON ON THE SITE AT ALL TIMES DURING WORK AND INSTALLATION WHO IS THOROUGHLY FAMILIAR WITH THE TYPE OF MATERIALS BEING INSTALLED AND THE BEST METHODS FOR THEIR INSTALLATION, AND WHO SHALL DIRECT ALL WORK BEING PERFORMED UNDER THESE SPECIFICATIONS. THIS PERSON SHALL HAVE A MINIMUM OF FIVE (5) YEARS EXPERIENCE INSTALLING NATIVE PLANT MATERIALS FOR WETLAND MITIGATION OR RESTORATION PROJECTS, UNLESS OTHERWISE ALLOWED BY THE LANDSCAPE DESIGNER, WETLAND BIOLOGIST AND/OR THE CITY OF KIRKLAND.
3. IN THE WETLAND CREATION AREA, REMOVE AND STOCKPILE TOPSOIL, EXCAVATE ~3-9" TO BE AT SAME ELEVATION AS ADJACENT WETLAND. REPLACE TOPSOIL AND PLANT. AOA TO REVIEW WETLAND CREATION PRIOR TO TOPSOIL REPLACEMENT.
4. ALL PLANTS SHOULD BE INSTALLED BETWEEN DECEMBER 1ST AND MARCH 15TH.
5. INTERMEDIATE INSPECTIONS. ALL PLANTS SHALL BE INSPECTED AND APPROVED BY THE LANDSCAPE DESIGNER AND/OR WETLAND BIOLOGIST PRIOR TO INSTALLATION. CONDITION OF ROOTS OF A RANDOM SAMPLE OF PLANTS WILL BE INSPECTED, AS WELL AS ALL ABOVEGROUND GROWTH ON ALL PLANTS. ROOTS OF ANY BARE ROOT PLANTS, IF PERMITTED FOR USE, WILL BE INSPECTED. PLANT MATERIAL MAY BE APPROVED AT THE SOURCE, AT THE DISCRETION OF THE LANDSCAPE DESIGNER AND THE WETLAND BIOLOGIST, BUT ALL MATERIAL MUST BE RE-INSPECTED AND APPROVED ON THE SITE PRIOR TO INSTALLATION. PLANT LOCATIONS SHALL ALSO BE INSPECTED AND APPROVED PRIOR TO PLANTING.
6. PRIOR TO INSTALLATION OF PLANT MATERIAL ALL HIMALAYAN BLACKBERRY, ENGLISH IVY, ENGLISH HOLLY, CHERRY LAUREL, REED CANARYGRASS, HEDGE BINDWEED, THISTLE, POISON HEMLOCK, CREEPING NIGHTSHADE, SCOT'S BROOM, KNOTWEED, ANY NON-ORGANIC DEBRIS AND ANY OTHER INVASIVE PLANT SPECIES LOCATED IN THE PLANTING AREAS WILL BE REMOVED BY HAND GRUBBING ALL ROOTS AND EXPORTED OFFSITE. CARE SHALL BE TAKEN TO AVOID DISTURBANCE TO NATIVE WOODY VEGETATION LOCATION AMONGST NON-NATIVE VEGETATION. ALL NON-ORGANIC DEBRIS SHALL BE REMOVED FROM THE ENHANCEMENT AREAS AND EXPORTED FROM THE SITE. IN INVASIVE GRUBBING AREAS, DEJONG'S FERTIL-MULCH SHALL BE PLACED TO PRE-CLEARING GRADES.
7. AOA TO REVIEW DEBRIS REMOVAL, INVASIVE PLANT REMOVAL, SOIL PLACEMENT AND PLANT LAYOUT PRIOR TO PLANTING.
8. A SPLIT-RAIL FENCE SHALL BE INSTALLED ALONG THE BUFFER BOUNDARY PER DETAIL 4 ON FIGURE 3 PRIOR TO PLANTING. FENCE SHALL INCLUDE 4 - 4' WIDE OPENINGS FOR ACCESS DURING MAINTENANCE.
9. ALL PLANTS SHALL BE PIT-PLANTED IN PLANTING PITS EXCAVATED 2X THE DIAMETER OF THE PLANT. PITS SHALL BE BACKFILLED WITH A 30/70 MIX OF STEERCO TO NATIVE SOIL. PLANTS SHALL BE INSTALLED 2" HIGH AND SURFACED MULCHED TO A DEPTH OF 2" WITH MEDIUM-COURSE BARK MULCH PLACED CONTINUOUSLY THROUGHOUT THE PLANTING BED.
10. ALL PLANTS SHALL BE NURSERY GROWN (IN WESTERN WA OR OR) FOR AT LEAST 1 YEAR FROM PURCHASE DATE, FREE FROM DISEASE OR PESTS, WELL-ROOTED, BUT NOT ROOT-BOUND AND TRUE TO SPECIES.
11. PLANT LAYOUT SHALL BE APPROVED BY AOA PRIOR TO INSTALLATION AND APPROVED UPON COMPLETION OF PLANTING.
12. UPON COMPLETION OF PLANTING, ALL PLANTS SHALL BE THOROUGHLY WATERED.
13. UPON APPROVAL OF PLANTING INSTALLATION BY AOA, THE CITY OF KIRKLAND WILL BE NOTIFIED TO CONDUCT A SITE REVIEW FOR FINAL APPROVAL OF CONSTRUCTION.
14. MAINTENANCE SHALL BE REQUIRED IN ACCORDANCE WITH THE CITY OF KIRKLAND SENSITIVE AREAS MITIGATION GUIDELINES AND APPROVED PLANS.
15. THE IRRIGATION SYSTEM FOR THE NEW HOME SHALL HAVE A SEPARATE ZONE FOR THE MITIGATION PLANTING AREAS. THE IRRIGATION SYSTEM SHALL BE DESIGN/BUILT BY THE LANDSCAPE CONTRACTOR.
16. IRRIGATION FOR THE MITIGATION PLANTING AREAS SHALL BE SET TO PROVIDE 1/2" OF FLOW 2 TIMES WEEKLY FROM JUNE 15 – OCTOBER 15 THE FIRST YEAR AFTER PLANTING. FLOW SHALL REDUCE TO 1 TIME WEEKLY FROM JULY 1 - SEPTEMBER 30 THE SECOND YEAR AFTER PLANTING AND ONCE WEEKLY THE THIRD YEAR, IF DEEMED NECESSARY. NO FURTHER IRRIGATION IS NECESSARY AFTER THE THIRD YEAR AND THE SYSTEM SHALL BE REMOVED.
17. MAINTENANCE SHALL BE IMPLEMENTED ON A REGULAR BASIS ACCORDING TO THE SCHEDULE BELOW.

ANNUAL MAINTENANCE SCHEDULE

MAINTENANCE ITEM	J	F	M	A	M	J	J	A	S	O	N	D
WEED CONTROL			1		1		1			1		
GENERAL MAINT.			1		1		1			1		
WATERING - YEAR 1						4	8	8	8			
WATERING - YEAR 2						4	8	8	8	4		
WATERING - YEARS 3-5						4	4	4	4			

1-8 = NUMBER OF TIMES TASK SHALL BE PERFORMED PER MONTH.

DRAWN SO
PROJECT 4811
SCALE AS NOTED
DATE 10-28-15
REVISED 03-04-16
4/5

FIGURE 4: SPECIFICATIONS
BUFFER MITIGATION PLAN
PARCEL 012000-0120
KIRKLAND, WASHINGTON

Altmann Oliver Associates, LLC
AOA Environmental Planning & Landscape Architecture
PO Box 1278 Gig Harbor, WA 98614 Office (425) 335-4120 Fax (425) 335-4109

4811-MIT-03-04-16.dwg

MAINTENANCE & MONITORING PLAN

1.0 WETLAND AND BUFFER MITIGATION

Mitigation for the 137 s.f. of wetland impact includes the creation of 103 s.f. of new wetland and the enhancement of the remaining degraded wetlands on the property. KZC 90.55.4 requires a 1.5:1 mitigation ratio for direct impacts to Type 2 wetlands in a secondary basin. Of the total mitigation area no more than ½ of the mitigation requirement may consist of enhancement (137 x 1.5 divided by 2 = 103).

Enhancement calculations were conducted utilizing the assumption that approximately 20% of the areas deemed suitable for enhancement contain native vegetation that would be preserved. Even with this assumption, enhancement for buffer impacts would be well over a 1:1 impact to mitigation ratio for buffer impacts (see **Figures 1 through 5**).

The proposed mitigation plan should increase the habitat functions of the wetland and buffer over current conditions. Under this plan, invasive species would be removed and degraded buffer areas would be planted with a variety of native trees and shrubs to increase the plant species and structural diversity of the wetland and buffer. These plantings would also provide increased physical and visual screening to the wetland from the proposed development.

1.1 Goal, Objectives, and Performance Standards for Mitigation Area

The primary goal of the mitigation plan is to increase the habitat functions of the wetland and buffer on the site. 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 mitigation area. *Performance Standard: There will be 100% survival of all woody planted species throughout the mitigation area at the end of the first year of planting. Following Year 1, success will be based on an 80% survival rate. In addition, areal cover of planted or recolonized native species within the mitigation area will be a minimum of 15% after Year 1, 20% after Year 2, 30% after Year 3, and 50% after Year 5*

Objective B: Limit the amount of invasive and exotic species within the mitigation area. *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.*

Objective C: Provide wetland hydrology within the proposed wetland creation area. *Performance Standard: After construction and following every monitoring event for a period of at least five years, the proposed wetland creation area will meet the hydrology requirements for wetlands as outlined in the* May 2010 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0).*

1.2 Construction Management

Prior to commencement of any work in the mitigation area, 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 mitigation 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 Kirkland and the consultant prior to their implementation.

1.3 Monitoring Methodology

The vegetation monitoring program will be conducted twice a year for a period of five years, with annual reports submitted to the City of Kirkland. Three permanent 50 foot long by 10 foot wide vegetation sampling transects will be established during the baseline monitoring assessment. Two in the southern portion of the site and one in the northeast portion of the site. During monitoring events, woody vegetation will be evaluated through the use of the point-intercept sampling methodology within each of these sampling locations. Herbaceous cover will be visually estimated.

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 mitigation area. Review of the photos over time will provide a visual representation of success of the plan.

A shallow groundwater monitoring well will be installed within the 103 s.f. wetland creation area. Hydrology within the created wetland will be monitored at least twice a year during the spring. Site visits will be conducted early in the growing season with a follow up visit conducted in mid-spring. Since the adjacent wetland contains a seasonally high groundwater table with little ponding, wetland hydrology will be achieved if soil saturation is observed within 10 inches of the surface for a period of at least one month during the growing season.

2.0 MAINTENANCE PLAN

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

2.1 Weed Control

Routine removal and control of non-native and other invasive plants (e.g., reed canarygrass, Himalayan and evergreen blackberry, Japanese knotweed, Scot's broom, English ivy, morning glory, thistle and creeping nightshade) shall be performed by manual means whenever possible. Chemical means (Rodeo or Roundup) will only be used if necessary. Undesirable and weedy exotic plant species shall be maintained at levels below 10% total cover within any given stratum at any time during the three-year monitoring period.

2.2 General Maintenance Items

Routine maintenance of planted trees shall be performed. Measures include resetting plants proper grades and upright positions. Weed control should be performed by: hand removal whenever possible. If weed-whacking is performed, great care shall be taken to prevent damage to desired native species either planted or re-colonized.

3.0 CONTINGENCY PLAN

All dead plants will be replaced with the same species or an approved substitute species that meets the goal of the mitigation 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 Kirkland, or the owner.

4.0 AS-BUILT PLAN

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

DRAWN	SO
PROJECT	4811
SCALE	AS NOTED
DATE	10-28-15
REVISED	03-04-16

5/5

FIGURE 5: MAINTENANCE & MONITORING PLAN
BUFFER MITIGATION PLAN
PARCEL 0120000-0120
KIRKLAND, WASHINGTON

Altmann Oliver Associates, LLC
AOA Environmental Planning & Landscape Architecture
PO Box 578 Gig Harbor, WA 98335 Office (253) 858-8330 Fax (253) 858-8339

4811-MIT-03-04-16.dwg

TECHNICAL MEMORANDUM

THE WATERSHED COMPANY

Date: February 16, 2016
To: Sean LeRoy, City of Kirkland
From: Ryan Kahlo, PWS
Project Number: 140622.15
Project Name: Kirkland Devon Lane (Schlau Property)

Subject: Wetland and Buffer Mitigation Plan Review

Findings

This memorandum presents our review of the proposed mitigation plan and accompanying mitigation report (*Devon Lane Reasonable Use – Parcel 012000-0120, Kirkland, WA Wetland/Buffer Mitigation Report.* Altman Oliver Associates, LLC, December 15, 2015) for the above-reference project. In combination, the plan and report contain most of the information and requirements specified in Chapter 90 of the Kirkland Zoning Code (KZC); however, a few omissions and inconsistencies are described below:

1. On Sheet 1/4 of the proposed mitigation plan, an area of wetland buffer directly east of the proposed structure is depicted as part of the wetland enhancement area. This area should be marked as wetland buffer enhancement, and the area calculations and ratios for wetland and wetland buffer mitigation be should be revised, as necessary.

2. On Page 3 of 5 in the mitigation report, objectives and performance standards are provided along with a brief mention of monitoring methods (Section 2.3). The objectives and performance standards are appropriate for the site. However, the monitoring methodology summary does not include descriptions of how data will be collected. Vegetation establishment should be measured along permanent monitoring transects or monitoring plots. The number, length/size, and general location of the monitoring transects/plots should be provided along with a description of how data will be measured. Similarly, shallow groundwater monitoring wells should be installed in the proposed wetland creation area, and the monitoring methodology for determining if wetland hydrology is achieved should be summarized.

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

The monitoring methodology, along with the goals and performance standards should be included in the proposed mitigation plan, rather than just in the mitigation report.

3. KZC 90.50 requires a "*6-foot-high construction-phase chain link fence or equivalent fence, as approved by the Planning Official along the upland boundary of the entire wetland buffer with silt screen fabric installed per City standard*" for the duration of construction activities. KZC 90.50 also requires a "*permanent 3- to 4-foot-tall split rail fence*" around all wetland buffers upon completion of construction activities. A description of the fencing to be installed should be included, and the proposed location of the permanent, split-rail fence should be depicted on the proposed plan.

4. An area of non-wetland, non-buffer is located behind the proposed structure in the northwest corner of the site. Repositioning the structure to be farther into this non-buffer area would not substantially reduce buffer impacts, as this would require additional driveway through the buffer. However, this area does provide functions to the wetland. Since this proposal is a reasonable use exception, which requires maximum use of available non-buffer areas, this area should be converted to wetland buffer to prevent future development in that location.

5. The clearing limits for the primary structure are within 2-3 feet of the proposed enhancement areas, meaning the initial construction and future building maintenance/repair would encroach into the mitigation site. The mitigation report/plan should verify if the area of disturbance (clearing limits) includes the required ten-foot building setback.

6. KZC 90.140.3 limits the area of impact for a Reasonable Use Exception (RUE) to 3,000 square feet. The on-site disturbance area is exactly 3,000 square feet. However, an additional 2,954 square feet of off-site wetland buffer impacts are proposed as part of the access road construction. The City will make the final determination as to whether the additional impacts are allowed under the exception for "unique circumstances."

Please call (425) 822-5242 if you have any questions or if we can provide you with any additional information.

I think I can work with email…that's fine.
Thanks,

Sean LeRoy
PLANNER
sleroy@kirklandwa.gov
425.587.3260

From: Ryan Kahlo [mailto:rkahlo@watershedco.com]
Sent: Monday, March 21, 2016 2:47 PM
To: Sean LeRoy
Subject: RE: Reply to watershed letter. Fwd: Devon Lane

Hi Sean,

The applicant has sufficiently addressed the items in our mitigation review letter. The proposed project and mitigation is in compliance with KZC Chapter 90. Do you need confirmation in letter, form or will the email suffice?

Thanks,

Ryan

From: Sean LeRoy [mailto:SLeRoy@kirklandwa.gov]
Sent: Monday, March 21, 2016 10:12 AM
To: Ryan Kahlo <rkahlo@watershedco.com>
Subject: FW: Reply to watershed letter. Fwd: Devon Lane

Hi Ryan,
Here's the revised mitigation report. Please let me know if you see anything else that needs attention.
Thanks!

Sean LeRoy
PLANNER
sleroy@kirklandwa.gov
425.587.3260

REASONABLE USE COVENANT

File Number(s):	
Building Permit Number(s):	
Project Name:	
Project Address:	

Declarants Insert Names hereby declares and agrees as follows:

1. Declarant is the owner of the real property described below in the legal description, which is referred to as the "Property" in this Covenant.

2. The total approved site disturbance area for the above-referenced project ("Project") is 3,000 square feet. The total approved site disturbance area may not be increased and site disturbances in areas not approved by the Project are prohibited.

3. The footprint of the residence associated with the Project may not be enlarged.

4. Structures and improvements shall not encroach into the 5 foot building setbacks from the approved site disturbance area along the east and south sides of the residence, with the exception of eaves.

5. This Covenant is binding on all owners of the Property described below and their heirs, successors and assigns. This Covenant shall run with the land described as follows:

LEGAL DESCRIPTION:

Exhibit A ("the Properties")

(Sign in blue ink)

(*Individuals Only*)

OWNER(S) OF REAL PROPERTY (INCLUDING SPOUSE)

_____

_____

_____

(*Individuals Only*)

STATE OF WASHINGTON)
) SS.
County of King)

On this _____ day of _____, _____, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared _____and _____to me known to be the individual(s) described herein and who executed the Reasonable Use Covenant and acknowledged that _____ signed the same as _____free and voluntary act and deed, for the uses and purposes therein mentioned.
WITNESS my hand and official seal hereto affixed the day and year first above written.

_____
Notary's Signature

_____
Print Notary's Name
Notary Public in and for the State of Washington,
Residing at: _____
My commission expires: _____

(*Partnerships Only*)

OWNER(S) OF REAL PROPERTY

_____
(Name of Partnership or Joint Venture)

_____
By General Partner

_____
By General Partner

_____
By General Partner

(*Partnerships Only*)

STATE OF WASHINGTON)
) SS.
County of King)

On this _____ day of _____, _____, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared _____and _____ to me, known to be general partners of _____, the partnership that executed the Reasonable Use Covenant and acknowledged the said instrument to be the free and voluntary act and deed of each personally and of said partnership, for the uses and purposes therein set forth, and on oath stated that they were authorized to sign said instrument.

WITNESS my hand and official seal hereto affixed the day and year first above written.

_____
Notary's Signature

_____
Print Notary's Name
Notary Public in and for the State of Washington, Residing at: _____
My commission expires: _____

(Corporations Only)

OWNER(S) OF REAL PROPERTY

_____

(Name of Corporation)

_____

By President

_____

By Secretary

(*Corporations Only*)

STATE OF WASHINGTON)
) SS.
County of King)

On this _____ day of _____, _____, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared _____and _____ to me, known to be the President and Secretary, respectively, of _____, the corporation that executed the Reasonable Use Covenant and acknowledged the said instrument to be the free and voluntary act and deed of said corporation, for the uses and purposes therein set forth, and on oath stated that they were authorized to sign said instrument and that the seal affixed is the corporate seal of said corporation.

WITNESS my hand and official seal hereto affixed the day and year first above written.

_____

Notary's Signature

_____

Print Notary's Name

Notary Public in and for the State of Washington,

Residing at: _____

My commission expires: _____

NATURAL GREENBELT PROTECTIVE EASEMENT

Grantor: _____, owner of the hereinafter described real property, hereby grants to

Grantee: The City of Kirkland, a municipal corporation.

A natural greenbelt protective easement over and across the following described real property to wit ("Easement Area"):

No tree trimming, tree topping, tree cutting, tree removal, shrub or brush-cutting or removal of native vegetation, application of pesticides, herbicides, or fertilizers; construction; clearing; or alteration activities shall occur within the Easement Area without prior written approval from the City of Kirkland. Application for such written approval to be made to the Kirkland Department of Planning and Community Development who may require inspection of the premises before issuance of the written approval and following completion of the activities. Any person conducting or authorizing such activity in violation of this paragraph or the terms of any written approval issued pursuant hereto, shall be subject to the enforcement provisions of Chapter 170, Ordinance 3719, the Kirkland Zoning Code. In such event, the Kirkland Department of Planning and Community Development may also require within the immediate vicinity of any damaged or fallen vegetation, restoration of the affected area by planting replacement trees and other vegetation as required in applicable sections of the Kirkland Zoning Code. The Department also may require that the damaged or fallen vegetation be removed.

It is the responsibility of the property owner to maintain critical areas and their buffers by removing non-native, invasive, and noxious plants in a manner that will not harm critical areas or their buffers and in accordance with Kirkland Zoning Code requirements for trees and other vegetation within critical areas and critical area buffers.

The City shall have a license to enter the Easement Area (and the property if necessary for access to the Easement Area) for the purpose of monitoring compliance with the terms of this easement.

Development outside of this Natural Greenbelt Protective Easement may be limited by codified standards, permit conditions, or movement of the critical area.

Each of the undersigned owners agree to defend, pay, and save harmless the City of Kirkland, its officers, agents, and employees from any and all claims of every nature whatsoever, real or imaginary, which may be made against the City, its officers, agents, or employees for any damage to property or injury to any person arising out of the existence of said Natural Greenbelt Protective Easement over said owner's property or the actions of the undersigned owners in carrying out the responsibilities under this agreement, including all costs and expenses, and recover attorney's fees as may be incurred by the City of Kirkland in defense thereof; excepting therefrom only such claims as may arise solely out of the negligence of the City of Kirkland, its officers, agents, or employees.

This easement is given to satisfy a condition of the development permit approved by the City of Kirkland under Kirkland File/Permit No. _____, for construction of _____ upon the following described real property:

This easement shall be binding upon the parties hereto, their successors and assigns, and shall run with the land.

DATED at Kirkland, Washington, this _____ day of _____, _____.

(Sign in blue ink)

(*Individuals Only*)

OWNER(S) OF REAL PROPERTY (INCLUDING SPOUSE)

_____

_____

_____

(*Individuals Only*)

STATE OF WASHINGTON)
) SS.
County of King)

On this _____ day of _____, _____, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared _____and _____to me known to be the individual(s) described herein and who executed the Natural Greenbelt Protective Easement and acknowledged that _____ signed the same as _____free and voluntary act and deed, for the uses and purposes therein mentioned.
WITNESS my hand and official seal hereto affixed the day and year first above written.

_____
Notary's Signature

_____
Print Notary's Name
Notary Public in and for the State of Washington,
Residing at: _____
My commission expires: _____

(*Partnerships Only*)

OWNER(S) OF REAL PROPERTY

_____
(Name of Partnership or Joint Venture)

_____
By General Partner

_____
By General Partner

_____
By General Partner

(*Partnerships Only*)

STATE OF WASHINGTON)
) SS.
County of King)

On this _____ day of _____, _____, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared _____and _____ to me, known to be general partners of _____, the partnership that executed the Natural Greenbelt Protective Easement and acknowledged the said instrument to be the free and voluntary act and deed of each personally and of said partnership, for the uses and purposes therein set forth, and on oath stated that they were authorized to sign said instrument.

WITNESS my hand and official seal hereto affixed the day and year first above written.

_____
Notary's Signature

_____
Print Notary's Name
Notary Public in and for the State of Washington, Residing at: _____
My commission expires: _____

(Corporations Only)

OWNER(S) OF REAL PROPERTY

_____
(Name of Corporation)

_____
By President

_____
By Secretary

(*Corporations Only*)

STATE OF WASHINGTON)
) SS.
County of King)

On this _____ day of _____, _____, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared _____and _____ to me, known to be the President and Secretary, respectively, of _____, the corporation that executed the Natural Greenbelt Protective Easement and acknowledged the said instrument to be the free and voluntary act and deed of said corporation, for the uses and purposes therein set forth, and on oath stated that they were authorized to sign said instrument and that the seal affixed is the corporate seal of said corporation.

WITNESS my hand and official seal hereto affixed the day and year first above written.

_____
Notary's Signature

_____
Print Notary's Name
Notary Public in and for the State of Washington,
Residing at: _____
My commission expires: _____

SAVE HARMLESS AGREEMENT - WETLAND

The undersigned, being all of the owners of the hereinafter described real property, hereby agree to indemnify, defend, and save harmless the City of Kirkland, its officers and employees from any claim, real or imaginary, filed against the City of Kirkland, its officers, or employees, alleging damage or injury caused by fault on the part of the undersigned, their employees or agents, and/or the City of Kirkland, its officers, or employees and arising out of maintenance, flooding, damming or enlargement of the wetland existing on the hereinafter described real property; provided, however, this agreement shall not include damage resulting from the sole fault of the City of Kirkland, its officers, or employees. Fault as herein used shall have the same meaning as set forth in RCW 4.22.01. This Agreement shall also include all reasonable cost and expense, including attorney's fees, incurred by the City of Kirkland in investigation and/or defense of any such claim.

This Agreement shall be binding upon the heirs, successors, and assigns of the parties hereto and shall run with the land.

The real property subject to this Agreement is situated in Kirkland, King County, Washington, and described as follows:

DATED at Kirkland, Washington, this ____day of _____, _____.

(Sign in blue ink)

(*Individuals Only*)

OWNER(S) OF REAL PROPERTY (INCLUDING SPOUSE)

_____

_____

_____

(*Individuals Only*)

STATE OF WASHINGTON)
) SS.
County of King)

On this _____ day of _____, _____, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared _____and _____to me known to be the individual(s) described herein and who executed the Save Harmless Agreement for a Wetland and acknowledged that _____ signed the same as _____free and voluntary act and deed, for the uses and purposes therein mentioned.
WITNESS my hand and official seal hereto affixed the day and year first above written.

_____
Notary's Signature

_____
Print Notary's Name
Notary Public in and for the State of Washington,
Residing at: _____
My commission expires: _____

(*Partnerships Only*)

OWNER(S) OF REAL PROPERTY

_____
(Name of Partnership or Joint Venture)

_____
By General Partner

_____
By General Partner

_____
By General Partner

(*Partnerships Only*)

STATE OF WASHINGTON)
) SS.
County of King)

On this _____ day of _____, _____, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared _____and _____ to me, known to be general partners of _____, the partnership that executed the Save Harmless Agreement for a Wetland and acknowledged the said instrument to be the free and voluntary act and deed of each personally and of said partnership, for the uses and purposes therein set forth, and on oath stated that they were authorized to sign said instrument.

WITNESS my hand and official seal hereto affixed the day and year first above written.

_____
Notary's Signature

_____
Print Notary's Name
Notary Public in and for the State of Washington, Residing at: _____
My commission expires: _____

(Corporations Only)

OWNER(S) OF REAL PROPERTY

_____
(Name of Corporation)

_____
By President

_____
By Secretary

(*Corporations Only*)

STATE OF WASHINGTON)
) SS.
County of King)

On this _____ day of _____, _____, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared _____and _____ to me, known to be the President and Secretary, respectively, of _____, the corporation that executed the Save Harmless Agreement for a Wetland and acknowledged the said instrument to be the free and voluntary act and deed of said corporation, for the uses and purposes therein set forth, and on oath stated that they were authorized to sign said instrument and that the seal affixed is the corporate seal of said corporation.

WITNESS my hand and official seal hereto affixed the day and year first above written.

_____
Notary's Signature

_____
Print Notary's Name
Notary Public in and for the State of Washington,
Residing at: _____
My commission expires: _____

Subsurface Exploration, Geologic Hazards, and Design Recommendations

Introduction

The purpose of this study was to gain subsurface information to be utilized in the design and construction of a new single-family residence on the subject property. The proposed construction will consist of clearing and grading, foundation subgrade preparation, utility installation, building construction, driveway construction, and associated landscaping. Authorization to proceed with this study was provided by Mr. Jay Schlau. This report was prepared for Mr. Schlau and his agents for specific use in support of this project. The location of the subject property is shown in the attached Vicinity Map and the locations of the subsurface explorations completed for this study are shown in the attached Site and Exploration Plan.

Site Conditions

The subject property was located at 856 9th Avenue South (Parcel # 0120000120) in Kirkland, Washington. The subject property was rectangular and was approximately 233 feet in the north-south direction and 109 feet in the east-west direction. Based on a review of the King County Department of Assessments records, the property was 0.59 acres (25,501 square feet) in size. The property was flat to very gently sloping, and based on review of the site survey there the total relief on the property was on the order of 5 to 6 feet. The property was bordered to the west and south by other single-family residences, and to the north and east by undeveloped land. There was a public trail adjacent to the subject property along the east property line.

The subject property had not been developed, but we presume that it had been previously logged. Vegetation on site consisted of typical Pacific Northwest second growth forest and ground cover vegetation; Western Red Cedar, Douglas Fir, alder, and maple trees were present as well as ground cover consisting of ferns, blackberry vines, and others. During our site reconnaissance, we did not observe evidence of soil settlement or soil movement.

Subsurface Conditions

Subsurface conditions on the property were inferred from a visual reconnaissance of the property, a review of the referenced geologic map (Minard, 1983), referenced online resources, and 3 hand auger boring explorations. The hand auger borings were advanced using a shovel and a hand auger to produce disturbed but representative samples of the soil. Observations of the in-situ relative density of the soil were made as the borings were advanced. The hand auger borings were logged by the undersigned licensed engineering geologist and immediately backfilled. The locations of the

subsurface explorations are shown in the Site and Exploration Plan and the hand auger boring logs are attached to this report. We interpret the native, near surface sediments as Vashon lodgement till sediments, and our interpretation is in agreement with the referenced geologic map.

Stratigraphy

Vashon Lodgement Till
Soils we interpret to be Vashon lodgement till sediments were encountered in all the explorations performed for this study. The lodgement till sediments generally consisted of medium dense, moist to saturated, light brown-gray to gray, fine to medium SAND with gravel and varying amounts of silt (SP, SP-SM & SM)). Lodgement till is a dense, poorly sorted mixture of clay, silt, sand, and gravel that was deposited at the sole of the Vashon glacial ice. Vashon lodgement till sediments, due to their glacially consolidated nature, are relatively dense in place, have low permeability, and are moderately to highly resistant to erosion.

Hydrology
We did not observe ponded water at the ground surface during our site reconnaissance. Groundwater seepage was observed in all the hand auger borings performed for this study. The subject property is significantly encumbered by Type 2 Secondary Basin wetlands (classified by others) and the proposed project will require a reasonable use exception for the wetlands present. However, it is our opinion that the wetlands and groundwater conditions will not significantly impact the proposed construction and the wetlands and shallow groundwater can be mitigated by following the subsequent design and drainage recommendations in this report.

Geologic Hazards

The following discussion of potential geologic hazards is based on the visual reconnaissance of the site, the subsurface explorations, reviews of aerial photographs and regional topographic and geologic maps of the area, review of the King County iMap Sensitive Area maps, review of the City of Kirkland geologic hazard mapping overlays, review of the Kirkland Municipal Code (KMC) and Kirkland Zoning Code (KZC), and review of other applicable maps available online.

Erosion Hazard Area/Erosion Concerns
Due to the generally flat topography of the site, there are no slopes in excess of 15 percent. As such, the subject property does not fulfill the criteria for an erosion hazard area, as defined in KZC Chapter 85.13(2).

Though special mitigations are not necessary, a temporary erosion and sediment control (TESC) plan should be created and implemented during site construction. With the limited earthwork associated with this project, it is our opinion that implementation of a relatively basic erosion

control plan will prevent off site sediment transport. The following is a partial list of BMPs that should be implemented:

- Perimeter controls, as appropriate
- Keeping exposed soils and stockpiles covered when not actively worked
- Stabilize soils upon completion of earthwork
- Sweep any sediment track-out, as required

Implementation of a TESC plan will likely be a requirement of the clearing and grading or building permit. TESC inspections during construction to verify compliance with the TESC plan and permit conditions may be required by the City of Kirkland during construction. South Fork Geosciences is available to assist with the TESC plan design and to provide recommendations during construction for maintenance and enhancement of the TESC measures to aid in compliance, if needed.

Landslide Hazard Areas

Due to the generally flat topography of the subject property, and lack of steep slopes adjacent to the subject property (greater than 300 feet away), there are no steep slope or landslide hazards associated with the subject property and therefore no mitigation is required.

Seismic Hazards

Upon review of the geology overlays on the City of Kirkland Public GIS, the northern portion of the property is mapped as a seismic hazard area. We could not find the GIS metadata on the City of Kirkland website, but we presume that this mapping is due to the presence of wetlands and the presumption that the soils are saturated and is prone to liquefaction. Based on the observed density (medium dense) of the native soils, it is our opinion that the geologic conditions do not constitute a seismic hazard area, and we are unaware of any other site specific geologic conditions that would constitute a seismic hazard. Though it is our opinion that there are not any seismic hazards that require special mitigation, this report will address general seismic hazards and risks associated with a seismic event with respect to project design.

Generally, there are four types of potential geologic hazards associated with large seismic events: 1) ground rupture; 2) seismically induced landslides; 3) liquefaction; and 4) ground motion. The potential for each of these to impact the site is discussed below.

Ground Rupture

Most large earthquakes in the Puget Sound area are sub-crustal events with epicenters ranging from 50 to 70 kilometers in depth. To our knowledge, there are no signs of past ground rupture or a known fault in the immediate vicinity of the subject property. Based on the stratigraphy present and the nature of the regional seismicity, it is our opinion that the probability of surface rupture impacting the subject property is low, and no mitigations are necessary.

Seismically Induced Landslides
Due the topography and absence of steep slopes on the subject property, it is our opinion that there is no potential for seismically induced slope failures on the site. Since nearby steep slopes are over 300 feet away from the subject property and are on the order of 50 feet in vertical height, it is our opinion that the risk of seismically induced landslides from adjacent properties affecting the subject property is extremely low and no special mitigation is required.

Liquefaction
Liquefaction is a condition where loose, saturated, fine sandy soils lose their shear strength due to rapid pore pressure build-up when subjected to high intensity cyclic loads, such as occur during earthquakes. Though the shallow soils are saturated, due to the medium dense, native soils encountered in the subsurface explorations, the liquefaction potential of this site is low, and no mitigations are necessary.

Ground Motion
Seismic hazards that will affect the structure would likely be due to the intensity and duration of the ground shaking. The structural design of the project should be consistent with 2012 International Building Code (2012 IBC) guidelines (Section 1613). Based on the results of our subsurface explorations and our estimation of soil properties at depth utilizing available geologic data, Site Class "C" may be used for the design of the project, as defined by ASCE 7 "Minimum Design Loads for Buildings and Other Structures", Chapter 20.

Design Recommendations

Our study indicates that the subject property is suitable for the proposed development, provided the risks discussed are accepted and the recommendations contained herein are properly followed. The near-surface, medium dense Vashon lodgement till sediments will can provide support for the proposed single-family home. Conventional spread footings to bear on medium dense natural sediments, or on approved structural fill soil, may be utilized to provide foundation support. To aid in the design of the project, the following general recommendations for site development are provided. South Fork Geosciences is available for further consultation with respect to specific design items, if needed.

Site Preparation and Site Grading
It is likely that structural fill soils will be required to establish grades for the project. Any fill soil placed beneath a foundation, retaining wall, or driveway/parking area must be constructed as a structural fill. Any existing fill soils or loose soils should be removed and replaced with structural fill as described below.

Structural fill is defined as non-organic soil, placed in horizontal loose lifts, with each lift being compacted to at least 95 percent of the maximum dry density, using the modified Proctor test

(ASTM: D1557) as the standard. Prior to placing any structural fill, the exposed soils must either be undisturbed or be compacted to a dense, non-yielding condition and be approved for structural fill placement. In the case of utility trench filling, the backfill should be placed and compacted in accordance with the applicable municipal or utility company standards.

Fill soils should be predominantly free of organics and other deleterious material and should be appropriately moisture conditioned when placed and compacted. Placement and compaction of the structural fill should be monitored by a competent field technician. Construction observations and in-situ density testing should be performed during fill placement to verify proper compaction of the fill soil. A sample of the planned structural fill soil will need to be available at least 48 hours prior to fill placement for laboratory analysis.

Temporary cut slopes may be necessary to allow the installation of the foundations and for utility installation. Temporary cut slopes should be limited to 1H:1V (Horizontal:Vertical) in the Vashon lodgement till sediments. Stability of the cut slopes is the responsibility of the on-site contractor and a safe work environment should be maintained at all times. A trench shield or trench box should be used to install all utilities over 4 feet in depth or the sides of the trench should be suitably sloped back per OSHA/WISHA standards.

Foundations

Spread footings may be used for building support when founded on medium dense native soils or approved structural fill soils. Due to the saturated soils, we recommend that an allowable bearing pressure of 1,500 pounds per square foot (psf) be utilized for design purposes, including both dead and live loads. An increase of one-third may be used for short-term wind or seismic loading. Perimeter footings should be buried at least 18 inches into the surrounding soil for frost protection; interior footings require only 12 inches burial. All footings must be constructed on the prescribed bearing stratum, and no footing should be founded in or above loose, organic, or existing fill soils.

Anticipated settlements of footings founded on medium dense native soils should be less than 1 inch. Loose or disturbed surface soils, excessive moisture present or poor foundation subgrade preparation could result in larger settlements. South Fork Geosciences should perform a foundation bearing evaluation prior to concrete placement to verify that the design bearing capacity of the soil has been attained. Foundation bearing evaluation will likely be required by the City of Kirkland as a condition of the building permit.

Lateral loads can be resisted by friction between the foundation and the supporting soils, and/or by passive earth pressure acting on the buried portions of the foundations. The spread footings must be backfilled with structural fill compacted to a dense, non-yielding condition to achieve the passive resistance provided below. The structural fill must extend horizontally outward from the

embedded portion of the foundation a distance equal to at least three times the embedment depth over which the passive resistance is applied. We recommend the following design parameters:

- Passive equivalent fluid = 250 pcf
- Coefficient of friction = 0.30

The above values are allowable and include a factor of safety of at least 1.5.

Differing Site Conditions/Potential Soft Soils

Hand auger borings were chosen as the method of subsurface exploration rather than excavation or drilling because we were confident that the soils were mapped correctly based on previous nearby experience and we did not want to adversely impact the wetlands during our study. Though we are confident in our assessment of the subsurface conditions, hand auger borings provide a very limited view of the subsurface conditions. Once exposed through grading and excavation, differing conditions may be present. In the event that soft soils or other adverse subsurface conditions are encountered during construction, additional recommendations or alternative foundation design may be required. We presume that South Fork Geosciences will be onsite during construction and will be available for further consultation if required.

Retaining Walls

Based on the relatively flat topography of the site, we do not anticipate the need for significant retaining walls to be used for grade separation on the project. South Fork Geosciences should be contacted to review any retaining walls that are in excess of 4 feet in height.

Floor Support

We anticipate that the new home will utilize a combination of slab-on-grade floors and structural/crawl space-type floors. Slab-on-grade concrete floors should be cast atop a prepared subgrade of structural fill soil compacted to a minimum of 90 percent of the modified Proctor maximum dry density or be firm, non-yielding native sediments. A capillary break should be placed atop the prepared subgrade consisting of pea gravel, ¾" washed drain rock, or clean crushed rock with less than 5 percent fines (material passing the No.200 sieve). The capillary break will reduce the potential for moisture wicking through the floor slab. A 10-mil thick plastic vapor barrier should also be placed atop the capillary break material. All concrete placement should follow the guidelines set forth by the American Concrete Institute (ACI). In areas that structural/crawl space-type floors are used the soil surface should be covered with a minimum 10-mil thick moisture barrier.

Drainage Considerations

Foundation Drainage

Due to the proximity of the proposed home to the wetlands, it is our opinion that typical foundation drainage such as perimeter foundation drains will not have gravity fall to a point of discharge. As such, perimeter foundation drains do not need to be installed. Since perimeter

foundation drainage is not possible, we recommend that the interior soil backfill in crawlspaces should be at least 6 above the exterior final grades. Concrete stem walls may need to be taller than typical construction to facilitate this. As a standard of practice, exterior final grades should slope slightly away from the foundation stem walls. We also recommend that the electrical design for the home should include a dedicated circuit in the crawlspace for a sump pump, in the event a sump pump is needed after the home is constructed.

Stormwater Drainage
We presume that any stormwater generated from new impervious surfaces will be dispersed into the adjacent wetlands. Dispersion of stormwater into the wetlands is consistent with the existing hydrogeologic setting. We presume that downspout splash blocks may be utilized and a dispersion strip along the driveway will be utilized in the final design. South Fork Geosciences can provide additional consulting with respect to stormwater drainage upon request.

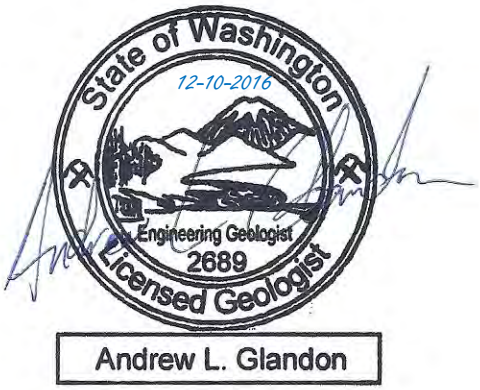
Closure

Our findings and recommendations provided in this report were prepared in accordance with generally accepted principles of engineering geology as practiced in the Puget Sound area at the time this report was submitted. We make no other warranty, either expressed or implied. Our observations, findings, and opinions are a means to identify and reduce the inherent risks to the owner.

We are available to provide additional design recommendations and consultation throughout the development of this project. We should be contacted to review architectural and civil engineering plans and to provide additional design team support for the planned development. We are also available to provide construction monitoring services during the development of the project for earthwork quality control and to help insure that the recommendations in this report are properly implemented.

We have enjoyed working with you and we are confident that this report will aid in the design of your project. If there are any questions, please feel free to contact us.

Sincerely,



Andrew L. Glandon, LEG, CPESC
Engineering Geologist / Owner
South Fork Geosciences, PLLC

Attachments: Vicinity Map
Site and Exploration Plan
Hand Auger Boring Logs

References:

"Geologic Map of the Kirkland Quadrangle, Kirkland, Washington", Minard, J.P., 1983, United States Geological Survey, Miscellaneous Field Studies, Map MF-1543

Subsurface Geology Information System, Washington Division of Geology and Earth Resources
https://fortress.wa.gov/dnr/protectiongis/geology/

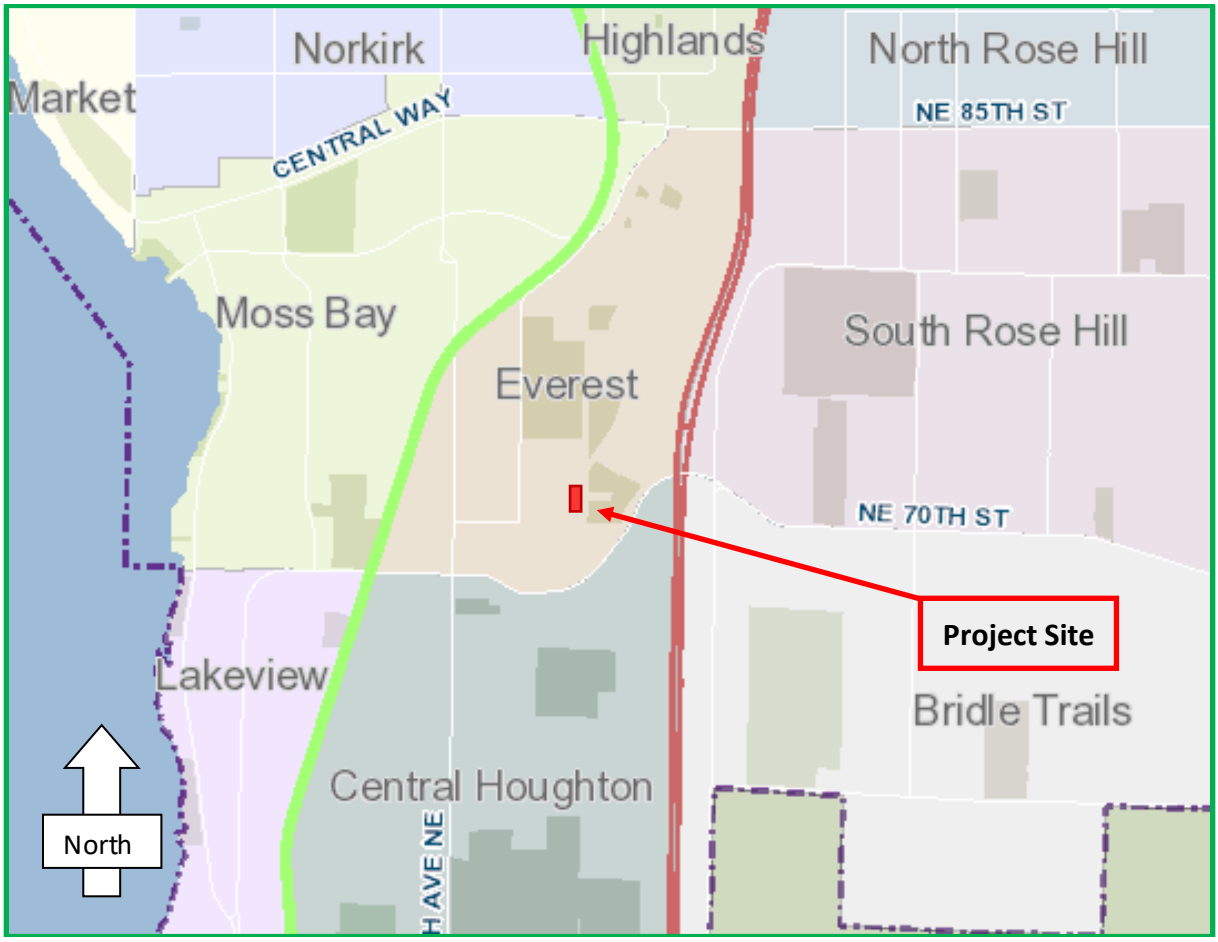
King County iMap Interactive Mapping Tool, http://gismaps.kingcounty.gov/iMap/

King County Department of Assessments Property Report,
http://blue.kingcounty.com/Assessor/eRealProperty/Dashboard.aspx?ParcelNbr=0120000120

City of Kirkland Public GIS
http://maps.kirklandwa.gov

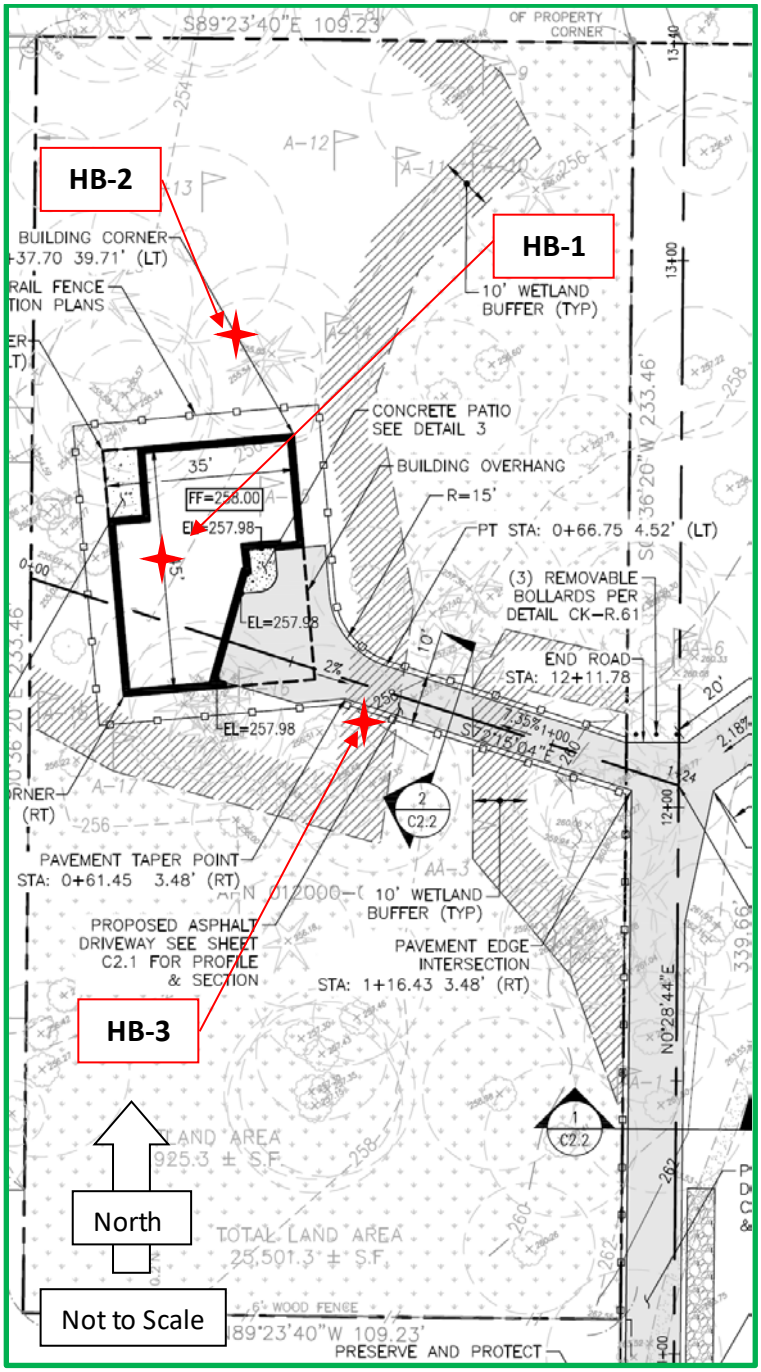
Kirkland Municipal & Zoning Code
http://www.codepublishing.com/WA/Kirkland/

USGS Interactive Fault Map, http://earthquake.usgs.gov/hazards/qfaults/map/



Source: City of Kirkland Public GIS

Vicinity Map



Source: Cecil Associates, "Schlau Residence: Layout, Paving and Grading Plan" Sheet C2.0

Site and Exploration Plan

Hand Auger Boring Log

Schlau Residence

Kirkland, Washington

Date: 5-27-2016

Number: **HB-1**

Depth (ft)	
0	**Forest Duff/Topsoil (0-4")**
	Vashon Lodgement Till
	loose, moist, gray-brown silty fine to medium SAND (SM)
1	medium dense, moist, light brown-gray fine to medium SAND with gravel and silt (SP-SM)
2	
3	
	medium dense, moist to wet, orange-brown fine to medium SAND, trace silt (SP)
4	- wet below 4ft
	medium dense, wet gray fine to medium SAND, trace silt (SP)
5	
6	
	saturated, medium dense, gray silty fine to medium SAND with gravel (SM)
7	Total Depth = 7 ft (Refusal)
	Groundwater at 4ft bgs after excavation
	No caving observed

The subsurface conditions shown on this field log represent our observations at the time and location of excavation, modified by geologic interpretation and judgment, and where noted, by engineering analysis and laboratory testing. The conditions shown may not be representative of conditions at other times. South Fork Geosciences will not be responsible for use or interpretation by others of information presented on these logs.

South Fork Geosciences, PLLC

PO Box 1275
North Bend, WA 98045

Phone: (425) 831-2023

Project # 16061

Hand Auger Boring Log

Schlau Residence

Kirkland, Washington

Date: 5-27-2016

Number: **HB-2**

Depth (ft)	
0	**Forest Duff/Wood Debris (0-4")**
	Vashon Lodgement Till
	loose, moist, brown fine to medium SAND with silt (SP-SM)
1	medium dense, moist, light brown fine to medium SAND with silt, some brown mottling (SP-SM)
2	
3	- becomes wet and brown-gray, no mottling
4	
5	medium dense, wet, gray silty fine SAND, trace gravel (SM)
	Total Depth = 5.75 ft (Refusal)
6	Groundwater at 5ft bgs after excavation
	No caving observed
7	

The subsurface conditions shown on this field log represent our observations at the time and location of excavation, modified by geologic interpretation and judgment, and where noted, by engineering analysis and laboratory testing. The conditions shown may not be representative of conditions at other times. South Fork Geosciences will not be responsible for use or interpretation by others of information presented on these logs.

South Fork Geosciences, PLLC

PO Box 1275
North Bend, WA 98045

Phone: (425) 831-2023

Project # 16061

Hand Auger Boring Log

Schlau Residence

Kirkland, Washington

Date: 5-27-2016

Number: **HB-3**

Depth (ft)	
0	**Forest Duff/Topsoil (0-4")**
	Vashon Lodgement Till
	loose, moist, gray-brown silty fine to medium SAND (SM)
1	medium dense, moist, light brown-gray fine to medium SAND with gravel and silt (SP-SM)
2	- minor seepage at 2.5ft - some clasts of silty fine SAND present
3	medium dense, wet to saturated, gray fine to medium SAND, trace gravel, trace silt (SP)
4	- some orange-brown oxidation from 4 to 5ft
5	medium dense, wet, gray silty fine SAND, trace gravel (SM)
6	
	Total Depth = 6.5 ft (Refusal) Groundwater at 3.5 ft bgs after excavation
7	No caving observed

The subsurface conditions shown on this field log represent our observations at the time and location of excavation, modified by geologic interpretation and judgment, and where noted, by engineering analysis and laboratory testing. The conditions shown may not be representative of conditions at other times. South Fork Geosciences will not be responsible for use or interpretation by others of information presented on these logs.

South Fork Geosciences, PLLC

PO Box 1275
North Bend, WA 98045

Phone: (425) 831-2023

Project # 16061