CITY OF KIRKLAND
Planning and Building Department
123 5th Avenue, Kirkland, WA 98033
425.587.3600 - www.kirklandwa.gov

ADVISORY REPORT
FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

To: Kirkland Hearing Examiner

From: Allison Zike, AICP, Project Planner

Eric R. Shields, AICP, Planning Director

Date: July 26, 2018

File: SAR16-02993

Hearing Date and Place: August 2, 2018, 9:00 a.m. or as soon thereafter as possible
City Hall Council Chamber
123 Fifth Avenue, Kirkland

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INTRODUCTION

A. APPLICATION

1. Applicant: Robert King of Wetlands Northwest LLC
2. Site Location: 10265 124th Avenue NE (see Attachment 1)
3. Request: Proposal to modify a Type II wetland buffer through wetland buffer averaging using the Critical Areas Ordinance in effect at the time of application (Dec. 16, 2016) in order to construct one detached dwelling unit (see Attachment 2).
4. Review Process: Process IIA, Hearing Examiner conducts public hearing and makes final decision
5. Summary of Key Issues and Conclusions: Compliance with the applicable wetland buffer modification criteria of KZC 90.60 (see Attachment 3).

B. RECOMMENDATIONS

Based on Statements of Fact and Conclusions (Section II), and Attachments in this report, I/we recommend approval of this application subject to the following conditions:

1. This application is subject to the applicable requirements contained in the Kirkland Municipal Code, Zoning Code, and Building and Fire Code. It is the responsibility of the applicant to ensure compliance with the various provisions contained in these ordinances. Attachment 4, Development Standards, is provided in this report to familiarize the applicant with some of the additional development regulations. This attachment does not include all of the additional regulations. When a condition of approval conflicts with a development regulation in Attachment 4, the condition of approval shall be followed.
2. With the building permit application for a new detached dwelling unit, the applicant shall:
   a. Submit plans consistent with the reviewed and approved plan set and mitigation plans in Attachment 2, 8, 10, 12, and 14 as part of the building permit application (see Conclusions II.C.1.b and II.C.2.b).
   b. Submit plans with the City Arborist's recommendations found in Attachment 4 (see Conclusion II.D.1.b).
3. Prior to issuance of the building permit, the applicant shall:
   a. Install a 6-foot-high construction-phase chain link fence along the upland boundary of the entire stream buffer with silt screen fabric at the base (see Conclusion II.C.1.b).
   b. Submit for recording a covenant that indemnifies the City for any claims, actions, liability and damages to wetlands arising out of development activity related to the sensitive areas on the subject property (see Attachment 16) (see Conclusion II.C.1.b).
   c. Submit to the Planning and Building Department a financial security device to cover all monitoring and maintenance activities that will need to be done including wetland consultant site visits, reports to the Planning Department, and any vegetation that needs to be replaced. The security shall be consistent with the standards outlined in the effective Zoning Code, section 90.145 (see Conclusion II.C.1.b).

d. Submit documentation to record a Natural Greenbelt Protective Easement over the wetland and wetland buffer areas on the subject property with land survey information in a format approved by the Planning Official (see Attachment 17) (see Conclusion II.C.3.b).

II. FINDINGS OF FACT AND CONCLUSIONS

A. SITE DESCRIPTION

1. Site Development and Zoning:

a. Facts:

(1) Size: 76,230 SF / 1.75 Acres

(2) Land Use: The subject property is currently developed with one detached dwelling unit, an accessory structure (shed), and large areas of pavement located within the existing wetland buffer (see Attachment 5).

(3) Zoning: RSX 7.2, Single-family Residential

(4) Terrain: The site slopes down gently from east to west at a fairly consistent grade of less than 5% over approximately 345 feet until reaching the surveyed boundary of the wetland (see Attachment 5).

(5) Vegetation: There are 40 significant trees on site, of which 8 may be impacted by the wetland buffer averaging and future development of a detached dwelling unit. The applicant has submitted an arborist report prepared by A.B.C. Consulting Arborists LLC and dated August 25, 2016 (see Attachment 6).

(6) Wetland: The on-site wetland was classified and delineated by the City's consulting biologist, The Watershed Company (TWC), using a previously effective version of the City's critical area ordinance (KZC Chapter 90, see Attachment 3), which this project is vested under. Under the applicable critical areas ordinance, wetlands are classified based on the wetland type and its basin designation. TWC classified the wetland as a Type 2 wetland within a primary drainage basin, with a standard wetland buffer width of 75 feet and 10-foot buffer setback (see Attachment 7).

b. Conclusions: Lot size, land use, zoning, terrain, and vegetation are not constraining factors in consideration of this application. The on-site wetland is a constraining factor and compliance with the wetland buffer averaging criteria is provided in Section II.C.1 below.

2. Neighboring Development and Zoning:

a. Facts: Zoning and existing uses adjacent to the subject property are as follows:

North RSX 7.2, Single-family residences

South: RSX 7.2, Multi-family residences

East: RSX 7.2, Single-family residences

West: RSX 7.2, Multi-family residences

b. Conclusion: Neighboring development and zoning are not constraining factors in consideration of this application.

B. PUBLIC COMMENT

The public comment period for the project ran from February 9, 2017 to February 27, 2017. No comments were received during the public comment period.

C. APPROVAL CRITERIA

1. MODIFICATION OF A TYPE 2 WETLAND BUFFER

a. Facts:

(1) Per the effective code, the wetland on the subject property is a Type 2 wetland requiring a 75-foot buffer. Per KZC 90.45.2, structures shall be set back at least 10 feet from the designated or modified wetland buffer (see Attachment 3).

(2) Applying the 75-foot buffer and 10-foot structure setback to the subject property results in a long and narrow buildable area. Accounting for the required front yard setback of 20 feet and the 10-foot structure setback, approximately 80% of the length of the buildable area (approximately 175 linear feet out of 218 linear feet) is an average of approximately 18 feet wide (see Attachment 5).

(3) The applicant's proposed buffer averaging modification would create a more uniform, rectangular, buildable area that is 60 feet wide after accounting for the 10-foot structure setback (see Attachment 2).

(4) The applicant is proposing a wetland buffer modification through averaging, per KZC 90.60.2.a.1. Buffer averaging requires that the area of the buffer resulting from the buffer averaging is equal in size and quality to the buffer area calculated by the standards specified in KZC 90.45.1. Buffers may not be reduced at any point by more than one-third of the standards specified in KZC 90.45.1. Buffer averaging calculations shall only consider the subject property.

(5) The applicant is proposing to reduce 3,974 SF of buffer area, and add 3,989 SF of buffer area through averaging, for a net buffer increase of 15 SF (see Attachment 2).

(6) The wetland buffer width is being reduced by a maximum of 25 feet, which is no more than one-third of the standard 75-foot buffer (see Attachment 2).

(7) Zoning Code section 90.60.2.b establishes nine decisional criteria for approving an improvement or land surface modification in a wetland buffer. The applicant's response to the criteria is included as Attachment 8. The decisional criteria are as follows:

- Criterion 1: It is consistent with *Kirkland's Streams, Wetlands and Wildlife Study* (The Watershed Company, 1998) and the *Kirkland Sensitive Areas Regulatory*

Recommendations Report (Adolfson Associates, Inc. 1998).

- Criterion 2: It will not adversely affect water quality.
- Criterion 3: It will not adversely affect fish, wildlife, or their habitat.
- Criterion 4: It will not have an adverse effect on drainage and/or storm water detention capabilities.
- Criterion 5: It will not lead to unstable earth conditions or create erosion hazards.
- Criterion 6: It will not be materially detrimental to any other property or to the City as a whole.
- Criterion 7: Fill material does not contain organic or inorganic material that would be detrimental to water quality or to fish, wildlife, or their habitat.
- Criterion 8: All exposed areas are stabilized with vegetation normally associated with native wetland buffers, as appropriate.
- Criterion 9: There is no practicable or feasible alternative development proposal that results in less impact to the buffer.

(8) Applicant-prepared reports, and review by the City's consulting qualified critical area professionals, The Watershed Company (TWC), proceeded as follows:

(a) Initial response to the wetland buffer averaging criteria and a mitigation and monitoring plan prepared by Wetlands Northwest, LLC, dated January 23, 2017 (see Attachment 8).

(b) TWC review letter #1 dated March 20, 2017 (see Attachment 9).

(c) Response to TWC's first round comments prepared by Wetlands Northwest, LLC, dated June 22, 2017 (see Attachment 10).

(d) TWC review letter #2 dated August 24, 2017 (see Attachment 11).

(e) Response to TWC's second round comments prepared by Wetlands Northwest, LLC, dated November 3, 2017 (see Attachment 12).

(f) TWC review letter #3 dated December 4, 2017 (see Attachment 13).

(g) Stormwater outfall memorandum prepared by Civil Engineering Solutions, dated June 25, 2018 (see Attachment 14).

(h) TWC final approval of the applicant's complete proposal dated June 29, 2018 (see Attachment 15).

(9) Pursuant to KZC 90.50, prior to beginning development activities, the applicant is required to install a 6-foot-high

construction phase chain link fence or equivalent fence, along the upland boundary of the entire wetland buffer with silt screen fabric installed per City standard. The construction-phase fence shall remain upright in the approved location for the duration of development activities install. Upon project completion, the applicant is required to install a permanent 3- to 4-foot-tall split rail fence at the buffer line.

(10) Pursuant to KZC 90.145, the Planning Official shall require a performance or maintenance bond to ensure compliance with any aspect of this chapter or any decision or determination made pursuant to this chapter.

(11) KZC 90.155 requires applicants to enter in to an agreement with the City indemnifying the City from any claims, actions, liability and damages to streams arising out of development activity on the subject property (see Attachment 16).

b. Conclusions: Pursuant to the attachments included with this report which include the proposed site plan, buffer averaging and mitigation plan, and monitoring and maintenance plans (see Attachments 8, 10, and 12, and the review letters from TWC (see Attachments 9, 11, and 13), the proposed development is consistent with the decisional criteria for buffer modifications as indicated in the effective KZC Chapter 90 (see Attachment 3), subject to the following conditions:

(1) With the building permit application the applicant should submit plans consistent with the reviewed and approved plan set and mitigation plans in Attachments 2, 8, 10, and 12.

(2) Prior to issuance of the building permit, the applicant should:

(a) Install a 6-foot-high construction-phase chain link fence along the upland boundary of the entire stream buffer with silt screen fabric at the base. Installation of the permanent fence or planted barrier should be done by hand where necessary to prevent machinery from entering the stream or its buffer. The construction-phase fence should remain upright in the approved location for the duration of development activities.

(b) Submit for recording a covenant that indemnifies the City for any claims, actions, liability and damages to wetlands arising out of development activity related to the sensitive areas on the subject property (see Attachment 16).

(c) Submit to the Planning and Building Department a financial security device to cover all monitoring and maintenance activities that will need to be done including wetland consultant site visits, reports to the Planning and Building Department, and any vegetation that needs to be replaced. The security shall be consistent with the standards outlined in Zoning Code section 90.145.

(3) Prior to final inspection of the new home, the applicant should:

(a) Provide a final as built of the planted mitigation area for review by the City's consultant. The final inspection of the buffer mitigation installation and subsequent maintenance

and monitoring work should be reviewed by the City's wetland consultant, the cost of which should be borne by the applicant.

(b) Install a permanent 3- to 4-foot-tall split rail fence. The fence should be placed at the wetland buffer line.

(c) Provide proof of a written contract with a qualified professional who will perform the monitoring program, together with a completed contract and fees to fund review of the monitoring and maintenance activities, (i.e., inspection of plant materials, annual monitoring reports or re-vegetation activities) by the City's wetland consultant. Alternatively, the applicant shall provide a copy of a completed contract and fees to fund completion of the monitoring program by the City's wetland consultant.

2. STORM WATER OUTFALL

a. Facts:

(1) Per KZC 90.45.3, surface discharge of storm water through wetland buffers and buffer setbacks is required unless a piped system is approved pursuant to the criteria in KZC 90.45.3. Storm water outfalls (piped systems) may be located within the buffer setback when the City determines that surface discharge of storm water would clearly pose a threat to slope stability, and if the storm water outfall will not:

(a) Adversely affect water quality;

(b) Adversely affect fish, wildlife, or their habitat;

(c) Adversely affect drainage or storm water detention capabilities;

(d) Lead to unstable earth conditions or create erosion hazards or contribute to scouring actions; and,

(e) Be materially detrimental to any other property in the area of the subject property or to the City as a whole, including the loss of significant open space or scenic vistas.

(2) The applicant has proposed a 2 foot x 30 foot stormwater dispersion trench in the southwest corner of the proposed buildable area, within the 10-foot buffer setback (see Attachment 2, Sheet C2.0). A 4-inch diameter stormwater pipe will convey stormwater from the driveway and a downspout to the dispersion trench. The pipe is partially located within the buffer setback; therefore, requires approval through the above criteria.

(3) The applicant has submitted a memorandum prepared by Civil Engineering Solutions and dated June 25, 2018 that addresses slope stability/erosion and responds to the above criteria (see Attachment 14).

(4) TWC provided final approval of the applicant's complete proposal in an email to the City dated June 29, 2018 (see Attachment 15).

b. Conclusion: Pursuant to the stormwater outfall memo (see Attachment 14), and the review letter from TWC (see Attachment 15), the proposed

stormwater dispersion trench and piped system is consistent with the decisional criteria for non-surface discharge in the effective KZC Chapter 90.45.3 (see Attachment 3) provided that the applicant submit plans for the new single-family building permit consistent with the approved plans in Attachment 2.

3. NATURAL GREENBELT PROTECTIVE EASEMENT

a. Facts:

(1) Pursuant to KZC 90.150, consistent with law, the applicant shall dedicate development rights, air space, or grant a greenbelt protection or open space easement to the City to protect sensitive areas and their buffers. Land survey information shall be provided by the applicant for this purpose in a format approved by the Planning Official.

(2) The subject property contains areas of wetland and wetland buffer, with the buffer areas being adjusted through this wetland buffer averaging application.

(3) The property is zoned single-family residential, and may be developed with one detached dwelling unit within the buildable area outside of the adjusted wetland buffer.

b. Conclusion: Prior to issuance of the building permit for a detached dwelling unit, the applicant should submit documentation to record a Natural Greenbelt Protective Easement over the wetland and wetland buffer areas on the subject property with land survey information in a format approved by the Planning Official (see Attachment 17).

4. GENERAL ZONING CODE CRITERIA

a. Fact: Zoning Code section 150.65.3 states that a Process IIA application may be approved if:

(1) It is consistent with all applicable development regulations and, to the extent there is no applicable development regulation, the Comprehensive Plan; and

(2) It is consistent with the public health, safety, and welfare.

b. Conclusion: The proposal complies with the criteria in section 150.65.3 / 152.70.3. It is consistent with all applicable development regulations (see Sections II.D and F and the Comprehensive Plan (see Section II.E). In addition, it is consistent with the public health, safety, and welfare because it will allow development of the property while improving the quality and function of the sensitive area buffer.

D. DEVELOPMENT REGULATIONS

1. Natural Features - Significant Vegetation

a. Facts:

(1) Regulations regarding the retention of trees can be found in Chapter 95 of the Kirkland Zoning Code. The applicant is required to submit a Tree Retention Plan for review as part of the Process IIA review process.

(2) The applicant has submitted a Tree Retention Plan, prepared by

A.B.C. Consulting Arborists LLC and dated August 25, 2016 (see Attachment 6). The report addresses the health and viability of all trees on site and identifies trees for removal.

(3) The City's Development Review Arborist has reviewed the applicant's arborist report, and typed the trees according to their retention value. The City's typing of the trees and recommendations can be found in Attachment 4, Development Standards\

b. Conclusion: The applicant should submit plans with the building permit application that comply with the specific recommendations of the City's Arborist (see Attachment 4).

E. COMPREHENSIVE PLAN

1. Fact: The subject property is located within the North Rose Hill neighborhood. Attachment 18 shows the Comprehensive Plan Land Use of the subject property as LDR 6, Low-Density Residential.

2. Conclusion: The proposed wetland buffer averaging modification and future development of one detached dwelling unit is consistent with the Comprehensive Plan land use designation.

F. DEVELOPMENT STANDARDS

1. Fact: Additional comments and requirements placed on the project are found on the Development Standards, Attachment 4.

2. Conclusion: The applicant should follow the requirements set forth in Attachment 4.

III. SUBSEQUENT MODIFICATIONS

Modifications to the approval may be requested and reviewed pursuant to the applicable modification procedures and criteria in effect at the time of the requested modification.

IV. APPEALS AND JUDICIAL REVIEW

The following is a summary of the deadlines and procedures for appeals. Any person wishing to file or respond to an appeal should contact the Planning Department for further procedural information.

A. APPEALS

Appeal to City Council:

Section 150.80 of the Zoning Code allows the Hearing Examiner's decision to be appealed by the applicant and any person who submitted written or oral testimony or comments to the Hearing Examiner. A party who signed a petition may not appeal unless such party also submitted independent written comments or information. The appeal must be in writing and must be delivered, along with any fees set by ordinance, to the Planning Department by 5:00 p.m., _____, @(((fourteen (14) calendar days / twenty-one (21) calendar days))) following the postmarked date of distribution of the Hearing Examiner's decision on the application.

B. JUDICIAL REVIEW

Section 150.130 of the Zoning Code allows the action of the City in granting or denying this zoning permit to be reviewed in King County Superior Court. The petition for review must be filed within 21 calendar days of the issuance of the final land use decision by the City.

V. LAPSE OF APPROVAL

Under 150.135:

The applicant must begin construction or submit to the City a complete building permit application for the development activity, use of land or other actions approved under this chapter within five (5) years after the final approval of the City of Kirkland on the matter, or the decision becomes void; provided, however, that in the event judicial review is initiated per KZC 150.130, the running of the five (5) years is tolled for any period of time during which a court order in said judicial review proceeding prohibits the required development activity, use of land, or other actions.

The applicant must substantially complete construction for the development activity, use of land, or other actions approved under this chapter and complete the applicable conditions listed on the notice of decision within nine (9) years after the final approval on the matter, or the decision becomes void.

VI. APPENDICES

Attachments 1 through 18 are attached.

1. Vicinity Map
2. Approved Plans
3. Applicable Kirkland Zoning Code Chapter 90
4. Development Standards
5. Survey
6. Arborist Report prepared by ABC Consulting Arborists LLC, dated August 25, 2016
7. Wetland Classification Report prepared by The Watershed Company (TWC), dated July 14, 2015
8. Applicant Environmental Report v.1 prepared by Wetlands Northwest LLC, dated January 23, 2017
9. TWC Review v.1, dated March 20, 2017
10. Applicant Environmental Report v.2 prepared by Wetlands Northwest LLC, dated June 22, 2017
11. TWC Review v.2, dated August 24, 2017
12. Applicant Environmental Report v.3 prepared by Wetlands Northwest LLC, dated November 3, 2017
13. TWC Review v.3, dated December 4, 2017
14. Stormwater Outfall Memo prepared by Civil Engineering Solutions, dated June 25, 2018
15. Final TWC Approval, dated July 10, 2018
16. Wetland Save Harmless Agreement Template
17. Native Greenbelt Protective Easement Template
18. Comprehensive Plan Land Use Map

VII. PARTIES OF RECORD

Applicant
Planning and Building Department
Department of Public Works

A written decision will be issued by the Hearing Examiner within eight calendar days of the date of the open record hearing.

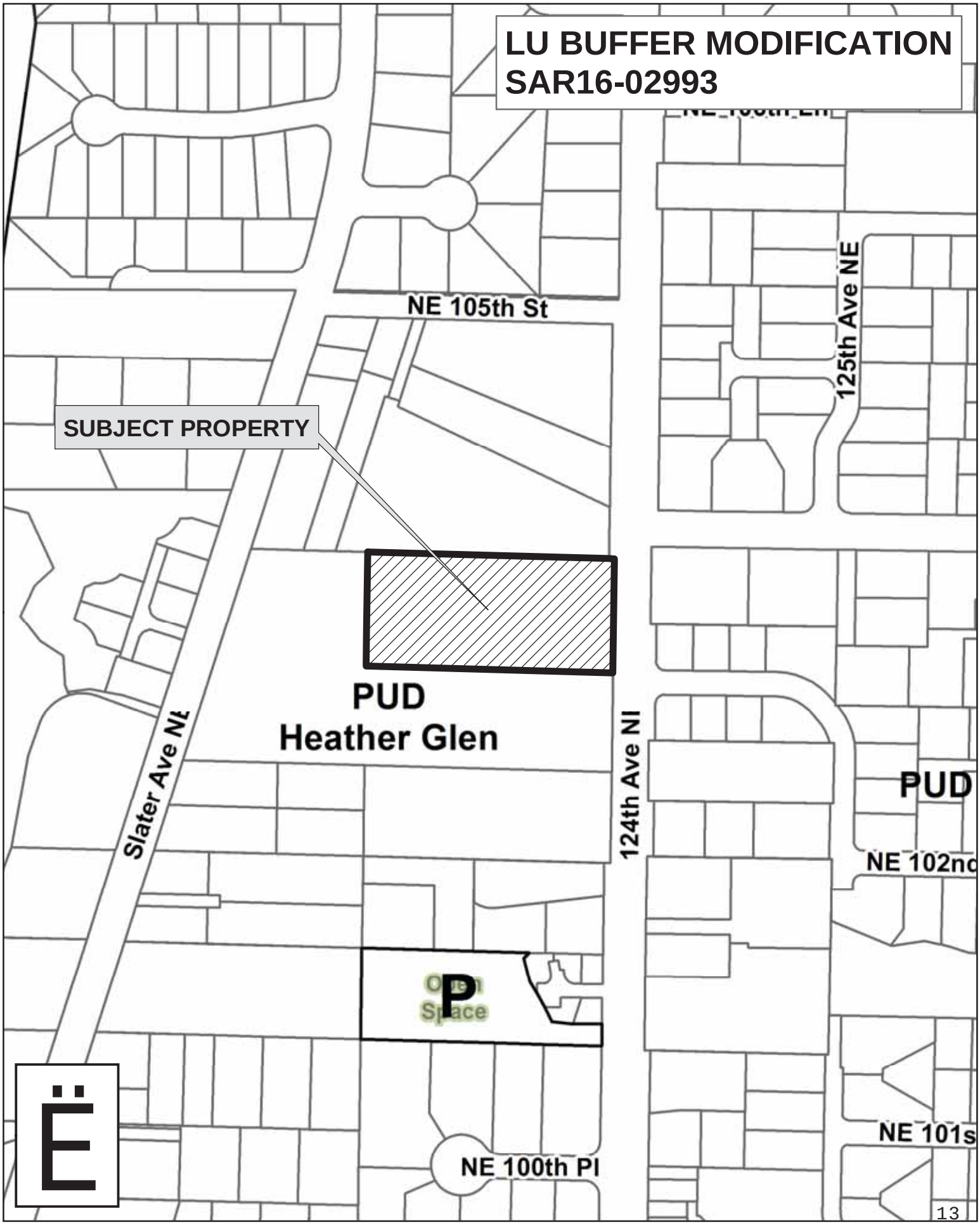
Review by Planning Director:

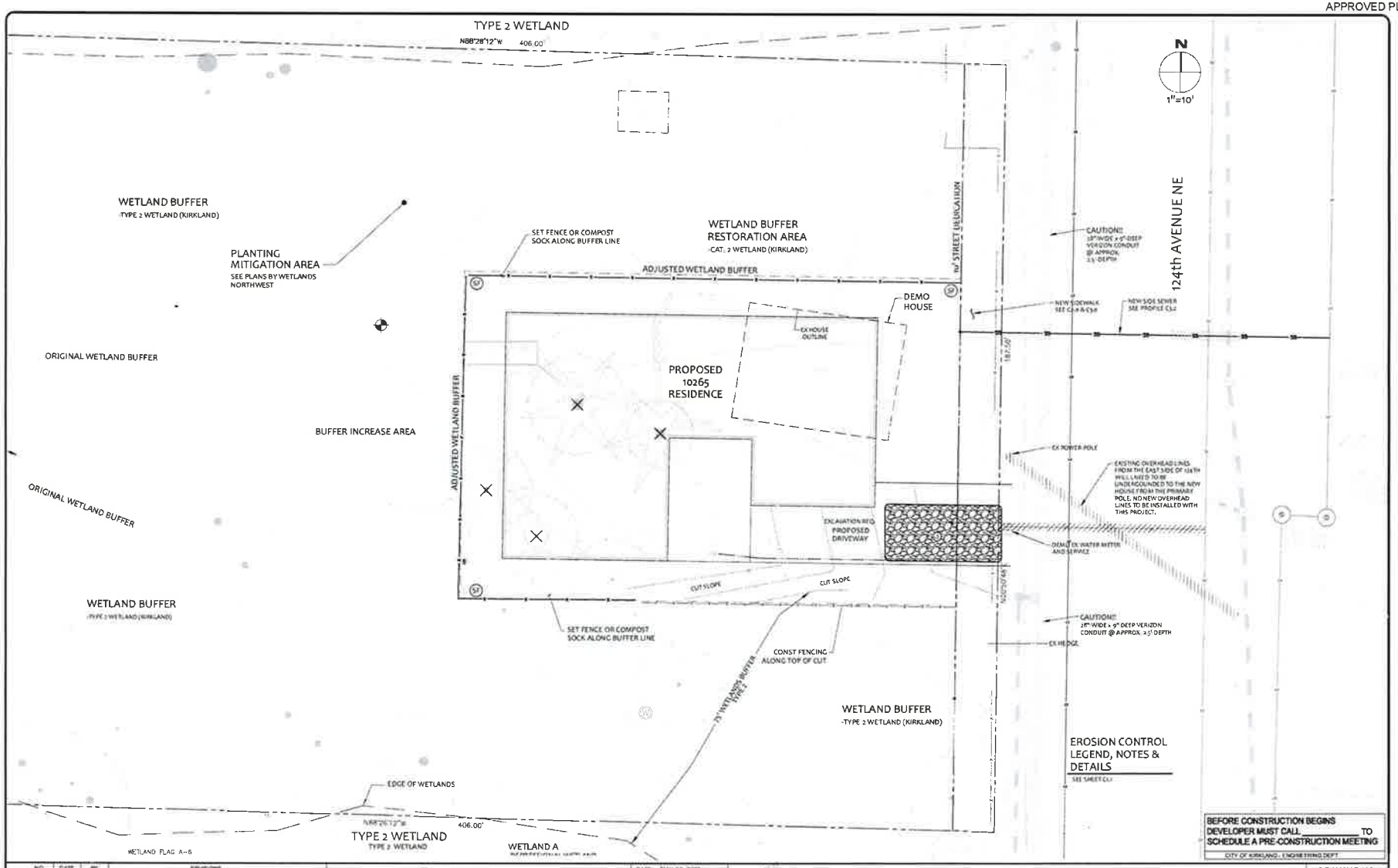
I concur [x] I do not concur [ ]

Comments: _____

_____

_____
For Eric R. Shields Date July 23, 2018


LU BUFFER MODIFICATION
SAR16-02993
NE 105th St
125th Ave NE
SUBJECT PROPERTY
PUD
Heather Glen
Slater Ave NE
124th Ave NE
PUD
NE 102nd
Open Space
P
NE 101st
NE 100th Pl



NO	DATE	BY	REVISIONS

APPLICANT
KUO

811 Know what's below. Call before you dig.

CITY OF KIRKLAND WASHINGTON

THIS DEVELOPMENT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE 2012 CITY OF KIRKLAND STANDARD SPECIFICATIONS AND DETAILS.

DATE: NOV 03, 2017
JOB#: 1525
DRAFTED CH DESIGN: SE
DIGITAL SIGNATURE

CIVIL ENGINEERING SOLUTIONS
3244 NW MARKET STREET, SUITE B SEATTLE, WA 98107
PHONE: 206.930.0342 DUFFY@CESOLUTIONS.US

TEMPORARY EROSION & SEDIMENT CONTROL

PROPOSED 10265 RESIDENCE
10265 124TH AVE NE, KIRKLAND 98033

DRAWING NO: C1.0

APN 663980-0280
BSF17-01267

SANITARY SEWER IMPROVEMENTS DETAILS C3.2

1. SHALLOW CROSSING - 8" DI SIDE SEWER STUB @ MIN 1.0% PER KIRKLAND DETAIL CK-S.19 AND CK-S.20. INSTALL MARKER POST PER CK S.18. (SEE FURTHER REQUIREMENTS ON PLAN ABOUT CENTERING PIPE STICK OVER EXISTING WATER.)
1. -
3. -
7. -

WATER IMPROVEMENTS

10. -1"X1" WATER SERVICE & METER PIT PER DETAIL CK-W.18.
11. -1.5" DIA WATER SERVICE, 250 PSI HDPE WATER (ASTM D2239) FROM METER TO HOUSE. RECOMMENDED MIN DEPTH=36". COORDINATE HOUSE ENTRY WITH BUILDER/OWNER
12. -
13. -
14. -

STORM DRAIN

20. 4" STORM DRAIN (3034 PVC) @ MIN 2.0% GRADE
21. -
22. -
23. -
24. -
25. -

STORM DRAIN STRUCTURES

30. -
31. -
32. -TYPE 1 CB WITH SOLID LID. MAX 5' RIM TO INVERT DEPTH
33. -
34. -
35. -
36. -
37. -
38. -NDS DURASLOPE CHANNEL DRAIN OR EQUAL. MINIMUM 6" DEEP CHANNEL WITH GALVANIZED GRATE.
39. -TYPE 1 CB PRIVATE CATCH BASIN PER KIRKLAND DETAIL CK-D.05A. INSTALL OVERFLOW PIPE OUT TO BUFFER.

STORMWATER FLOW CONTROL BMP's DETAILS C3.5

50. -RESTORE SOILS WITH COMPOST AMENDED SOIL PER CITY DETAIL CK-E.02 AND DOE BMP DETAIL T5-13. COORDINATE WITH LANDSCAPING CONTRACTOR.
51. -
52. -SPLASHBLOCK (FULL DISPERSION): MINIMUM 100' VEGETATED FLOWPATH PER 2016 KC SWDM C.2.13. SEE DETAIL (FIGURE C.2.12A) ON SHEET C3.5.
53. -24" WIDE X 18" DEEP GRAVEL FILLED DISPERSION TRENCH PER CITY DETAIL CK-D.27. SEE PLAN FOR LENGTH. SEE DETAIL SHEET C3.5.
54. -
55. -
56. -
57. -
58. -

STREET IMPROVEMENTS DETAILS C3.4

60. -
61. -5' WIDE PERVIOUS SIDEWALK PER DETAIL CK-L.06 ON SHEET C3.4
62. -DRIVEWAY PER DRIVEWAY DETAIL CK-R.21 ON SHEET C3.4. SEE ARCH PLAN FOR WIDTH.
63. -
65. -
67. -STREET TREE PER KIRKLAND DETAIL CK-R.48, C3.4 CENTER IN PLANTER STRIP. FOR TREE SELECTION, SEE KIRKLAND POLICY R-10.
68. -
70. -
71. -2" ASPHALT OVERLAY REQUIRED WHERE 3 OR MORE UTILITY TRENCHES CROSSINGS OCCUR WITHIN 150 LF STRETCH. CONFIRM WITH INSPECTOR.
72. -RESPONSIBILITY OF APPLICANT TO TO RELOCATE ANY ABOVE OR BELOW GROUND UTILITIES WHICH CONFLICT WITH STREET IMPROVEMENTS.
73. -
74. -

SURVEYOR

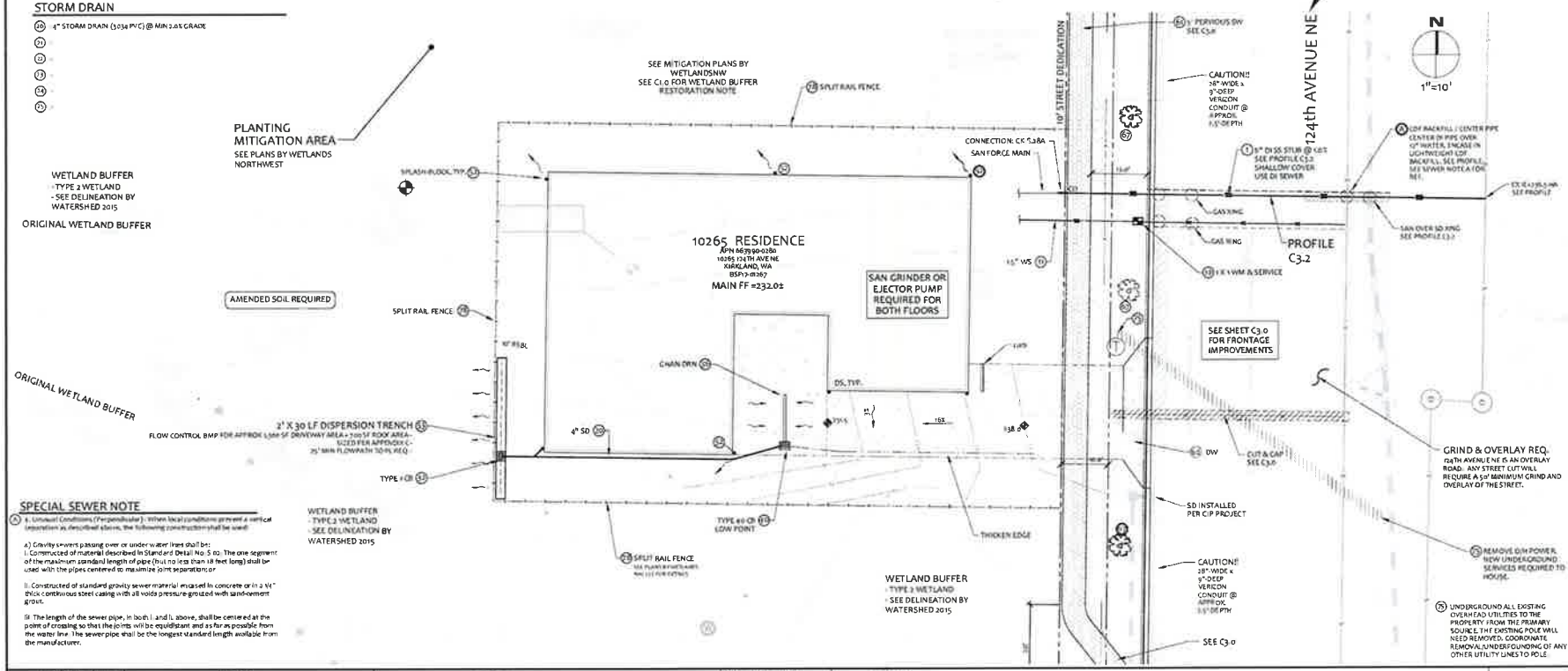
BOUNDARY & TOPOGRAPHIC SURVEY BY:
EASTSIDE CONSULTANTS, INC.
1320 NW MAIL STREET, SUITE B
ISSAQUAH, WA 98027
PH (425) 392 5351

BENCHMARK

CONTACT SURVEYOR FOR BENCHMARK.

OVERLAY NOTE

124TH AVENUE NE IS AN OVERLAY STREET. ANY STREET CUT WILL REQUIRE A 50' MINIMUM GRIND AND OVERLAY OF THE STREET.



SPECIAL SEWER NOTE

A. Unusual Conditions (Perpendicular): When local conditions prevent a vertical separation as described above, the following construction shall be used:

a) Gravity sewers passing over or under water lines shall be:

I. Constructed of material described in Standard Detail No. S 02. The one segment of the maximum standard length of pipe (but no less than 18 feet long) shall be used with the pipes centered to maximize joint separation; or

II. Constructed of standard gravity sewer material encased in concrete or in a 1/4" thick continuous steel casing with all voids pressure-grouted with sand-cement grout.

III. The length of the sewer pipe, in both I and II, above, shall be centered at the point of crossing so that the joints will be equidistant and as far as possible from the water line. The sewer pipe shall be the longest standard length available from the manufacturer.

NO.	DATE	BY	REVISIONS

APPLICANT: KUO

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CITY OF KIRKLAND WASHINGTON

THIS DEVELOPMENT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE 2017 CITY OF KIRKLAND STANDARD SPECIFICATIONS AND DETAILS.

DATE	Nov 13, 2017
JOB#	1525
DRAFTED CH	DESIGN DE
DIGITAL SIGNATURE	

CIVIL ENGINEERING SOLUTIONS
2244 NW MARKET STREET, SUITE B SEATTLE, WA 98107
PHONE: 206 930.0342 DUFFY@CESOLUTIONS.US

DRAINAGE/BMP PLAN

PROPOSED 10265 RESIDENCE
10265 124TH AVE NE, KIRKLAND 98033

DRAWING NO: C2.0

APN 863990-0280
BSF17-01267

STREET IMPROVEMENTS

DETAILS C3.4

(60) -TYPE A CURB & GUTTER PER KIRKLAND DETAIL CK-R.17, C3.4. FIELD FIT LIP OF GUTTER AT 2% CROSS-SLOPE FROM EXISTING EDGE OF PAVEMENT.

(61) -5' PERMEABLE SIDEWALK PER STD DETAIL CK-4.06

(62) DRIVEWAY CUT PER WSDOT DETAIL F-80.10-03. SEE PLAN FOR WIDTH. SEE C3.4 FOR WSDOT DETAIL. MAX SIDEWALK GRADE IS 8.3% (12:1) TO DRIVEWAY.

(63)

(64)

(65)

(66)

(67) -STREET TREES AT 30-FOOT ON CENTER PER KIRKLAND DETAIL CK-R.18, C3.4. CENTER IN PLANTER STRIP. FOR TREE SELECTION, SEE KIRKLAND POLICY R-10 TO FIND, GOOGLE" KIRKLAND PRE-APPROVED ROADWAY", LOOK FOR POLICY R-10 UNDER ROADWAY DETAILS.

(68)

(69)

(70) -2" ASPHALT OVERLAY REQUIRED WHERE 3 OR MORE UTILITY TRENCHES CROSSINGS OCCUR WITHIN 150 LF STRETCH. CONFIRM WITH INSPECTOR.

(72) -RESPONSIBILITY OF APPLICANT TO TO RELOCATE ANY ABOVE OR BELOW GROUND UTILITIES WHICH CONFLICT WITH STREET IMPROVEMENTS.

(73)

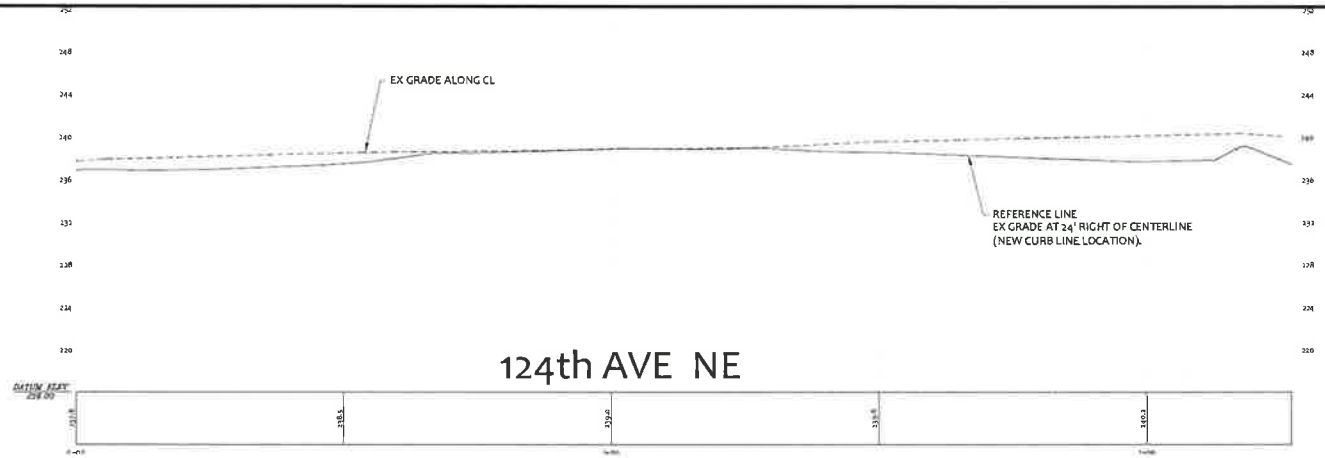
(74) -PAVEMENT PATCH PER KIRKLAND DETAIL CK-R.12. USE CLASS B HMA. EXCEED EXISTING PVMT DEPTH BY 1". MAX 6" DEPTH.

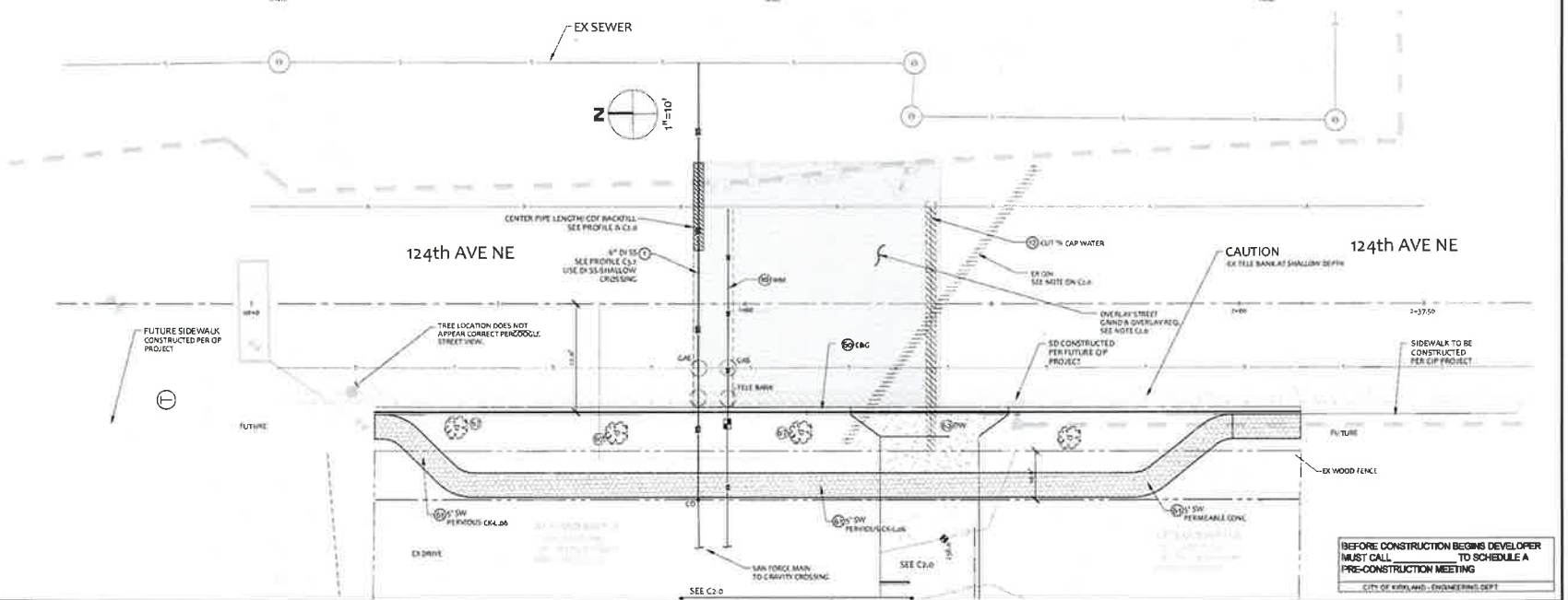
(75)

(76)

(77)

(78)





BEFORE CONSTRUCTION BEGINS DEVELOPER MUST CALL _____ TO SCHEDULE A PRE-CONSTRUCTION MEETING

CITY OF KIRKLAND - ENGINEERING DEPT

NO.	DATE	BY	REVISIONS

APPLICANT: KUO

811 Know what's below. Call before you dig.

CITY OF KIRKLAND WASHINGTON

THIS DEVELOPMENT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE 2012 CITY OF KIRKLAND STANDARD SPECIFICATIONS AND DETAILS.

DATE: Nov 03, 2017
JOB#: 1525
DRAFTED: CH DESIGN: DE
DIGITAL SIGNATURE

CIVIL ENGINEERING SOLUTIONS
1244 NW MARKET STREET, SUITE B SEATTLE, WA 98107
PHONE: 206 930 0342 DL.FTY@CESOLUTIONS.US

124th AVE NE IMPROVEMENTS

PROPOSED 10265 RESIDENCE
10265 124TH AVE NE, KIRKLAND 98033

DRAWING NO: C3.0

APN 663990-0280
BSF17-01267

CITY OF KIRKLAND STORM DRAINAGE PLAN NOTES

1. A PRE-CONSTRUCTION CONFERENCE SHALL BE HELD PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SECURING ALL NECESSARY PERMITS PRIOR TO CONSTRUCTION.

2. BEFORE ANY CONSTRUCTION MAY OCCUR, THE CONTRACTOR SHALL HAVE PLANS WHICH HAVE BEEN SIGNED AND APPROVED BY THE CITY OF KIRKLAND PUBLIC WORKS DEPARTMENT, OBTAINED ALL CITY, COUNTY, STATE, FEDERAL AND OTHER REQUIRED PERMITS, AND HAVE POSTED ALL REQUIRED BONDS.

3. ALL STORM DRAINAGE IMPROVEMENTS SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE LATEST EDITION OF THE CITY OF KIRKLAND PUBLIC WORKS PRE-APPROVED PLANS AND POLICIES AND THE STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND MUNICIPAL CONSTRUCTION, PREPARED BY WSDOT AND THE AMERICAN PUBLIC WORKS ASSOCIATION (APWA).

4. ANY DEVIATION FROM THE APPROVED PLANS WILL REQUIRE WRITTEN APPROVAL, ALL CHANGES SHALL BE SUBMITTED TO THE CITY.

5. A COPY OF THE APPROVED STORM WATER PLANS MUST BE ON THE JOB SITE WHENEVER CONSTRUCTION IS IN PROGRESS.

6. ALL DISTURBED AREAS SHALL BE SEEDED AND MULCHED OR SIMILARLY STABILIZED TO THE SATISFACTION OF THE CITY OF KIRKLAND DEPARTMENT OF PUBLIC WORKS FOR THE PREVENTION OF ON SITE EROSION AFTER THE COMPLETION OF CONSTRUCTION.

7. MINIMUM COVER OVER STORM DRAINAGE PIPES IN ROW OR VEHICULAR PATH SHALL BE 18 INCHES, UNLESS OTHER DESIGN IS APPROVED.

8. STEEL PIPE SHALL HAVE ASPHALT TREATMENT #1 OR BETTER INSIDE AND OUTSIDE.

9. ALL CATCH BASINS SHALL BE TYPE I UNLESS OTHERWISE NOTED. CATCH BASINS WITH A DEPTH OF OVER FIVE FEET (5') TO THE PIPE INVERT SHALL BE A TYPE II CATCH BASIN. TYPE II CATCH BASINS EXCEEDING FIVE FEET (5') IN DEPTH SHALL HAVE A STANDARD LADDER INSTALLED.

10. ALL STORM DRAINAGE MAIN EXTENSIONS WITHIN THE PUBLIC RIGHT-OF-WAY OR IN EASEMENTS MUST BE STAKED FOR LINE AND GRADE PRIOR TO STARTING CONSTRUCTION.

11. ROCK FOR EROSION PROTECTION OF ROADWAY DITCHES, WHERE REQUIRED, MUST BE OF SOUND QUARRY ROCK, PLACED TO A DEPTH OF ONE FOOT (1') AND MUST MEET THE FOLLOWING SPECIFICATIONS: 4"-8" ROCK (40-70% PASSING; 2"-4" ROCK (30-40% PASSING; 2" MINUS ROCK (0-30% PASSING.

12. ALL PIPE, MANHOLES, CATCH BASINS, AND APPURTENANCES SHALL BE LAID ON A PROPERLY PREPARED FOUNDATION IN ACCORDANCE WITH THE CURRENT STATE OF WASHINGTON STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION (WSDOT). THIS SHALL INCLUDE NECESSARY LEVELING OF THE TRENCH BOTTOM OR THE TOP OF THE FOUNDATION MATERIAL AS WELL AS PLACEMENT AND COMPACTION OF REQUIRED BEDDING MATERIAL TO UNIFORM GRADE SO THAT THE ENTIRE LENGTH OF THE PIPE WILL BE SUPPORTED ON A UNIFORMLY DENSE, UNYIELDING BASE. IF THE NATIVE MATERIAL IN THE BOTTOM OF THE TRENCH MEETS THE REQUIREMENTS FOR "GRAVEL BACKFILL FOR PIPE BEDDING," THE FIRST LIFT OF PIPE BEDDING MAY BE OMITTED PROVIDED THE MATERIAL IN THE BOTTOM OF THE TRENCH IS LOOSENED, REGRADED, AND COMPACTED TO FORM A DENSE, UNYIELDING BASE. ALL PIPE BEDDING SHALL BE APWA CLASS B, TYPE 1, OR BETTER. PIPE SHALL NOT BE INSTALLED ON SOD, FROZEN EARTH, LARGE BOULDERS, OR ROCK. PIPE BEDDING FOR FLEXIBLE PIPES SHALL BE PEA GRAVEL TO THE SPRINGLINE OF THE PIPE.

13. CONSTRUCTION OF DEWATERING (GROUNDWATER) SYSTEMS SHALL BE IN ACCORDANCE WITH THE APWA STANDARD SPECIFICATIONS

14. ISSUANCE OF A BUILDING OR LAND SURFACE MODIFICATION PERMIT BY THE CITY OF KIRKLAND DOES NOT RELIEVE THE OWNER OF THE CONTINUING LEGAL OBLIGATION AND/OR LIABILITY CONNECTED WITH STORM SURFACE WATER DISPOSITION. FURTHER, THE CITY OF KIRKLAND DOES NOT ACCEPT ANY OBLIGATION FOR THE PROPER FUNCTIONING AND MAINTENANCE OF THE SYSTEM DURING OR FOLLOWING CONSTRUCTION EXCEPT AS OUTLINED IN THE CITY OF KIRKLAND PUBLIC WORKS STANDARDS.

15. ALL TRENCH BACKFILL SHALL BE COMPACTED TO 95 PERCENT DENSITY IN ROADWAYS, ROADWAY SHOULDERS, ROADWAY PRISM AND DRIVEWAYS, AND 85 PERCENT DENSITY IN UNPAVED AREAS. ALL PIPE ZONE COMPACTION SHALL BE 95 PERCENT.

16. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ADEQUATE SAFEGUARDS, SAFETY DEVICES, PROTECTIVE EQUIPMENT, CONFINED SPACE PROTECTION, FLAGGERS, AND ANY OTHER NEEDED ACTIONS TO PROTECT THE LIFE, HEALTH, AND SAFETY OF THE PUBLIC, AND TO PROTECT PROPERTY IN CONNECTION WITH THE PERFORMANCE OF WORK COVERED BY THE CONTRACT. ANY WORK WITHIN THE TRAVELED RIGHT-OF-WAY THAT MAY INTERRUPT NORMAL TRAFFIC FLOW SHALL REQUIRE A TRAFFIC CONTROL PLAN APPROVED BY THE CITY OF KIRKLAND. ALL SECTIONS OF THE WSDOT STANDARD SPECIFICATIONS "TRAFFIC CONTROL" AND THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) SHALL APPLY.

17. NO FINAL CUT OR FILL SLOPE SHALL EXCEED SLOPES OF TWO (2) HORIZONTAL TO ONE (1) VERTICAL WITHOUT STABILIZATION BY ROCKERY OR BY A STRUCTURAL RETAINING WALL.

18. ALL MANHOLE LADDERS SHALL BE FIRMLY ATTACHED AND EXTEND TO WITHIN 4' OF THE BOTTOM OF THE STRUCTURE.

19. APPROXIMATE LOCATIONS OF EXISTING UTILITIES HAVE BEEN OBTAINED FROM AVAILABLE RECORDS AND ARE SHOWN FOR CONVENIENCE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF EXISTING UTILITY LOCATIONS WHETHER OR NOT THESE UTILITIES ARE SHOWN ON THE PLANS. THE CONTRACTOR SHALL EXERCISE ALL CARE TO AVOID DAMAGE TO ANY UTILITY. IF CONFLICTS WITH EXISTING UTILITIES ARISE DURING CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE CITY CONSTRUCTION INSPECTOR AND ANY CHANGES REQUIRED SHALL BE APPROVED BY THE DEVELOPMENT ENGINEER PRIOR TO COMMENCEMENT OF RELATED CONSTRUCTION ON THE PROJECT.

20. THE UNDERGROUND UTILITY LOCATION SERVICE SHALL BE CONTACTED FOR FIELD LOCATION OF EXISTING UTILITIES PRIOR TO ANY CONSTRUCTION. THE OWNER OR HIS REPRESENTATIVE SHALL BE CONTACTED IF A UTILITY CONFLICT EXISTS. FOR UTILITY LOCATION IN KING COUNTY, CALL 1-800-424-5555. THE CONTRACTOR IS RESPONSIBLE TO ENSURE THAT UTILITY LOCATES ARE MAINTAINED THROUGHOUT THE LIFE OF THE PROJECT.

21. THE CONTRACTOR SHALL VERIFY THE LOCATIONS, WIDTHS, THICKNESSES, AND ELEVATIONS OF ALL EXISTING PAVEMENTS AND STRUCTURES THAT ARE TO INTERFACE WITH NEW WORK. PROVIDE ALL TRIMMING, CUTTING, SAW CUTTING, GRADING, LEVELING, SLOPING, COATING, AND OTHER WORK, INCLUDING MATERIALS AS NECESSARY, TO CAUSE THE INTERFACE WITH EXISTING WORKS TO BE PROPER, ACCEPTABLE TO THE ENGINEER AND THE CITY OF KIRKLAND, COMPLETE IN PLACE AND READY TO USE.

22. ALL INLET, MANHOLE, AND CATCH BASIN FRAMES AND GRATES SHALL NOT BE ADJUSTED TO GRADE UNTIL IMMEDIATELY PRIOR TO FINAL PAVING. ALL CATCH BASIN GRATES SHALL BE SET 0.02' BELOW PAVEMENT LEVEL.

23. OPEN CUT ROAD CROSSINGS FOR UTILITY TRENCHES ON EXISTING TRAVELED ROADWAYS SHALL BE BACKFILLED ONLY WITH 5/8" MINUS CRUSHED ROCK AND MECHANICALLY COMPACTED (UNLESS OTHERWISE APPROVED BY THE CITY). FOR STREETS CLASSIFIED AS ARTERIALS OR COLLECTORS, BACKFILL FOR CROSSINGS SHALL BE CDF. CUTS INTO THE EXISTING ASPHALT SHALL BE NEAT LINE CUT WITH SAW OR JACKHAMMER IN A CONTINUOUS LINE. A TEMPORARY COLD MIX PATCH MUST BE PLACED IMMEDIATELY AFTER BACKFILL AND COMPACTION. A PERMANENT HOT MIX PATCH SHALL BE PLACED WITHIN 30 DAYS AND SHALL BE A MINIMUM OF 1" THICKER THAN THE ORIGINAL ASPHALT WITH A MINIMUM THICKNESS OF 2". SEE STANDARD D 02.

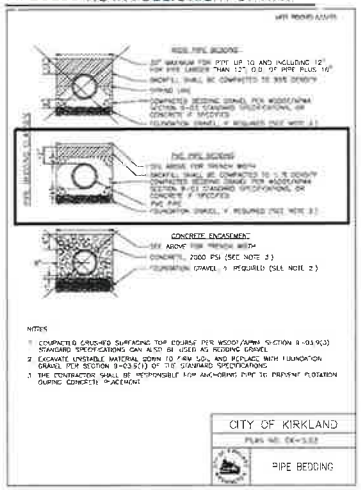
24. ALL DAMAGES INCURRED TO PUBLIC AND/OR PRIVATE PROPERTY BY THE CONTRACTOR DURING THE COURSE OF CONSTRUCTION SHALL BE PROMPTLY REPAIRED TO THE SATISFACTION OF THE CITY CONSTRUCTION INSPECTOR BEFORE PROJECT APPROVAL AND/OR THE RELEASE OF THE PROJECT'S PERFORMANCE BOND.

25. GROUT ALL SEAMS AND OPENINGS IN ALL INLETS, CATCH BASINS, AND MANHOLES. JETSET GROUT IS NOT ALLOWED.

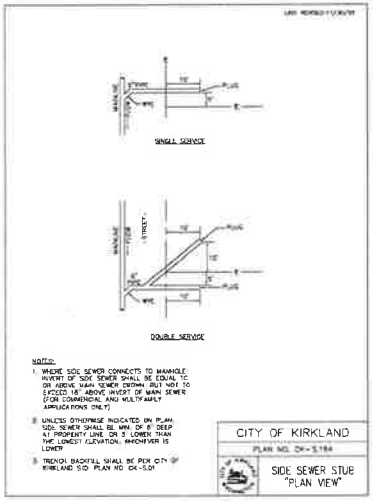
26. WHEN WIDENING AN EXISTING ROADWAY WHERE AN EXISTING TYPE I CATCH BASIN WILL REMAIN IN THE TRAVEL LANE, THE EXISTING FRAME AND COVER SHALL BE REPLACED WITH A ROUND, LOCKING FRAME AND COVER.

27. FOR OTHER THAN SINGLE FAMILY DWELLINGS, ALL EXPOSED OR READILY EXPOSED INDOOR STORM DRAINAGE PIPING/PLUMBING SHALL BE LABELED WITH THE WORDS "STORM DRAIN" WITH MINIMUM 1 INCH HIGH LETTERS.

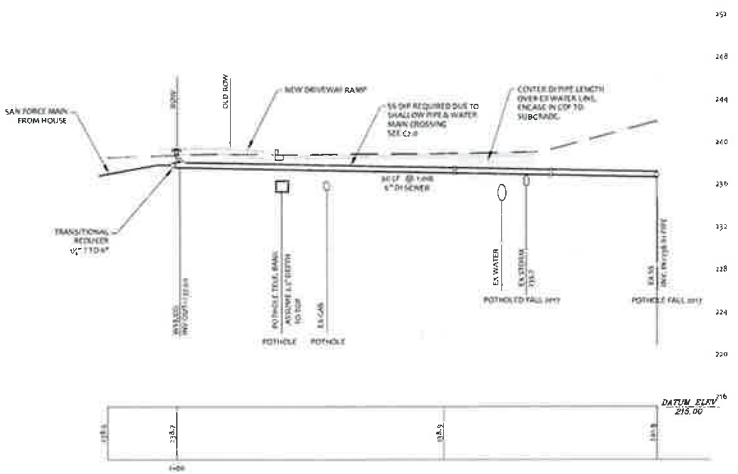
PIPE BEDDING IN PUBLIC RIGHT OF WAY



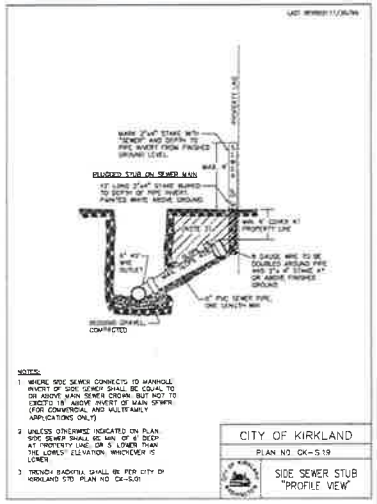
SIDE SEWER DETAIL S.19A



SIDE SEWER PROFILE



SIDE SEWER DETAIL S.19



NO	DATE	BY	REVISIONS

APPLICANT
KUO

Know what's below. Call before you dig.

THIS DEVELOPMENT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE 2017 CITY OF KIRKLAND STANDARD SPECIFICATIONS AND DETAILS.

DATE: NOV 03, 2017
JOB# 1525
DRAFTED: CH DESIGN: DK
DIGITAL SIGNATURE

CIVIL ENGINEERING SOLUTIONS
2244 NW MARKET STREET, SUITE B SEATLLE, WA 98107
PHONE: 206.850.0342 DUFFY@CESOLUTIONS.US

STORM & SEWER DETAILS

PROPOSED 10265 RESIDENCE
10265 124TH AVE NE, KIRKLAND 98033

DRAWING NO:
C3.2

APN 663990-0280
BSF17-01267

PERMITTED GROUNDCOVER IN LANDSCAPE STRIP

DEPARTMENT OF PUBLIC WORKS
PRE-APPROVED PLANS POLICY

Policy R-18: Permitted Groundcover in Public Landscape Strip

In addition to grass, the following types of groundcover can be planted in a landscape strip (the planting area between curb and sidewalk) in the public right-of-way:

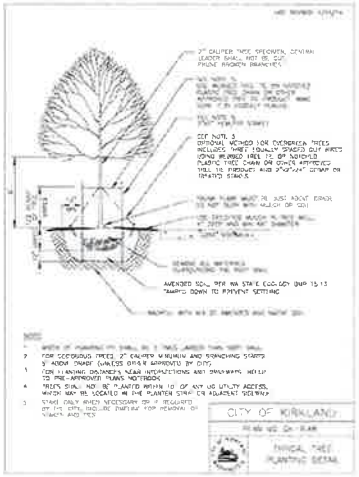
- Lawfield Cotoneaster
- Pyracantha
- Kinnikinnick
- Sedum
- Heather and Heath
- Ice Plant (for shady areas)
- Ornamental grasses such as:
  - Blue fescue
  - Silver Mist
  - Dwarf Lavender
  - Hyssop
  - Others as approved

Maintenance of the groundcover, including watering, trimming, and weeding, is the responsibility of the adjacent property owner.

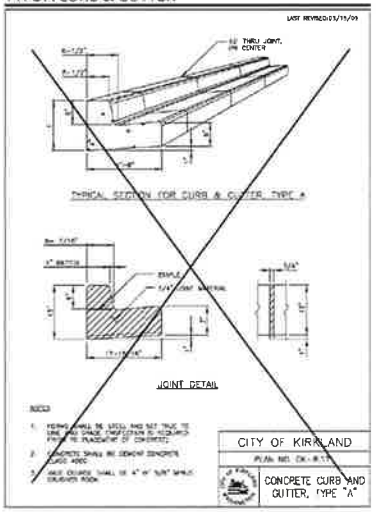
Plantings shall be as follows:

- 4" minimum pot size
- 30" minimum spacing on center
- Growth shall be no higher than 12". Adjacent property owner is responsible for keeping height below the 12" maximum
- Preferred planting dates between October and February

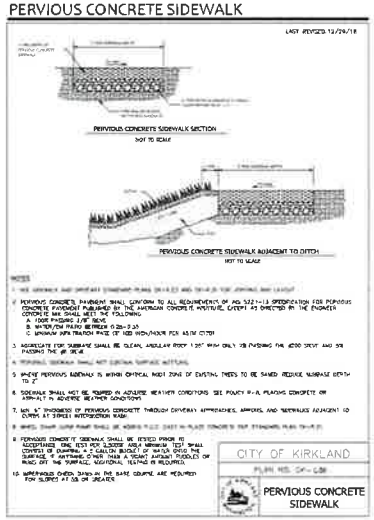
TREE PLANTING DETAIL CK-R.48



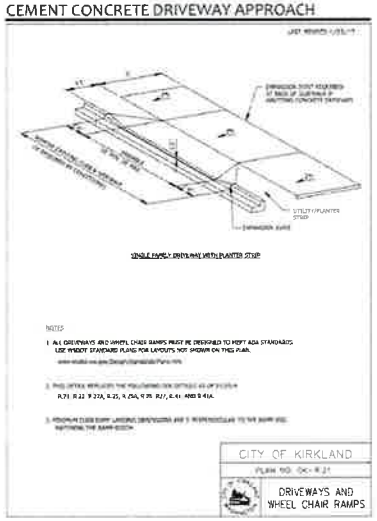
TYPE A CURB & GUTTER



PERVIOUS CONCRETE SIDEWALK



CEMENT CONCRETE DRIVEWAY APPROACH



NO.	DATE	BY	REVISIONS

APPLICANT
NUD

811 Know what's below. Call before you dig.

CITY OF KIRKLAND WASHINGTON

THIS DEVELOPMENT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE 2017 CITY OF KIRKLAND STANDARD SPECIFICATIONS AND DETAILS

DATE: Nov 03, 2017
JOB# 1535
DRAFTED: CH DESIGN: DE
DIGITAL SIGNATURE

CIVIL ENGINEERING SOLUTIONS
7244 NW MARKET STREET, SUITE B SEATTLE, WA 98107
PHONE: 206 930 0843 DUFFY@CESOLUTIONS.US

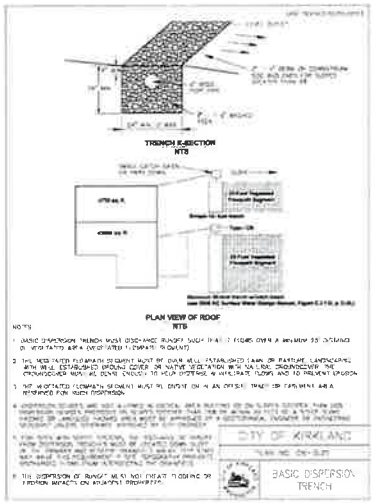
CITY OF KIRKLAND ROAD DETAILS

PROPOSED 10265 RESIDENCE
10265 124TH AVE NE, KIRKLAND 98033

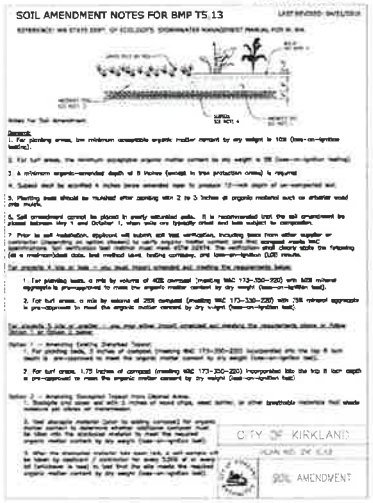
DRAWING NO: C3.4

APN 863980-0280
BSF17-01267

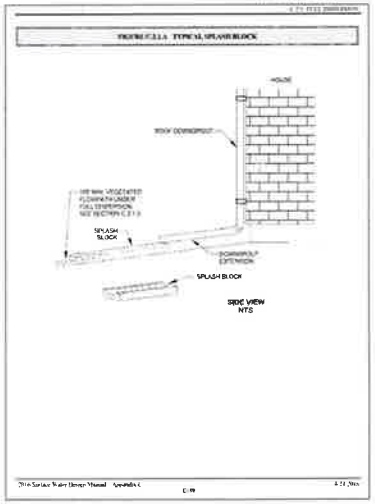
DISPERSION TRENCH — FLOW CONTROL BMP



COMPOST-AMENDED SOIL — FLOW CONTROL BMP



SPLASH-BLOCK DISPERSION — FLOW CONTROL BMP



NO	DATE	BY	REVISIONS

APPLICANT
KUO

811 Know what's below. Call before you dig.

CITY OF KIRKLAND WASHINGTON

THIS DEVELOPMENT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE 2012 CITY OF KIRKLAND STANDARD SPECIFICATIONS AND DETAILS.

DATE: NOV 03, 2012
JOB#: 1525
DRAFTED CH DESIGN DF
DIGITAL SIGNATURE

CIVIL ENGINEERING SOLUTIONS
2244 NW MARKET STREET, SUITE B SEATTLE, WA 98107
PHONE: 206.930.0342 DUFFY@CESOLUTIONS.US

STORMWATER BMP DETAILS

PROPOSED 10265 RESIDENCE
10265 124TH AVE NE, KIRKLAND 98033

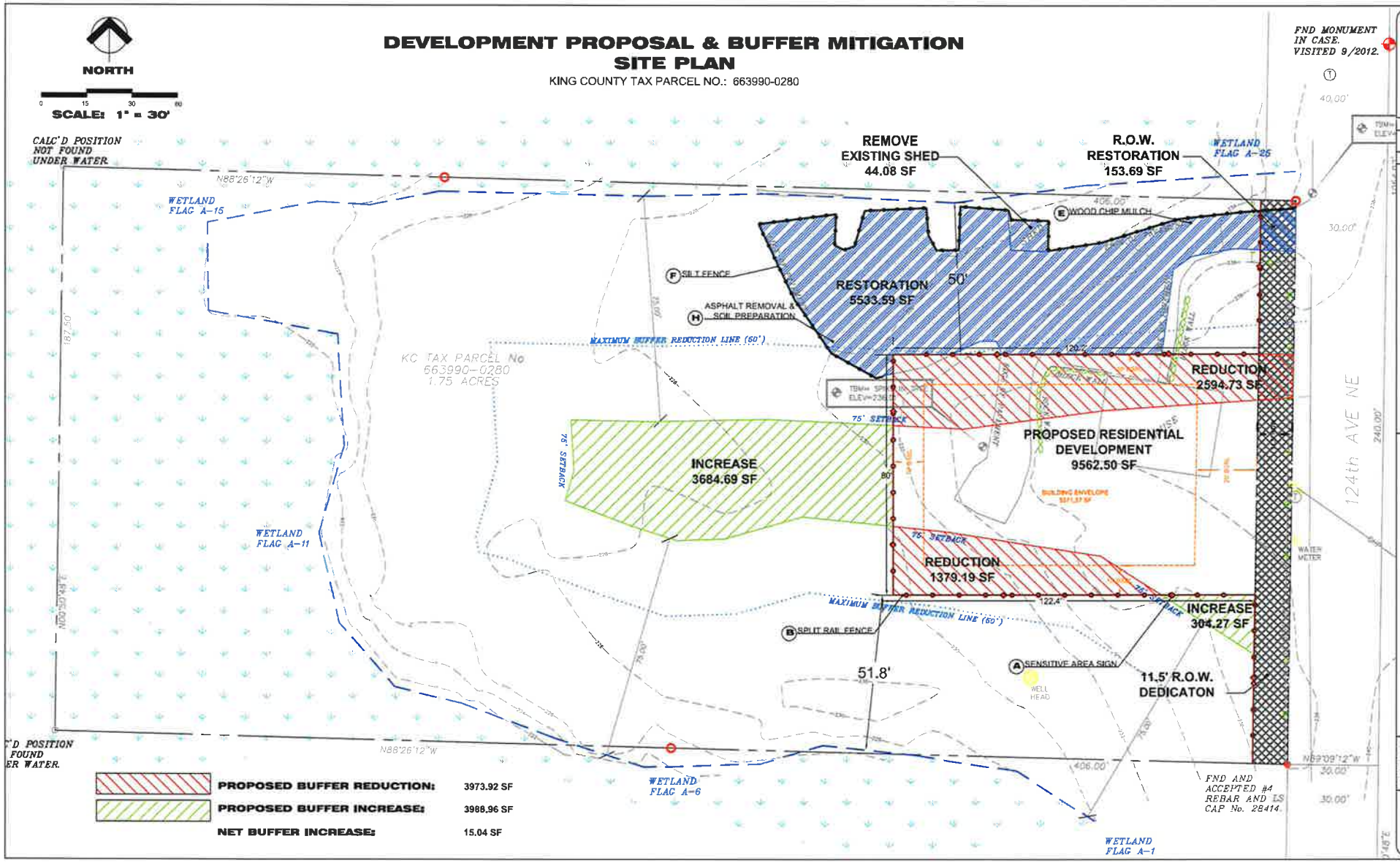
DRAWING NO:
C3.5

APN 663990-0280
BSF17-01267

SAR16--02993
ATTACHMENT 2
APPROVED PLANS

DEVELOPMENT PROPOSAL & BUFFER MITIGATION
SITE PLAN

KING COUNTY TAX PARCEL NO.: 663990-0280



CONSUL. ANTS:
Wetlands Northwest, LLC
5218 Ivanhoe Place Northeast
Seattle, Washington 98105
BUS: 206-456-5474 MOB: 206-554-1628
WWW.WETLANDSNW.COM

CLIENT:
HSU CHIU CHIH & YEH HUA LU
10265 124TH AVENUE NE KIRKLAND, WASHINGTON 98033

PROJECT:
DEVELOPMENT PROPOSAL & BUFFER MITIGATION
KING COUNTY TAX PARCEL NO.: 663990-0280

SCALE 1"=30'

SHEET W.1

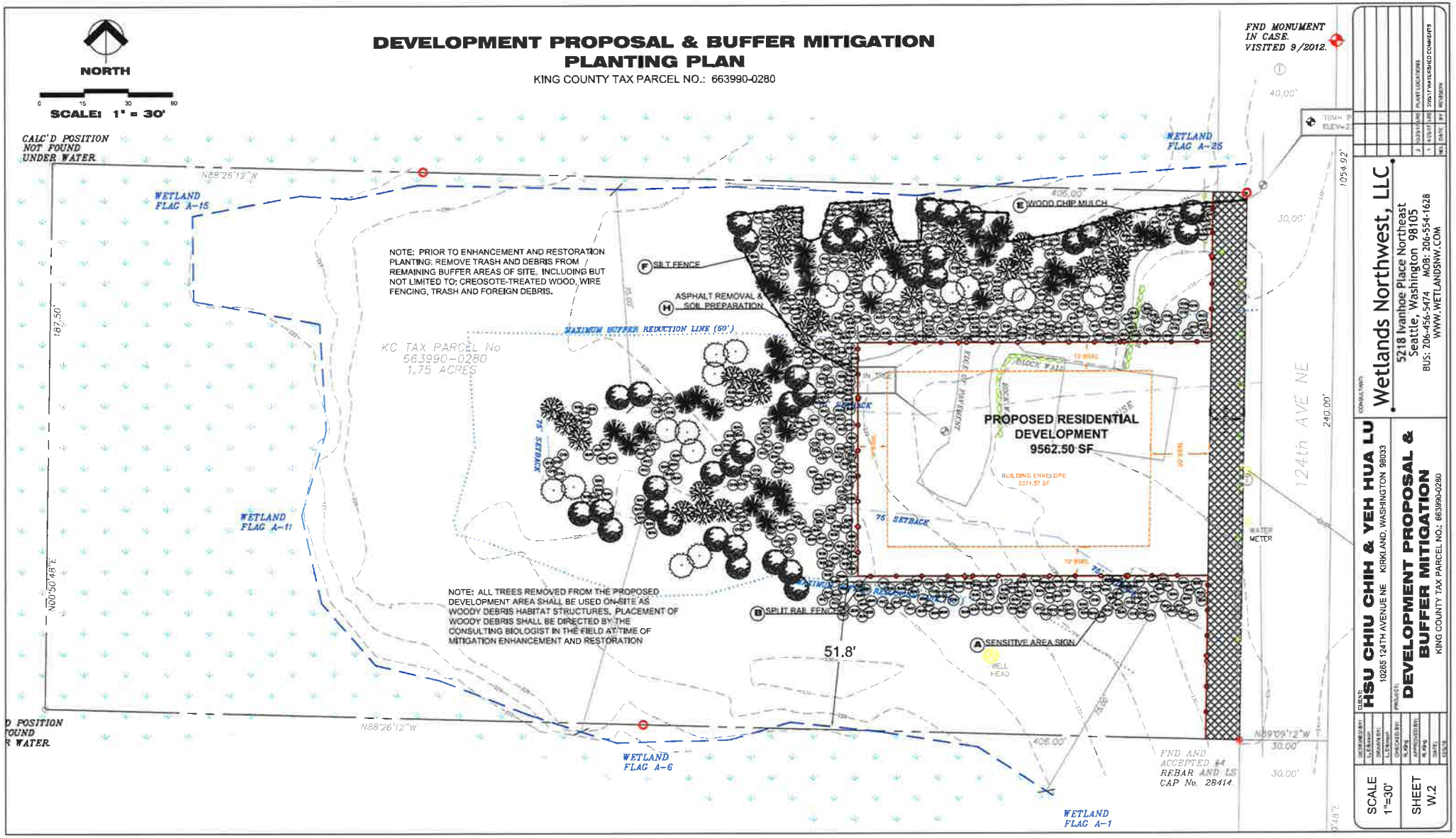
SAR16–02993
ATTACHMENT 2
APPROVED PLANS

DEVELOPMENT PROPOSAL & BUFFER MITIGATION
PLANTING PLAN

KING COUNTY TAX PARCEL NO.: 663990-0280

NORTH

SCALE: 1" = 30'



CONSULTANTS
Wetlands Northwest, LLC
5218 Ivanhoe Place Northeast
Seattle, Washington 98105
BUS: 206-456-5474 MOB: 206-554-1628
WWW.WETLANDSNW.COM

NO.	DATE	BY	REVISIONS
2	10/23/17	LMS	PLANT LOCATIONS
1	9/15/17	LMS	2009/17 WATERSHED COMMENTS

CLIENT: HSU CHIU CHIH & YEH HUA LU
10265 124TH AVENUE NE KIRKLAND, WASHINGTON 98033

PROJECT: DEVELOPMENT PROPOSAL & BUFFER MITIGATION
KING COUNTY TAX PARCEL NO.: 663990-0280

DESIGNED BY: L.E.Brown
DRAWN BY: L.E.Brown
CHECKED BY: K.King
APPROVED BY: K.King
DATE:
FILE #:

SCALE 1"=30'

SHEET W.2

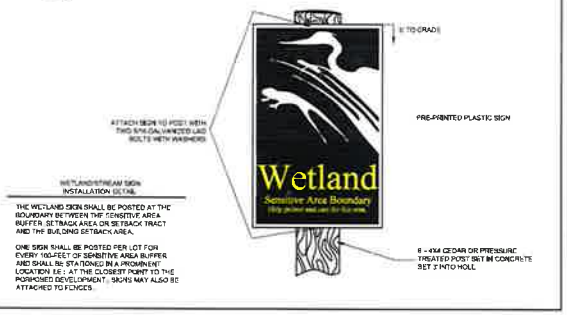
SAR16–02993
ATTACHMENT 2
APPROVED PLANS

DEVELOPMENT PROPOSAL & BUFFER MITIGATION DETAILS

KING COUNTY TAX PARCEL NO.: 663990-0280

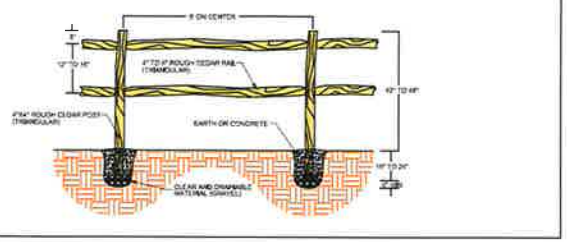
A SENSITIVE AREA SIGN

NOT TO SCALE



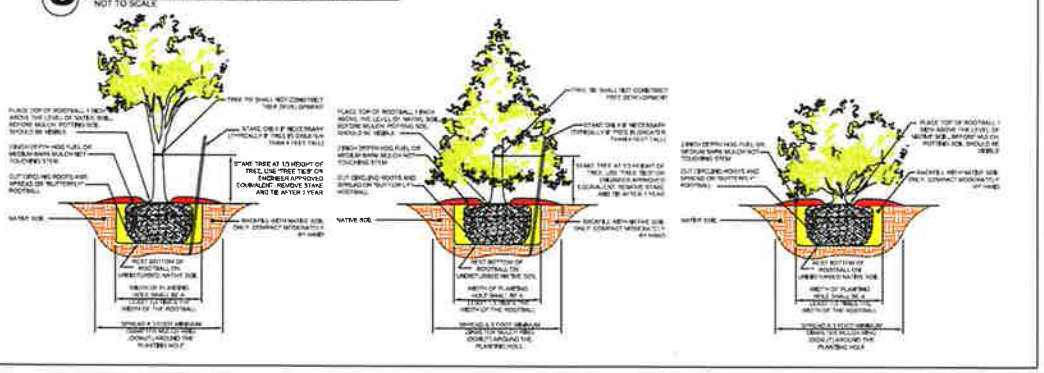
B SPLIT RAIL FENCE

NOT TO SCALE



C PLANTING & STAKING

NOT TO SCALE



D PLANT SCHEDULE

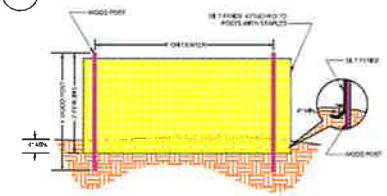
SYMBOL	COMMON NAME	SCIENTIFIC NAME	QTY.	SIZE
	BIG-LEAF MAPLE	ACER MACROPHYLLUM	30	2 GAL
	RED ALDER	ALNUS RUBRA	35	2 GAL
	DOUGLAS FIR	PSEUDOTSUGA MENZIESII	35	5 GAL
	WESTERN RED CEDAR	THUJA PLICATA	20	2 GAL
OS	OCEANSPRAY	HOLODISCUS DISCOLOR	100	1 GAL
RC	RED-FLOWERING CURRANT	RIBES SANGUINEUM	100	1 GAL
BR	BALDHIP ROSE	ROSA GYMNOCARPA	100	1 GAL
SB	SALMONBERRY	RUBUS SPECTABILIS	100	1 GAL
SN	SNOWBERRY	SYMPHORICARPOS ALBUS	100	1 GAL

PLANTING NOTES:
TREE AND SHRUB LOCATIONS AREA APPROXIMATE AND MAYBE RELOCATED IN THE FIELD BASED ON SITE CONDITIONS AND LOCATIONS OF EXITISTING VEGETATION

E WOOD CHIP MULCH

1. APPLY WOOD CHIP MULCH TO ALL BARE SOIL AREAS FOLLOWING INSTALLATION OF ENHANCEMENT/RESTORATION PLANTINGS.
2. WOOD CHIP MULCH SHOULD BE APPLIED AT A THICKNESS OF 1-2 INCHES.

F SILT FENCE DETAIL



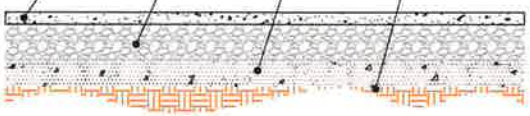
CONSTRUCTION NOTES

1. ALL STRUCTURES AND ASPHALT DRIVEWAYS ARE TO BE REMOVED FROM BUFFER PRIOR TO MITIGATION PLANTING
2. ANY COMPACTED SOILS SHALL HAVE APPRORIATE DECONSOLIDATON METHODS USED TO CREATE MORE SUITABLE SOIL CONDITIONS (SEE DETAIL H)
3. PLANT LOCATIONS ARE APPROXIMATE AND MAY NEED TO BE RELOCATED IN FIELD BASED ON SITE CONDITIONS.
4. SILT FENCE SHALL BE INSTALLED ALONG THE DOWNSLOPE SIDE OF THE CONSTRUCTION AREA PRIOR TO ANY EARTH WORK ACTIVITIES (SEE DETAIL F)

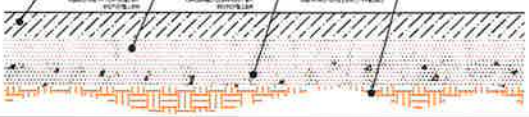
H ASPHALT REMOVAL AND SOIL PREPARATION

NOT TO SCALE TYPICAL

EXISTING ASPHALT CONDITIONS (TYPICAL)



SOIL CONDITIONING FOLLOWING ASPHALT REMOVAL (TYPICAL)



NOTES:
1. REMOVE ALL ASPHALT, GRAVEL AND COMPACTED MATERIALS FROM THE BUFFER RESTORATION AREA AND DISPOSE OF OFF-SITE IN A LEGAL MANNER.
2. DECONSOLIDATE COMPACTED NATIVE SOILS WITH ROTOTILLER PRIOR TO INSTALLATION OF TOPSOIL AND ORGANIC COMPOST
3. THOUROUGHLY MIX ORGANIC COMPOST AND TOPSOIL WITH ROTOTILLER PRIOR TO PLANT INSTALLATION
4. CONSULTING BIOLOGIST SHALL APPROVE SOIL CONDITIONS PRIOR TO MITIGATION PLANTING

REV.	DATE	BY	DESCRIPTION
1	10/21/17	LMS	PLANT LOCATIONS
2	10/21/17	LMS	2/22/17 WATER-ED COMMENTS

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CLIENT:
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10265 124TH AVENUE NE KIRKLAND, WASHINGTON 98033

PROJECT:
DEVELOPMENT PROPOSAL & BUFFER MITIGATION
KING COUNTY TAX PARCEL NO.: 663990-0280

DESIGNED BY: L. Ersson
DRAWN BY: L. Ersson
CHECKED BY: R. Wing
APPROVED BY: R. Wing
DATE: 10/21/16

SCALE VARIES

SHEET W.3

DEVELOPMENT PROPOSAL & BUFFER MITIGATION
MITIGATION TEXT

KING COUNTY TAX PARCEL NO.: 663990-0280

1.0 Executive Summary

A regulated wetland is present on-site along the north, west and south portions of the property extending off-site in the same directions. Per City of Kirland the on-site wetland is required to have a 75-foot buffer. City of Kirkland allows reduction of the buffer for averaging purposes with compensatory mitigation. The applicant proposes buffer averaging, reducing the require buffer along the north and south sides of the property by 3,973.92 square feet and increasing the buffer along the western side of the property by 3,988.96 square feet. The net gain in buffer area will be 15.04 square feet following averaging. In addition, 5,509.70 square feet of existing asphalt driveway and a shed will be removed from the northern portion of the buffer. Compacted soils in this area will be deconsolidated, organic topsoil will be install and incorporated into the restoration area and native trees and shrubs will be planted as mitigation for impacts. Additionally, area immediately adjacent to the proposed western edge of the development area will be planted with native trees and shrubs to mitigate for buffer averaging impacts. Split rail fence and sensitive area signs will be installed to delineate the edge of the new wetland buffer. Native plant species will increase plant diversity, wildlife habitat and prevent the establishment of invasive species.

1.1 Goals and Objectives

The goal of mitigation is to increase the functions and values of the existing wetland buffer through enhancement. Enhancement will be through removal of impervious surfaces and installation of native trees and shrubs. In its current state, the buffer does not provide the functions necessary to adequately protect the off-site wetland. The objectives necessary to meet the above stated goal are as follows:

- Remove asphalt and shed from the buffer
- Deconsolidate compacted soils and install organic compost
- Install native vegetation within the buffer
- Maintain and monitor the enhancement area for a period of five years or until the site meets the specified performance standards
- Install split rail fence and sensitive area signs at the limit of the buffer to detour future intrusions into the sensitive area
- Record the sensitive area in a "Notice on Title"
- If the enhancement area fails to meet performance standards provide a contingency plan to rectify the situation

2.0 Site Conditions

The Contractor shall immediately notify the Landscape Designer and/or Wetland Biologist of drainage or soil conditions likely to be deterimental to the growth or survival of plants. Locations shall be as depicted in the approved plan set. The Landscape Designer and/or Wetland Biologist may adjust the locations of plantings shown on plans based on field conditions. Planting operations shall not be conducted under the following conditions: freezing weather, when the ground is frozen, excessively wet weather, excessively windy weather, or in excessive heat. Changes should be documented and as-built drawings submitted to City of Kirkland upon request for formal construction approval.

3.0 Plants

3.1 Origin: Plant materials shall be Northwest native plants, nursery grown in the Puget Sound region of Washington.
3.2 Plant Names: Plant names shall comply with those generally accepted in the native plant nursery trade. Any questions regarding plant species or variety shall be referred to the Landscape Designer or Wetland Biologist. All plant materials shall be true to species and variety.
3.3 Plant Substitutions: Same species substitutions of larger size do not require special permission. However, small plants often experience less transplant shock and adapt more quickly to site conditions, resulting in a higher success rate. As such, smaller plants will be approved as substitutions based on certain site-specific conditions (trees not less than 1 gallon size however). All plant substitutions shall be approved by Landscape Designer and/or Wetland Biologist.
3.4 Quality and Condition: Plants shall be normal in pattern of growth, healthy, well-branched, vigorous, with well-developed root systems, and free of pests and diseases. Damaged, diseased, pest-infested, scraped, bruised, dried-out, burned, broken, or defective plants will be rejected.
3.5 Handling: Plants shall be handled so as to avoid all damage, including breaking, bruising, root damage, sunburn, drying, freezing or other injury. Plants must be covered during transport. Plants shall not be bound with wire or rope in a manner that could damage branches. Protect plant roots with shade and wet soil in the time period between delivery and installation. Do not lift container stock by trunks, stems, or tops. Do not remove from containers until ready to plant. Water all plants as necessary to keep moisture levels appropriate to the species horticultural requirements. Plants shall not be allowed to dry out. All plants shall be watered thoroughly immediately upon installation. Soak all containerized plants thoroughly prior to installation. Bare root plants are subject to the following special requirements, and shall not be used unless planted between November 1 and March 1, and only with the permission of the Landscape Designer, Wetland Biologist, and/or City of Kirkland Staff. Bare root plants must have enough fibrous root to insure plant survival. Roots must be covered at all times with mud and/or wet straw, moss, or other suitable packing material until time of installation. Plants whose roots have dried out from exposure will not be accepted at installation inspection.
3.6 Damaged Plants: Damaged, dried out, or otherwise mishandled plants will be rejected at installation inspection. All rejected plants shall be immediately removed from the site.
3.7 Roots: All plants shall be balled and burlapped or containerized, unless explicity authorized by the Landscape Designer and/or Wetland Biologist. Root bound plants or B&B plants with damaged, cracked or loose rootballs (major damage) will be rejected. Immediately before installation, plants with minor root damage (some broken and/or twisted) must be root-pruned. Matted or circling roots of containerized plantings must be pruned or straightened and the sides of the root ball must be roughened from top to bottom to a depth of approximately half and inch in two to four places. Bare root plantings of woody material is allowed only with permission from the Landscape Designer, Wetland Biologist, and/or City of Kirkland Staff.
3.8 Sizes: Plant sizes shall be the size indicated in the plant schedule. Larger stock may be acceptable provided that it has not been cut back to size specified, and that the root ball is proportionate to the size of the plant. Smaller stock may be acceptable, and under some circumstances perferable, based on site-specific conditions. Measurements, caliper, branching and balling and burlapping shall conform to the American Standard of Nursery Stock by the American Assoiciation of Nurserymen (latest edition).
3.9 Form: Evergreen trees, if used, shall have single trunks and symmetrical, well-developed form. Deciduous trees shall be single trunked unless specified as multi-stem in the plant schedule. Shrubs shall have multiple stems, and be well-branched.
3.10 Planting: Planting shall be done in accordance with illustrated details in the mitigation plan set and accepted industry standards. Plant locations shall also be inspected and approved prior to planting.
3.11 Timing of Planting: Unless otherwise approved by City of Kirkland, all planting shall occur between September 1 and March 31.
3.12 Planting in Pits: Planting pits shall be circular or square with vertical sides, and shall be 6" larger in diameter than the root ball of the plant. Break up the sides of the pit in compacted soils. Set plants upright in pits, as illustrated in planting detail. Burlap shall be removed from the planting pit. Backfill shall be worked back into holes such that air pockets are removed without adversely compacting soils.
3.13 Mulch: The soil surface surrounding all planting pit areas shall receive no less than 3"-4" of hog fuel or medium bark mulch after planting. Hog fuel or mulch shall be kept well away (at least 3") from the trunks and stems of woody plants.
3.14 Water: Plants shall be watered upon completion of backfilling. For spring plantings (if approved), a rim of earth shall be mounded around the base of the tree or shrub no closer than the drip line, or no less than 30" in diameter, except on steep slopes or in hollows. Plants shall be watered a second time within 24-48 hours after installation. The earthen rim/dam should be leveled prior to the second growing season.
3.15 Staking: Most shrubs and many trees do not require any staking. If the plant can stand alone without staking in a moderate wind, do not use a stake. If the plant needs support, then strapping or webbing should be used as low as possible on the trunk to loosely brace the tree with one stake (see Planting Detail). Do not brace the tree tightly or too high on the trunk. If the tree is unable to sway, it will further lose the ability to support itself. As soon as supporting the plant becomes unnecessary, remove the stakes. All stakes must be removed within two years of installation.
3.16 Wildlife Control: As determined by the Landscape Designer and/or Wetland Biologist, fencing or deer repellants may be needed to limit deer intrusion while installed plants are becoming established.

4.0 Maintenance

Maintenance shall be required in accordance with City of Kirkland guidelines and approved plans.
4.1 Duration and Extent: In order to achieve performance standards, the Permittee shall have the mitigation area maintained twice annually for the duration of the monitoring period, __5__ years. All maintenance shall be directed by the Landscape Designer and/or Wetland Biologist.
Maintenance will include:

- watering
- weeding around base of installed plants
- pruning
- replacement
- restaking
- removal of all classes of noxious weeds (see Washington State Noxious Weeds List, WAC 16-7150-005) as well as Himalayan blackberry
- any other measures needed to insure plant survival
- general maintenance activities which include the replacement of any vandalized or damaged signs, habitat features, fences or other structural component of the mitigation site.

4.2 Survival: The Permittee shall be responsible for the health of 100% of all newly installed plants for one growing season after installation has been accepted by City of Kirkland (see Performance Standards). A growing season for these purposes is defined as occurring from March 1 to October 31. For fall installation (often required), the growing season will begin the following spring. The Permittee shall replace any plants that are failing, weak, defective in a manner of growth, or dead during this growing season, as directed by the Landscape Designer, Wetland Biologist, and/or City of Kirkland.
4.3 Installation Timing for Replacement Plants: Replacement plants shall be installed between September 1 and March 31, unless otherwise determined by the Landscape Designer, Wetland Biologist, and/or City of Kirkland.
4.4 Standards for Replacement Plants: Replacement plants shall meet the same standards for size and type as those specified for original installation unless otherwise directed by the Landscape Designer, Wetland Biologist, and/or City of Kirkland. Replacement plants shall be inspected as described above for the original installation.
4.5 Replanting: Plants that have settled in their planting pits too deep, too shallow, loose, or crooked shall be replanted as directed by the Landscape Designer, Wetland Biologist, and/or City of Kirkland.
4.6 Herbicides/Pesticides: Chemical controls shall not be used in the mitigation area, sensitive areas or their buffers. However, limited use of herbicides may be approved depending on site specific conditions, only if approved by City of Kirkland.
4.7 Irrigation/Watering: Water shall be provided during the dry season (July 1-October 15) for the first two years after installation to ensure plant survival and establishment. Water should be provided by a temporary above ground irrigation system. Water should be applied at a rate of 1" of water two times a week for Year 1 and 1" of water one time a week during Year 3.

5.0 Performance Standards – Plant Cover and Survival

- Plant survival and cover standards are established to measure mitigation success as follows:

	Year 1	Year 2	Year 3	Year 4	Year 5
Shrub and Sapling Tree Cover*	>10%	>15%	>20%	>30%	>35%
Shrub and Sapling Tree Survival	100%	>85%	>80%		

*Includes beneficial native plants in that category that are naturally recruiting volunteers

- Less than 10% invasive vegetation during any monitoring event.
- The establishment of _3_ species of native trees and _4_ species of native shrubs at the end the the monitoring period.
- Unplanted buffer areas are to remain free from new impacts. Prohibited activities include but are not limited to clearing, grading, excavating, filling, mowing, pruning of existing vegetation, and/or planting or seeding non-native species.

6.0 Monitoring

Monitoring shall be conducted twice annually (mid spring and fall) for __5__ years in accordance with the approved mitigation monitoring plan.
6.1 Vegetation Monitoring: Sample points or transects will be established for vegetation monitoring. Linear transects are the preferred method for vegetation monitoring for this site. No less than one (1) 100-foot transect per 10,000 square feet of area will be established in the mitigation area. Permanent transect location(s) must be identified on mitigation site plans in the first monitoring report (they may be drawn on approved mitigation plans by hand). Plots located at the end of each transect shall detail herb, shrub, and tree aerial cover at radii of 1m, 5m, and 10m respectively, using the Braun-Blanquet releve method or other acceptable field method. Monitoring of vegetation transects shall occur annually between August 1 and September 30 (prior to leaf drop), unless otherwise specified.
6.2 Photopoints: No less than four (4) permanent photo points will be established within the mitigation area. Photographs will be taken from these points to visually record the condition of the mitigation area. Photos shall be taken annually between August 1 and September 30 (prior to leaf drop), unless otherwise specified.
6.3 Reports: Monitoring reports shall be submitted by December 31 of each year during the monitoring period. As applicable, monitoring reports must include description/data for:

- Site plan and location map
- Historic description of project, including date of installation, current year of monitoring, restatement of mitigation goals, and performance standards
- Plant survival, vigor, and aerial coverage from every plant community (transect data), and explanation of monitoring methodology in the context of assessing performance standards
- Slope condition, site stability, any structures or special features
- Buffer conditions, e.g. surrounding land use, use by humans, wild and domestic creatures
- Observed wildlife, including amphibians, avians and others
- Assessment of nuisance/exotic biota and recommendations for management
- Color photographs taken from permanent photo points as shown in the first as-built plan or the first monitoring report.
- Summary of maintenance and contingency measures proposal for next season and completed for past season

6.4 Deficiencies: Any deficiency discovered during any monitoring or inspection visit must be corrected within 60 days of approval by City of Kirkland.
6.5 Contingency Plan: Should any monitoring report reveal the mitigation has failed in whole or in part, and should that failure be beyond the scope of routine maintenance, a Contingency Plan will be submitted. The Contingency Plan may range in complexity from a list of plants substituted, to cross-sections of proposed engineered structures. Once approved, it may be installed, and will replace the approved mitigation plan. If the failure is substantial, City of Kirklandmay extend the monitoring period for that mitigation.

7.0 Bond

Prior to beginning any work, the Permittee must provide a mitigation bond or assignment of funds per City of Kirkland. A bond quantity worksheet has been completed based on all elements of the mitigation plan. The total cost, plus contingency fees has been determined to be $__44,813.81__, which will be the amount of the mitigation bond the Permittee is required to provide. Bonds are eligible for reduction to maintenance status upon successful installation inspection, providing that it also meets performance standards established in the mitigation plan and City of Kirkland guidelines.

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PROJECT: DEVELOPMENT PROPOSAL & BUFFER MITIGATION
KING COUNTY TAX PARCEL NO.: 663990-0280

DESIGNED BY: L. Ekman
DRAWN BY: L. Ekman
CHECKED BY: R. King
APPROVED BY: R. King

SCALE NONE

SHEET W.4

Chapter 90 – DRAINAGE BASINS Old version

This version of Chapter 90 is no longer effective as of March 1, 2017. To see the current version of Chapter 90, as amended by Ordinance 4551, please click here.

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INTRODUCTION

90.05 User Guide

The regulations in this chapter apply to activities, work, and conditions in or near any stream, wetland, frequently flooded area, or lake in the City. For properties within jurisdiction of the Shoreline Management Act, the regulations in Chapter 83 KZC must be met. These regulations add to and in some cases supersede other City regulations. Anyone interested in conducting any development activity on or near a wetland, stream, lake, or frequently flooded area; wishing to participate in the City's decision on a proposed development on or near any of these areas; or wishing to have a determination made as to the presence of one (1) of these areas on their property, should read these regulations. See also KZC 95.23(5)(d)(2), Trees in Critical Areas or Critical Area Buffers; and KZC 95.50(11), Installation Standards for Required Plantings – Mitigation and Restoration Plantings in Critical Areas and Critical Area Buffers.

Chapter 83 KZC contains wetland, stream and flood hazard reduction regulations for properties located within its jurisdiction. However, regulations contained in this chapter that are not addressed in Chapter 83 KZC continue to apply, such as bond or performance security, dedication and liability.

(Ord. 4252 § 1, 2010; Ord. 4238 § 2, 2010; Ord. 4010 § 3, 2005; Ord. 3834 § 1, 2002)

90.10 Purpose

These regulations were prepared to comply with the Growth Management Act, Chapter 36.70A RCW. The purpose of these regulations is to protect the environment, human life, and property. This purpose will be achieved by preserving the important ecological functions of wetlands, streams, lakes, and frequently flooded areas. The designation and classification of these sensitive areas is intended to assure their preservation and protection from loss or degradation, and to restrict incompatible land uses.

Sensitive areas perform a variety of valuable biological, chemical, and physical functions that benefit the City and its residents. The functions of sensitive areas include, but are not limited to, the following:

1. Wetlands – Wetlands help maintain water quality; store and convey storm and flood water; recharge ground water; provide fish and wildlife habitat; and serve as areas for recreation, education, scientific study, and aesthetic appreciation. The City's goal is to achieve no net loss of wetlands through retention of wetland functions, values, and acreage within each drainage basin. Wetlands are protected in part by buffers, which are upland areas adjacent to wetlands.

Wetland buffers serve to moderate runoff volume and flow rates; reduce sediment loads; remove waterborne contaminants such as excess nutrients, synthetic organic chemicals (e.g., pesticides, oils, and greases), and metals; provide shade for surface water temperature moderation; provide wildlife habitat; and deter harmful intrusion into wetlands.

The primary purpose of wetland regulations is to achieve a goal of no net loss of wetland function, value, and acreage within each drainage basin, which, where possible, includes enhancing and restoring wetlands.

2. Streams – Streams and their associated buffers provide important fish and wildlife habitat and travel corridors; help maintain water quality; store and convey storm and flood water; recharge groundwater; and serve as areas for recreation, education, scientific study, and aesthetic appreciation. Streams are protected in part by buffers, which are adjacent upland areas that interact with streams.

Stream buffers – sometimes known as riparian buffers – serve to moderate runoff volume and flow rates; reduce sediment loads; remove waterborne contaminants such as excess nutrients, synthetic organic chemicals (e.g., pesticides, oils, and greases), and metals; provide shade for surface water temperature moderation; provide wildlife habitat; and deter harmful intrusion into streams.

The primary purpose of stream regulations is to avoid reducing stream and riparian corridor functions, and where possible, to enhance and restore streams and riparian areas.

3. Lakes – Lakes provide important fish and wildlife habitat; store and convey storm and flood water; recharge ground water; store ground water discharge; and serve as areas for recreation, education, scientific study, and aesthetic appreciation. Many uses and activities in and around lakes are regulated under the wetland regulations, because the shallow perimeter of most lakes (the littoral zone) often meets the definition of a wetland.

Lake Washington is a Shoreline of the State, and is subject to the Shoreline Management Act.

Uses and activities near, on or in Lake Washington are regulated by the applicable use zone regulations in Chapters 15 through 56 KZC and by the shoreline regulations in Chapters 83 and 141 KZC. Uses and activities in wetlands contiguous to Lake Washington are subject primarily to the wetland regulations in Chapter 83 KZC, but also some applicable regulations in this chapter. Wetland buffers not located within 200 feet of the ordinary high water mark of Lake Washington are subject to the wetland buffer regulations in this chapter.

The primary purpose of the lake regulations is to avoid impacts to lakes and contiguous riparian areas, and where possible, to enhance and restore lakes.

4. Frequently Flooded Areas – Frequently flooded areas help to store and convey storm and flood water; recharge ground water; provide important riparian habitat for fish and wildlife; and serve as areas for recreation, education, and scientific study. Development within these areas can be hazardous to those inhabiting such development, and to those living upstream and downstream. Flooding also can cause substantial damage to public and private property that results in significant costs to the public as well as to private individuals.

The primary purpose of frequently flooded areas regulations is to regulate development in the 100-year floodplain to avoid substantial risk and damage to public and private property and loss of life.

(Ord. 4476 § 3, 2015; Ord. 4252 § 1, 2010; Ord. 3834 § 1, 2002)

90.15 Applicability

1. General – These regulations apply to any property that contains any of the following:

a. Streams;

b. Type 1 or 2 wetlands;

c. Type 3 wetlands greater than 1,000 square feet in a primary basin;

d. Type 3 wetlands greater than 2,500 square feet in a secondary basin;

e. Totem Lake and Forbes Lake;

f. Frequently flooded areas; and

g. Buffers required for the preceding six (6) features.

2. Conflicting Provisions – The regulations in this chapter supersede any conflicting regulations in the Kirkland Zoning Code. For properties within jurisdiction of the Shoreline Management Act, the regulations in Chapter 83 KZC supersede any conflicting regulation in this chapter. If more than one

(1) regulation applies to the subject property, then the regulation that provides the greatest protection to sensitive areas shall apply.

3. Other Jurisdictions – Nothing in these regulations eliminates or otherwise affects the responsibility of the applicant or property owner to comply with all other applicable local, state, and federal laws regulating development activities in sensitive areas, as herein defined.

4. SEPA Compliance – Nothing in these regulations or the decisions made pursuant to these regulations affects the authority of the City to review, condition, and deny projects under the State Environmental Policy Act, Chapter 43.21C RCW.

(Ord. 4252 § 1, 2010; Ord. 3834 § 1, 2002)

90.20 General Exceptions

The following activities or conditions shall be exempt from this chapter:

1. Activities involving artificially created wetlands or streams intentionally created from non-wetland sites, including but not limited to grass-lined swales, irrigation and drainage ditches, retention and/or detention facilities, farm ponds, and landscape features, except activities involving wetlands or streams that are created as mitigation for impacts to regulated sensitive areas, or that support state or federally listed threatened or endangered species.

2. Legally filled wetlands, or wetlands created after July 1, 1990, that were unintentionally created as a result of the construction of a road, street, or highway.

3. Activities affecting Type 3 wetlands that are 1,000 square feet or less in any of the primary basins, or affecting Type 3 wetlands that are 2,500 square feet or less in any of the secondary basins.

4. All utility work in improved City rights-of-way; all normal and routine maintenance, operation and reconstruction of existing roads, streets, and associated rights-of-way and structures; construction of sewer or water lines that connect to existing lines in a sensitive area or buffer where no feasible alternative location exists based on an analysis of technology and system efficiency; and minor replacement or modification of existing facilities by a public utility in an improved utility corridor. In each case (1) such activities shall not increase the impervious area (excluding utility poles) or reduce flood storage capacity, and (2) the construction drawings shall specify that all affected sensitive areas and buffers will be expeditiously restored to their pre-project condition or better. For purposes of this subsection only, “improved City rights-of-way” shall include the Cross Kirkland Corridor, Eastside Rail Corridor, and those rights-of-way that have improvements only underground, as well as those with surface improvements.

5. Construction of public nonmotorized trails within the Cross Kirkland Corridor and Eastside Rail Corridor; provided, that (1) the trail is located in a manner that, to the extent feasible, avoids and

minimizes impacts to sensitive areas and buffers such as placement on previously disturbed areas, (2) the trail project includes on-site or off-site mitigation of new impacts to affected sensitive areas and buffers, and (3) pervious or other low-impact materials are used where practical.

6. Normal and routine maintenance or repair of structures; provided, that such activities do not increase the previously approved structure footprint within a sensitive area or its buffer. Increases in structure footprint outside of such areas shall be allowed, even if all or a portion of the previously approved footprint is within such areas.

7. Site investigative work and studies necessary for preparing and processing land use applications, including but not limited to hand-dug holes for soils tests, water quality sampling, wildlife studies, and wetland and stream investigations; provided, that any disturbance of the sensitive area or its buffer shall be the minimum necessary to carry out the work or studies. Use of any mechanized equipment requires prior approval of the Planning Official. Areas disturbed by these activities shall be expeditiously stabilized and replanted, as approved by the Planning Official, to restore them to their previous condition.

8. Educational activities, scientific research, and passive outdoor recreational activities such as bird watching.

9. Emergency activities necessary to prevent an immediate threat to public health, safety, or welfare.

(Ord. 4442 § 1, 2014; Ord. 3834 § 1, 2002)

90.25 Sensitive Areas Maps and Other Resources

As part of the City's SEPA Ordinance, the City Council adopted, and may amend, a map folio entitled "Kirkland Sensitive Areas." Some of the maps in this folio depict wetlands, streams, and 100-year floodplains. The most recent amendment to this map folio reflects a 1998 study of wetlands and streams throughout the City's drainage basins and other sensitive areas discovered since 1992. The map folio, subsequent amendments, and other available resources (such as topographic maps, soils maps, and air photos) are intended only as guides. They depict the *approximate* location and extent of known sensitive areas. Some sensitive areas depicted in these resources may no longer exist; further, sensitive areas not shown in these resources may occur. Property owners and project applicants are strongly advised to retain qualified professionals to conduct site-specific studies for the presence of sensitive areas.

(Ord. 3834 § 1, 2002)

90.30 Definitions

1. Basin – A specific area of land drained by a particular watercourse and its tributaries.

2. Buffer – The area immediately adjacent to wetlands and streams that protects these sensitive areas and provides essential habitat elements for fish and/or wildlife.

3. Buffer Setback – A setback distance of 10 feet from a designated or modified wetland or stream buffer within which no buildings or other above-ground structures may be constructed, except as provided in KZC 90.45(2) and 90.90(2). The buffer setback serves to protect the wetland or stream buffer during development activities, use, and routine maintenance occurring adjacent to these resources.

4. Class A Streams – Streams that are used by salmonids. Class A streams generally correlate with Type 3 streams as defined in the Washington State Hydraulic Code.

5. Class B Streams – Perennial streams (during years of normal precipitation) that are not used by salmonids. Class B streams generally correlate with Type 4 streams as defined in the Washington State Hydraulic Code.

6. Class C Streams – Seasonal or ephemeral streams (during years of normal precipitation) not used by salmonids. Class C streams generally correlate with Type 5 streams as defined in the Washington State Hydraulic Code.

7. Critical Areas – Critical areas include the following areas and ecosystems: (a) wetlands; (b) areas with a critical recharging effect on aquifers used for potable water; (c) fish and wildlife habitat conservation areas; (d) frequently flooded areas; and (e) geologically hazardous areas.

8. Frequently Flooded Areas – All areas shown on the Kirkland sensitive areas maps as being within a 100-year floodplain, as well as all areas regulated by Chapter 21.56 KMC.

9. Minor Improvements – Walkways, pedestrian bridges, benches, and similar features, as determined by the Planning Official, pursuant to KZC 90.45(5) and 90.90(5).

10. Primary Basins – The following basins, as shown on the Sensitive Areas Map: Juanita Creek, Forbes Creek, South Juanita Slope, Yarrow Creek, Carillon Creek, Denny Creek, and Champagne Creek.

11. Qualified Professional – An individual with relevant education and training, as determined by the Planning Official, and with at least three (3) years' experience in biological fields such as botany, fisheries, wildlife, soils, ecology, and similar areas of specialization, and including a professional wetland scientist.

12. Salmonid – A member of the fish family salmonidae, which include chinook, coho, chum, sockeye, and pink salmon; rainbow, steelhead, and cutthroat trout; brown trout; brook and dolly varden char, kokenee, and white fish.

13. Secondary Basins – Moss Bay, Houghton Slope A, Houghton Slope B, Kirkland Slope, Holmes Point and Kingsgate Slope, which are depicted on the Sensitive Areas Map.

14. Sensitive Areas – Wetlands, streams, lakes, and frequently flooded areas.

15. Significant Habitat Area – An area that provides food, protective cover, nesting, breeding, or movement for threatened, endangered, sensitive, monitor, or priority species of plants, fish, or wildlife. The terms threatened, endangered, sensitive, monitor, and priority pertain to lists, categories, and definitions of species promulgated by the Washington Department of Wildlife (Non-Game Data Systems Special Animal Species), as identified in WAC 232-12-011 or 232-12-014, or in the Priority Habitat and Species (PHS) program of the Washington State Department of Wildlife, or in rules and regulations adopted from time to time by the U.S. Fish and Wildlife Service.

16. Streams – Areas where surface waters produce a defined channel or bed that demonstrates clear evidence of the passage of water, including but not limited to bedrock channels, gravel beds, sand and silt beds, and defined-channel swales. The channel or bed need not contain water year-round. Streams do not include irrigation ditches, canals, storm or surface water runoff devices, or other entirely artificial watercourses, unless they are used by salmonids or convey a naturally occurring stream that has been diverted into the artificial channel.

17. Type 1 Wetlands – Wetlands that meet any of the following conditions:

a. Wetlands contiguous to Lake Washington;

b. Wetlands containing at least one-quarter (1/4) acre of organic soils, such as peat bogs or mucky soils;

c. Wetlands equal to or greater than 10 acres in size and having three (3) or more wetland classes, as defined by the U.S. Fish & Wildlife Service (Cowardin et al., 1979), one (1) of which is open water;

d. Wetlands that have significant habitat value to state or federally listed threatened or endangered wildlife species; or

e. Wetlands that contain state or federally listed threatened or endangered plant species.

18. Type 2 Wetlands – Wetlands that do not meet any of the criteria for Type 1 Wetlands, yet provide significant habitat function and value, and that merit at least 22 points as determined by using the City's Wetland Field Data Form, which is Plate 26 of Chapter 180 KZC.

19. Type 3 Wetlands – Wetlands that do not meet the criteria for either Type 1 or Type 2 wetlands and that merit fewer than 22 points as determined by using the City's Wetland Field Data Form, which

is Plate 26 of Chapter 180 KZC.

20. Watershed – A region or area bounded on the periphery by a parting of water and draining to a particular watercourse or body of water.

21. Wetlands – Those areas that are inundated or saturated by surface or groundwater at a frequency and duration to support, and that under normal conditions do support, a prevalence of vegetation typically adapted for life in saturated soils conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. Wetlands do not include those artificial wetlands intentionally created from non-wetland sites, including but not limited to irrigation and drainage ditches, grass-lined swales, canals, retention and/or detention facilities, wastewater treatment facilities, farm ponds, and landscape amenities, or those wetlands created after July 1, 1990, that were unintentionally created as a result of the construction of a road, street, or highway. However, wetlands do include those artificial wetlands intentionally created from non-wetland sites as mitigation for the conversion of wetlands.

(Ord. 4196 § 1, 2009; Ord. 3977 § 3, 2004; Ord. 3834 § 1, 2002)

WETLANDs

90.35 Wetland Determinations, Delineations, Regulations, Criteria, and Procedures

All delineations of wetlands shall be made using the criteria and procedures described in WAC 173-22-035, now or as hereafter amended. All determinations, delineations, and regulations of wetlands shall be based on the entire extent of the wetland, irrespective of property lines, ownership patterns, and the like.

(Ord. 4320 § 1, 2011; Ord. 3834 § 1, 2002)

90.40 Wetland Determinations

Either prior to or during review of a development application, the Planning Official shall determine whether a wetland or its buffer is present on the subject property using the following provisions:

1. During or immediately following a site inspection, the Planning Official shall make an initial assessment as to whether any portion of the subject property or surrounding area (which shall be the area within 100 feet of the subject property) meets the definition of a wetland. If this initial site inspection does not indicate the presence of a wetland on the subject property or surrounding area, no additional wetland studies will be required. However, if the initial site inspection or information subsequently obtained indicates the presence of a wetland on the subject property or surrounding area, then the applicant shall follow the procedure in subsection (2) of this section.

2. If the initial site inspection or information subsequently obtained indicates that a wetland may

exist on or near the subject property or surrounding area, the applicant shall either (a) fund a study and report prepared by the City's wetland consultant; or (b) submit a report prepared by a qualified professional approved by the City, and fund a review of this report by the City's wetland consultant.

3. If a wetlands study and report are required, at a minimum the report shall include the following:

a. A summary of the methodology used to conduct the study;

b. A professional survey which is based on the KCAS or plat-bearing system and tied to a known monument, depicting the wetland boundary on a map of the surrounding area which shows the wetland and its buffer;

c. A description of the wetland habitat(s) found throughout the entire wetland (not just on the subject property) using the U.S. Fish & Wildlife Service classification system (*Classification of Wetlands and Deepwater Habitats in the U.S.,* Cowardin et al., 1979);

d. A description of nesting, denning, and breeding areas found in the wetland or its surrounding area;

e. A description of the surrounding area, including any drainage systems entering and leaving the wetland, and a list of observed or documented plant and wildlife species;

f. A description of historical, hydrologic, vegetative, topographic, and soil modifications, if any;

g. A proposed classification of the wetland as a Type 1, 2, or 3 wetland, including the rationale for the proposed classification; and

h. A completed Wetland Field Data Form, which is Plate 26 of Chapter 180 KZC.

4. Formal determination of whether a wetland exists on the subject property, as well as its boundaries, habitat classes, and rating, shall be made by the Planning Official after preparation and review of the report, if applicable, by the City's wetland consultant. A decision of the Planning Official may be appealed pursuant to KZC 90.160. The Planning Official's decision under this section shall be used for review of any development activity proposed on the subject property for which an application is received within two (2) years of the decision; provided, that the Planning Official may modify any decision whenever physical circumstances have markedly and demonstrably changed on the subject property or the surrounding area as a result of natural processes or human activity.

(Ord. 3834 § 1, 2002)

90.45 Wetland Buffers and Setbacks

1. No land surface modification or tree removal shall occur and no improvement may be located in a wetland or its buffer, except as provided in this section through KZC 90.70. See also KZC

95.23(5)(d)(2), Trees in Critical Areas or Critical Area Buffers; and KZC 95.50(11), Installation Standards for Required Plantings – Mitigation and Restoration Plantings in Critical Areas and Critical Area Buffers. Required, or standard, buffers for wetlands are as follows:

Wetland Type	Primary Basin	Secondary Basin
1	100 feet	75 feet
2	75 feet	50 feet
3	50 feet	25 feet

2. Buffer Setback – Structures shall be set back at least 10 feet from the designated or modified wetland buffer. The Planning Official may allow within this setback minor improvements which would clearly have no adverse effect during their construction, installation, use, or maintenance, on fish, wildlife, or their habitat or any vegetation in the buffer or adjacent wetland. The Planning Official's decision may be appealed in accordance with KZC 90.160.

3. Storm Water Outfalls – Surface discharge of storm water through wetland buffers and buffer setbacks is required unless a piped system is approved pursuant to this section. Storm water outfalls (piped systems) may be located within the buffer setback specified in subsection (2) of this section and within the buffers specified in subsection (1) of this section only when the Public Works and Planning Officials both determine, based on a report prepared by a qualified professional under contract to the City and paid for by the applicant, that surface discharge of storm water through the buffer would clearly pose a threat to slope stability, and if the storm water outfall will not:

a. Adversely affect water quality;

b. Adversely affect fish, wildlife, or their habitat;

c. Adversely affect drainage or storm water detention capabilities;

d. Lead to unstable earth conditions or create erosion hazards or contribute to scouring actions; and

e. Be materially detrimental to any other property in the area of the subject property or to the City as a whole, including the loss of significant open space or scenic vistas.

The decision of the Public Works and Planning Officials may be appealed in accordance with KZC 90.160.

If a piped system is used, catch basins may be located within the buffer setback specified in subsection (2) of this section, but must be installed as far as feasible from the buffer boundary (see Plate 25 of Chapter 180 KZC). Under this subsection, pipe conveying storm water may be located within the buffer, but catch basins may not. Detention and water quality treatment

devices shall not be located within the wetland buffers or buffer setbacks of this section except as provided below.

4. Water Quality Facilities – Water quality facilities, as determined by the Planning Official, may be located within the wetland buffers of subsection (1) of this section. The Planning Official shall approve a proposal to install a water quality facility within the outer one-half (1/2) of a wetland buffer if:

a. It will not adversely affect water quality;

b. It will not adversely affect fish, wildlife, or their habitat;

c. It will not adversely affect drainage or storm water detention capabilities;

d. It will not lead to unstable earth conditions or create erosion hazards or contribute to scouring actions;

e. It will not be materially detrimental to any other property in the area of the subject property or to the City as a whole, including the loss of significant open space or scenic vistas;

f. The existing buffer is already degraded as determined by a qualified professional;

g. Its installation would be followed immediately by enhancement of an area equal in size and immediately adjacent to the affected portion of the buffer; and

h. Once installed, it would not require any further disturbance or intrusion into the buffer.

The Planning Official shall approve a proposal by a public agency to install a water quality facility elsewhere in a wetland buffer if criteria i – l (below) are met in addition to a – h (above):

i. The project includes enhancement of the entire buffer;

j. The project would provide an exceptional ecological benefit off-site;

k. The water quality facility, once installed, would not require any further disturbance or intrusion into the buffer; and

l. There is no practicable or feasible alternative proposal that results in less impact to the buffer.

The Planning Official's decision may be appealed in accordance with KZC 90.160.

5. Minor Improvements – Minor improvements may be located within the sensitive area buffers specified in subsection (1) of this section. These minor improvements shall be located within the outer one-half (1/2) of the sensitive area buffer, except where approved stream crossings are made. The

Planning Official shall approve a proposal to construct a minor improvement within an environmentally sensitive area buffer if:

a. It will not adversely affect water quality;

b. It will not adversely affect fish, wildlife, or their habitat;

c. It will not adversely affect drainage or storm water detention capabilities;

d. It will not lead to unstable earth conditions or create erosion hazards or contribute to scouring actions; and

e. It will not be materially detrimental to any other property in the area of the subject property or to the City as a whole, including the loss of significant open space or scenic vistas.

The Planning Official may require the applicant to submit a report prepared by a qualified professional which describes how the proposal will or will not comply with the criteria for approving a minor improvement. The Planning Official's decision may be appealed in accordance with KZC 90.160.

(Ord. 4320 § 1, 2011; Ord. 4238 § 2, 2010; Ord. 4010 § 3, 2005; Ord. 3834 § 1, 2002)

90.50 Wetland Buffer Fence or Barrier

Prior to beginning development activities, the applicant shall install 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, in a manner approved by the Planning Official. The construction-phase fence shall remain upright in the approved location for the duration of development activities.

Upon project completion, the applicant shall install between the upland boundary of all wetland buffers and the developed portion of the site, either (1) a permanent 3- to 4-foot-tall split rail fence; or (2) permanent planting of equal barrier value; or (3) equivalent barrier, as approved by the Planning Official. Installation of the permanent fence or planted barrier must be done by hand where necessary to prevent machinery from entering the wetland or its buffer.

(Ord. 3834 § 1, 2002)

90.55 Wetland Modification

1. Modification of Type 1 Wetlands – No land surface modification shall occur and no improvement shall be located in a Type 1 wetland, except as provided in this subsection. Furthermore, all modifications of a Type 1 wetland shall be consistent with *Kirkland's Streams, Wetlands and Wildlife Study* (The Watershed Company, 1998) and the *Kirkland Sensitive Areas Regulatory*

Recommendations Report (Adolfson Associates, Inc., 1998).

An applicant may request a modification of the requirements of this subsection. The City Council shall consider the modification request pursuant to Process IIB, described in Chapter 152 KZC. As part of the modification request, the applicant shall submit a report prepared by a qualified professional and fund a review of this report by the City's wetland consultant. The report shall contain all information specified in KZC 90.40(3) as well as an assessment of the habitat, water quality, storm water detention, ground water recharge, shoreline protection, and erosion protection functions of the wetland and its buffer. The report shall also assess the effects of the proposed modification on those functions. In addition to criteria of Process IIB, the City Council shall approve an improvement or land surface modification in a wetland only if:

a. It will not adversely affect water quality;

b. It will not adversely affect fish, wildlife, or their habitat;

c. It will not have an adverse effect on drainage and/or storm water detention capabilities;

d. It will not lead to unstable earth conditions or create an erosion hazard or contribute to scouring actions;

e. It will not be materially detrimental to any other property or the City as a whole;

f. It will result in land surface modification of no more than five (5) percent of the wetland on the subject property;

g. Compensatory mitigation is provided in accordance with the table in subsection (4) of this section;

h. Fill material does not contain organic or inorganic material that would be detrimental to water quality or fish and wildlife habitat;

i. All exposed areas are stabilized with vegetation normally associated with native wetlands and/or buffers, as appropriate; and

j. There is no practicable or feasible alternative development proposal that results in less impact to the Type 1 wetland and its buffer.

2. Modification of Type 2 Wetlands – No land surface modification shall occur and no improvement shall be located in a Type 2 wetland, except as provided in this subsection.

An applicant may request a modification of the requirements of this subsection. The Hearing Examiner shall consider the modification request pursuant to Process IIA, described in Chapter

150 KZC. The requirements for requesting such a modification are identical to those listed above for a Type 1 wetland with the following exceptions:

a. In primary basins, the modification shall not affect more than 10 percent of the wetland on the subject property; and

b. In secondary basins, the modification shall not affect more than 25 percent of the wetland on the subject property.

3. Modification of Type 3 Wetlands – No land surface modification shall occur and no improvement may be located in a Type 3 wetland, except as provided in this subsection.

An applicant may request a modification of the requirements of this subsection. The Planning Official shall consider the modification request in conjunction with approval of the applicable development permit. The requirements for requesting such a modification are identical to those listed above for a Type 1 wetland with the following exceptions:

a. In primary basins, the modification shall not affect more than 50 percent of the wetland on the subject property; and

b. In secondary basins, the modification may affect all of the wetland on the subject property.

Decisions on requests to modify Type 3 wetlands may be appealed in accordance with KZC 90.160.

4. Compensatory Mitigation – All approved impacts to regulated wetlands require compensatory mitigation so that the goal of no net loss of wetland function, value, and acreage may be achieved. Mitigation shall be implemented through the creation of wetlands (from non-wetland areas) or through the restoration of wetlands (from uplands that were formerly wetlands). The following mitigation ratios (the ratio of the mitigated area to the impacted area) shall apply:

Wetland Type	Primary Basin	Secondary Basin
1	3:1	3:1
2	2:1	1.5:1
3	1.5:1	1:1

Compensatory mitigation as wetland enhancement (that is, the improvement of existing wetlands) shall also be allowed. In primary basins, no more than one-third (1/3) of the mitigation may consist of enhancement; in secondary basins, no more than one-half (1/2) of the mitigation may consist of enhancement.

On-site mitigation is presumed to be preferable to off-site mitigation. The decision maker may

approve a plan to implement all or a portion of the required mitigation off-site, if the off-site mitigation is within the same drainage basin as the property that will be impacted by the project. The applicant shall demonstrate that the off-site mitigation will result in higher wetland functions, values, and/or acreage than on-site mitigation. Required compensatory mitigation ratios shall be the same for on-site or off-site mitigation, or a combination of both.

If the proposed on-site or off-site mitigation plan will result in the creation or expansion of a wetland or its buffer on any property other than the subject property, the plan shall not be approved until the applicant submits to the Planning Official a copy of a statement signed by the owners of all affected properties, in a form approved by the City Attorney and recorded in the King County Recorder's Office, consenting to the wetland and/or buffer creation or increase on such property.

Applicants proposing to alter wetlands or their buffers shall submit a mitigation plan prepared by a qualified professional. The mitigation plan shall consist of a description of the existing functions and values of the wetlands and buffers affected by the proposed project, the nature and extent of impacts to those areas, and the mitigation measures to offset those impacts. The mitigation plan shall also contain a drawing that illustrates the compensatory mitigation elements. The plan and/or drawing shall list plant materials and other habitat features to be installed.

To ensure success of the mitigation plan, the applicant shall submit a monitoring and maintenance program prepared by a qualified professional. At a minimum, the monitoring and maintenance plan shall include the following:

a. The goals and objectives for the mitigation plan;

b. Success criteria by which the mitigation will be assessed;

c. Plans for a 5-year monitoring and maintenance program;

d. A contingency plan in case of failure; and

e. Proof of a written contract with a qualified professional who will perform the monitoring program.

The monitoring program shall consist of at least two (2) site visits per year by a qualified professional, with annual progress reports submitted to the Planning Official and all other agencies with jurisdiction.

The cost of producing and implementing the mitigation plan, the monitoring and maintenance program, reports, and drawing, as well as the review of each component by the City's wetland

consultant, shall be borne by the applicant.

(Ord. 4491 § 11, 2015; Ord. 3834 § 1, 2002)

90.60 Wetland Buffer Modification

1. Modification of Wetland Buffers when Wetland Is Also To Be Modified – Wetland buffer impact is assumed to occur when wetland fill or modification is proposed. Any proposal for wetland fill/modification shall include provisions for establishing a new wetland buffer zone to be located around the compensatory mitigation sites and to be equal in width to its standard buffer specified in KZC 90.45(1) or a buffer reduced in accordance with this section by no more than one-third (1/3) of the standard buffer width in all cases (regardless of wetland type or basin type).

2. Modification of Wetland Buffers when Wetland Is Not To Be Modified – No land surface modification may occur and no improvement may be located in a wetland buffer, except as provided for in this subsection. Buffer widths may be decreased if an applicant receives a modification request approval.

a. Types of Buffer Modifications – Buffers may be reduced through one (1) of two (2) means, either (1) buffer averaging, or (2) buffer reduction with enhancement. A combination of these two (2) buffer reduction approaches shall not be used:

1) Buffer averaging requires that the area of the buffer resulting from the buffer averaging is equal in size and quality to the buffer area calculated by the standards specified in KZC 90.45(1). Buffers may not be reduced at any point by more than one-third (1/3) of the standards specified in KZC 90.45(1). Buffer averaging calculations shall only consider the subject property.

2) Buffers may be decreased through buffer enhancement. The applicant shall demonstrate that through enhancing the buffer (by removing invasive plants, planting native vegetation, installing habitat features such as downed logs or snags, or other means), the reduced buffer will function at a higher level than the existing standard buffer. At a minimum, a buffer enhancement plan shall provide the following: (a) a map locating the specific area of enhancement; (b) a planting plan that uses native species, including groundcover, shrubs, and trees; and (c) a monitoring and maintenance program prepared by a qualified professional consistent with the standards specified in KZC 90.55(4). Buffers may not be reduced at any point by more than one-third (1/3) of the standards in KZC 90.45(1).

b. Review Process and Decisional Criteria – Modification requests for averaging or reduction/enhancement of Types 1 and 2 wetland buffers shall be considered by the Hearing Examiner pursuant to Process IIA, described in Chapter 150 KZC. Modification requests for averaging or reduction/enhancement of Type 3 wetland buffers shall be considered by the

Planning Official.

An improvement or land surface modification shall be approved in a wetland buffer only if:

1) It is consistent with *Kirkland's Streams, Wetlands and Wildlife Study* (The Watershed Company, 1998) and the *Kirkland Sensitive Areas Regulatory Recommendations Report* (Adolfson Associates, Inc., 1998);

2) It will not adversely affect water quality;

3) It will not adversely affect fish, wildlife, or their habitat;

4) It will not have an adverse effect on drainage and/or storm water detention capabilities;

5) It will not lead to unstable earth conditions or create an erosion hazard;

6) It will not be materially detrimental to any other property or the City as a whole;

7) Fill material does not contain organic or inorganic material that would be detrimental to water quality or to fish, wildlife, or their habitat;

8) All exposed areas are stabilized with vegetation normally associated with native wetland buffers, as appropriate; and

9) There is no practicable or feasible alternative development proposal that results in less impact to the buffer.

As part of the modification request, the applicant shall submit a report prepared by a qualified professional and fund a review of this report by the City's wetland consultant. The report shall assess the habitat, water quality, storm water detention, ground water recharge, shoreline protection, and erosion protection functions of the buffer; assess the effects of the proposed modification on those functions; and address the nine (9) criteria listed in this subsection (2)(b) of this section.

(Ord. 4072 § 1, 2007; Ord. 3834 § 1, 2002)

90.65 Wetland Restoration

Planning Official approval is required prior to wetland restoration. The Planning Official may permit or require the applicant or property owner to restore and maintain a wetland and/or its buffer by removing material detrimental to the area, such as debris, sediment, or vegetation. The Planning Official may also permit or require the applicant to restore a wetland or its buffer through the addition of native plants and other habitat features. See also KZC 95.23(5)(d)(2), Trees in Critical Areas or Critical Area Buffers; and KZC 95.50(11), Installation Standards for Required Plantings – Mitigation and Restoration

Plantings in Critical Areas and Critical Area Buffers. Restoration may be required whenever a condition detrimental to water quality or habitat exists. When wetland restoration is required by the City, the requirements of KZC 90.55(4), Compensatory Mitigation, shall apply.

(Ord. 4238 § 2, 2010; Ord. 4010 § 3, 2005; Ord. 3834 § 1, 2002)

90.70 Wetland Access

The City may develop access through a wetland and its buffer in conjunction with a public park.

(Ord. 3834 § 1, 2002)

MINOR LAKEs

90.75 Totem Lake and Forbes Lake

The majority, if not the entirety, of the perimeters of Totem Lake and Forbes Lake meet the definition of wetlands. All activities in the shallow (less than or equal to 6.6 feet) portions of these lakes as well as in their contiguous wetlands (located above the high waterline) are regulated pursuant to KZC 90.35 through 90.70. Activities in deep water portions (water depths greater than 6.6 feet) of these lakes, that is, waterward of the lakes' perimeter wetlands, shall be regulated as follows:

1. The Planning Official may permit or require the applicant or property owner to rehabilitate and maintain a lake by removing material detrimental to the lake, such as debris, sediment, or non-native vegetation. Rehabilitation may be required when a condition detrimental to water quality or habitat exists. Decisions made under this paragraph may be appealed in accordance with KZC 90.160.

2. Moorage structures are permitted in Totem Lake and Forbes Lake. The Planning Official shall consider requests to construct, replace, or repair structures concurrently with the Washington Department of Fish and Wildlife's review of a Hydraulic Project Approval (HPA), or upon notification by that agency that an HPA is not required.

3. The Planning Official shall review applications for moorage structures using Process I, described in Chapter 145 KZC. The Planning Director shall authorize a moorage structure to be constructed only if (a) it is accessory to a dwelling unit or public park on the subject property, and (b) no significant habitat area will be destroyed.

4. A moorage structure shall extend no farther than is necessary to function properly, but in no event may extend more than 125 feet waterward of the high waterline.

5. A moorage structure shall not be treated with creosote or oil base or toxic substances.

6. Docks and pier decks and the tops of other moorage structures shall not be more than two (2) feet above the high waterline.

7. Bulkheads are prohibited unless (a) necessary to prevent significant erosion and (b) the use of vegetation or other "bioengineering" materials and techniques would not sufficiently stabilize the shoreline.

(Ord. 3834 § 1, 2002)

STREAMs

90.80 Activities in or Near Streams

No land surface modification or tree removal may occur and no improvements may be located in a stream or its buffer except as provided in this chapter.

(Ord. 4320 § 1, 2011; Ord. 3834 § 1, 2002)

90.85 Stream Determinations

The Planning Official shall determine whether a stream or stream buffer is present on the subject property using the following provisions. During or immediately following a site inspection, the Planning Official shall make an initial assessment as to whether a stream exists on any portion of the subject property or surrounding area (which shall be the area within approximately 100 feet of the subject property).

If the initial site inspection indicates the presence of a stream, the Planning Official shall determine, based on the definitions contained in this chapter and after a review of all information available to the City, the classification of the stream.

If this initial site inspection does not indicate the presence of a stream on or near the subject property, no additional stream study will be required.

If an applicant disagrees with the Planning Official's determination that a stream exists on or near the subject property or the Planning Official's classification of a stream, the applicant shall submit a report prepared by a qualified professional approved by the Planning Official that independently evaluates the presence of a stream or the classification of the stream, based on the definitions contained in this chapter.

The Planning Official shall make final determinations regarding the existence of a stream and the proper classification of that stream. This determination may be appealed pursuant to the provisions of KZC 90.160. The Planning Official's decision under this section shall be used for review of any development activity proposed on the subject property for which an application is received within two (2) years of the decision; provided, that the Planning Official may modify any decision whenever physical circumstances have markedly and demonstrably changed on the subject property or the surrounding area as a result of natural processes or human activity.

(Ord. 3834 § 1, 2002)

90.90 Stream Buffers and Setbacks

1. Stream Buffers – No land surface modification or tree removal shall occur and no improvement may be located in a stream or its buffer, except as provided in this section through KZC 90.120. See also KZC 95.23(5)(d)(2), Trees in Critical Areas or Critical Area Buffers; and KZC 95.50(11), Installation Standards for Required Plantings – Mitigation and Restoration Plantings in Critical Areas and Critical Area Buffers. Required, or standard, buffers for streams are as follows:

Stream Class	Primary Basins	Secondary Basins
A	75 feet	N/A
B	60 feet	50 feet
C	35 feet	25 feet

Stream buffers shall be measured from each side of the top of the slope of the channel of the stream except that where streams enter or exit pipes, the buffer shall be measured in all directions from the pipe opening (see Plates 16 and 16A of Chapter 180 KZC). Essential improvements to accommodate required vehicular, pedestrian, or utility access to the subject property may be located within those portions of stream buffers which are measured toward culverts from culvert openings.

2. Buffer Setback – Structures shall be set back at least 10 feet from the designated or modified stream buffer. The Planning Official may allow within this setback minor improvements which would have no potential adverse effect during their construction, installation, use, or maintenance to fish, wildlife, or their habitat or to any vegetation in the buffer or adjacent stream. The Planning Official's decision may be appealed in accordance with KZC 90.160.

3. Storm Water Outfalls – Surface discharge of storm water through stream buffers and buffer setbacks is required unless a piped system is approved pursuant to this section. Storm water outfalls (piped systems) may be located within the buffer setback specified in subsection (2) of this section and within the buffers specified in subsection (1) of this section only when the Public Works and Planning Officials both determine, based on a report prepared by a qualified professional under contract to the City and paid for by the applicant, that surface discharge of storm water through the buffer would clearly pose a threat to slope stability; and if the storm water outfall will not:

a. Adversely affect water quality;

b. Adversely affect fish, wildlife, or their habitat;

c. Adversely affect drainage or storm water detention capabilities;

d. Lead to unstable earth conditions or create erosion hazards or contribute to scouring actions;

e. Be materially detrimental to any other property in the area of the subject property or to the City as a whole, including the loss of significant open space or scenic vistas.

The decision of the Planning and Public Works Officials may be appealed in accordance with KZC 90.160.

If a pipe system is used, catch basins may be located within the buffer setback of subsection (2) of this section, but must be installed as far as feasible from the buffer boundary (see Plate 25 of Chapter 180 KZC). Under this subsection, pipe conveying storm water may be located within the buffer, but catch basins may not. Detention and water quality treatment devices shall not be located within the stream buffers or buffer setbacks of this section except as provided below.

4. Water Quality Facilities – Water quality facilities, as determined by the Planning Official, may be located within the stream buffers of subsection (1) of this section. The Planning Official shall approve a proposal to install a water quality facility within the outer one-half (1/2) of a stream buffer if:

a. It will not adversely affect water quality;

b. It will not adversely affect fish, wildlife, or their habitat;

c. It will not adversely affect drainage or storm water detention capabilities;

d. It will not lead to unstable earth conditions or create erosion hazards or contribute to scouring actions;

e. It will not be materially detrimental to any other property in the area of the subject property or to the City as a whole, including the loss of significant open space or scenic vistas;

f. The existing buffer is already degraded as determined by a qualified professional;

g. Its installation of the water quality facility would be followed immediately by enhancement of an area equal in size and immediately adjacent to the affected portion of the buffer; and

h. Once installed, it would not require any further disturbance or intrusion into the buffer.

The Planning Official shall approve a proposal by a public agency to install a water quality facility elsewhere in a stream buffer if Criteria i – l (below) are met in addition to a – h (above):

i. The project includes enhancement of the entire buffer;

j. The project would provide an exceptional ecological benefit off-site;

k. The water quality facility, once installed, would not require any further disturbance or intrusion into the buffer; and

l. There is no practicable or feasible alternative proposal that results in less impact to the buffer.

The Planning Official's decision may be appealed in accordance with KZC 90.160.

5. Minor Improvements – Minor improvements may be located within the sensitive area buffers specified in subsection (1) of this section. These minor improvements shall be located within the outer one-half (1/2) of the sensitive area buffer, except where approved stream crossings are made. The Planning Official shall approve a proposal to construct a minor improvement within a sensitive area buffer if:

a. It will not adversely affect water quality;

b. It will not adversely affect fish, wildlife, or their habitat;

c. It will not adversely affect drainage or storm water detention capabilities;

d. It will not lead to unstable earth conditions or create erosion hazards or contribute to scouring actions; and

e. It will not be materially detrimental to any other property in the area of the subject property or to the City as a whole, including the loss of significant open space or scenic vistas.

The Planning Official may require the applicant to submit a report prepared by a qualified professional which describes how the proposal will or will not comply with the criteria for approving a minor improvement. The Planning Official's decision may be appealed in accordance with KZC 90.160.

(Ord. 4320 § 1, 2011; Ord. 4238 § 2, 2010; Ord. 4010 § 3, 2005; Ord. 3834 § 1, 2002)

90.95 Stream Buffer Fence or Barrier

Prior to beginning development activities, the applicant shall install 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 stream buffer with silt screen fabric installed per City standard, in a manner approved by the Planning Official. The construction-phase fence shall remain upright in the approved location for the duration of development activities.

Upon project completion, the applicant shall install between the upland boundary of all stream buffers and the developed portion of the site, either (1) a permanent 3- to 4-foot-tall split rail fence; or (2)

permanent planting of equal barrier value; or (3) equivalent barrier, as approved by the Planning Official. Installation of the permanent fence or planted barrier must be done by hand where necessary to prevent machinery from entering the stream or its buffer. (Ord. 3834 § 1, 2002)

90.100 Stream Buffer Modification

1. Types of Buffer Modification – Buffers may be reduced through one (1) of two (2) means, either (a) buffer averaging; or (b) buffer reduction with enhancement. A combination of these two (2) buffer reduction approaches shall not be used.

a. Buffer averaging requires that the area of the buffer resulting from the buffer averaging be equal in size and quality to the buffer area calculated by the standards specified in KZC 90.90(1). Buffers may not be reduced at any point by more than one-third (1/3) of the standards in KZC 90.90(1). Buffer averaging calculations shall only consider the subject property.

b. Buffers may be decreased through buffer enhancement. The applicant shall demonstrate that through enhancing the buffer (by removing invasive plants, planting native vegetation, installing habitat features such as downed logs or snags, or other means) the reduced buffer will function at a higher level than the standard existing buffer. A buffer enhancement plan shall at a minimum provide the following: (1) a map locating the specific area of enhancement; (2) a planting plan that uses native species, including groundcover, shrubs, and trees; and (3) a monitoring and maintenance program prepared by a qualified professional consistent with the standards specified in KZC 90.55(4). Buffers may not be reduced at any point by more than one-third (1/3) of the standards in KZC 90.90(1).

2. Review Process and Decisional Criteria – Modification requests for averaging or reduction/enhancement of Class A stream buffers shall be considered by the Hearing Examiner pursuant to Process IIA, described in Chapter 150 KZC. Modification requests for averaging or reduction/enhancement of Class B stream buffers shall be considered by the Planning Official pursuant to Process I, described in Chapter 145 KZC. Modification requests for averaging or reduction/enhancement of Class C stream buffers shall be considered by the Planning Official.

An improvement or land surface modification shall be approved in a stream buffer only if:

a. It is consistent with *Kirkland's Streams, Wetlands and Wildlife Study* (The Watershed Company, 1998) and the *Kirkland Sensitive Areas Regulatory Recommendations Report* (Adolfson Associates, Inc., 1998);

b. It will not adversely affect water quality;

c. It will not adversely affect fish, wildlife, or their habitat;

d. It will not have an adverse effect on drainage and/or storm water detention capabilities;

e. It will not lead to unstable earth conditions or create an erosion hazard or contribute to scouring actions;

f. It will not be materially detrimental to any other property or the City as a whole;

g. Fill material does not contain organic or inorganic material that would be detrimental to water quality or to fish, wildlife, or their habitat;

h. All exposed areas are stabilized with vegetation normally associated with native stream buffers, as appropriate; and

i. There is no practicable or feasible alternative development proposal that results in less impact to the buffer.

As part of the modification request, the applicant shall submit a report prepared by a qualified professional and fund a review of this report by the City's wetland consultant. The report shall assess the habitat, water quality, storm water detention, ground water recharge, and erosion protection functions of the buffer; assess the effects of the proposed modification on those functions; and address the nine (9) criteria listed in this subsection.

(Ord. 4072 § 1, 2007; Ord. 3834 § 1, 2002)

90.105 Stream Relocation or Modification

A proposal to relocate or modify a Class C stream shall be considered by the Planning Official. A proposal to relocate or modify a Class A or B stream shall be considered by the Planning Official pursuant to Process I. The Planning Official shall permit a stream to be relocated or modified only if water quality, conveyance, fish and wildlife habitat, wetland recharge (if hydrologically connected to a wetland), and storm water detention capabilities of the stream, will be significantly improved by the relocation or modification. Convenience to the applicant in order to facilitate general site design may not be considered.

A proposal to relocate or modify a Class A stream shall be approved only if the Washington Department of Fish and Wildlife issues a Hydraulic Project Approval for the project. Furthermore, all modifications shall be consistent with *Kirkland's Streams, Wetlands and Wildlife Study* (The Watershed Company, 1998) and the *Kirkland Sensitive Areas Regulatory Recommendations Report* (Adolfson Associates, Inc., 1998).

If the proposed stream activity will result in the creation or expansion of a stream or its buffer on any property other than the subject property, the Planning Official shall not approve the plan until the applicant submits to the Planning Official a copy of a statement signed by the owners of all affected properties, in a form approved by the City Attorney and recorded in the King County Recorder's

Office, consenting to the sensitive area and/or buffer creation or increase on such property.

Prior to the Planning Official's approval of a stream relocation or modification, the applicant shall submit a stream relocation/modification plan prepared by a qualified professional approved by the Planning Official. The cost of producing and implementing the stream relocation/modification plan, and the cost of review of that plan by the City's stream consultant shall be borne by the applicant. This plan shall contain or demonstrate the following:

1. A topographic survey showing existing and proposed topography and improvements;

2. The filling and revegetation of the existing stream channel;

3. A proposed phasing plan specifying time of year for all project phases;

4. The ability of the new stream channel to accommodate flow and velocity of 100-year storm events; and

5. The design and implementation features and techniques listed below, unless clearly and demonstrably inappropriate for the proposed relocation or modification:

a. The creation of natural meander patterns;

b. The formation of gentle and stable side slopes, no steeper than two (2) feet horizontal to one (1) foot vertical, and the installation of both temporary and permanent erosion-control features (the use of native vegetation on stream banks shall be emphasized);

c. The creation of a narrow sub-channel (thalweg) against the south or west stream bank;

d. The utilization of native materials;

e. The installation of vegetation normally associated with streams, emphasizing native plants with high food and cover value for fish and wildlife;

f. The creation of spawning areas, as appropriate;

g. The re-establishment of fish population, as appropriate;

h. The restoration of water flow characteristics compatible with fish habitat areas;

i. Demonstration that the flow and velocity of the stream after relocation or modification shall not be increased or decreased at the points where the stream enters and leaves the subject property, unless the change has been approved by the Planning Official to improve fish and wildlife habitat or to improve storm water management; and

j. A written description of how the proposed relocation or modification of the stream will significantly improve water quality, conveyance, fish and wildlife habitat, wetland recharge (if hydrologically connected to a wetland), and storm water detention capabilities of the stream.

Prior to diverting water into a new stream channel, a qualified professional approved by the Planning Official shall inspect the completed new channel and issue a written report to the Planning Official stating that the new stream channel complies with the requirements of this section. The cost for this inspection and report shall be borne by the applicant.

(Ord. 4491 § 11, 2015; Ord. 3834 § 1, 2002)

90.110 Bulkheads in Streams

Bulkheads are not permitted along a stream except as provided in this section. A proposal for a bulkhead shall be reviewed and decided upon by the Planning Official. Decisions made under this subsection may be appealed in accordance with KZC 90.160. The Planning Official shall allow a bulkhead to be constructed only if:

1. It is not located within a wetland or between a wetland and a stream;

2. It is needed to prevent significant erosion;

3. The use of vegetation and/or other biological materials would not sufficiently stabilize the stream bank to prevent significant erosion;

4. The applicant submits a plan prepared by a qualified professional approved by the Planning Official that shows a bulkhead and implementation techniques that meet the following criteria:

a. There will be no adverse impact to water quality;

b. There will be no adverse impact to fish, wildlife, and their habitat;

c. There will be no increase in the velocity of stream flow, unless approved by the Planning Official to improve fish habitat;

d. There will be no decrease in flood storage volumes;

e. Neither the installation, existence, nor operation of the bulkhead will lead to unstable earth conditions or create erosion hazards or contribute to scouring actions; and

f. Neither the installation, existence, nor operation of the bulkhead will be detrimental to any other property or the City as a whole.

The bulkhead shall be designed and constructed to minimize the transmittal of water current and

energy to other properties. Changes in the horizontal or vertical configuration of the land shall be kept to a minimum. Fill material used in construction of a bulkhead shall be non-dissolving and non-decomposing. The applicant shall also stabilize all exposed soils by planting native riparian vegetation with high food and cover value for fish and wildlife.

(Ord. 3834 § 1, 2002)

90.115 Culverts in Streams

Culverts are not permitted in streams except as specified in this section. The Planning Official shall review and decide upon an application to place a stream in a culvert under an access drive, driveway, or street. Decisions made under this subsection may be appealed in accordance with KZC 90.160. The Planning Director will review and decide upon proposals to place streams in culverts, other than as specified above, using Process I, described in Chapter 145 KZC. A stream shall be allowed to be put in a culvert only if:

1. Placing the stream in a culvert is necessary to provide required vehicular, pedestrian, or utility access to the subject property. Convenience to the applicant in order to facilitate general site design shall not be considered; and

2. The applicant submits a plan prepared by a qualified professional approved by the Planning Official that shows the culvert and implementation techniques that meet the following criteria:

a. There will be no adverse impact to water quality;

b. There will be no adverse impact to fish, wildlife, and their habitat;

c. There will be no increase in the velocity of stream flow, unless approved by the Planning Official to improve fish habitat;

d. There will be no decrease in flood storage volumes;

e. Neither the installation, existence, nor operation of the culvert will lead to unstable earth conditions or create erosion hazards or contribute to scouring actions; and

f. Neither the installation, existence, nor operation of the culvert will be detrimental to any other property or to the City as a whole.

The culvert shall be designed and constructed to allow passage of fish inhabiting the stream or which may inhabit the stream in the future. The culvert shall be large enough to accommodate a 100-year storm event. The applicant shall at all times keep the culvert free of debris and sediment so as to allow free passage of water and fish. The Planning Official shall require a security or perpetual culvert maintenance agreement under KZC 90.145 for continued maintenance of the culvert.

If a proposal for a culvert is denied, a bridge may be approved if the bridge complies with the above criteria.

If a proposed project requires approval through Process IIB, the City Council may require that any stream in a culvert on the subject property be opened, relocated, and restored, consistent with the provisions of this subsection.

(Ord. 3834 § 1, 2002)

90.120 Stream Rehabilitation

Planning Official approval is required prior to stream rehabilitation. The Planning Official may permit or require the applicant or property owner to restore and maintain a stream and/or its buffer by removing material detrimental to the stream and its surrounding area such as debris, sediment, or vegetation. The Planning Official may also permit or require the applicant to restore a stream or its buffer through the addition of native plants and other habitat features. See also KZC 95.23(5)(d)(2), Trees in Critical Areas or Critical Area Buffers; and KZC 95.50(11), Installation Standards for Required Plantings – Mitigation and Restoration Plantings in Critical Areas and Critical Area Buffers. Restoration may be required at any time that a condition detrimental to water quality or habitat exists. When stream rehabilitation is required by the City, the mitigation plan and monitoring requirements of KZC 90.55(4), shall apply.

(Ord. 4238 § 2, 2010; Ord. 4010 § 3, 2005; Ord. 3834 § 1, 2002)

GENERAL

90.125 Frequently Flooded Areas

No land surface modification may take place and no improvements may be located in a frequently flooded area except as specifically provided for in Chapter 21.56 KMC.

(Ord. 3834 § 1, 2002)

90.130 Site Requirements and Sensitive Areas Protection Techniques

In addition to any other requirements of this chapter, the applicant shall locate all improvements on the subject property to minimize adverse impacts to sensitive areas. In order to minimize adverse impacts to sensitive areas or to other areas not subject to development activity, the decision maker may require construction techniques, conditions, and restrictions, including:

1. The decision maker may limit development activity in or near sensitive areas to specific months and to a maximum number of continuous days or hours in order to minimize adverse impacts.

2. The decision maker may require that equipment be operated from only one (1) side of a stream in order to minimize bank disruption.

3. The applicant shall install a berm, curb, or other physical barrier during construction and following completion of the project when necessary to prevent direct runoff and erosion from any modified land surface into any sensitive area.

(Ord. 3834 § 1, 2002)

90.135 Maximum Development Potential

1. Dwelling Units – The maximum potential number of dwelling units for a site which contains a wetland, stream, minor lake, or their buffers shall be the buildable area in square feet divided by the minimum lot area per unit or the maximum units per acre as specified by Chapters 15 through 56 KZC, plus the area of the required sensitive area buffer in square feet divided by the minimum lot area per unit, the maximum units per acre or as specified by Chapters 15 through 56 KZC, multiplied by the development factor derived from subsection (2) of this section:

MAXIMUM DWELLING UNIT POTENTIAL = (BUILDABLE AREA/THE PRESCRIBED MINIMUM LOT AREA PER UNIT OR MAXIMUM UNITS PER ACRE) + [(BUFFER AREA/THE PRESCRIBED MINIMUM LOT AREA PER UNIT OR MAXIMUM UNITS PER ACRE) X (DEVELOPMENT FACTOR)]

For purposes of this subsection only, “buildable area” means the total area of the subject property minus sensitive areas and their buffers.

For developments providing affordable housing units pursuant to Chapter 112 KZC, or cottage, carriage or two/three-unit homes pursuant to Chapter 113 KZC, the density bonus and resulting maximum density shall be calculated using the maximum dwelling unit potential of this section as the base to which the bonus units will be added.

For multifamily development, if application of the maximum development potential formula results in a fraction, the number of permitted dwelling units shall be rounded up to the next whole number (unit) if the fraction of the whole number is at least 0.50. For single-family development, if application of the maximum development potential formula results in a fraction, the number of permitted dwelling units (lots) shall not be rounded up, regardless of the fraction. This provision shall not be construed to preclude application of Chapter 22.28 KMC.

Lot size and/or density may be limited by or through other provisions of this code or other applicable law, and the application of the provisions of this chapter may result in the necessity for larger lot sizes or lower density due to inadequate buildable area.

2. Development Factor – The development factor, consisting of a “percent credit,” to be used in computing the maximum potential number of dwelling units for a site which contains a sensitive area

buffer is derived from the following table:

Percentage of Site in Sensitive Area Buffer			Counted at
< 1	to	10%	100%
> 10	to	20%	90%
> 20	to	30%	80%
> 30	to	40%	70%
> 40	to	50%	60%
> 50	to	60%	50%
> 60	to	70%	40%
> 70	to	80%	30%
> 80	to	90%	20%
> 90	to	100%	10%

(Ord. 4476 § 3, 2015; Ord. 4252 § 1, 2010; Ord. 4196 § 1, 2009; Ord. 4120 § 1, 2007; Ord. 3938 § 1, 2004; Ord. 3834 § 1, 2002)

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.

(Ord. 4072 § 1, 2007)

90.145 Bond or Performance Security

The Planning Official shall require a performance or maintenance bond, a performance or maintenance security, a perpetual culvert maintenance agreement, and/or a perpetual landscape maintenance agreement, as determined to be appropriate by the Planning Official, to ensure compliance with any aspect of this chapter or any decision or determination made pursuant to this chapter.

1. Performance or Maintenance Bond or Security Requirement – The performance or maintenance security required by the Planning Official shall be provided in such forms and amounts as the Planning Official deems necessary to assure that all work or actions are satisfactorily completed or maintained in accordance with the approved plans, specifications, permit or approval requirements, and applicable regulations, and to assure that all work or actions not satisfactorily completed or maintained will be corrected to comply with approved plans, specifications, requirements, and regulations to restore environmental damage or degradation, protect fish and wildlife habitat and protect the health, safety, and general welfare of the public.

2. Form of Performance Security – The performance security shall be a surety bond obtained from companies registered as surety in the state or certified as acceptable sureties on federal bonds. In lieu of a surety bond, the Planning Official may allow alternative performance security in the form of an assignment of funds or account, an escrow agreement, an irrevocable letter of credit, or other financial security device in an amount equal to that required for a surety bond. The surety bond or other performance security shall be conditioned on the work being completed or maintained in accordance with requirements, approvals, or permits; on the site being left or maintained in a safe condition; and on the site and adjacent or surrounding areas being restored in the event of damages or other environmental degradation from development or maintenance activities conducted pursuant to the permit or approval.

3. Amount of Performance Security – The amount of the performance or maintenance security shall be 125 percent of the estimated cost, as approved by the Planning Official, of conformance to plans, specifications, and permit or approval requirements under this chapter, including corrective work and compensation, enhancement, mitigation, maintenance, and restoration of sensitive areas. In addition, an administrative deposit shall be paid as required in KZC 175.25. All bond or performance security shall be submitted in their original form with original signatures of authorization.

4. Administration of Performance Security – If during the term of the performance or maintenance

security, the Planning Official determines that conditions exist which do not conform with plans, specifications, approval or permit requirements, the Planning Official may issue a stop work order prohibiting any additional work or maintenance until the condition is corrected. The Planning Official may revoke the performance or maintenance security, or a portion thereof, in order to correct conditions that are not in conformance with plans, specifications, approval or permit requirements. The performance or maintenance security may be released upon written notification by the Planning Official, following final site inspection or completion, as appropriate, or when the Planning Official is satisfied that the work or activity complies with permits or approved requirements.

5. Exemptions for Public Agencies – State agencies and local government bodies, including school districts, shall not be required to secure the performance or maintenance of permit or approval conditions with a surety bond or other financial security device. These public agencies are required to comply with all requirements, terms, and conditions of the permit or approval, and the Planning Official may enforce compliance by withholding certificates of occupancy or occupancy approval, by administrative enforcement action, or by any other legal means.

(Ord. 3834 § 1, 2002)

90.150 Dedication

Consistent with law, the applicant shall dedicate development rights, air space, or grant a greenbelt protection or open space easement to the City to protect sensitive areas and their buffers. Land survey information shall be provided by the applicant for this purpose in a format approved by the Planning Official.

(Ord. 3834 § 1, 2002)

90.155 Liability

Prior to issuance of a land surface modification permit or a building permit, whichever is issued first, the applicant shall enter into an agreement with the City that runs with the property, in a form acceptable to the City Attorney, indemnifying the City from any claims, actions, liability and damages to sensitive areas arising out of development activity on the subject property. The applicant shall record this agreement with the King County Recorder's Office.

(Ord. 4491 § 11, 2015; Ord. 3834 § 1, 2002)

90.160 Appeals

All classifications, decisions, and determinations made pursuant to this chapter may be appealed using, except as stated below, the applicable appeal provisions of Chapter 145 KZC. If a proposed development activity requires approval through Process IIA or IIB (as described in Chapters 150 and 152 KZC, respectively), any appeal of a classification, determination, or decision will be heard as part

of that other process.

(Ord. 3834 § 1, 2002)

90.165 Setbacks and Buffers Required by Prior Approvals

If, subsequent to October 2, 1982, the City approved a variance, planned unit development, rezone, or zoning permit through Processes I, II, IIA, or IIB, as described in Chapters 120, 125, 130, 145, 150, and 152 KZC, respectively, and/or a subdivision or short subdivision for the subject property with established setbacks or buffers on the subject property from a stream or wetland, those setbacks or buffers shall apply to the original construction on the subject property. All of the provisions of this chapter which do not directly conflict with the previously imposed setback or buffer requirements shall fully apply to the subject property.

(Ord. 3834 § 1, 2002)

90.170 Planning/Public Works Official Decisions – Lapse of Approval

Planning or Public Works Official decisions authorized by this chapter shall be subject to the lapse of approval provisions of KZC 145.115.

(Ord. 4072 § 1, 2007)

CITY OF KIRKLAND
Planning and Building Department
123 5th Avenue, Kirkland, WA 98033
425.587.3600 ~ www.kirklandwa.gov

DEVELOPMENT STANDARDS LIST
File: SAR16-02993, Lu Wetland Buffer Modification

TREE PLAN SUMMARY

KMC 22.28.210 & KZC 95.30 Significant Trees.
A Tree Retention Plan was submitted with the land use application. During the review of the land use application, all proposed improvements were unknown. Therefore KZC Section 95.30 (6)(a) – Phased Review applies in regards to tree retention. There are 35 significant trees on the site, of which 31 are viable. These trees have been assessed by staff and the City's Arborist. They are identified in the applicant's arborist report. Comments from the City's Arborist follow:

Subject Property:

Existing on-site grove: Yes ☒ No ☐ Discuss - proposed impacts to grove, which trees are to be retained/removed, comments...

There are multiple groves within the wetland buffer. There are no groves proposed for impacts.

Conflicts between trees and utilities: Yes ☐ No ☒ If yes, tree #'s: _____

Acceptable Tree Protection Fencing Shown on plans: Yes ☐ No ☐ Redline Suggestions Below ☐

No tree protection fencing is necessary for this permit.

Remarks on arborist report accuracy, reasonableness of limits of disturbance, likely windfirmness of retained trees, lot setbacks and any additional discussion:

Adjacent Property:

Right-of-way or parks trees impacted: Yes ☐ No ☒ Discuss:

Trees on adjoining property impacted: Yes ☐ No ☒ Discuss: There are no neighboring trees

Observations

1. The arborist report correctly identifies all of the significant trees. Since the time the report was written, no additional trees have grown into a significant size. Tree conditions have not changed.

2. Trees #204 - #209 are a grouping of fruit trees in the southeast property corner. If fruit trees aren't desired they could be replaced with native trees which would be more appropriate for a wetland buffer.

No trees are to be removed with an approved short plat or subdivision permit. Based on the approved Tree Retention Plan, the applicant shall retain and protect all viable trees throughout the development of each single family lot except for those trees allowed to be removed for the installation of the plat infrastructure improvements with an approved Land Surface Modification permit. Subsequent approval for tree removal is granted for the construction of the house and other associated site improvements with a required Building Permit. The Planning Official is authorized to require site plan alterations to retain High Retention value trees at each stage of the project. In addition to retaining viable trees, new trees may be required to meet the minimum tree density per KZC Section 95.33.

ZONING CODE STANDARDS

85.25.1 Geotechnical Report Recommendations. The geotechnical recommendations contained in the report submitted with the building permit application shall be implemented.

90.45 Wetlands and Wetland Buffers. No land surface modification may take place and no improvement may be located in a wetland or within the environmentally sensitive area buffers for a wetland, except as specifically provided in this Section.

90.50 Wetland Buffer Fence. Prior to development, the applicant shall install a six-foot high construction phase fence along the upland boundary of the wetland buffer with silt screen fabric installed per City standard. The fence shall remain upright in the approved location for the duration of development activities. Upon project completion, the applicant shall install between the upland boundary of all wetland buffers and the developed portion of the site, either 1) a permanent 3 to 4 foot tall split rail fence, or 2) permanent planting of equal barrier value.

90.55 Monitoring and Maintenance of Wetland Buffer Modifications: Modification of a wetland buffer will require that the applicant submit a 5-year monitoring and maintenance plan consistent with the criteria found in 95.55 and which is prepared by a qualified professional and reviewed by the City's wetland consultant. The cost of the plan and the City's review shall be borne by the applicant.

95.51.2.a Required Landscaping. All required landscaping shall be maintained throughout the life of the development. The applicant shall submit an agreement to the city to be recorded with King County which will perpetually maintain required landscaping. Prior to issuance of a certificate of occupancy, the proponent shall provide a final as-built landscape plan and an agreement to maintain and replace all landscaping that is required by the City.

95.50 Tree Installation Standards. All supplemental trees to be planted shall conform to the Kirkland Plant List. All installation standards shall conform to Kirkland Zoning Code Section 95.45.

95.52 Prohibited Vegetation. Plants listed as prohibited in the Kirkland Plant List shall not be planted in the City.

105.20 Required Parking. 2 parking spaces are required for this use.

105.47 Required Parking Pad. Except for garages accessed from an alley, garages serving detached dwelling units in low density zones shall provide a minimum 20-foot by 20-foot parking pad between the garage and the access easement, tract, or right-of-way providing access to the garage.

110.60.5 Street Trees. All trees planted in the right-of-way must be approved as to species by the City. All trees must be two inches in diameter at the time of planting as measured using

the standards of the American Association of Nurserymen with a canopy that starts at least six feet above finished grade and does not obstruct any adjoining sidewalks or driving lanes.

115.25 Work Hours. It is a violation of this Code to engage in any development activity or to operate any heavy equipment before 7:00 am. or after 8:00 pm Monday through Friday, or before 9:00 am or after 6:00 pm Saturday. No development activity or use of heavy equipment may occur on Sundays or on the following holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving, and Christmas Day. The applicant will be required to comply with these regulations and any violation of this section will result in enforcement action, unless written permission is obtained from the Planning official.

115.40 Fence Location. Fences over 6 feet in height may not be located in a required setback yard. A detached dwelling unit abutting a neighborhood access or collector street may not have a fence over 3.5 feet in height within the required front yard. No fence may be placed within a high waterline setback yard or within any portion of a north or south property line yard, which is coincident with the high waterline setback yard.

A detached dwelling unit may not have a fence over 3.5 feet in height within 3 feet of the property line abutting a principal or minor arterial except where the abutting arterial contains an improved landscape strip between the street and sidewalk. The area between the fence and property line shall be planted with vegetation and maintained by the property owner.

115.42 Floor Area Ratio (F.A.R.) Limits. Floor area for detached dwelling units is limited to a maximum floor area ratio in low density residential zones. See Use Zone charts for the maximum percentages allowed. This regulation does not apply within the disapproval jurisdiction of the Houghton Community Council.

115.43 Garage Requirements for Detached Dwelling Units in Low Density Zones. Detached dwelling units served by an open public alley, or an easement or tract serving as an alley, shall enter all garages from that alley. Whenever practicable, garage doors shall not be placed on the front façade of the house. Side-entry garages shall minimize blank walls. For garages with garage doors on the front façade, increased setbacks apply, and the garage width shall not exceed 50% of the total width of the front façade. These regulations do not apply within the disapproval jurisdiction of the Houghton Community Council. Section 115.43 lists other exceptions to these requirements.

115.75.2 Fill Material. All materials used as fill must be non-dissolving and non-decomposing. Fill material must not contain organic or inorganic material that would be detrimental to the water quality, or existing habitat, or create any other significant adverse impacts to the environment.

115.90 Calculating Lot Coverage. The total area of all structures and pavement and any other impervious surface on the subject property is limited to a maximum percentage of total lot area. See the Use Zone charts for maximum lot coverage percentages allowed. Section 115.90 lists exceptions to total lot coverage calculations See Section 115.90 for a more detailed explanation of these exceptions.

115.95 Noise Standards. The City of Kirkland adopts by reference the Maximum Environmental Noise Levels established pursuant to the Noise Control Act of 1974, RCW 70.107. See Chapter 173-60 WAC. Any noise, which injures, endangers the comfort, repose, health or safety of persons, or in any way renders persons insecure in life, or in the use of property is a violation of this Code.

115.115 Required Setback Yards. This section establishes what structures, improvements and activities may be within required setback yards as established for each use in each zone.

115.115.3.g Rockeries and Retaining Walls. Rockeries and retaining walls are limited to a maximum height of four feet in a required yard unless certain modification criteria in this section are met. The combined height of fences and retaining walls within five feet of each other in a required yard is limited to a maximum height of 6 feet, unless certain modification criteria in this section are met.

115.115.3.n Covered Entry Porches. In residential zones, covered entry porches on dwelling units may be located within 13 feet of the front property line if certain criteria in this section are

met. This incentive is not effective within the disapproval jurisdiction of the Houghton Community Council.

115.115.3.o Garage Setbacks. In low density residential zones, garages meeting certain criteria in this section can be placed closer to the rear property line than is normally allowed in those zones.

115.115.3.p HVAC and Similar Equipment: These may be placed no closer than five feet of a side or rear property line, and shall not be located within a required front yard; provided, that HVAC equipment may be located in a storage shed approved pursuant to subsection (3)(m) of this section or a garage approved pursuant to subsection (3)(o)(2) of this section. All HVAC equipment shall be baffled, shielded, enclosed, or placed on the property in a manner that will ensure compliance with the noise provisions of KZC 115.95.

115.115.5.a Driveway Width and Setbacks. For a detached dwelling unit, a driveway and/or parking area shall not exceed 20 feet in width in any required front yard, and shall be separated from other hard surfaced areas located in the front yard by a 5-foot wide landscape strip. Driveways shall not be closer than 5 feet to any side property line unless certain standards are met.

115.115.5.b Driveway Setbacks. For attached and stacked dwelling units in residential zones, driveways shall have a minimum 5' setback from all property lines except for the portion of any driveway, which connects with an adjacent street. Vehicle parking areas shall have a minimum 20-foot setback from all front property lines and meet the minimum required setbacks from all other property lines for the use.

115.115.5.c Driveway Setbacks. Vehicle parking areas for schools and day-care centers greater than 12 students shall have a minimum 20-foot setback from all property lines.

115.120 Rooftop Appurtenance Screening. New or replacement appurtenances on existing buildings shall be surrounded by a solid screening enclosure equal in height to the appurtenance. New construction shall screen rooftop appurtenances by incorporating them in to the roof form.

115.135 Sight Distance at Intersection. Areas around all intersections, including the entrance of driveways onto streets, must be kept clear of sight obstruction as described in this section.

150.22.2 Public Notice Signs. Within seven (7) calendar days after the end of the 21-day period following the City's final decision on the permit, the applicant shall remove all public notice signs.

Prior to recording:

110.60.5 Landscape Maintenance Agreement. The owner of the subject property shall sign a landscape maintenance agreement, in a form acceptable to the City Attorney, to run with the subject property to maintain landscaping within the landscape strip and landscape island portions of the right-of-way (see Attachment). It is a violation to pave or cover the landscape strip with impervious material or to park motor vehicles on this strip.

110.60.6 Mailboxes. Mailboxes shall be installed in the development in a location approved by the Postal Service and the Planning Official. The applicant shall, to the maximum extent possible, group mailboxes for units or uses in the development.

Prior to issuance of a grading or building permit:

85.25.1 Geotechnical Report Recommendations. A written acknowledgment must be added to the face of the plans signed by the architect, engineer, and/or designer that he/she has reviewed the geotechnical recommendations and incorporated these recommendations into the plans.

85.40 Natural Greenbelt Protective Easement. The applicant shall submit for recording a natural greenbelt protective easement, in a form acceptable to the City Attorney, for recording with King County (see Attachment).

85.45 Liability. The applicant shall enter into an agreement with the City, which runs with the property, in a form acceptable to the City Attorney, indemnifying the City for any damage resulting from development activity on the subject property which is related to the physical condition of the property (see Attachment).

90.50 Wetland Buffer Fence. Prior to development, the applicant shall install a six-foot high construction phase fence along the upland boundary of the wetland buffer with silt screen fabric installed per City standard. The fence shall remain upright in the approved location for the duration of development activities. Upon project completion, the applicant shall install between the upland boundary of all wetland buffers and the developed portion of the site, either 1) a permanent 3 to 4 foot tall split rail fence, or 2) permanent planting of equal barrier value.

90.150 Natural Greenbelt Protective Easement. The applicant shall submit for recording a natural greenbelt protective easement, in a form acceptable to the City Attorney, for recording with King County (see Attachment).

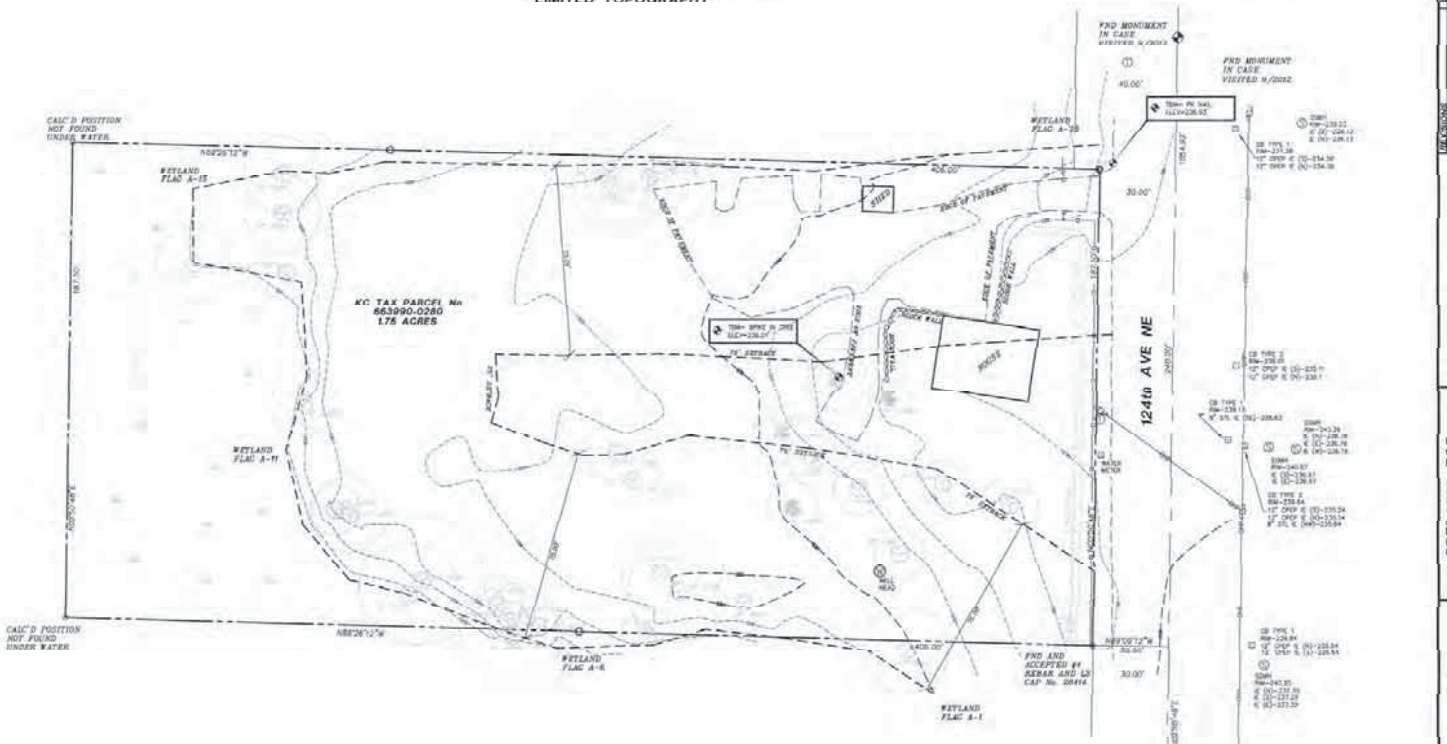
90.155 Liability. The applicant shall enter into an agreement with the City which runs with the property, in a form acceptable to the City Attorney, indemnifying the City for any damage resulting from development activity on the subject property which is related to the physical condition of the stream, minor lake, or wetland (see Attachment).

95.30(4) Tree Protection Techniques. A description and location of tree protection measures during construction for trees to be retained must be shown on demolition and grading plans.

95.34 Tree Protection. Prior to development activity or initiating tree removal on the site, vegetated areas and individual trees to be preserved shall be protected from potentially damaging activities. Protection measures for trees to be retained shall include (1) placing no construction material or equipment within the protected area of any tree to be retained; (2) providing a visible temporary protective chain link fence at least 6 feet in height around the protected area of retained trees or groups of trees until the Planning Official authorizes their removal; (3) installing visible signs spaced no further apart than 15 feet along the protective fence stating “Tree Protection Area, Entrance Prohibited” with the City code enforcement phone number; (4) prohibiting excavation or compaction of earth or other damaging activities within the barriers unless approved by the Planning Official and supervised by a qualified professional; and (5) ensuring that approved landscaping in a protected zone shall be done with light machinery or by hand.

27.06.030 Park Impact Fees. New residential units are required to pay park impact fees prior to issuance of a building permit. Please see KMC 27.06 for the current rate. Exemptions and/or credits may apply pursuant to KMC 27.06.050 and KMC 27.06.060. If a property contains an existing unit to be removed, a “credit” for that unit shall apply to the first building permit of the subdivision.

WETLAND SURVEY AND LIMITED TOPOGRAPHY



SURVEY NOTES:

1. THE PURPOSE OF THIS SURVEY IS TO FIELD LOCATE AND MAP THE WETLAND FLAGS AS DEPICTED HEREON IN RELATION TO THE CALCULATED PROPERTY LINES AS SHOWN. IT IS ALSO THE INTENT TO SHOW VISIBLE ABOVE GROUND IMPROVEMENTS.
2. THE WETLAND AS SHOWN WAS FIELD IDENTIFIED BY THE RAISBROOKS COMPANY AND AN EARLIER WAS PROVIDED WHICH DEPICTED FLAGS A-1 THROUGH A-25. THE SKETCH PROVIDED WAS DATED JULY 13, 2016.
3. THE LEGAL DESCRIPTION AS SHOWN HEREON IS AS PROVIDED BY THE CLIENT, SAID LEGAL DESCRIPTION IS PER KING COUNTY RECORDING No. 8505241474.
4. THE PROPERTY BOUNDARY AS SHOWN IS ALSO DEPICTED ON A RECORD OF SURVEY RECORDED FOR THIS PROJECT.
5. NO ATTEMPT WAS MADE TO IDENTIFY EASEMENTS OF RECORD OR OTHERWISE.
6. AN FIELD WORK FOR THIS PROJECT WAS CONDUCTED IN SEPTEMBER OF 2012 AND SEPTEMBER 2015 AND THIS DRAWING IS THEREFORE A REFLECTION OF CONDITIONS AT THAT TIME.
7. INSTRUMENT USED A SOKKIA SET 530 THREE SECOND TOTAL STATION WITH INDUSTRY STANDARD EQUIPMENT FOR MINIMUM ACCURACY STANDARDS AS SET FORTH BY WAC 332-130.

LEGAL DESCRIPTION:

THAT PORTION OF THE EAST HALF OF THE SOUTHWEST QUARTER OF SECTION 33, TOWNSHIP 26 NORTH, RANGE 5 EAST, WILLAMETTE MERIDIAN, IN KING COUNTY, WASHINGTON, DESCRIBED AS FOLLOWS:

BEGINNING AT THE SOUTHEAST CORNER OF SAID SUBDIVISION;
THENCE SOUTH 89°30'00" WEST 30 FEET;
THENCE NORTH 1°33'00" WEST 1992.2 FEET TO THE TRUE POINT OF BEGINNING;
THENCE SOUTH 89°30'00" WEST 406 FEET;
THENCE NORTH 1°33'00" WEST 157.5 FEET;
THENCE NORTH 89°30'00" EAST 406 FEET TO A POINT 30 FEET WEST OF THE EAST LINE OF SAID SUBDIVISION;
THENCE PARALLEL WITH SAID EAST LINE OF SAID SUBDIVISION SOUTH 1°33'00" EAST 157.5 FEET TO THE TRUE POINT OF BEGINNING.

(ALSO KNOWN AS THE EAST 406 FEET OF LOT 29 AND THE NORTH HALF OF THE EAST 406 FEET OF LOT 28, HARWOOD'S BARBER TRACTS, ACCORDING TO THE UNRECORDED PLAT THEREOF, IN KING COUNTY, WASHINGTON.)

ROBERT A. BOSSEN
STATE OF WASHINGTON
REGISTERED
PROFESSIONAL LAND SURVEYOR

BASIS OF BEARING:
HOLDING THE BEARING OF N0°05'48"E ALONG THE CENTERLINE OF 124th AVE NE AS PER THAT RECORD OF SURVEY FILED IN BOOK 235, PAGE 84, RECORDS OF KING COUNTY, WASHINGTON.

GRAPHIC SCALE
1"=20'

VERTICAL DATUM: NAVD 1988

INDEX LOCATION:
NE 1/4 SW 1/4 SW 1/4 SW 1/4 SEC 33 T 26N R 5E W.M.

33

REVISIONS	BY	DATE

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WETLAND LOCATION LIMITED TOPO

PREPARED FOR
MR. CHUCK LEE
SECTION 33, T.26N., R5E, W.M.
KING COUNTY, WASHINGTON

ENGINEERS - SURVEYORS
EASTSIDE CONSULTANTS, INC.
10215 NE 4th STREET, SUITE 5
BELLEVUE, WASHINGTON 98004
(425) 454-1265 FAX (425) 454-1270

JOB NO.	9510A
DATE	8/16
SCALE	1"=20'
DESIGNED	RB
DRAWN	RB
CHECKED	RAB/TC
APPROVED	RB

SHEET 1 OF 1

DATE: 08/25/2016

Prepared for:
David Kuo
10265 124th AV. NE.
Kirkland WA. 98033

Assignment:
Provide a tree inventory with: tree tagging, species, condition, tree protection zones (TPZ) and/or critical root zones (CRZ), impact to trees on adjoining properties within 10' of the site or that have CRZ within the proposed site improvement area, tree density calculations, replanting needed and potential planting sites, post construction viability of trees left onsite.

Purpose:

To fulfill the city code 95.30 Tree Retention Associated with Development Activity, for the construction of a Residential home at 10265 124th Ave. NE. Kirkland WA. Also Known as 10265 Residence.

Methodology:
To evaluate the trees for risk and prepare this report I drew upon my 25+ years of experience in the field of arboriculture and my formal education. Following the protocol established by the International Society of Arboriculture (ISA) Best Management Practices (BMP) for Risk Assessment ANSI A300 Part 9 And Construction Part 5.
The site assessed for any noted condition that may have a negative impact on the local forest including but not limited to: **1)** history of tree failure (wind throw) **2)** Change in Wind Patterns **3)** soil depth **4)** Soil Hydrology **5)** grade changes **6**) fungal fruiting bodies/decay pathogens.
The trees were assessed and:
1. The crown of the tree(s) were examined for current vigor. Inspecting the crown (foliage, buds and branches) for color, density, form, and annual shoot growth, limb dieback and disease. Branches were inspected for cracks and other defects, as well as needs for remedial pruning.
2. The bole or main stem of the tree(s) were inspected for decay, which includes cavities, wounds, fruiting bodies of decay (conks or mushrooms), seams, insects, bleeding, callus development, broken or dead tops, structural defects and unnatural leans. Structural defects include crooks, forks with V-shaped crotches, multiple attachments, and excessive sweep.

Site:
No trees with driplines at or near the property-line from adjoining properties were noted. No other relevant site conditions were noted.

Trees:
There are 40 significant trees (6" Diameter or greater) on this site. Plus 7 fruit trees that due structure are under 6" DBH But should be credited as they have greater value than a 2" tree planted to meet the needed tree credits.

Trees Adjacent to Site:
There are 9 trees next to the property-line and/or driplines extend over the property-lines, the trees are referenced as A-I. No trees on properties adjacent to the site will be negatively affected by the proposed tree removal and construction activity.

Tagging:
Trees are tagged with aluminum tags and numbered 171-210 A site map is included to help locate the trees (not to scale).

Tree Inventory Summary Table

Tree	Species	Scientific Name	DBH	Height	Spread	Health	Retention Value	Post Construction Viable	Proposed action	Tree Protection
171	Dogwood	*"Cornus"*	20"	40'	28'	Good	High	Yes	Retain	18'
172	Cottonwood	*"Populas trichocarpa"*	32"	104'	30'	Good	Moderate	Yes	Retain	Not Needed
173	Cottonwood	*"Populas trichocarpa"*	32"	104'	38'	Good	Moderate	Yes	Retain	Not Needed
174	Cottonwood	*"Populas trichocarpa"*	19,35"	104'	38'	Good	Moderate	Yes	Retain	Not Needed
175	Cottonwood	*"Populas trichocarpa"*	18"	60'	25'	Good	Moderate	Yes	Retain	Not Needed
176	Cottonwood	*"Populas trichocarpa"*	13"	60'	18'	F/P	Moderate	Yes	Retain	Not Needed
177	Red Alder	*"Alnus rubra"*	12"	48'	15'	Good	High	Yes/Wetlands	Retain	Not Needed
178	Red Alder	*"Alnus rubra"*	16"	48'	15'	Good	High	Yes/Wetlands	Retain	Not Needed
179	Red Alder	*"Alnus rubra"*	9"	48'	12'	Good	High	Yes/Wetlands	Retain	Not Needed
180	Red Alder	*"Alnus rubra"*	14"	35'	18'	Fair	High	Yes/Wetlands	Retain	Not Needed
181	Cottonwood	*"Populas trichocarpa"*	29"	98'	N/A	DEAD	High	Yes/Wetlands	Retain	Not Needed
182	Cottonwood	*"Populas trichocarpa"*	38"	101'	N/A	DEAD	High	Yes/Wetlands	Retain	Not Needed
183	Red Alder	*"Alnus rubra"*	11"	29'	N/A	DEAD	Moderate	Yes	Retain	Not Needed
184	Red Alder	*"Alnus rubra"*	16,10"	44'	30'	Good	High	Yes/Wetlands	Retain	Not Needed
185	Red Alder	*"Alnus rubra"*	13"	40'	20'	Fair	Moderate	Yes	Retain	Not Needed
186	Red Alder	*"Alnus rubra"*	12"	40'	20'	Fair	High	Yes	Retain	Not Needed
187	Willow	*"Salix"*	15"	38'	15'	Poor	High	Yes/Wetlands	Retain	Not Needed
188	Willow	*"Salix"*	17,8"	22'	25'	Poor	High	Yes/Wetlands	Retain	Not Needed
189	Cottonwood	*"Populas trichocarpa"*	21"	104'	50'	Good	Moderate	Yes	Retain	Not Needed
190	Cottonwood	*"Populas trichocarpa"*	32'	87'	N/A	DEAD	Moderate	Yes	Retain	Not Needed
191	Cottonwood	*"Populas trichocarpa"*	24"	100'	26'	Good	Moderate	Yes	Retain	Not Needed
192	Cottonwood	*"Populas trichocarpa"*	11"	80'	12'	Fair/PT	Moderate	Yes Poor Taper	Retain	Not Needed
193	Willow	*"Salix"*	13"	27'	15'	Fair	Moderate	Yes	Retain	Not Needed
194	Cottonwood	*"Populas trichocarpa"*	26"	102'	30'	Good	Moderate	Yes	Retain	Not Needed
195	**Cottonwood**	*"Populas trichocarpa"*	**26"**	**98'**	**25'**	Good	**Moderate**	**Remove 4 Const.**	**REMOVE**	**N/A**
196	**Cottonwood**	***"Populas trichocarpa"***	**23"**	**102'**	**30'**	**Good**	**LOW**	**Y/Rec Removal**	**Retain**	**20'**
197	Cottonwood	*"Populas trichocarpa"*	23"	100'	28'	Good	Moderate	Yes	Retain	Not Needed
198	Cottonwood	*"Populas trichocarpa"*	26"	100'	28'	Good	Moderate	Yes	Retain	Not Needed
199	Cottonwood	*"Populas trichocarpa"*	28"	90'	36'	Fair	Moderate	Yes /Crown decay	Retain	Not Needed
200	Cedar	*"Thuja plicata"*	21"	41'	25'	Good	Moderate	Yes	Retain	18'
201	**Cedar**	*"Thuja plicata"*	**22"**	**41'**	**23'**	Good	**Moderate**	**Remove 4 Const.**	**REMOVE**	**N/A**
202	Doug Fir	*"Pseudotsuga menziesii"*	34"	78'	40'	Poor	LOW	See Photos/ HAZ.	**REMOVE**	HAZARD
203	**Port orford**	*"Chamaecyparis lawsoniana"*	**10" Aver.**	**40'**	**18'**	Fair	**Low**	**Remove 4 Const.**	**REMOVE**	**N/A**
204	Plum	*"Prunus"*	12"	15'	20'	Poor	LOW	Yes	Retain	Not Needed
205	Cherry	*"Prunus"*	15"	18'	21'	Good	LOW	Yes	Retain	Not Needed
206	Apple	*"Malus"*	14"	15'	24'	Good	LOW	Yes	Retain	Not Needed
207	Pear	*"Pyrus"*	7"	11'	15'	Good	LOW	Yes	Retain	Not Needed
208	Apple	*"Malus"*	13"	14'	18'	Good	LOW	Yes	Retain	Not Needed
209	Apple	*"Malus"*	11"	14'	18'	Good	LOW	Yes	Retain	Not Needed
210	Holly	*"Ilex aquifolium"*	13"	18'	13'	Good	LOW	Yes	Retain	Not Needed
A	Cottonwood	*"Populas trichocarpa"*	14"	90'	20'	Good	Moderate	Yes	Retain	Not Needed
B	Cottonwood	*"Populas trichocarpa"*	16"	90'	20'	Good	Moderate	Yes	Retain	Not Needed
C	Cottonwood	*"Populas trichocarpa"*	14"	90'	20'	Good	Moderate	Yes	Retain	Not Needed
D	Red Alder	*"Alnus rubra"*	14"	40'	18'	Good	High	Yes/Wetlands	Retain	Not Needed
E	Willow	*"Salix"*	12,15"	30'	40'	Poor	High	Yes/Wetlands	Retain	Not Needed
F	Willow	*"Salix"*	8,12,16"	34'	35'	Fair	Moderate	Yes	Retain	Not Needed
G	Willow	*"Salix"*	11"	35'	26'	Good	Moderate	Yes	Retain	Not Needed
H	**Cherry**	*"prunus"*	21"	42'	29'	Good	High	Yes	Retain	Not Needed
I	Doug Fir	*"Pseudotsuga menziesii"*	22"	72'	30'	Good	High	Yes	Retain	Not Needed

There are 7 fruit trees onsite that branch below 4.5', because of the low branching structure they fall below the 6" minimum requirement for a "Significant tree" however these are mature trees and should count as tree credits, as these trees are better for our environment than a 2" tree.

Trees Not Viable:
Tree # 202 has poor structure, decay at old topping wound and excess trunk decay. Risk Rating is High. Tree #196 currently proposed for retention, while it is Viable at this time, as the tree grows it will conflict with the proposed building. See attached info. On cottonwoods and our urban forest.

Impacts from Tree Removal:
No negative impacts to this site, adjoining sites and/or the trees associated with them was noted from the proposed site development activities.

Limits of Disturbance:
There are 3 trees that will have construction activity in their vicinity, and of the three trees 1 is recommended for removal.
No other trees are within the Limits Of Disturbance.
Tree 171 Tree Protection Zone TPZ shall be 18' Radius in all directions.
Tree 196 Should the tree be retained the TPZ shall be 20' radius in all directions.
Tree 200 TPZ shall be 21' Radius in all directions.
The remaining trees TPZ shall be 5' outside of the dripline or 5' outside the farthest extending tree limb.
If needed the TPZ may be reduced on a case by case bias, and under the direct supervision of an ISA Certified Arborist, or professional with like certified training.

Tree Protection Fencing:
Construction fencing (chain link or like fencing is recommended) shall be installed along the established TPZ prior to commencement of site clearing and shall remain in place for the duration of the project. At no time shall any vehicle or equipment be allowed inside the TPZ/Fencing. No placing or stock-piling of any material of any kind shall be allowed inside the TPZ/Fencing.

Root Pruning:
Any roots encountered of 2" in diameter or greater, shall be cut with loppers, pruners, reciprocal saw or like device to provide a clean smooth cut. At no time shall 2" or greater diameter roots be ripped or torn.
Exposed roots shall be covered with wet burlap or like item to keep roots from drying out and shall be covered as soon as reasonably possible.

Summary:
Client is proposing to demo. An existing home and rebuild a new single family dwelling. There are 3 trees proposed to be removed and 1 recommended for removal, of the 3 proposed to be removed 1 is a non-viable hazard tree, Tree 196 is currently proposed for retention, however I recommend removal of this tree as it will conflict with the structure in the future. There are 7 fruit trees onsite that branch below 4.5', because of the low branching structure they fall below the 6" minimum requirement for a "Significant tree" however these are mature trees and should count as tree credits, as these trees are better for our environment than a 2" replacement tree.
The proposed demolition of an existing single family dwelling and construction of a new single family dwelling, will have no negative impacts to the above property or adjoining properties or the trees on them.

Tree Credits:
This Residential lot is 76,230 SQ. FT, or 1.75 Acres. Tree credits are 30 per acre. 1.75 X 30 = 52 Credits needed.
40 tree credits are on site – 4 to be removed = 37 credits + 7 Fruit trees = 44 Credits. 52-44 = 8 tree credits needed to bring lot up to code.

Replanting:
1 Tree credit is given for,
1) A 6'+ Tall Evergreen tree. 2) A 2" Diameter or greater Deciduous tree.
8 trees are needed to replant. (15 if city won't allow credit for fruit trees)

Recommended Plants:
The following Trees would work well on this site:
1) *"Styrax japonicus"* **Japanese Snowbell. 2) "***Cercidiphyllum japonicum"* **Katsura Tree. 3)** *"Cornus kousa"* **Japanese Dogwood.**
4) *"Acer macrophyllum"* **Big Leaf Maple 5)** *"Carpinus betulus" 'Fastigiata.* **European Hornbeam**
Evergreen:
1*) "Tsuga mertensiana" Mountain* **Hemlock.** 2) *"Thuja plicata" Western* **Red Cedar.** 3) "*Chamaecyparis obtuse"* **Hinoki Cypress.** 4) "*Magnolia grandiflora" St.* **Mary's Southern Magnolia**. 5) "*Calocedrus decurrens"* **Incense Cedar**
I feel that the western red cedar "Thuja plicata" planted along the North and West sides of the lot would be the preferred choices for this site.

Replanting Sites:
Replanting sites are limitless on this site, Good choices would be along the edge of the wetlands on the Northwest side of the lot and along the North property-line, as well in the vicinity of trees 195,196 that are being removed.

Replanting Specifications:
Replanting Shall Be Done in the months of October, November, February, March, April or May and shall conform to ANSI A300 part 5 **(Attached) and KZC 95.50 and 95.51. See Attached**.
Pay attention to: Nursery Stock Specs. Transporting specs. Planting and staking specs. Mulch Specs.
Also see ANSI A300 Part 2 For soil amendment Specs Prior to planting and Fertilization Post-planting.

Maintenance:

Trees Shall be watered regularly for a minimum of 2 years using 1 of the following methods:

Option 1. A permanent built-in irrigation system with an automatic controller designed and certified by a licensed landscape architect as part of the landscape plan.

Option 2. An irrigation system designed and certified by a licensed landscape architect as part of the landscape plan, which provides sufficient water to ensure that the plants will become established. The system does not have to be permanent if the plants chosen can survive adequately on their own, once established.

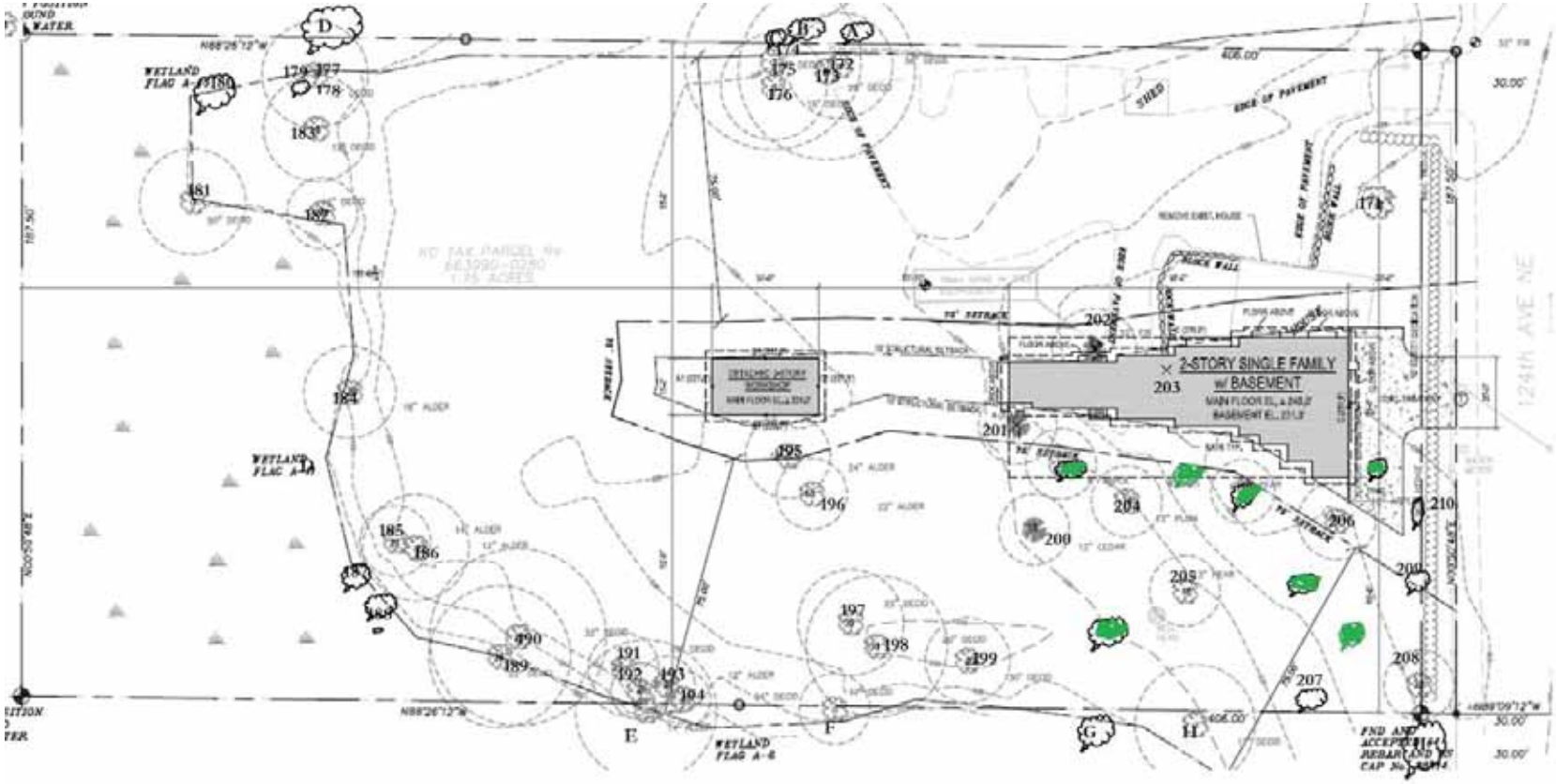
Option 3. Irrigation by hand. If the applicant chooses this option, an inspection will be required one (2) years after final inspection to ensure that the landscaping has become established.

Option 4. Approved Water Bags (Must be inspected and filled Weekly or more frequently in hot weather)

Prepared by
Daniel Maple
ISA Certified Arborist
Tree Risk Qualified
ISA # PN-7970A

Assumptions & Limiting Conditions

1. A field examination of the site was made for this report (date referenced in report.) Care has been taken to obtain all information from reliable sources in a timely fashion. Therefor all data has been verified to the best of my knowledge, the certified/consulting arborist can neither guarantee or be held responsible for the accuracy of information provided by any outside sources.
2. Any and all information provided in this report covers only the tree's that were examined and reflects the condition of those tree's at the time of inspection. This inspection is limited to a visual method of the trees in question, excluding any core sampling, probing, dissection, or excavation. There is no guarantee nor warranty, expressed or implied that any deficiencies or problems of the mentioned trees may not arise in the future.
3. All drawings, sketches, and photographs submitted with this report, are intended as visual aids only, and are not exact to scale. They should not be construed as engineering or architectural report of surveys unless noted and specified.
4. The certified arborist/consulting arborist is not required to give any testimony or to attend court for any reason considering this report unless subsequent contractual agreements are made.
5. Any alterations made to this report or loss automatically invalidates this report.
6. Unless required by law otherwise, possession of this report or a copy of this report does not imply right of publication or use for any purpose by anyone other than the person for whom it was created for, without prior expressed written permission and verbal consent of the certified/consulting arborist.
7. The report and values/opinions expressed, represent the opinion of the certified/consulting arborist, and the arborist fees are in no way contingent upon reporting any specified values, stipulated results, the occurrence of a subsequent event, nor upon finding to be reported.


2-STORY SINGLE FAMILY
w/ BASEMENT
203
WETLAND FLAG A-1
WETLAND FLAG A-6
124TH AVE NE
EDGE OF PAVEMENT
SHED
D
E
F
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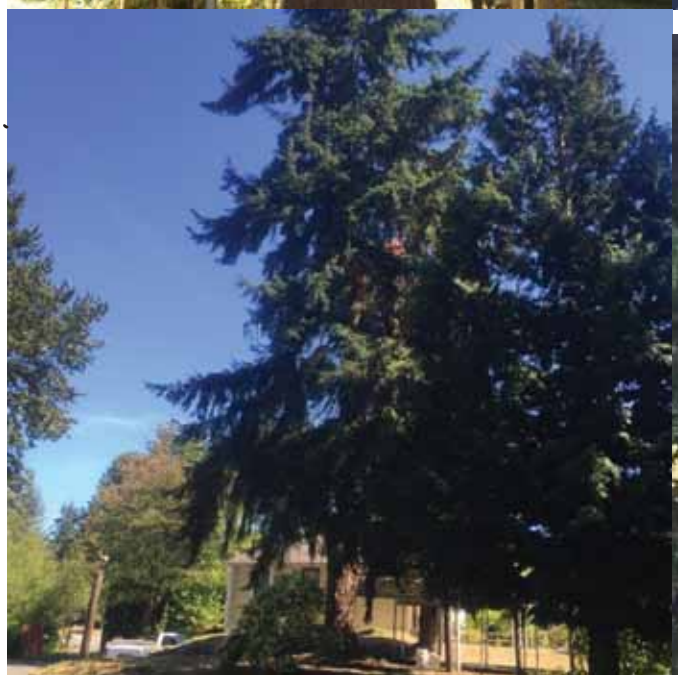

- Green dots= trees that should be credited
- Yellow circle=tree recommend to remove
- Red circle = trees to remove for construction

Note: 202 is a Hazard tree.

95.50 Installation Standards for Required Plantings

All required trees and landscaping shall be installed according to sound horticultural practices in a manner designed to encourage

quick establishment and healthy plant growth. All required landscaping shall be installed in the ground and not in above-ground containers, except for landscaping required on the top floor of a structure.

When an applicant proposes to locate a subterranean structure under required landscaping that appears to be at grade, the applicant will: (1) provide site-specific documentation prepared by a qualified expert to establish that the design will adequately support the long-term viability of the required landscaping; and (2) enter into an agreement with the City, in a form acceptable to the City Attorney, indemnifying the City from any damage resulting from development activity on the subject property which is related to the physical condition of the property. The applicant shall record this agreement with the King County Recorder's Office.

1. Compliance. It is the applicant's responsibility to show that the proposed landscaping complies with the regulations of this chapter.

2. Timing. All landscaping shall be installed prior to the issuance of a certificate of occupancy, except that the installation of any required tree or landscaping may be deferred during the summer months to the next planting season, but never for more than six (6) months. Deferred installation shall be secured with a performance bond pursuant to Chapter 175 KZC prior to the issuance of a certificate of occupancy.

3. Grading. Berms shall not exceed a slope of two (2) horizontal feet to one (1) vertical foot (2:1).

4. Soil Specifications. Soils in planting areas shall have adequate porosity to allow root growth. Soils which have been compacted to a density greater than one and three-tenths (1.3) grams per cubic centimeters shall be loosened to increase aeration to a minimum depth of 24 inches or to the depth of the larges plant root ball, whichever is greater. Imported topsoil's shall be tilled into existing soils to prevent a distinct soil interface from forming. After soil preparation is completed, motorized vehicles shall be kept off soils to prevent excessive compaction and underground pipe damage. The soil quality in any landscape area shall comply with the soil quality requirements of the Public Works Pre-Approved Plans. See subsection (9) of this section for mulch requirements.

5. Plant Selection.

a. Plant selection shall be consistent with the Kirkland Plant Lis, which is produced by the City's Natural Resource Management Team and available in the Planning and Building Department.

b. Plants shall be selected and sited to produce a hardy and drought-resistant landscape area. Selection shall consider soil type and depth, the amount of maintenance required, spacing, exposure to sun and wind, the slope and contours of the site, and compatibility with existing native vegetation preserved on the site. Preservation of existing vegetation is strongly encouraged.

c. Prohibited Materials. Plants listed as prohibited in the Kirkland Plant Lis are prohibited in required landscape areas. Additionally, there are other plants that may not be used if identified in the Kirkland Plant Lis as potentially damaging to sidewalks, roads, underground utilities, drainage improvements, foundations, or when not provided with enough growing space.

d. All plants shall conform to American Association of Nurserymen (AAN) grades and standards as published in the "American Standard for Nursery Stock" manual.

e. Plants shall meet the minimum size standards established in other sections of the KZC.

f. Multiple-stemmed trees may be permitted as an option to single-stemmed trees for required landscaping provided that such multiple-stemmed trees are at least 10 feet in height and that they are approved by the Planning Official prior to installation.

6. Fertilization. All fertilizer applications to turf or trees and shrubs shall follow Washington State University, National Arborist Association or other accepted agronomic or horticultural standards.

7. Irrigation. The intent of this standard is to ensure that plants will survive the critical establishment period when they are most vulnerable due to lack of watering. All required plantings must provide an irrigation system, using either Option 1, 2, or 3 or a combination of those options. For each option irrigation shall be designed to conserve water by using the best practical management techniques available. These techniques may include, but not be limited to: drip irrigation to minimize evaporation loss, moisture sensors to prevent irrigation during rainy periods, automatic controllers to insure proper duration of watering, sprinkler head selection and spacing designed to minimize overspray, and separate zones for turf and shrubs and for full sun exposure and shady areas to meet watering needs of different sections of the landscape.

Exceptions, as approved by the Planning Official, to the irrigation requirement may be approved xeriscape (i.e., low water usage plantings), plantings approved for low impact development techniques, established indigenous plant material, or landscapes where natural appearance is acceptable or desirable to the City. However, those exceptions will require temporary irrigation (Option 2 and/or 3) until established.

a. Option 1. A permanent built-in irrigation system with an automatic controller designed and certified by a licensed landscape architect as part of the landscape plan.

b. Option 2. An irrigation system designed and certified by a licensed landscape architect as part of the landscape plan, which provides sufficient water to ensure that the plants will become established. The system does not have to be permanent if the plants chosen can survive adequately on their own, once established.
c. Option 3. Irrigation by hand. If the applicant chooses this option, an inspection will be required one (1) year after final inspection to ensure that the landscaping has become established.
8. Drainage. All landscapes shall have adequate drainage, either through natural percolation or through an installed drainage system. A percolation rate of one-half (1/2) inch of water per hour is acceptable.
9. Mulch.
a. Required plantings, except turf or areas of established ground cover, shall be covered with two (2) inches or more of organic mulch to minimize evaporation and runoff. Mulch shall consist of materials such as yard waste, sawdust, and/or manure that are fully composed.
b. All mulches used in planter beds shall be kept at least six (6) inches away from the trunks of shrubs and trees.
10. Protection. Everything required landscaped areas, particularly trees and shrubs, must be protected from potential damage by adjacent
uses and development, including parking and storage areas. Protective devices such as bollards, wheel sops, trunk guards, root
guards, etc., may be required in some situations.
11. Mitigation and Restoration Plantings in Critical Areas and Critical Area Buffers. Plants intended to mitigate for the loss of natural resource values are subject to the following requirements in addition to the other landscaping requirements found in KZC 95.40 through 95.45. Where these requirements conflict with other requirements of this chapter, these requirements take precedence. Refer to Chapters 85 and 90 KZC for additional requirements for these areas.
a. Plant Source. Plant materials must be native and selected from the Kirkland Plant Lis. Seed source must be as local as possible, and plants must be nursery propagated unless transplanted from on-site areas approved for disturbance. These requirements must be included in the Mitigation Plan specifications.
b. Installation. Plant materials must be supported only when necessary due to extreme winds at the planting site. Where support is necessary, sakes, guy wires, or other measures must be removed as soon as the plant can support itself, usually after the first growing season. All fertilizer applications to turf or trees and shrubs shall follow Washington State University, National Arborist Association or other accepted agronomic or horticultural standards.
c. Fertilizer Applications. Fertilizers shall be applied in such a manner as to prevent its entry into waterways and wetlands and minimize its entry into storm drains. No applications shall be made within 50 feet of a waterway or wetland, or a required buffer as established by the City codes (such as Chapter 90 KZC) or Kirkland Shoreline Maser Program (SMP, KMC Title

95.51 Tree and Landscape Maintenance Requirements

The following maintenance requirements apply to all trees, including street trees, and other vegetation required to be planted or preserved by the City:

1. Responsibility for Regular Maintenance. Required trees and vegetation, fences, walls, and other landscape elements shall be considered as elements of the project in the same manner as parking, building materials, and other site details. The applicant, landowner, or successors its interest shall be responsible for the regular maintenance of required landscaping elements. Plants that die must be replaced in kind. It is also the responsibility of the property owner to maintain street trees abutting their property pursuant to KZC 95.21.

2. Maintenance Duration. Maintenance shall be ensured in the following manner except as set forth in subsections (3), (4) and (5) of this section:

a. All required landscaping shall be maintained throughout the life of the development. Prior to issuance of a certificate of occupancy, the proponent shall provide a final as-built landscape plan and an agreement to maintain and replace all landscaping that is required by the City.

b. Any existing tree or other existing vegetation designated for preservation in a tree retention plan shall be maintained for a period of five (5) years following issuance of the certificate of occupancy for the individual lot or development. After five (5) years, all trees on the property are subject to KZC 95.23 unless:

1) The tree and associated vegetation are in a grove that is protected pursuant to subsection (3) of this section; or

2) The tree or vegetation is considered to be a public benefit related to approval of a planned unit development; or

3) The tree or vegetation was retained to partially or fully meet requirements of KZC 95.40 through 95.45, required landscaping.

3. Maintenance of Preserved Grove. Any applicant who has a grove of trees identified for preservation on an approved Tree Retention Plan pursuant to KZC 95.30(2) shall provide prior to occupancy the legal instrument acceptable to the City to ensure preservation of the grove and associated vegetation in perpetuity, except that the agreement may be extinguished if the Planning Official determines that preservation is no longer appropriate.

4. Maintenance in Holmes Point Overlay Zone. Vegetation in designated Protected Natural Areas in the Holmes Point Overlay Zone is to be protected in perpetuity pursuant to KZC 70.15(8)(a). Significant trees in the remainder of the lot shall be protected in perpetuity pursuant to KZC 70.15(8)(b).

5. Maintenance of Critical Area and Critical Area Buffers. In critical areas and their buffers, native vegetation is not to be removed without City approval pursuant to KZC 95.23(5)(d). However, it is the responsibility of the property owner to maintain critical areas and their buffers by removing nonnative, invasive, and noxious plants in a manner that will not harm critical areas or their buffers. See also subsection (7) of this section and Chapters 85 and 90 KZC for additional requirements for trees and other vegetation within critical areas and critical area buffers.

6. Nonnative Invasive and Noxious Plants. It is the responsibility of the property owner to remove nonnative invasive plants and noxious plants from the vicinity of any tree or other vegetation that the City has required to be planted or protected. Removal must be performed in a manner that will not harm the tree or other vegetation that the City has required to be planted or protected.

THE WATERSHED COMPANY

SCIENCE & DESIGN

July 14, 2015

Allison Zike
City of Kirkland
Planning and Community Development
123 Fifth Avenue
Kirkland, WA 98033

Re: Lu Property Wetland and Stream Delineation Report, 2015 Revision
The Watershed Company Reference Number: 080704.6

Dear Allison:

On July 13, 2015, Ecologist Ryan Kahlo, PWS and Anna Hoenig visited the Lu property located at 10265 124th Avenue NE in Kirkland. The purpose of this visit was to conduct a wetland and stream delineation study on the subject property and to determine the buffer impacts from wetlands and streams on neighboring properties. The study is a follow-up to a September 2012 and January 2009 wetland and stream delineation study of the property, both performed by The Watershed Company.

This letter summarizes the findings of this study and details applicable federal, state, and local regulations. The following attachments are included:

- Revised Wetland Delineation Sketch
- Revised Wetland Rating Form
- 2014 Ecology Rating Form

Methods

The study area was evaluated for wetlands using methodology from *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (Regional Supplement) (US Army Corps of Engineers [Corps] May 2010). Wetland boundaries were determined on the basis of an examination of vegetation, soils, and hydrology. Areas meeting the criteria set forth in the Supplement were determined to be wetland. Soil, vegetation, and hydrologic parameters were sampled at several locations along the wetland boundaries to make the determination. Delineated wetlands were classified using the *City of Kirkland Wetland Field Data Form* (Kirkland Rating Form) and the *Western Washington Wetland Rating System* (Ecology, Oct 2014) (Ecology Rating Form).

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

Wetland boundaries are marked with pink- and black-striped flags. The flags are numbered A-1 through A-25. Data points are marked with yellow- and black-striped flags.

A review of publicly available information, including on-line soil maps provided by the National Resource Conservation Service (NRCS), was conducted prior to the site inspection. The soil map indicates two soils in Wetland A: Alderwood gravelly sandy loam, 8 to 15 % slopes and Seattle Muck. Per the soil mapping, within Wetland A, approximately 2 acres are Seattle Muck, an organic soil. In 2012, to verify the NRCS organic soil definition, TWC took soil samples in the wetland and had them analyzed by a soils laboratory. The results of that testing was a determination that Wetland A soils do not meet the requirements for organic soils.

Streams were identified by examining water flow, evidence of scour and channel formation, and bed and bank characteristics. The headwater of one stream was noted within the wetland boundaries, on site. However this channel was not delineated, as it is less encumbering than the wetland and associated buffers.

Findings

One wetland (Wetland A) was found on and adjacent to the property. One stream (Stream A) was observed from the property to the south and west of the subject property (parcel 3211220000). Stream A originates within the boundary of Wetland A. The upland areas, which contain the existing home, shed, driveway, and maintained lawn, are located on a raised portion of the property. The wetland boundary follows a sharp topographic break, indicating that much of this property was likely filled to support the existing improvements on the site. The upland vegetation primarily consists of lawn grasses, creeping buttercup, common dandelions and black cottonwood. The property is located in a residential area of Kirkland and is surrounded by roads, houses, and condominiums. The property is located in the Forbes Creek Basin, a primary basin.

Wetland A

Wetland A is a depressional wetland with forested, scrub-shrub, and emergent Cowardin classes and also contains substantial areas of open water. The primary vegetation consists of red alder, black cottonwood, Pacific willow, salmonberry, lady fern, and a variety of sedges. There are also areas containing red-osier dogwood, Douglas spirea, and reed canarygrass. The soils of Wetland A are a very dark gray (2.5Y 3/1) sandy loam around the western and southern portions of the subject property Hydrology for Wetland A comes from a high water table and precipitation.

The wetland extends north, west, and south of the subject property with the open water northwest of the subject property. Wetland A drains to the west via a corrugated metal culvert located beneath Slater Avenue, discharging into Forbes Creek. There is a metal grate over an approximately 5-foot vertical drop above opening to the culvert that would prevent any fish passage into Wetland A or Stream A. Since 2012, beaver activity has increased resulting in further dieback of black cottonwood trees and an increase in open water area.

Most of the developed portions of the property are approximately five feet higher than the surrounding wetland. A steep slope (~1:1) lies along the northern and southern property lines and at the western edge of the maintained lawn. Wetland A begins at the toe of this slope. Since the northern and southern property lines are contiguous with the wetland boundary, the only significant portion of Wetland A located on-site occupies the western quarter of the property.

Stream A

While no defined stream channel was found on the subject property, a defined stream (Stream A) was visually observed to the south and west of the subject property on parcel 3211220000. Stream A originates from groundwater seeps within Wetland A, south of the subject property and flows in a generally northwest direction into the permanently ponded areas west of the subject property. Stream A is a tributary to Forbes Creek. The confluence is just downstream of the culvert beneath Slater Avenue. There was no flow present in Stream A at the time of our July 2015 inspection. As a seasonally-flowing stream containing no fish, and any regulations related to Wetland A would be more encumbering than Stream A. Therefore, Stream A was not flagged in the field.

Local Regulations

Wetlands and Streams in Kirkland are regulated under Chapter 90 of the Kirkland Zoning Code (KZC). Wetlands are rated as one of three types based on location, composition, size, and habitat function. Wetland buffers are determined based on the wetland type and its basin designation. Streams are rated as one of three classes based on duration of flow, and presence of salmonids. Stream buffers are determined based on the stream class and basin designation.

According to the *City of Kirkland Wetland Field Data Form*, Wetland A does not meet any of the criteria for a Type 1 wetland, including the condition of at least ¼ acre of organic soils. The wetland scores 44 points based on functions, making it a Type 2 wetland. Type 2 wetlands in a primary basin are required to have a standard buffer width of 75 feet (KZC 90.45). In addition, all structures are required to have a ten-foot setback from the designated wetland buffer. Additionally, Wetland A was rated according to the Ecology Rating Form (Oct. 2014) and, for state and federal permitting, is considered a Category III wetland.

Stream A is a perennial stream with no salmonid presence, making it a Class B stream. Class B streams in primary basins are required to have a standard buffer width of 60 feet (KZC 90.90). The 60-foot buffer for Stream A is less encumbering than the 75-foot buffer for Wetland A and is, therefore, not relevant to any proposed development on the subject property.

State and Federal Regulations

Wetlands are also regulated by the U.S. Army Corps of Engineers (Corps) under section 404 of the Clean Water Act. Any filling of Waters of the State, including wetlands (except isolated wetlands), would require notification and permits from the Corps. Wetland A would not be considered isolated due to its downstream connections. A formal isolated status inquiry can be requested from the Corps through the Jurisdictional Determination process. Federally permitted actions that could affect endangered species (i.e. salmon or bull trout) may also require a biological assessment study and consultation with the U.S. Fish and Wildlife Service and/or the National Marine Fisheries Service. Application for Corps permits may also require an individual 401 Water Quality Certification and Coastal Zone Management Consistency determination from Ecology.

In general, neither the Corps nor Ecology regulates wetland buffers, unless direct impacts are proposed. When direct impacts are proposed, mitigated wetlands may be required to employ buffers based on Corps and Ecology joint regulatory guidance.

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

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

Sincerely,

Anna Hoenig
Ecologist

THE WATERSHED COMPANY
750 Sixth Street South
Kirkland, WA 98033
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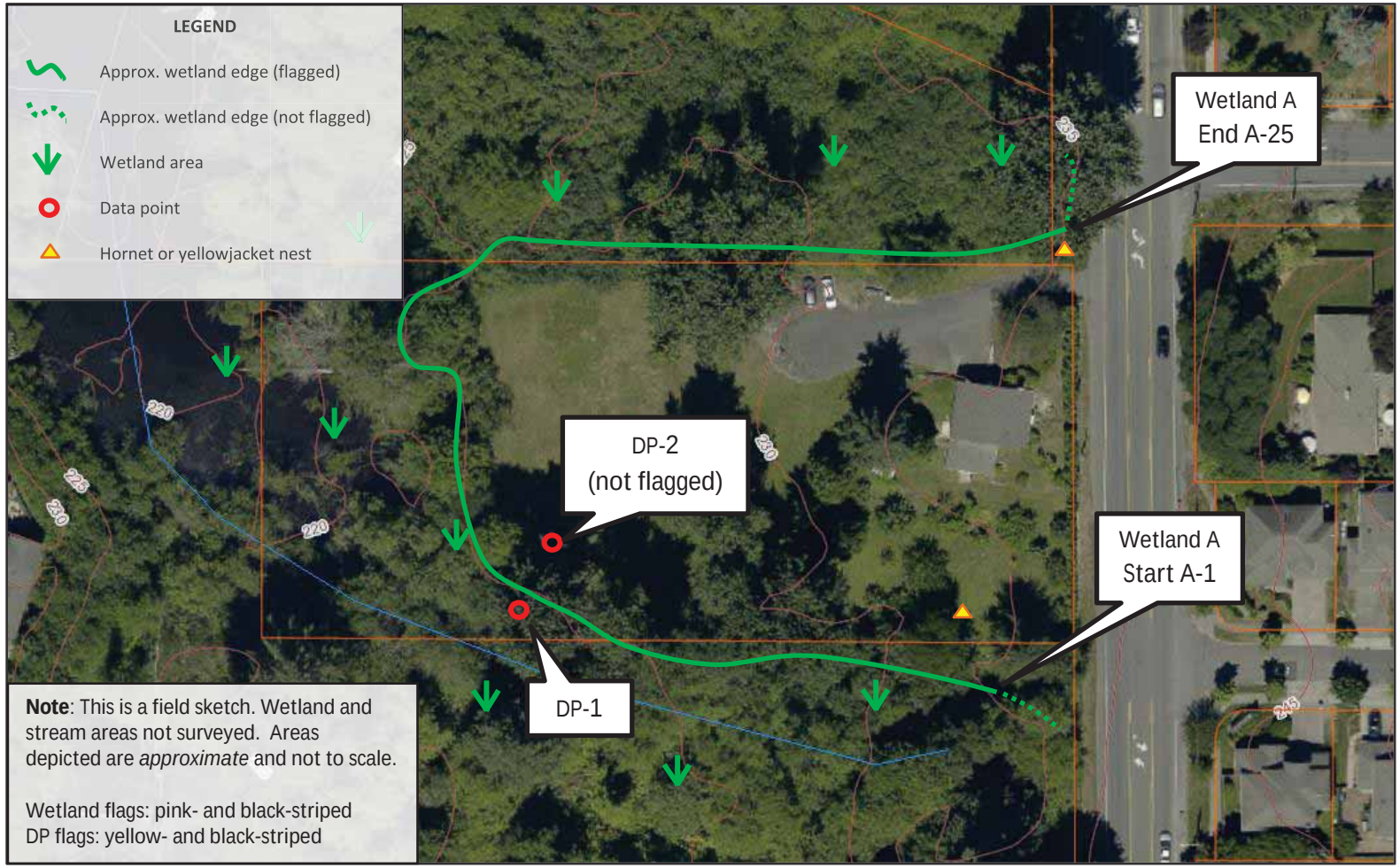
watershedco.com

Wetland Delineation Sketch
10265 124th Avenue, Kirkland, WA
Parcel #6639900280
TWC Reference Number: 080704.6
Prepared for Allison Zike, City of Kirkland
July 13, 2015



WETLAND FIELD DATA FORM – _____Lu____property located at _____10265 124th Ave____ Kirkland, WA 98033.

Rating done on ___July 13, 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	**4**
	1-4.99	=	3	
	0.1-0.99	=	2	
	<0.1	=	1	

(4 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

(7 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

(9 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

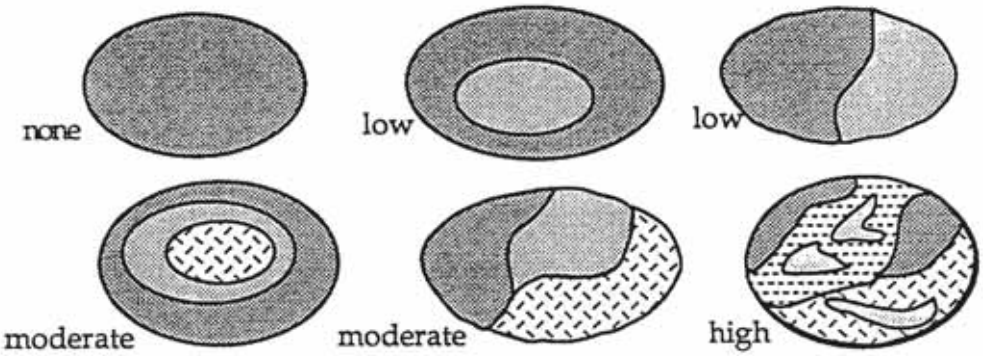
Herbaceous ground cover = 1

(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



(3 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

(5 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 perennial stream 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	60 %	X 0 =	0		=	0
Lawn, grazed pasture, vineyards or annual crops	10 %	X 1 =	10	3	=	30
Ungrazed grassland or orchards	%	X 2 =			=	
Open water or native grasslands	%	X 3 =			=	
Forest or shrub	30 %	X 4 =	120	3	=	360
				Add buffer total		390

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

(2 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: **44**

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

Answer:

Yes = Type 2

No = Type 3

Wetland name or number: A

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland A, 10265 124th Ave NE, Kirkland Date of site visit: 7/13/2015

Rated by: Anna Hoenig, Ryan Kahlo Trained by Ecology? ☒Y ☐N Date of training: 09/2014

HGM Class used for rating: Depressional Wetland has multiple HGM classes? ☐Y ☒N

NOTE: **Form is not complete without the figures requested** *(figures can be combined)*.
Source of base aerial photo/map: King County iMap, 2013 aerial

OVERALL WETLAND CATEGORY III (based on functions ☒ or special characteristics ☐)

1. Category of wetland based on FUNCTIONS

☐ **Category I** – Total score = 23 - 27

☐ **Category II** – Total score = 20 - 22

☒ **Category III** – Total score = 16 - 19

☐ **Category IV** – Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
	Circle the appropriate ratings			
Site Potential	H M (L)	(H) M L	H (M) L	
Landscape Potential	H (M) L	H (M) L	H M (L)	
Value	H (M) L	(H) M L	(H) M L	TOTAL
Score Based on Ratings	5	8	6	19

Score for each function based on three ratings *(order of ratings is not important)*

9 = H,H,H
8 = H,H,M
7 = H,H,L
7 = H,M,M
6 = H,M,L
6 = M,M,M
5 = H,L,L
5 = M,M,L
4 = M,L,L
3 = L,L,L

2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	CATEGORY
Estuarine	I II
Wetland of High Conservation Value	I
Bog	I
Mature Forest	I
Old Growth Forest	I
Coastal Lagoon	I II
Interdunal	I II III IV
None of the above	☒

Wetland name or number: A

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	1
Hydroperiods	D 1.4, H 1.2	2
Location of outlet (*can be added to map of hydroperiods)*	D 1.1, D 4.1	2
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	2
Map of the contributing basin	D 4.3, D 5.3	3
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	4
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	5
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	6

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Ponded depressions	R 1.1	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	R 2.4	
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	
Width of unit vs. width of stream *(can be added to another figure)*	R 4.1	
Map of the contributing basin	R 2.2, R 2.3, R 5.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	

Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	L 1.1, L 4.1, H 1.1, H 1.4	
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	L 2.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	L 3.1, L 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	L 3.3	

Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Plant cover of **dense** trees, shrubs, and herbaceous plants	S 1.3	
Plant cover of **dense, rigid** trees, shrubs, and herbaceous plants (*can be added to figure above)*	S 4.1	
Boundary of 150 ft buffer (can be added to another figure)	S 2.1, S 5.1	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	

Wetland name or number: A

HGM Classification of Wetlands in Western Washington

For questions 1-7, the criteria described must apply to the entire unit being rated.

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

1. Are the water levels in the entire unit usually controlled by tides except during floods?

   ☒NO – go to 2 ☐**YES** – the wetland class is **Tidal Fringe** – go to 1.1

   1.1 Is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?

   NO – Saltwater Tidal Fringe (Estuarine) **YES – Freshwater Tidal Fringe**
   *If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is Saltwater Tidal Fringe it is an **Estuarine** wetland and is not scored. This method **cannot** be used to score functions for estuarine wetlands.*

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

   ☒NO – go to 3 ☐**YES** – The wetland class is **Flats**
   *If your wetland can be classified as a Flats wetland, use the form for **Depressional** wetlands.*

3. Does the entire wetland unit **meet all** of the following criteria?
   ☐The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface at any time of the year) at least 20 ac (8 ha) in size;
   ☐At least 30% of the open water area is deeper than 6.6 ft (2 m).

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

4. Does the entire wetland unit **meet all** of the following criteria?
   ☐The wetland is on a slope (*slope can be very gradual*),
   ☐The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks,
   ☐The water leaves the wetland **without being impounded**.

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

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

5. Does the entire wetland unit **meet all** of the following criteria?
   ☐The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river,
   ☐The overbank flooding occurs at least once every 2 years.

Wetland name or number: A

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

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

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

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

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

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

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a Depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within the wetland unit being scored.

NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the HGM class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM classes within the wetland unit being rated	HGM class to use in rating
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake Fringe	Lake Fringe
Depressional + Riverine along stream within boundary of depression	Depressional
Depressional + Lake Fringe	Depressional
Riverine + Lake Fringe	Riverine
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE

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

Wetland name or number: A

DEPRESSIONAL AND FLATS WETLANDS

Water Quality Functions - Indicators that the site functions to improve water quality

D 1.0. Does the site have the potential to improve water quality?	
D 1.1. Characteristics of surface water outflows from the wetland: Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it (no outlet). points = 3 Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet. points = 2 Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 1 Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch. points = 1	2
D 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic *(use NRCS definitions)*. Yes = 4 No = 0	0
D 1.3. Characteristics and distribution of persistent plants (Emergent, Scrub-shrub, and/or Forested Cowardin classes): Wetland has persistent, ungrazed, plants > 95% of area points = 5 Wetland has persistent, ungrazed, plants > 1/2 of area points = 3 Wetland has persistent, ungrazed plants > 1/10 of area points = 1 Wetland has persistent, ungrazed plants < 1/10 of area points = 0	1
D 1.4. Characteristics of seasonal ponding or inundation: *This is the area that is ponded for at least 2 months. See description in manual.* Area seasonally ponded is > ½ total area of wetland points = 4 Area seasonally ponded is > ¼ total area of wetland points = 2 Area seasonally ponded is < ¼ total area of wetland points = 0	2
Total for D 1 Add the points in the boxes above	5

Rating of Site Potential If score is: ☐**12-16 = H** ☐**6-11 = M** ☒**0-5 = L** *Record the rating on the first page*

D 2.0. Does the landscape have the potential to support the water quality function of the site?	
D 2.1. Does the wetland unit receive stormwater discharges? Yes = 1 No = 0	1
D 2.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants? Yes = 1 No = 0	1
D 2.3. Are there septic systems within 250 ft of the wetland? Yes = 1 No = 0	0
D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in questions D 2.1-D 2.3? Source_____ Yes = 1 No = 0	0
Total for D 2 Add the points in the boxes above	2

Rating of Landscape Potential If score is: ☐**3 or 4 = H** ☒**1 or 2 = M** ☐**0 = L** *Record the rating on the first page*

D 3.0. Is the water quality improvement provided by the site valuable to society?	
D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list? Yes = 1 No = 0	0
D 3.2. Is the wetland in a basin or sub-basin where an aquatic resource is on the 303(d) list? Yes = 1 No = 0	1
D 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality (*answer YES if there is a TMDL for the basin in which the unit is found*)? Yes = 2 No = 0	0
Total for D 3 Add the points in the boxes above	1

Rating of Value If score is: ☐**2-4 = H** ☒**1 = M** ☐**0 = L** *Record the rating on the first page*

Wetland name or number: A

DEPRESSIONAL AND FLATS WETLANDS

Hydrologic Functions - Indicators that the site functions to reduce flooding and stream degradation

D 4.0. Does the site have the potential to reduce flooding and erosion?	
D 4.1. Characteristics of surface water outflows from the wetland: Wetland is a depression or flat depression with no surface water leaving it (no outlet) points = 4 Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet points = 2 Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch points = 1 Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 0	2
D 4.2. Depth of storage during wet periods: *Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or if dry, the deepest part.* Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7 Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet points = 5 Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet points = 3 The wetland is a "headwater" wetland points = 3 Wetland is flat but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft (6 in) points = 0	5
D 4.3. Contribution of the wetland to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* The area of the basin is less than 10 times the area of the unit points = 5 The area of the basin is 10 to 100 times the area of the unit points = 3 The area of the basin is more than 100 times the area of the unit points = 0 Entire wetland is in the Flats class points = 5	3
Total for D 4 Add the points in the boxes above	10

Rating of Site Potential If score is: ☐**12-16 = H** ☒**6-11 = M** ☐**0-5 = L** *Record the rating on the first page*

D 5.0. Does the landscape have the potential to support hydrologic functions of the site?	
D 5.1. Does the wetland receive stormwater discharges? Yes = 1 No = 0	1
D 5.2. Is >10% of the area within 150 ft of the wetland in land uses that generate excess runoff? Yes = 1 No = 0	1
D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at >1 residence/ac, urban, commercial, agriculture, etc.)? Yes = 1 No = 0	1
Total for D 5 Add the points in the boxes above	3

Rating of Landscape Potential If score is: ☒**3 = H** ☐**1 or 2 = M** ☐**0 = L** *Record the rating on the first page*

D 6.0. Are the hydrologic functions provided by the site valuable to society?	
D 6.1. The unit is in a landscape that has flooding problems. *Choose the description that best matches conditions around the wetland unit being rated. Do not add points. Choose the highest score if more than one condition is met.* The wetland captures surface water that would otherwise flow down-gradient into areas where flooding has damaged human or natural resources (e.g., houses or salmon redds): • Flooding occurs in a sub-basin that is immediately down-gradient of unit. points = 2 • Surface flooding problems are in a sub-basin farther down-gradient. points = 1 Flooding from groundwater is an issue in the sub-basin. points = 1 The existing or potential outflow from the wetland is so constrained by human or natural conditions that the water stored by the wetland cannot reach areas that flood. *Explain why*_____ points = 0 There are no problems with flooding downstream of the wetland. points = 0	2
D 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan? Yes = 2 No = 0	0
Total for D 6 Add the points in the boxes above	2

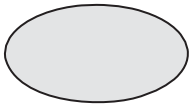
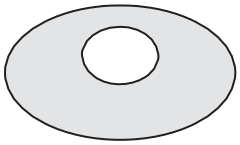
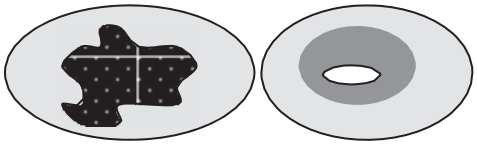
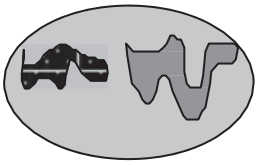
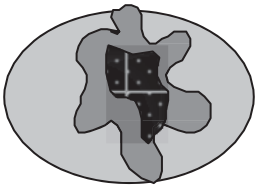
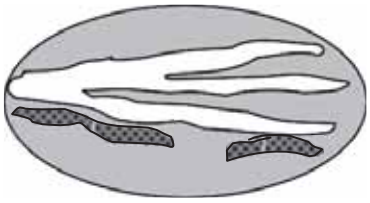
Rating of Value If score is: ☒**2-4 = H** ☐**1 = M** ☐**0 = L** *Record the rating on the first page*

Wetland name or number: A

These questions apply to wetlands of all HGM classes.

HABITAT FUNCTIONS - Indicators that site functions to provide important habitat

H 1.0. Does the site have the potential to provide habitat?

H 1.1. Structure of plant community: *Indicators are Cowardin classes and strata within the Forested class.* Check the Cowardin plant classes in the wetland. *Up to 10 patches may be combined for each class to meet the threshold of ¼ ac or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked.* ☐ Aquatic bed — 4 structures or more: points = 4 ☒ Emergent — 3 structures: points = 2 ☒ Scrub-shrub (areas where shrubs have > 30% cover) — 2 structures: points = 1 ☒ Forested (areas where trees have > 30% cover) — 1 structure: points = 0 *If the unit has a Forested class, check if:* ☐ The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the Forested polygon	2
H 1.2. Hydroperiods Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ ac to count (*see text for descriptions of hydroperiods*). ☒ Permanently flooded or inundated — 4 or more types present: points = 3 ☒ Seasonally flooded or inundated — 3 types present: points = 2 ☐ Occasionally flooded or inundated — 2 types present: points = 1 ☐ Saturated only — 1 type present: points = 0 ☐ Permanently flowing stream or river in, or adjacent to, the wetland ☐ Seasonally flowing stream in, or adjacent to, the wetland ☐ **Lake Fringe wetland** — **2 points** ☐ **Freshwater tidal wetland** — **2 points**	1
H 1.3. Richness of plant species Count the number of plant species in the wetland that cover at least 10 ft^2. *Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle* If you counted: > 19 species — points = 2 5 - 19 species — points = 1 < 5 species — points = 0	2
H 1.4. Interspersion of habitats Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always high.*  **None** = 0 points  **Low** = 1 point  **Moderate** = 2 points All three diagrams in this row are **HIGH** = 3points   	3

Wetland name or number: A

H 1.5. Special habitat features: Check the habitat features that are present in the wetland. *The number of checks is the number of points.* ☒ Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long). ☒ Standing snags (dbh > 4 in) within the wetland ☒ Undercut banks are present for at least 6.6 ft (2 m) **and/or** overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) ☒ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet weathered where wood is exposed)* ☒ At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)* ☐ Invasive plants cover less than 25% of the wetland area in every stratum of plants (*see H 1.1 for list of strata*)	5
Total for H 1 — Add the points in the boxes above	13

Rating of Site Potential If score is: ☐**15-18 = H** ☒**7-14 = M** ☐**0-6 = L** *Record the rating on the first page*

H 2.0. Does the landscape have the potential to support the habitat functions of the site?	
H 2.1. Accessible habitat (include *only habitat that directly abuts wetland unit*). *Calculate:* % undisturbed habitat: **0.2 +** [(% moderate and low intensity land uses)/2] **0 = 0.2%** If total accessible habitat is: > 1/3 (33.3%) of 1 km Polygon — points = 3 20-33% of 1 km Polygon — points = 2 10-19% of 1 km Polygon — points = 1 < 10% of 1 km Polygon — points = 0	0
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* % undisturbed habitat: **0.2 +** [(% moderate and low intensity land uses)/2] **1.6 = 1.8%** Undisturbed habitat > 50% of Polygon — points = 3 Undisturbed habitat 10-50% and in 1-3 patches — points = 2 Undisturbed habitat 10-50% and > 3 patches — points = 1 Undisturbed habitat < 10% of 1 km Polygon — points = 0	0
H 2.3. Land use intensity in 1 km Polygon: If > 50% of 1 km Polygon is high intensity land use — points = (- 2) ≤ 50% of 1 km Polygon is high intensity — points = 0	-2
Total for H 2 — Add the points in the boxes above	-2

Rating of Landscape Potential If score is: ☐**4-6 = H** ☐**1-3 = M** ☒**< 1 = L** *Record the rating on the first page*

H 3.0. Is the habitat provided by the site valuable to society?	
H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? *Choose only the highest score that applies to the wetland being rated.* Site meets ANY of the following criteria: — points = 2 ☒ It has 3 or more priority habitats within 100 m (see next page) ☐ It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists) ☐ It is mapped as a location for an individual WDFW priority species ☐ It is a Wetland of High Conservation Value as determined by the Department of Natural Resources ☐ It has been categorized as an important habitat site in a local or regional comprehensive plan, in a Shoreline Master Plan, or in a watershed plan Site has 1 or 2 priority habitats (listed on next page) within 100 m — points = 1 Site does not meet any of the criteria above — points = 0	2

Rating of Value If score is: ☒**2 = H** ☐**1 = M** ☐**0 = L** *Record the rating on the first page*

Wetland name or number: A

WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. http://wdfw.wa.gov/publications/00165/wdfw00165.pdf or access the list from here: http://wdfw.wa.gov/conservation/phs/list/)

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland unit: ***NOTE:*** *This question is independent of the land use between the wetland unit and the priority habitat.*

☐ **Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).

☐ **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*).

☐ **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.

☐ **Old-growth/Mature forests:** Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multi- layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in (81 cm) dbh or > 200 years of age. Mature forests – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.

☐ **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).

☒ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

☐ **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161 – see web link above*).

☒ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.

☐ **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report – see web link on previous page).*

☐ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.

☐ **Cliffs:** Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.

☐ **Talus:** Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.

☒ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 20 in (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list because they are addressed elsewhere.

Wetland name or number: A

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type *Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.*	**Category**
SC 1.0. Estuarine wetlands Does the wetland meet the following criteria for Estuarine wetlands? ☐ The dominant water regime is tidal, ☐ Vegetated, and ☐ With a salinity greater than 0.5 ppt ☐Yes –Go to **SC 1.1** ☒No= **Not an estuarine wetland**	
SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? ☐Yes = **Category I** ☐No - Go to **SC 1.2**	**Cat. I**
SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? ☐ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. (If non-native species are *Spartina*, see page 25) ☐ At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un- mowed grassland. ☐ The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. ☐Yes = **Category I** ☐No= **Category II**	**Cat. I** **Cat. II**
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? ☐Yes **–** Go to **SC 2.2** ☒No **–** Go to **SC 2.3** SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? ☐Yes **= Category** I ☐No **= Not a WHCV** SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf ☐Yes **– Contact WNHP/WDNR and go to SC 2.4** ☒No **= Not a WHCV** SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? ☐Yes **= Category I** ☒No **= Not a WHCV**	**Cat. I**
SC 3.0. Bogs Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? *Use the key below. If you answer YES you will still need to rate the wetland based on its functions.* SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? ☐Yes – Go to **SC 3.3** ☒No – Go to **SC 3.2** SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? ☐Yes – Go to **SC 3.3** ☒No = **Is not a bog** SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4? ☐Yes = **Is a Category I bog** ☒No – Go to **SC 3.4** **NOTE:** If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? ☐Yes = **Is a Category I bog** ☒No **= Is not a bog**	**Cat. I**

Wetland name or number: A

SC 4.0. Forested Wetlands Does the wetland have at least 1 contiguous acre of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? *If you answer YES you will still need to rate the wetland based on its functions.* ☐ **Old-growth forests** (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more. ☐ **Mature forests** (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm). ☐Yes = **Category I** ☒No = **Not a forested wetland for this section**	**Cat. I**
SC 5.0. Wetlands in Coastal Lagoons Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? ☐ The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks ☐ The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* ☐Yes – Go to **SC 5.1** ☒No = **Not a wetland in a coastal lagoon** SC 5.1. Does the wetland meet all of the following three conditions? ☐ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100). ☐ At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un- mowed grassland. ☐ The wetland is larger than $^{1}/_{10}$ ac (4350 ft^2) ☐Yes = **Category I** ☐No = **Category II**	**Cat. I** **Cat. II**
SC 6.0. Interdunal Wetlands Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? *If you answer yes you will still need to rate the wetland based on its habitat functions.* In practical terms that means the following geographic areas: ☐ Long Beach Peninsula: Lands west of SR 103 ☐ Grayland-Westport: Lands west of SR 105 ☐ Ocean Shores-Copalis: Lands west of SR 115 and SR 109 ☐Yes – Go to **SC 6.1** ☒No = **not an interdunal wetland for rating** SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)? ☐Yes = **Category I** ☐No – Go to **SC 6.2** SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger? ☐Yes = **Category II** ☐No – Go to **SC 6.3** SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac? ☐Yes = **Category III** ☐No = **Category IV**	**Cat I** **Cat. II** **Cat. III** **Cat. IV**
Category of wetland based on Special Characteristics If you answered No for all types, enter "Not Applicable" on Summary Form	N/A

Wetland name or number _____

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ECY 2014 Wetland Rating Form: Depressional figures

Figure 1. Cowardin plant classes - D1.3, H1.1, H1.4

Figure 2. Hydrology: hydroperiods, outlets, and 150ft buffer - D1.1, D1.4, D4.1, H1.2, D2.2, D5.2

Figure 3. Contributing upland basin to wetland area - D4.3, D5.3

Figure 4. Accessible and undisturbed habitat 1km from wetland edge - H2.1, H2.2, H2.3

Figure 5. Screen-capture of 303(d) listed waters in Forbes Creek Basin - D3.1, D3.2

Figure 6. Screen-capture of TMDL list for WRIA 8 Cedar-Sammamish- D3.3

Resources and Links:

King County i-Map
Google Earth
ECY 303(d) list
TMDL list

Figure 1. Cowardin plant classes - D1.3, H1.1, H1.4

Note: Boundaries depicted may not be to scale. They are sketches based on available data and best professional judgment.

LEGEND

- Palustrine forested
- Palustrine scrub-shrub
- Palustrine emergent
- Wetland boundary

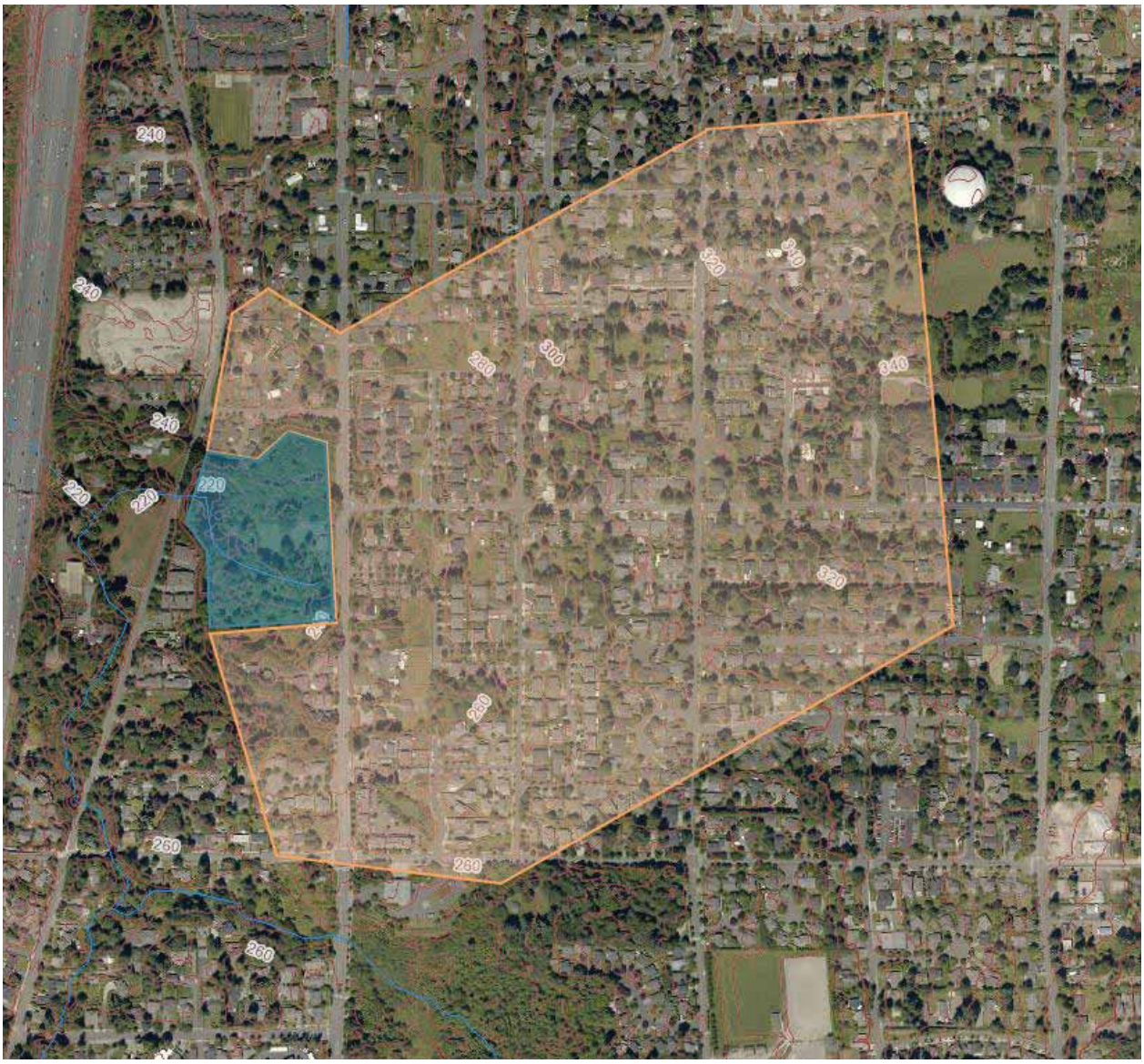
Figure 2. Hydrology: hydroperiods, outlets, and 150ft buffer - D1.1, D1.4, D4.1, H1.2, D2.2, D5.2

Note: Boundaries depicted may not be to scale. They are sketches based on available data and best professional judgment

LEGEND

- Permanently flooded
- Seasonally flooded
- Occasionally flooded
- Permanently flowing stream
- Approx. 150-foot buffer

Figure 3. Contributing upland basin to wetland area - D4.3, D5.3



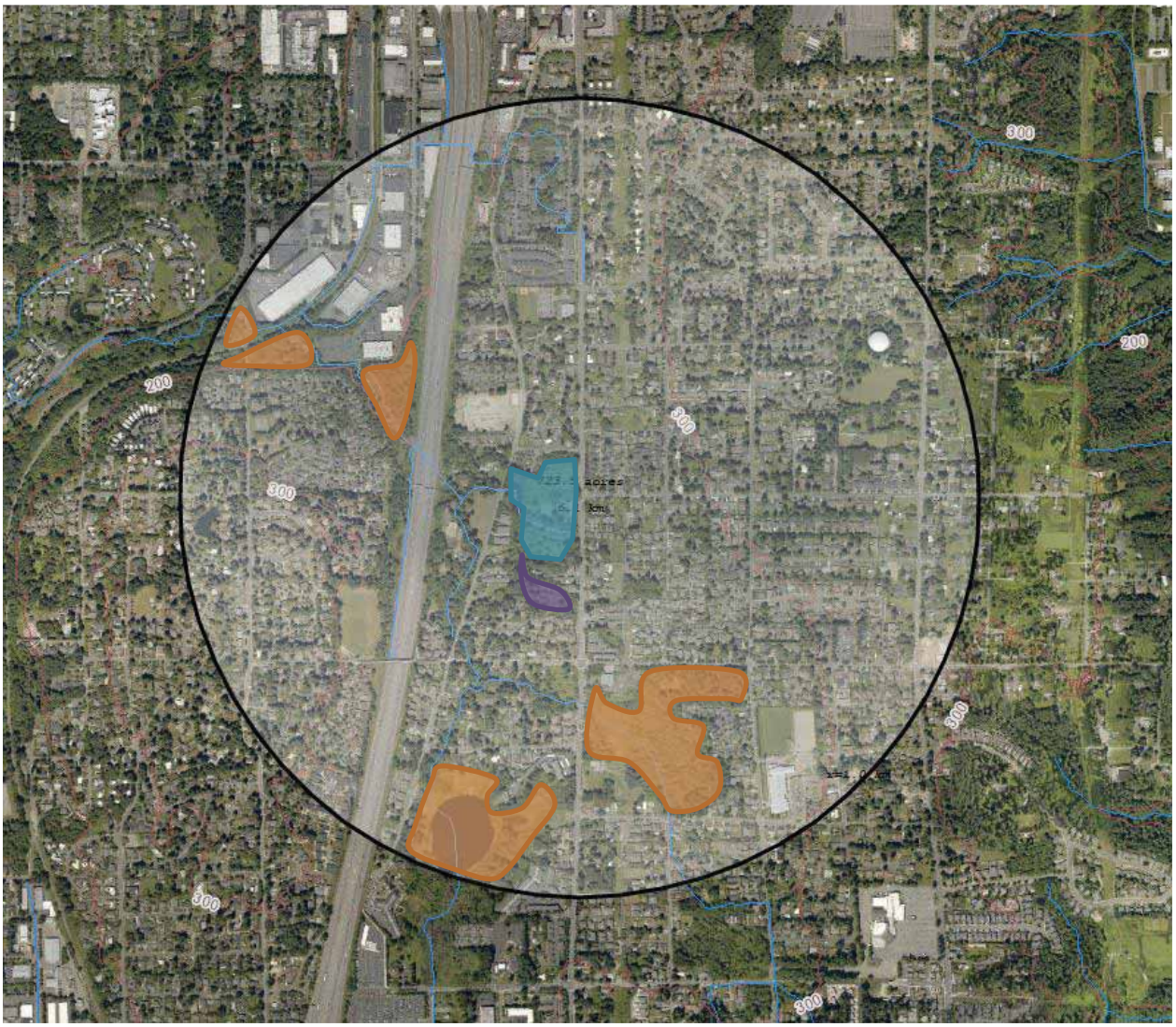
Note: Boundaries depicted may not be to scale. They are sketches based on available data and best professional judgment.

LEGEND

Wetland unit

Approx. basin boundary

Figure 4. Accessible and undisturbed habitat 1km from wetland edge - H2.1, H2.2, H2.3



Note: Boundaries depicted may not be to scale. They are sketches based on available data and best professional judgment.

LEGEND

- Relatively undisturbed
- Moderate/low intensity land use
- Wetland unit
- Approx. 1-km buffer

Figure 5. Screen-capture of 303(d) listed waters in Forbes Creek basin of WRIA 8 – Cedar Sammamish. - D3.1, D3.2

DEPARTMENT OF ECOLOGY State of Washington

Washington State Water Quality Assessment
303(d)/305(b) Integrated Report

2012 WQ Assessment Home

Category 3 listings contain data insufficient in determining water quality and so have been removed from your results. Click here to include these 14 omitted listings.

Search Results: 6 Matches

View Listing	Category	WRIA	Waterbody Name	Parameter	Medium	Map Link
7029	5	8 - Cedar-Sammamish	FORBES CREEK	Temperature	Water	7029
10733	1	8 - Cedar-Sammamish	FORBES CREEK	pH	Water	10733
12677	5	8 - Cedar-Sammamish	FORBES CREEK	Dissolved Oxygen	Water	12677
13129	5	8 - Cedar-Sammamish	FORBES CREEK	Bacteria	Water	13129
13530	1	8 - Cedar-Sammamish	FORBES CREEK	Ammonia-N	Water	13530
13539	2	8 - Cedar-Sammamish	FORBES CREEK	Mercury	Water	13539

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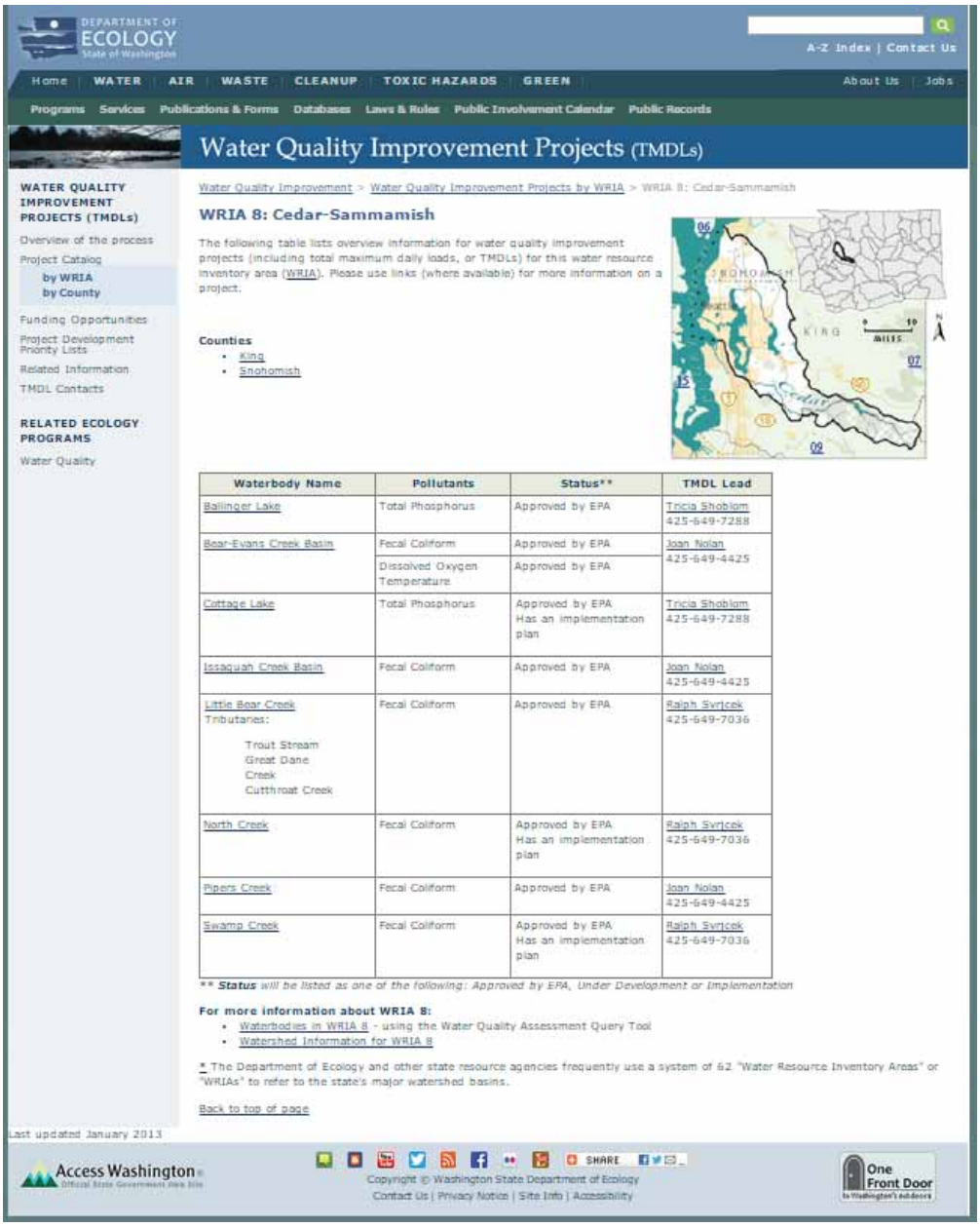
ITSOWATS Version: 2.0.0.0

Figure 6. Screen-capture of TMDL list for WRIA 8 – Cedar-Sammamish Watershed in which unit is found - D3.3. There is no TMDL for Forbes Creek basin.



DEPARTMENT OF ECOLOGY State of Washington

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Water Quality Improvement Projects (TMDLs)

WATER QUALITY IMPROVEMENT PROJECTS (TMDLs)
- Overview of the process
- Project Catalog
  - by WRIA
  - by County
- Funding Opportunities
- Project Development Priority Lists
- Related Information
- TMDL Contacts

RELATED ECOLOGY PROGRAMS
- Water Quality

Water Quality Improvement > Water Quality Improvement Projects by WRIA > WRIA 8: Cedar-Sammamish

WRIA 8: Cedar-Sammamish

The following table lists overview information for water quality improvement projects (including total maximum daily loads, or TMDLs) for this water resource inventory area (WRIA). Please use links (where available) for more information on a project.

Counties
- King
- Snohomish

Waterbody Name	Pollutants	Status**	TMDL Lead
Ballinger Lake	Total Phosphorus	Approved by EPA	Tricia Shoblom 425-649-7288
Bear-Evans Creek Basin	Fecal Coliform	Approved by EPA	Joan Nolan 425-649-4425
	Dissolved Oxygen Temperature	Approved by EPA	
Cottage Lake	Total Phosphorus	Approved by EPA Has an implementation plan	Tricia Shoblom 425-649-7288
Issaquah Creek Basin	Fecal Coliform	Approved by EPA	Joan Nolan 425-649-4425
Little Bear Creek Tributaries: Trout Stream, Great Dane Creek, Cutthroat Creek	Fecal Coliform	Approved by EPA	Ralph Svrjcek 425-649-7036
North Creek	Fecal Coliform	Approved by EPA Has an implementation plan	Ralph Svrjcek 425-649-7036
Pipers Creek	Fecal Coliform	Approved by EPA	Joan Nolan 425-649-4425
Swamp Creek	Fecal Coliform	Approved by EPA Has an implementation plan	Ralph Svrjcek 425-649-7036

** ***Status*** *will be listed as one of the following: Approved by EPA, Under Development or Implementation*

For more information about WRIA 8:
- Waterbodies in WRIA 8 - using the Water Quality Assessment Query Tool
- Watershed Information for WRIA 8

* The Department of Ecology and other state resource agencies frequently use a system of 62 "Water Resource Inventory Areas" or "WRIAs" to refer to the state's major watershed basins.

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One Front Door to Washington's outdoors

THE WATERSHED COMPANY

WETLAND DETERMINATION DATA FORM

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

DP- 1

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

Project Site:	**Kirkland Lu #6639900280**	Sampling Date:	**7/13/2015**
Applicant/Owner:	**Allison Zike, City of Kirkland**	Sampling Point:	DP- **1**
Investigator:	**Anna Hoenig, Ryan Kahlo**	City/County:	**Kirkland/King County**
Sect., Township, Range:	S **33** T **26N** R **05E**	State:	**WA**
Landform (hillslope, terrace, etc): **depression**	Slope (%): Click	Local relief (concave, convex, none): **concave**	
Subregion (LRR): **A**	Lat:	Long:	Datum:
Soil Map Unit Name: AgC Alderwood gravelly sandy loam,8 to 15 % slopes		NWI classification: **PFOC**	

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

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

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

Remarks: **inpit**

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 5m diam.)	Absolute % Cover	Dominant Species?	Indicator Status
1. ***Populus balsamifera***	**100**	**Yes**	**FAC**
2.			
3.			
4.			
	100	= Total Cover	
Sapling/Shrub Stratum (Plot size: 3m diam.)			
1. ***Spirea douglasii***	**25**	**Yes**	**FACW**
2. ***Salix Luciana***	**20**	**Yes**	**FACW**
3.			
4.			
5.			
	45	= Total Cover	
Herb Stratum (Plot size: 1m diam.)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
		= Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
		= Total Cover	
% Bare Ground in Herb Stratum:			

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC:	**3**	(A)
Total Number of Dominant Species Across All Strata:	**3**	(B)
Percent of Dominant Species that are OBL, FACW, or FAC:	**100**	(A/B)

Prevalence Index Worksheet

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

Prevalence Index = B / A =

Hydrophytic Vegetation Indicators

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

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

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks:

SOIL **Sampling Point – DP-1**

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-5	**2.5Y 2.5/1**	**100**	**none**				**Sandy loam**	
5-14	**2.5Y 3/1**	**98**	**2.5Y 5/2**	**2**	**C**	**M**	**Sandy loam**	

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

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

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

Indicators for Problematic Hydric Soils[3]

- ☐ 2cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Other (explain in remarks)
- ☐

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

Restrictive Layer (if present):
Type: _____
Depth (inches): _____

Hydric soil present? Yes ☒ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required):

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

Field Observations

Surface Water Present?	Yes ☐	No ☒	Depth (in):
Water Table Present?	Yes ☒	No ☐	Depth (in): **7 in**
Saturation Present? (includes capillary fringe)	Yes ☒	No ☐	Depth (in): **0in**

Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks:

THE WATERSHED COMPANY

WETLAND DETERMINATION DATA FORM

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

DP- 2

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

Project Site:	**Kirkland Lu #6639900280**	Sampling Date:	**7/13/2015**
Applicant/Owner:	**Allison Zike, City of Kirkland**	Sampling Point:	DP- **2**
Investigator:	**Anna Hoenig, Ryan Kahlo**	City/County:	**Kirkland/King County**
Sect., Township, Range:	S **33** T **26N** R **05E**	State:	**WA**
Landform (hillslope, terrace, etc): **terrace**	Slope (%): **0**	Local relief (concave, convex, none): **none**	
Subregion (LRR): **A**	Lat:	Long:	Datum:
Soil Map Unit Name: AgC Alderwood gravelly sandy loam,8 to 15 % slopes		NWI classification: **n/a**	

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

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

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

Remarks: Click here to enter text.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 5m diam.)	Absolute % Cover	Dominant Species?	Indicator Status
1. ***Populus balsamifera***	**45**	**Yes**	**FAC**
2.			
3.			
4.			
	45	= Total Cover	
Sapling/Shrub Stratum (Plot size: 3m diam.)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	
Herb Stratum (Plot size: 1m diam.)			
1. ***Ranunculus repens***	**15**	**Yes**	**FAC**
2. ***Long field grasses***	**100**	**Yes**	**FAC**
3. ***Taraxacum officinale***	**5**	**no**	**FACU**
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	120	= Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
		= Total Cover	
% Bare Ground in Herb Stratum:			

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC:	**3**	(A)
Total Number of Dominant Species Across All Strata:	**3**	(B)
Percent of Dominant Species that are OBL, FACW, or FAC:	**100**	(A/B)

Prevalence Index Worksheet

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

Prevalence Index = B / A =

Hydrophytic Vegetation Indicators

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

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

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks:

SOIL **Sampling Point – DP-2**

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-12	**10YR 2/2**	**100**	**None**				**Gravelly sandy loam**	

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

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

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

Indicators for Problematic Hydric Soils[3]

- ☐ 2cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Other (explain in remarks)
- ☐

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

Restrictive Layer (if present):
Type: _____
Depth (inches): _____

Hydric soil present? Yes ☐ No ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required):

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

Field Observations

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

Wetland Hydrology Present? Yes ☐ No ☒

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

Remarks:

Wetlands Northwest LLC

January 23,2017

Allison Zike
City of Kirkland- Planning and Building Department
123 Fifth Avenue
Kirkland, Washington 98033

Re: SAR16-02993 Lu Wetland Buffer Modification

Dear Ms. Zike:

Per your letter dated January 13,2017, I have addressed Section 90.60.2(b) and have responded to each item below.

KZC 90.60.2(b).1
As noted in pages 53 and 54 in the *Kirkland's Streams, Wetlands and Wildlife Study* (The Watershed Company, 1998), the opportunities to enhance the functions of Wetland 9 include:

1. Protection and preservation of the high quality wetland areas in both the upper and lower valleys should be the primary goal for wetlands in the Forbes Creek Basin.
2. Along wetlands where much of the surrounding land has already been developed, it is recommended that vegetated buffers be established wherever possible and as future opportunities arise

Presently the property owner has a grandfathered use, which allows landscaping, and lawn to the wetland edge. The project proposes to permanently limit residential use to approximately 9,500 sq. ft. on a 1.75 acre parcel. Once the project is complete Wetland 9 will have an averaged 75-foot buffer established. The project also proposes to enhance approximately 9,200 square feet of buffer with native vegetation to increase the wetland functions.

The project is consistent with the *Kirkland Sensitive Areas Regulatory Recommendations Report* (Adolfson Associates, Inc., 1998) as the applicant is complying the current City Zoning Code.

KZC 90.60.2(b).2
As mentioned in item 1 above, after project completion, the total residential area will be permanently limited to approximately 9,500 sq. ft. Presently, the applicant maintains a lawn to the edge of the wetland that covers an area approximately 54,000 square feet based on aerial photos. The remainder of the property will be kept in open space in perpetuity.

KZC 90.60.2(b).3
Presently, approximately 54,000 square feet of residential area occupies a lot size of 76,230 square foot. Once the project is complete, total residential area will be permanently limited to approximately 9,500 sq. ft. with the remainder being wetland and buffer including approximately 9,200 square feet of buffer enhancement.

KZC 90.60.2(b).4
Building plans will conform to current stormwater regulations.

KZC 90.60.2(b).5
There are no steep slopes or erosion hazards on the property. Temporary erosion control measures will be followed in accordance with current stormwater regulations.

5218 Ivanhoe PL NE
Seattle, WA 98105
206-456-5474
www.wetlandsnw.com

KZC 90.60.2(b).6
The building permit will conform to current zoning (single family residential).

KZC 90.60.2(b).7
Building permits will have standards that include that any fill material will not contain organic or inorganic material that would be detrimental to water quality or to fish, wildlife, or their habitat.

KZC 90.60.2(b).8
The submitted buffer enhancement addresses this section of the Code.

KZC 90.60.2(b).9
The property is zoned as Rsx 7,200 on a 76,230 square foot property. Due to wetland buffer encumbrances, only one single-family unit is proposed for this project. This is the least amount of residential use for this zone on a lot this size. A two-lot short plat was explored but was likely going to be denied during the pre-application meeting.

If you have any further questions, feel free to contact me on my mobile phone at 206-554-1628.

Sincerely,

Robert King, PWS
Principal

Critical Areas Mitigation
Bond Quantity Worksheet

Date: 5-Dec-16 **Prepared by:** L. Erickson

Project Number:

Project Description: Buffer Reduction & Enhancement of the Thi & Nguyen Property

Location:

Applicant: Chih & Lu Property **Phone:**

PLANT MATERIALS (includes labor cost for plant installation)

Type	Unit Price	Unit	Quantity	Description	Cost
PLANTS: Potted, 4" diameter, medium	$5.00	Each			$ -
PLANTS: Container, 1 gallon, medium soil	$11.50	Each	275.00		$ 3,162.50
PLANTS: Container, 2 gallon, medium soil	$20.00	Each	85.00		$ 1,700.00
PLANTS: Container, 5 gallon, medium soil	$36.00	Each	35.00		$ 1,260.00
PLANTS: Seeding, by hand	$0.50	SY	612.00		$ 306.00
PLANTS: Slips (willow, red-osier)	$2.00	Each			$ -
PLANTS: Stakes (willow)	$2.00	Each			$ -
PLANTS: Stakes (willow)	$2.00	Each			$ -
PLANTS: Flats/plugs	$2.00	Each			$ -
				TOTAL	**$ 6,428.50**

INSTALLATION COSTS (LABOR, EQUIPMENT, & OVERHEAD)

Type	Unit Price	Unit			Cost
Compost, vegetable, delivered and spread	$37.88	CY	51.00		$ 1,931.88
Decompacting till/hardpan, medium, to 6" depth	$1.57	CY	51.00		$ 80.07
Decompacting till/hardpan, medium, to 12" depth	$1.57	CY			$ -
Hydroseeding	$0.51	SY			$ -
Labor, general (landscaping other than plant installation)	$40.00	HR	16.00		$ 640.00
Labor, general (construction)	$40.00	HR	16.00		$ 640.00
Labor: Consultant, supervising	$55.00	HR			$ -
Labor: Consultant, on-site re-design	$95.00	HR			$ -
Rental of decompacting machinery & operator	$70.00	HR	8.00		$ 560.00
Sand, coarse builder's, delivered and spread	$42.00	CY			$ -
Staking material (set per tree)	$7.00	Each			$ -
Surveying, line & grade	$250.00	HR			$ -
Surveying, topographical	$250.00	HR			$ -
Watering, 1" of water, 50' soaker hose	$3.62	MSF	25.00		$ 90.50
Irrigation - temporary	$3,000.00	Acre			$ -
Irrigation - buried	$4,500.00	Acre			$ -
Tilling topsoil, disk harrow, 20hp tractor, 4"-6" deep	$1.02	SY			$ -
				TOTAL	**$ 3,942.45**

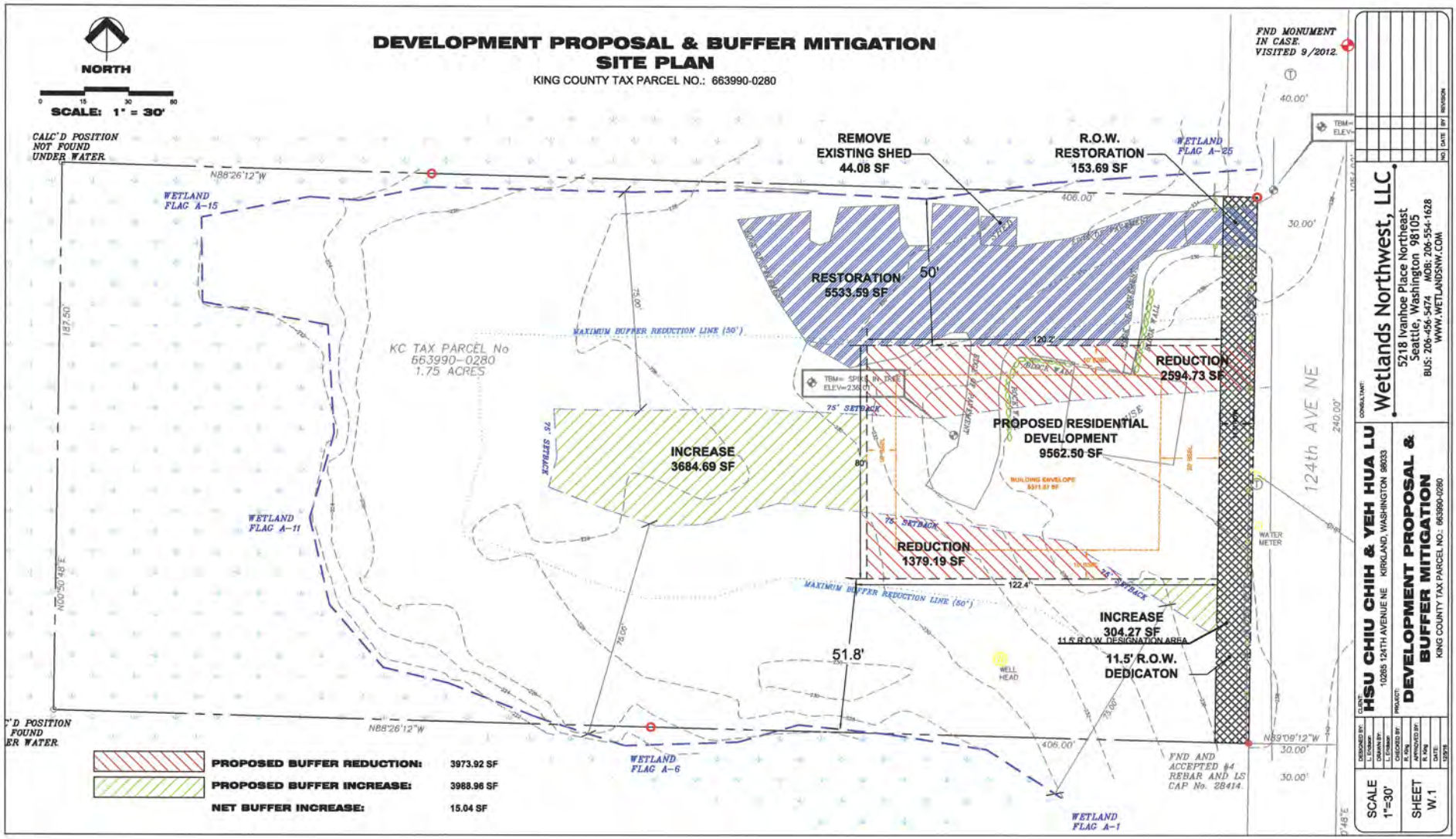
HABITAT STRUCTURES*

ITEMS	Unit Cost	Unit			Cost
Fascines (willow)	$ 2.00	Each			$ -
Logs, (cedar), w/ root wads, 16"-24" diam., 30' long	$1,000.00	Each			$ -
Logs (cedar) w/o root wads, 16"-24" diam., 30'	$400.00	Each			$ -
Logs, w/o root wads, 16"-24" diam., 30' long	$245.00	Each			$ -
Logs w/ root wads, 16"-24" diam., 30' long	$460.00	Each			$ -
Rocks, one-man	$60.00	Each			$ -
Rocks, two-man	$120.00	Each			$ -
Root wads	$163.00	Each			$ -
Spawning gravel, type A	$22.00	CY			$ -
Weir - log	$1,500.00	Each			$ -
Weir - adjustable	$2,000.00	Each			$ -
Woody debris, large	$163.00	Each			$ -
Snags - anchored	$400.00	Each			$ -
Snags - on site	$50.00	Each			$ -
Snags - imported	$800.00	Each			$ -
* All costs include delivery and installation				*TOTAL*	**$ -**

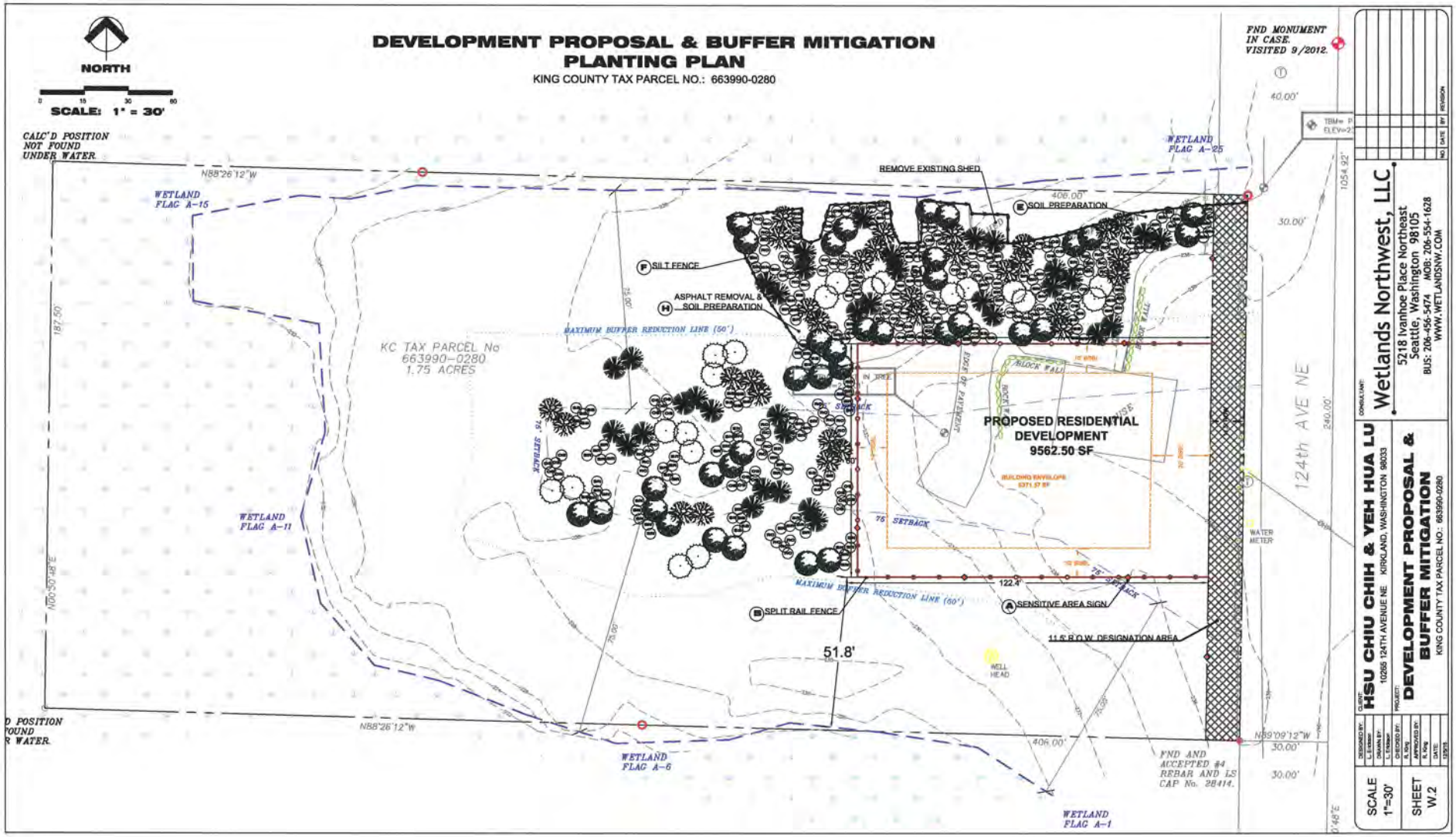
EROSION CONTROL

ITEMS	Unit Cost	Unit			Cost
Backfill and Compaction-embankment	$ 4.89	CY			$ -
Crushed surfacing, 1 1/4" minus	$30.00	CY			$ -
Ditching	$7.03	CY			$ -
Excavation, bulk	$4.00	CY			$ -
Fence, silt	$1.60	LF	305.00		$ 488.00
Jute Mesh	$1.26	SY			$ -
Mulch, by hand, straw, 2" deep	$1.27	SY			$ -
Mulch, by hand, wood chips, 2" deep	$3.25	SY	43.00		$ 139.75
Mulch, by machine, straw, 1" deep	$0.32	SY			$ -
Piping, temporary, CPP, 6"	$9.30	LF			$ -
Piping, temporary, CPP, 8"	$14.00	LF			$ -
Piping, temporary, CPP, 12"	$18.00	LF			$ -
Plastic covering, 6mm thick, sandbagged	$2.00	SY			$ -
Rip Rap, machine placed, slopes	$33.98	CY			$ -
Rock Constr. Entrance 100'x15'x1'	$3,000.00	Each			$ -
Rock Constr. Entrance 50'x15'x1'	$1,500.00	Each			$ -
Sediment pond riser assembly	$1,695.11	Each			$ -
Sediment trap, 5' high berm	$15.57	LF			$ -
Sediment trap, 5' high berm w/spillway incl. riprap	$59.60	LF			$ -
Sodding, 1" deep, level ground	$5.24	SY			$ -
Sodding, 1" deep, sloped ground	$6.48	SY			$ -
Straw bales, place and remove	$600.00	TON			$ -
Hauling and disposal	$20.00	CY			$ -
Topsoil, delivered and spread	$35.73	CY	51.00		$ 1,822.23
				TOTAL	**$ 2,449.98**

GENERAL ITEMS					
ITEMS	Unit Cost	Unit			Cost
Fencing, chain link, 6' high	$18.89	LF			$ -
Fencing, chain link, corner posts	$111.17	Each			$ -
Fencing, chain link, gate	$277.63	Each			$ -
Fencing, split rail, 3' high (2-rail)	$10.54	LF	326.00		$ 3,436.04
Fencing, temporary (NGPE)	$1.20	LF			$ -
Signs, sensitive area boundary (inc. backing, post, install)	$28.50	Each	8.00		$ 228.00
				TOTAL	**$ 3,664.04**
OTHER				*(Construction Cost Subtotal)*	**$ 16,484.97**
ITEMS	Percentage of Construction Cost	Unit			Cost
Mobilization	10%	1			$ 1,648.50
Contingency	30%	1			$ 4,945.49
				TOTAL	**$ 6,593.99**
MAINTENANCE AND MONITORING	NOTE: Projects with multiple permit requirements may be required to have longer monitoring and maintenance terms. This will be evaluated on a case-by-case basis for development applications. Monitoring and maintance ranges may be assessed anywhere from 5 to 10 years.				
Maintenance, annual (by owner or consultant)					
Less than 1,000 sq.ft. and buffer mitigation only	$ 1.08	SF		(3 X SF total for 3 annual events; Includes monitoring)	$ -
Less than 1,000 sq.ft. with wetland or aquatic area mitigation	$ 1.35	SF		(3 X SF total for 3 annual events; Includes monitoring)	$ -
Larger than 1,000 sq. ft. but less than 5,000 sq.ft. of buffer mitigation	$ 180.00	EACH		(4hr @$45/hr)	$ -
Larger than 1,000 sq. ft. but less than 5,000 sq.ft. of wetland or aquatic area mitigation	$ 270.00	EACH		(6hr @$45/hr)	$ -
Larger than 5,000 sq.ft. but < 1 acre -buffer mitigation only	$ 360.00	EACH	10.00	(8 hrs @ 45/hr)	$ 3,600.00
Larger than 5,000 sq.ft. but < 1 acre with wetland or aquatic area mitigation	$ 450.00	EACH		(10 hrs @ $45/hr)	$ -
Larger than 1 acre but < 5 acres - buffer and / or wetland or aquatic area mitigation	$ 1,600.00	DAY		(WEC crew)	$ -
Larger than 5 acres - buffer and / or wetland or aquatic area mitigation	$ 2,000.00	DAY		(1.25 X WEC crew)	$ -
Monitoring, annual (by owner or consultant)					
Larger than 1,000 sq.ft. but less than 5,000 wetland or buffer mitigation	$ 720.00	EACH		(8 hrs @ 90/hr)	$ -
Larger than 5,000 sq.ft. but < 1 acre with wetland or aquatic area impacts	$ 900.00	EACH	5.00	(10 hrs @ $90/hr)	$ 4,500.00
Larger than 1 acre but < 5 acres - buffer and / or wetland or aquatic area impacts	$ 1,440.00	DAY		(16 hrs @ $90/hr)	$ -
Larger than5 acres - buffer and / or wetland or aquatic area impacts	$ 2,400.00	DAY		(24 hrs @ $90/hr)	$ -
				TOTAL	**$ 8,100.00**
				Total	**$31,178.96**



SAR16-02993
ATTACHMENT 8
APPLICANT ENVIRONMENTAL REPORT V.1



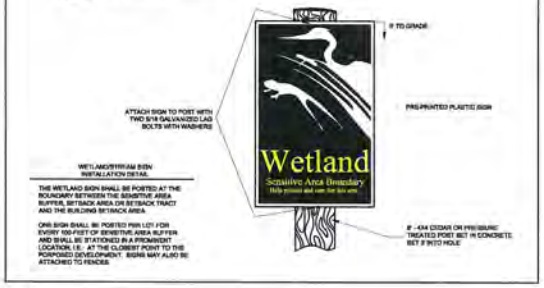
SAR 10-02993
ATTACHMENT 8
APPLICANT ENVIRONMENTAL REPORT V.1

DEVELOPMENT PROPOSAL & BUFFER MITIGATION DETAILS

KING COUNTY TAX PARCEL NO.: 663990-0280

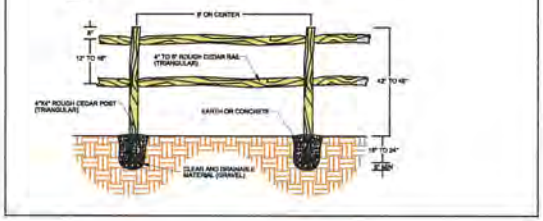
A SENSITIVE AREA SIGN

NOT TO SCALE



B SPLIT RAIL FENCE

NOT TO SCALE



D PLANT SCHEDULE

SYMBOL	COMMON NAME	SCIENTIFIC NAME	QTY.	SIZE
	BIG-LEAF MAPLE	ACER MACROPHYLLUM	30	2 GAL
	RED ALDER	ALNUS RUBRA	35	2 GAL
	DOUGLAS FIR	PSEUDOTSUGA MENZIESII	35	5 GAL
	WESTERN RED CEDAR	THUJA PLICATA	20	2 GAL
OS	OCEANSPRAY	HOLODISCUS DISCOLOR	55	1 GAL
RC	RED-FLOWERING CURRANT	RIBES SANGUINEUM	50	1 GAL
BR	BALDHIP ROSE	ROSA GYMNOCARPA	50	1 GAL
SB	SALMONBERRY	RUBUS SPECTABILIS	60	1 GAL
SN	SNOWBERRY	SYMPHORICARPOS ALBUS	60	1 GAL

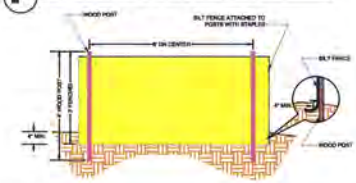
PLANTING NOTES:
TREE AND SHRUB LOCATIONS AREA APPROXIMATE AND MAYBE RELOCATED IN THE FIELD BASED ON SITE CONDITIONS AND LOCATIONS OF EXITISTING VEGETATION

E GRASS SEEDING

GRASS NAME	SCIENTIFIC NAME	PERCENTAGE
BLUE WILDRYE	ELYMUS GLAUCUS	60%
MEADOW BARLEY	HORDEUM	30%
TUFTED HAIRGRASS	BRACHYANTHERIUM DESCHAMPSIA CAESPITOSA	10%

* APPLICATION RATE: 40 LBS PER ACRE
* TOTAL BUFFER AREA TO BE SEEDED: 0.13 ACRES
* TOTAL AMOUNT OF SEED NEEDED: 5.2 LBS
* BROADCAST SEED APPLICATION BY HAND

F SILT FENCE DETAIL

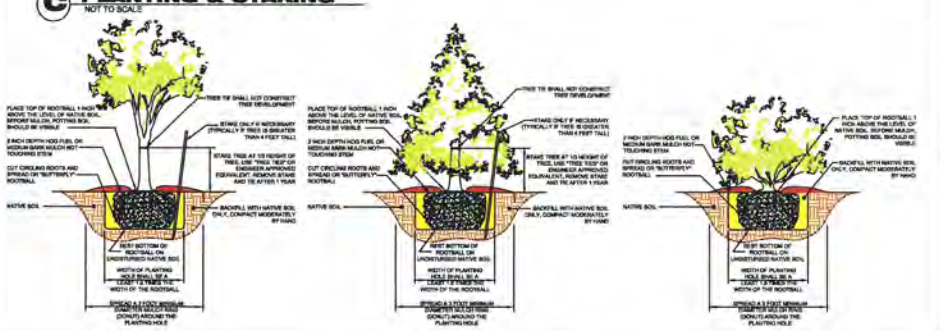


CONSTRUCTION NOTES

1. ALL STRUCTURES AND ASPHALT DRIVEWAYS ARE TO BE REMOVED FROM BUFFER PRIOR TO MITIGATION PLANTING
2. ANY COMPACTED SOILS SHALL HAVE APPRORIATE DECONSOLIDATON METHODS USED TO CREATE MORE SUITABLE SOIL CONDITIONS (SEE DETAIL H)
3. PLANT LOCATIONS ARE APPROXIMATE AND MAY NEED TO BE RELOCATED IN FIELD BASED ON SITE CONDITIONS.
4. SILT FENCE SHALL BE INSTALLED ALONG THE DOWNSLOPE SIDE OF THE CONSTRUCTION AREA PRIOR TO ANY EARTH WORK ACTIVITIES (SEE DETAIL F)

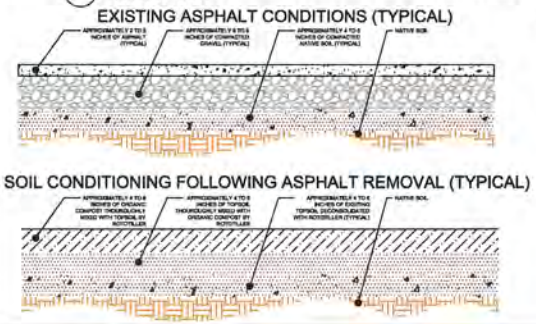
C PLANTING & STAKING

NOT TO SCALE



H ASPHALT REMOVAL AND SOIL PREPARATION

NOT TO SCALE TYPICAL



NOTES:

1. REMOVE ALL ASPHALT, GRAVEL AND COMPACTED MATERIALS FROM THE BUFFER RESTORATION AREA AND DISPOSE OF OFF-SITE IN A LEGAL MANNER.
2. DECONSOLIDATE COMPACTED NATIVE SOILS WITH ROTOTILLER PRIOR TO INSTALLATION OF TOPSOIL AND ORGANIC COMPOST
3. THOUROUGHLY MIX ORGANIC COMPOST AND TOPSOIL WITH ROTOTILLER PRIOR TO PLANT INSTALLATION
4. CONSULTING BIOLOGIST SHALL APPROVE SOIL CONDITIONS PRIOR TO MITIGATION PLANTING

NO.	DATE	BY	REVISION

CONSULTANT
Wetlands Northwest, LLC
5218 Ivanhoe Place Northeast
Seattle, Washington 98105
BUS: 206-456-5474 MOB: 206-554-1628
WWW.WETLANDSNW.COM

CLIENT: HSU CHIU CHIH & YEH HUA LU
10205 124TH AVENUE NE KIRKLAND, WASHINGTON 98033

PROJECT: DEVELOPMENT PROPOSAL & BUFFER MITIGATION
KING COUNTY TAX PARCEL NO.: 663990-0280

DESIGNED BY: L. Eckman	DRAWN BY: L. Eckman	CHECKED BY: R. King	APPROVED BY: R. King	DATE: 12/8/10

SCALE VARIES

SHEET W.3

SAR 10-02993
ATTACHMENT 8
APPLICANT ENVIRONMENTAL REPORT V.1

DEVELOPMENT PROPOSAL & BUFFER MITIGATION
MITIGATION TEXT

KING COUNTY TAX PARCEL NO.: 663990-0280

1.0 Executive Summary

A regulated wetland is present on-site along the north, west and south portions of the property extending off-site in the same directions. Per City of Kirland the on-site wetland is required to have a 75-foot buffer. City of Kirkland allows reduction of the buffer for averaging purposes with compensatory mitigation. The applicant proposes buffer averaging, reducing the require buffer along the north and south sides of the property by 3,973.92 square feet and increasing the buffer along the western side of the property by 3,988.96 square feet. The net gain in buffer area will be 15.04 square feet following averaging. In addition, 5,509.70 square feet of existing asphalt driveway and a shed will be removed from the northern portion of the buffer. Compacted soils in this area will be deconsolidated, organic topsoil will be install and incorporated into the restoration area and native trees and shrubs will be planted as mitigation for impacts. Additionally, area immediately adjacent to the proposed western edge of the development area will be planted with native trees and shrubs to mitigate for buffer averaging impacts. Split rail fence and sensitve area signs will be installed to delineate the edge of the new wetland buffer. Native plant species will increase plant diversity, wildlife habitat and prevent the establishment of invasive species.

1.1 Goals and Objectives

The goal of mitigation is to increase the functions and values of the existing wetland buffer through enhancement. Enhancement will be through removal of impervious surfaces and installation of native trees and shrubs. In its current state, the buffer does not provide the functions necessary to adequately protect the off-site wetland. The objectives necessary to meet the above stated goal area as follows:

- Remove asphalt and shed from the buffer
- Deconsolidate compacted soils and install organic compost
- Install native vegetation within the buffer
- Maintain and monitor the enhancement area for a period of five years or until the site meets the specified performance standards
- Install split rail fence and sensitive area signs at the limit of the buffer to detour future intrusions into the sensitive area
- Record the sensitive area in a "Notice on Title"
- If the enhancement area fails to meet performance standards provide a contingency plan to rectify the situation.

2.0 Site Conditions

The Contractor shall immediately notify the Landscape Designer and/or Wetland Biologist of drainage or soil conditions likely to be deterimental to the growth or survival of plants. Locations shall be as depicted in the approved plan set. The Landscape Designer and/or Wetland Biologist may adjust the locations of plantings shown on plans based on field conditions. Planting operations shall not be conducted under the following conditions: freezing weather, when the ground is frozen, excessively wet weather, excessively windy weather, or in excessive heat. Changes should be documented and as-built drawings submitted to City of Kirkland upon request for formal construction approval.

3.0 Plants

3.1 Origin: Plant materials shall be Northwest native plants, nursery grown in the Puget Sound region of Washington.
3.2 Plant Names: Plant names shall comply with those generally accepted in the native plant nursery trade. Any questions regarding plant species or variety shall be referred to the Landscape Designer or Wetland Biologist. All plant materials shall be true to species and variety.
3.3 Plant Substitutions: Same species substitutions of larger size do not require special permission. However, small plants often experience less transplant shock and adapt more quickly to site conditions, resulting in a higher success rate. As such, smaller plants will be approved as substitutions based on certain site-specific conditions (trees not less than 1 gallon size however). All plant substitutions shall be approved by Landscape Designer and/or Wetland Biologist.
3.4 Quality and Condition: Plants shall be normal in pattern of growth, healthy, well-branched, vigorous, with well-developed root systems, and free of pests and diseases. Damaged, diseased, pest-infested, scraped, bruised, dried-out, burned, broken, or defective plants will be rejected.
3.5 Handling: Plants shall he handled so as to avoid all damage, including breaking, bruising, root damage, sunburn, drying, freezing or other injury. Plants must be covered during transport. Plants shall not be bound with wire or rope in a manner that could damage branches. Protect plant roots with shade and wet soil in the time period between delivery and installation. Do not lift container stock by trunks, stems, or tops. Do not remove from containers until ready to plant. Water all plants as necessary to keep moisture levels appropriate to the species borticultural requirements. Plants shall not be allowed to dry out. All plants shall be watered thoroughly immediately upon installation. Soak all containerized plants thoroughly prior to installation. Bare root plants are subject to the following special requirements, and shall not be used unless planted between November 1 and March 1, and only with the permission of the Landscape Designer, Wetland Biologist, and/or City of Kirkland Staff. Bare root plants must have enough fibrous root to insure plant survival. Roots must be covered at all times with mud and/or wet straw, moss, or other suitable packing material until time of installation. Plants whose roots have dried out from exposure will not be accepted at installation inspection.
3.6 Damaged Plants: Damaged, dried out, or otherwise mishandled plants will be rejected at installation inspection. All rejected plants shall be immediately removed from the site.
3.7 Roots: All plants shall be balled and burlapped or containerized, unless explicity authorized by the Landscape Designer and/or Wetland Biologist. Root bound plants or B&B plants with damaged, cracked or loose rootballs (major damage) will be rejected. Immediately before installation, plants with minor root damage (some broken and/or twisted) must be root-pruned. Matted or circling roots of containerized plantings must he pruned or straightened and the sides of the root ball must be roughened from top to bottom to a depth of approximately half and inch in two to four places. Bare root plantings of woody material is allowed only with permission from the Landscape Designer, Wetland Biologist, and/or City of Kirkland Staff.
3.8 Sizes: Plant sizes shall be the size indicated in the plant schedule. Larger stock may be acceptable provided that it has not been cut back to size specified, and that the root ball is proportionate to the size of the plant. Smaller stock may be acceptable, and under some circumstances perferable, based on site-specific conditions. Measurements, caliper, branching and balling and burlapping shall conform to the American Standard of Nursery Stock by the American Assoiciation of Nurserymen (latest edition).
3.9 Form: Evergreen trees, if used, shall have single trunks and symmetrical, well-developed form. Deciduous trees shall be single trunked unless specified as multi-stem in the plant schedule. Shrubs shall have multiple stems, and he well-branched.
3.10 Planting: Planting shall be done in accordance with illustrated details in the mitigation plan set and accepted industry standards. Plant locations shall also be inspected and approved prior to planting.
3.11. Timing of Planting: Unless otherwise approved hy City of Kirkland, all planting shall occur between September 1 and March 31.
3.12 Planting in Pits: Planting pits shall be circular or square with vertical sides, and shall be 6" larger in diameter than the root ball of the plant. Break up the sides of the pit in compacted soils. Set plants upright in pits, as illustrated in planting detail. Burlap shall be removed from the planting pit. Backfill shall be worked back into holes such that air pockets are removed without adversely compacting soils.
3.13 Mulch: The soil surface surrounding all planting pit areas shall receive no less than 3"-4" of hog fuel or medium bark mulch after planting. Hog fuel or mulch shall be kept well away (at least 3") from the trunks and stems of woody plants.
3.14 Water: Plants shall he watered upon completion of backfilling. For spring plantings (if approved), a rim of earth shall be mounded around the base of the tree or shrub no closer than the drip line, or no less than 30" in diameter, except on steep slopes or in hollows. Plants shall be watered a second time within 24-48 hours after installation. The earthen rim/dam should be leveled prior to the second growing season.
3.15 Staking: Most shrubs and many trees do not require any staking. If the plant can stand alone without staking in a moderate wind, do not use a stake. If the plant needs support, then strapping or webbing should be used as low as possible on the trunk to loosely brace the tree with one stake (see Planting Detail). Do not brace the tree tightly or too high on the trunk. If the tree is unable to sway, it will further lose the ability to support itself. As soon as supporting the plant becomes unnecessary, remove the stakes. All stakes must be removed within two years of installation.
3.16 Wildlife Control: As determined by the Landscape Designer and/or Wetland Biologist, fencing or deer repellants may be needed to limit deer intrusion while installed plants are becoming establisbed.

4.0 Maintenance

Maintenance shall be required in accordance with City of Kirkland guidelines and approved plans.
4.1 Duration and Extent: In order to achieve performance standards, the Permittee shall have the mitigation area maintained twice annually for the duration of the monitoring period, _5_ years. All maintenance shall be directed by the Landscape Designer and/or Wetland Biologist.
Maintenance will include:

- watering
- weeding around base of installed plants
- pruning
- replacement
- restaking
- removal of all classes of noxious weeds (see Washington State Noxious Weeds List, WAC 16-7150-005) as well as Himalayan blackberry
- any other measures needed to insure plant survival
- general maintenance activities which include the replacement of any vandalized or damaged signs, habitat features, fences or other structural component of the mitigation site.

4.2 Survival: The Permittee shall be responsible for the health of 100% of all newly installed plants for one growing season after installation has been accepted by City of Kirkland (see Performance Standards). A growing season for these purposes is defined as occurring from March 1 to October 31. For fall installation (often required), the growing season will begin the following spring. The Permittee shall replace any plants that are failing, weak, defective in a manner of growth, or dead during this growing season, as directed by the Landscape Designer, Wetland Biologist, and/or City of Kirkland.
4.3 Installation Timing for Replacement Plants: Replacement plants shall be installed between September 1 and March 31, unless otherwise determined by the Landscape Designer, Wetland Biologist, and/or City of Kirkland.
4.4 Standards for Replacement Plants: Replacement plants sball meet the same standards for size and type as those specified for original installation unless otherwise directed by the Landscape Designer, Wetland Biologist, and/or City of Kirkland. Replacement plants shall be inspected as described above for the original installation.
4.5 Replanting: Plants that have settled in their planting pits too deep, too shallow, loose, or crooked shall be replanted as directed by the Landscape Designer, Wetland Biologist, and/or City of Kirkland.
4.6 Herbicides/Pesticides: Chemical controls shall not be used in the mitigation area, sensitive areas or their buffers. However, limited use of herbicides may he approved depending on site specific conditions, only if approved by City of Kirkland.
4.7 Irrigation/Watering: Water sball be provided during the dry season (July 1-October 15) for the first two years after installation to ensure plant survival and establisbment. Water should be provided by a temporary above ground irrigation system and/or water truck. Water should be applied at a rate of 1" of water two times a week for Year 1 and 1" of water one time a week during Year 3.

5.0 Performance Standards - Plant Cover and Survival

- Plant survival and cover standards are established to measure mitigation success as follows:

	Year 1	Year 2	Year 3	Year 4	Year 5
Shrub and Sapling Tree Cover*	>10%	>15%	>20%	>30%	>35%
Shrub and Sapling Tree Survival	100%	>85%	>80%		

*Includes beneficial native plants in that category that are naturally recruiting volunteers

- Less than 10% invasive vegetation during any monitoring event.
- The establishment of _3_ species of native trees and _4_ species of native shrubs at the end the the monitoring period.

6.0 Monitoring

Monitoring shall be conducted twice annually (mid spring and fall) for _5_ years in accordance with the approved mitigation monitoring plan.
6.1 Vegetation Monitoring: Sample points or transects will be established for vegetation monitoring. Linear transects are the preferred method for vegetation monitoring for this site. No less than one (1) 100-foot transect per 10,000 square feet of area will be established in the mitigation area. Permanent transect location(s) must be identified on mitigation site plans in the first monitoring report (they may be drawn on approved mitigation plans by hand). Plots located at the end of each transect shall detail herb, shrub, and tree aerial cover at radii of 1m, 5m, and 10m respectively, using the Braun-Blanquet releve method or other acceptable field method. Monitoring of vegetation transects shall occur annually between August 1 and September 30 (prior to leaf drop), unless otherwise specified.
6.2 Photopoints: No less than four (4) permanent photo points will be established within the mitigation area. Photographs will be taken from these points to visually record the condition of the mitigation area. Photos shall be taken annually between August 1 and September 30 (prior to leaf drop), unless otherwise specified.
6.3 Reports: Monitioring reports shall be submitted by December 31 of each year during the monitoring period. As applicable, monitoring reports must include description/data for:

- Site plan and location map
- Historic description of project, including date of installation, current year of monitoring, restatement of mitigation goals, and performance standards
- Plant survival, vigor, and aerial coverage from every plant community (transect data), and explanation of monitoring methodology in the context of assessing performance standards
- Slope condition, site stability, any structures or special features
- Buffer conditions, e.g. surrounding land use, use by humans, wild and domestic creatures
- Observed wildlife, including amphibians, avians and others
- Assessment of nuisance/exotic biota and recommendations for management
- Color photographs taken from permanent photo points as shown in the first as-built plan or the first monitoring report.
- Summary of maintenance and contingency measures proposed for next season and completed for past season

6.4 Deficiences: Any deficiency discovered during any monitoring or inspection visit must be corrected within 60 days of approval by City of Kirkland.
6.5 Contingency Plan: Should any monitoring report reveal the mitigation has failed in whole or in part, and should that failure be beyond the scope of routine maintenance, a Contingency Plan will be submitted. The Contingency Plan may range in complexity from a list of plants substituted, to cross-sections of proposed engineered structures. Once approved, it may be installed, and will replace the approved mitigation plan. If the failure is substantial, City of Kirklandmay extend the monitoring period for that mitigation.

7.0 Bond

Prior to beginning any work, the Permittee must provide a mitigation bond or assignment of funds per City of Kirkland. A bond quantity worksheet has been completed based on all elements of the mitigation plan. The total cost, plus contingency fees has been determined to be $ **31,178.96** , which will be the amount of the mitigation bond the Permittee is required to provide. Bonds are eligible for reduction to maintenance status upon successful installation inspection, providing that it also meets performance standards established in the mitigation plan and City of Kirkland guidelines.

NO. | DATE | BY | REVISION

CONSULTANT:
Wetlands Northwest, LLC
5218 Ivanhoe Place Northeast
Seattle, Washington 98105
BUS: 206-456-5474 MOB: 206-554-1628
WWW.WETLANDSNW.COM

CLIENT:
HSU CHIU CHIH & YEH HUA LU
10265 124TH AVENUE NE KIRKLAND, WASHINGTON 98033

PROJECT:
DEVELOPMENT PROPOSAL & BUFFER MITIGATION
KING COUNTY TAX PARCEL NO.: 663990-0280

DESIGNED BY: L. Erickson
DRAWN BY: L. Erickson
CHECKED BY: R. King
APPROVED BY: R. King
DATE: 12/2/16

SCALE NONE

SHEET W.4

APPLICANT ENVIRONMENTAL REPORT V.1
ATTACHMENT 8
SAR16-02993

THE WATERSHED COMPANY

SCIENCE & DESIGN

March 20, 2017

Allison Zike
City of Kirkland
Planning & Community Development
123 Fifth Avenue
Kirkland, WA 98033

Re: Lu Project – Wetland Buffer Modification Plan Review

The Watershed Company Reference Number: 080704.6

Dear Allison:

Thank you for requesting we review the proposed buffer modification plan submitted for this project. I recently visited the project site, located at 10265 124th Avenue NE (parcel #6639900280) to evaluate the mitigation areas proposed to offset buffer impacts. I also reviewed the environmental components of the proposed project as described in plan sheets and a letter submitted to the City of Kirkland. This letter is a summary of the site visit findings and review findings.

The following documents were provided for this review:

- Code compliance summary letter. Prepared by
- Wetlands Northwest LLC January 23, 2017.
- Critical Areas Mitigation Bond Quantity Worksheet. Prepared by Wetlands Northwest LLC December 5, 2016.
- Development Proposal & Buffer Mitigation Site Plan. Prepared by Triad Associates, August 30, 2006. Prepared by Wetlands Northwest LLC December 5, 2016.
- 124th Ave NE Improvements plan (sheet C3.0 only). Prepared by Civil Engineering Solutions January 25, 2017.

Findings

Wetland buffer modification

The project proposes to reduce the wetland buffer through buffer averaging. Because the entire on-site buffer area is in a low-functioning state, enhancement is proposed to

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

improve buffer function. The two areas of enhancement include a densely planted asphalt removal area and a lower-density former lawn area.

Overall mitigation plan comments and recommendations

1. The last paragraph of KZC 90.602b has not been addressed in the submittal documents provided for this review. **Recommendation**: The applicant should assess the habitat, water quality, storm water detention, ground water recharge, shoreline protection and erosion protection of the proposed modification on those functions.

2. Large areas of low functioning buffer will remain after implementation of the mitigation plan. Presumably these areas will be left to re-colonize, most likely with a mix of native and non-native/invasive species. Such colonization, though of lower value than the restored areas, will improve functions over time. However, to secure functional improvements, the plan should indicate these buffer areas are to be left in a natural state and shall not be cleared, landscaped or otherwise altered. **Recommendation:** add a mitigation performance standard to document the unplanted buffer areas remain free from new impacts, including but not limited to the addition of new structures (temporary or permanent), clearing, mowing, or pruning existing vegetation; planting or seeding non-native vegetation; and grading, excavating or filling activities.

3. Removal and enhancement of the asphalt area, as proposed, is necessary since asphalt will prevent the natural succession of vegetation at the site. However, the rationale for the selected location of the other buffer enhancement area west of the proposed building envelope has not been explained. A higher degree of function would be obtained from establishing a dense assemblage of native trees and shrubs that surrounds the building envelope. This would provide a much better level of screening between the wetland and the proposed development. **Recommendation:** propose a suitably-wide, densely planted zone around the building envelope on the north, west and south sides of the project. Planting density should follow King County recommendations of 9-foot triangular tree spacing and 6-foot triangular shrub spacing.

4. The split rail fence is shown on the north, west and south sides of the development only and not along the sidewalk improvement. **Recommendation:** extend fencing and signage along the sidewalk north and south of the development to limit pet and pedestrian intrusion and demarcate protected buffer area.

5. Large trees in mitigation areas should be kept back from any structures such that the risk of future hazards to the building are limited. **Recommendation:** the

revised mitigation plan should show large trees farther away than the 10-foot structure setback

6. The ROW dedication appears to overlap the proposed buffer addition and restoration areas. Sheet W1 shows 153 square feet of restoration and 304 square feet of buffer increase inside the dedication to the right of way. **Recommendation:** revise the impacts and planting plans to account for ROW buffer losses.

7. General site cleanup is needed. In addition to the shed proposed for removal, there are other elements that should also be removed. **Recommendation:** Remove the creosote-treated wood and wire fence along the north, west and south wetland boundaries; removal trash and foreign debris site-wide.

8. Trees salvaged from on-site should be used in the buffer areas for additional habitat structure as mentioned in KZC 90.60.2.a.2.

9. Grass seeding is proposed. Grass seed mix should be omitted from the plan since grasses aggressively compete with installed woody vegetation. Erosion control should rely on other methods such as thick applications of mulch site-wide. Woodchip mulch favors native woody species over grasses, especially canarygrass. . **Recommendation:** substitute woodchip mulch for grass seed.

10. Irrigation is proposed but water trucks are given as an alternative to an above-ground system. Water trucks have proven unreliable form of irrigation and should not be allowed on sites with municipal water supplies. **Recommendation:** remove the water truck option from the irrigation section on sheet W4.

11. There are a few bond quantity estimates that are incorrect. **Recommendation:** Add costs for the following:

    a. Supervising consultant. Note the asphalt removal detail on sheet W3 requires a consultant be available to inspect soil amendments. Other key inspections are needed to ensure proper installation.

    b. Include costs for a temporary irrigation system instead of soaker hoses.

    c. Large woody debris. Include costs for imported debris and/or costs for moving and placing salvaged trees on-site.

    d. Include costs for additional split rail fencing and signage.

e. Monitoring twice per year is required by KZC chapter 90 as is an as-built inspection. Therefore, the monitoring visits should be increased from 5 to 11.

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

Sincerely,

Hugh Mortensen, PWS
President

Wetlands Northwest LLC

June 22, 2017

Allison Zike
City of Kirkland- Planning and Building Department
123 Fifth Avenue
Kirkland, Washington 98033

Re: SAR16-02993 Lu Wetland Buffer Modification

Dear Ms. Zike:

This is in response to the review letter dated March 20, 2017 by the *Watershed Company*. Each item in the review letter is addressed below:

Item 1:
According to the Washington State Department of Fish and Wildlife (WDFW), there are no listed species within the vicinity. The WDFW has inventoried the adjacent wetlands and are categorized as "scrub/shrub". A mostly mixed forest surrounds the wetlands. The wetland and forest which occupies an area of approximately 12 acres situated on private property. The outlet of the wetlands is a culvert that conveys drainage under Slater Avenue NE and discharges to a stream tributary to Forbes Creek. Forbes Creek is then conveyed under I-405 to the west. According to the WDFW, the reach of Forbes Creek west of I-405 to Lake Washington is suitable habitat for coho salmon (*Oncorhynchus kisutch*). As the crow flies, this is a distance of approximately from 1300 feet from the building permit proposal.

Water quality will be treated with a Type 40 catch basin that will collect stormwater runoff from driveway surfaces allowing for the separation of pollutants (see civil engineering plans by *Civil Engineering Solutions* dated 6/16/2017 attached with this submittal).

No stormwater will be conveyed to the City's storm sewer, all runoff will be infiltrated. A dispersion trench is proposed near the home's southwest corner (see civil engineering plans by *Civil Engineering Solutions* dated 6/16/2017 attached with this submittal).

Possible erosion resulting from construction activities is addressed in the civil engineering plans by *Civil Engineering Solutions* dated 6/16/2017 attached with this submittal. Erosion functions will be enhanced long term with the buffer enhancement plan and will also increase buffer and wetland functions to protect downstream properties and shoreline fucntion.

Items 2 through 11 are addressed on the mitigation plan are as follows:

Item 2:
Added language to mitigation standards regarding activities in remaining buffer area.

Item 3:
Added a 15-foot designated shrub planting surrounding the development area.

Item 4:
Extended fence as requested. Signs were already specified in the area.

Item 5:
Removed all trees within 20-feet of edge of development area and relocated them in the mitigation area

Item 6:
No changes made. The buffer impact within the ROW was already included in the mitigation calculations. There was no proposed increase of buffer within the ROW dedication.

5218 Ivanhoe PL NE
Seattle, WA 98105
206-456-5474
www.wetlandsnw.com

Item 7:
Added note to plans regarding removal of trash, debris, creosote and fencing within the buffer area.

Item 8:
Added note regarding placement of woody debris from trees removed from development area.

Item 9:
Removed grass seeding and called for wood chip placement. Revised bond worksheet accordingly.

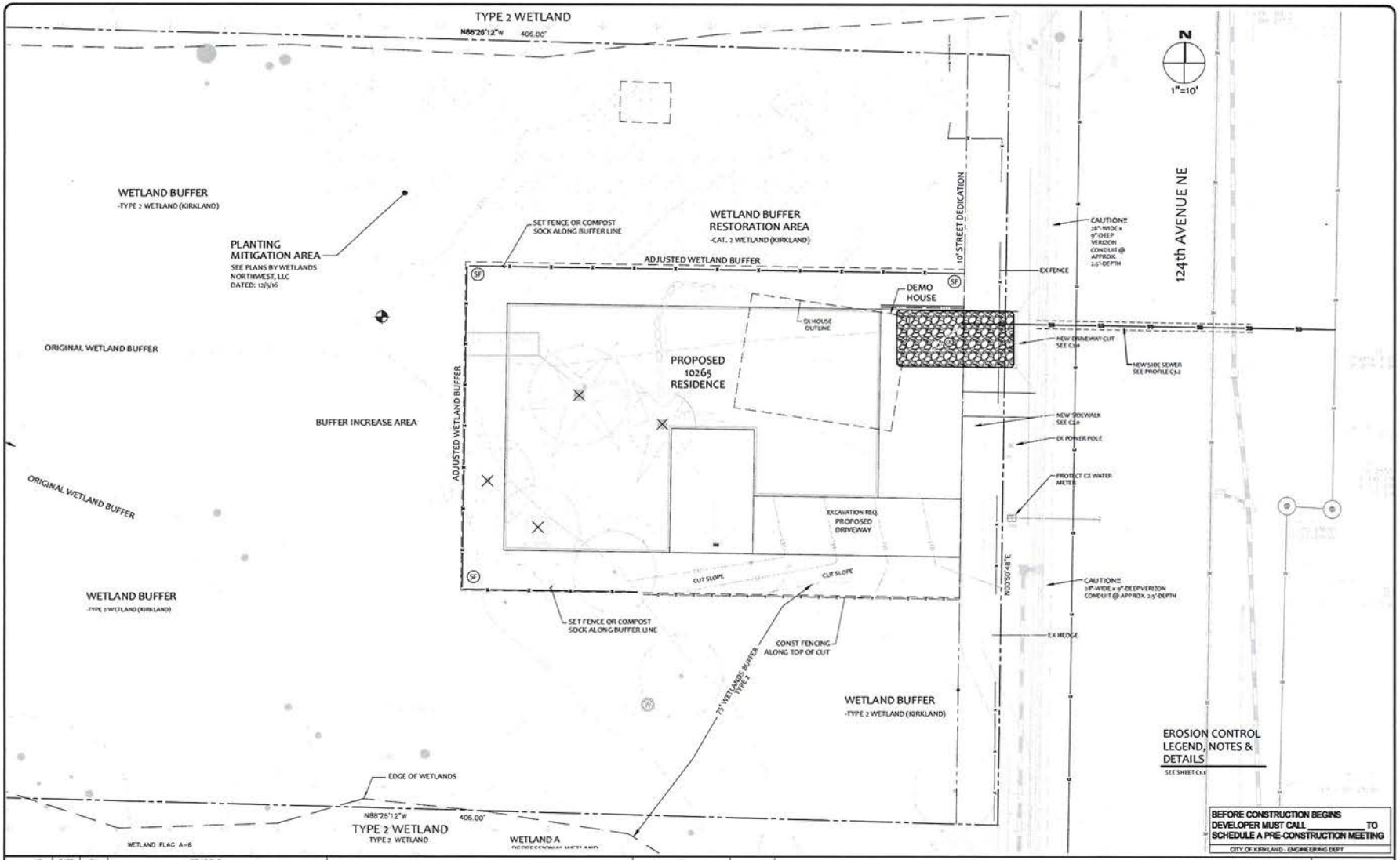
Item 10:
Removed reference to water truck. Revised bond worksheet accordingly.

Item 11:
Revised bond worksheet as requested.

If you have any further questions, feel free to contact me on my mobile phone at 206-554-1628.

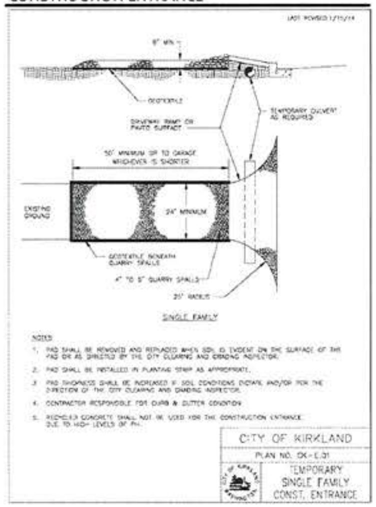
Sincerely,

Robert King, PWS
Principal

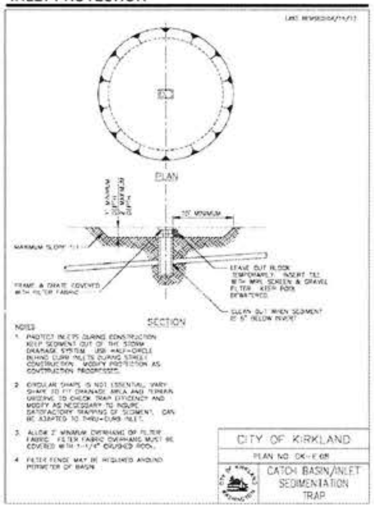


SAR 10-02993
ATTACHMENT 10
APPLICANT ENVIRONMENTAL REPORT V.2

CONSTRUCTION ENTRANCE



INLET PROTECTION



BAKER TANK NOTE

A BAKER TANK OR OTHER TEMPORARY GROUND AND/OR SURFACE WATER STORAGE TANK MAY BE REQUIRED DURING CONSTRUCTION, DEPENDING ON WEATHER CONDITIONS.

DENUDED AREAS REQUIREMENTS

MAY 1 TO SEPT 30
ALL DENUDED AREAS MUST BE STABILIZED WITHIN 7 DAYS OF CONSTRUCTION. PLEASE READ ALL CITY TESC NOTES ON SHEET C1.2.

OCT 1 TO APRIL 30
ALL DENUDED AREAS MUST BE STABILIZED WITHIN 2 DAYS OF GRADING. IF AN EROSION PROBLEM ALREADY EXISTS ON THE SITE, OTHER COVER PROTECTION AND EROSION CONTROL WILL BE REQUIRED.

CESCL RESPONSIBLE FOR TESC PLANS

DUFFY ELLIS, PE, CESCL 5260901

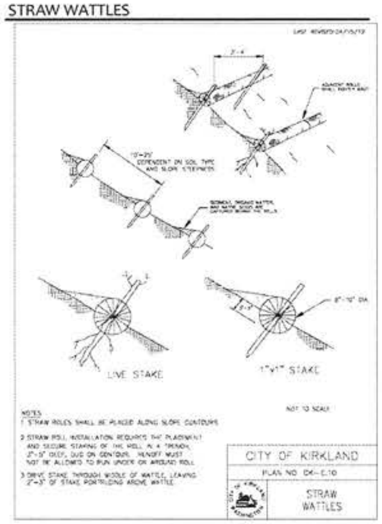
EROSION CONTROL LEGEND

LIMITS OF DISTURBANCE			
FILTER FABRIC FENCE (SILT FENCE)	CK E.03	(SF)	
STABILIZED CONSTRUCTION ENTRANCE	CK E.01	(CE)	
CATCH BASIN INLET PROTECTION	CK D.21	(IP)	
INTERCEPTOR SWALE SEE COR DWG 504, TYPE A TEMPORARY SWALE		(IS)	
TREE PROTECTION FENCING	CK R.49	(TP)	
CHECK DAM		(CD)	
STRAW WATTLES		(SW)	USE AS NEEDED
PLASTIC COVERING		(PC)	COVER EXPOSED AREAS WITHIN KIRKLAND TIME LIMIT
COMPOST SOCK		(CS)	SEDIMENT CONTROL OPTION RECOMMENDED IN LIEU OF SILT FENCE

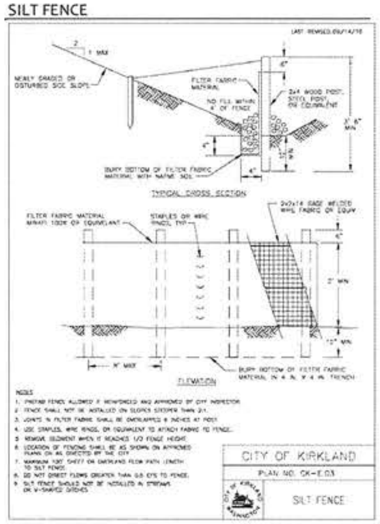
CITY OF KIRKLAND EROSION/SEDIMENTATION CONTROL NOTES

1. THE APPROVED CONSTRUCTION SEQUENCE SHALL BE AS FOLLOWS:
   A. CONDUCT PRE-CONSTRUCTION MEETING.
   B. FLAG OR FENCE CLEARING LIMITS.
   C. POST SIGN WITH NAME AND PHONE NUMBER OF TESC SUPERVISOR.
   D. INSTALL CATCH BASIN PROTECTION IF REQUIRED.
   E. GRADE AND INSTALL CONSTRUCTION ENTRANCE(S).
   F. INSTALL PERIMETER PROTECTION (SILT FENCE, BRUSH BARRIER, ETC.).
   G. CONSTRUCT SEDIMENT PONDS AND TRAPS.
   H. GRADE AND STABILIZE CONSTRUCTION ROADS.
   I. CONSTRUCT SURFACE WATER CONTROLS (INTERCEPTOR DIKES, PIPE SLOPE DRAINS, ETC.) SIMULTANEOUSLY WITH CLEARING AND GRADING FOR PROJECT DEVELOPMENT.
   J. MAINTAIN EROSION CONTROL MEASURE IN ACCORDANCE WITH CITY OF KIRKLAND STANDARDS AND MANUFACTURER'S RECOMMENDATIONS.
   K. RELOCATE EROSION CONTROL MEASURES OR INSTALL NEW MEASURES SO THAT AS SITE CONDITIONS CHANGE, THE EROSION AND SEDIMENT CONTROL IS ALWAYS IN ACCORDANCE WITH THE CITY TESC MINIMUM REQUIREMENTS.
   L. COVER ALL AREAS WITHIN THE SPECIFIED TIME FRAME WITH STRAW, WOOD FIBER MULCH, COMPOST, PLASTIC SHEETING, CRUSHED ROCK OR EQUIVALENT.
   M. STABILIZE ALL AREAS THAT REACH FINAL GRADE WITHIN 7 DAYS.
   N. SEED OR SOD ANY AREAS TO REMAIN UNWORKED FOR MORE THAN 30 DAYS.
   O. UPON COMPLETION OF THE PROJECT, ALL DISTURBED AREAS MUST BE STABILIZED AND BEST MANAGEMENT PRACTICES REMOVED IF APPROPRIATE.
2. ALL WORK AND MATERIALS SHALL BE IN ACCORDANCE WITH CITY OF KIRKLAND STANDARDS AND SPECIFICATIONS.
3. THE BOUNDARIES OF THE CLEARING LIMITS SHOWN ON THIS PLAN SHALL BE SET BY SURVEY AND CLEARLY FLAGGED IN THE FIELD BY A CLEARING CONTROL FENCE PRIOR TO CONSTRUCTION. DURING THE CONSTRUCTION PERIOD, NO DISTURBANCE OR REMOVAL OF ANY GROUND COVER BEYOND THE FLAGGED CLEARING LIMITS SHALL BE PERMITTED. THE FLAGGING SHALL BE MAINTAINED BY THE PERMITTEE/CONTRACTOR FOR THE DURATION OF CONSTRUCTION.
4. APPROVAL OF THIS EROSION/SEDIMENTATION CONTROL (ESC) PLAN DOES NOT CONSTITUTE AN APPROVAL OF PERMANENT ROAD OR DRAINAGE DESIGN (E.G., SIZE AND LOCATION OF ROADS, PIPES, RESTRICTORS, CHANNELS, RETENTION FACILITIES, UTILITIES, ETC.)
5. THE IMPLEMENTATION OF THIS ESC PLAN AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT, AND UPGRADING OF THESE ESC FACILITIES IS THE RESPONSIBILITY OF THE PERMITTEE/CONTRACTOR UNTIL ALL CONSTRUCTION IS APPROVED.
6. A COPY OF THE APPROVED ESC PLANS MUST BE ON THE JOB SITE WHENEVER CONSTRUCTION IS IN PROGRESS.
7. THE ESC FACILITIES SHOWN ON THIS PLAN MUST BE CONSTRUCTED PRIOR TO OR IN CONJUNCTION WITH ALL CLEARING AND GRADING ACTIVITIES IN SUCH A MANNER AS TO ENSURE THAT SEDIMENT-LADEN WATER DOES NOT ENTER THE DRAINAGE SYSTEM OR VIOLATE APPLICABLE WATER STANDARDS. WHEREVER POSSIBLE, MAINTAIN NATURAL VEGETATION FOR SILT CONTROL.
8. THE ESC FACILITIES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE DETAILS ON THE APPROVED PLANS. LOCATIONS MAY BE MOVED TO SUIT FIELD CONDITIONS, SUBJECT TO APPROVAL BY THE ENGINEER AND THE CITY OF KIRKLAND INSPECTOR.
9. THE ESC FACILITIES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, THESE ESC FACILITIES SHALL BE UPGRADED (E.G., ADDITIONAL SUMPS, RELOCATION OF DITCHES AND SILT FENCES, ETC.) AS NEEDED FOR UNEXPECTED STORM EVENTS. ADDITIONALLY, MORE ESC FACILITIES MAY BE REQUIRED TO ENSURE COMPLETE SILTATION CONTROL. THEREFORE, DURING THE COURSE OF CONSTRUCTION IT SHALL BE THE OBLIGATION AND RESPONSIBILITY OF THE CONTRACTOR TO ADDRESS ANY NEW CONDITIONS THAT MAY BE CREATED BY HIS ACTIVITIES AND TO PROVIDE ADDITIONAL FACILITIES OVER AND ABOVE THE MINIMUM REQUIREMENTS AS MAY BE NEEDED.
10. THE ESC FACILITIES SHALL BE INSPECTED BY THE PERMITTEE/CONTRACTOR DAILY DURING NON-RAINFALL PERIODS, EVERY HOUR (DAYLIGHT) DURING A RAINFALL EVENT, AND AT THE END OF EVERY RAINFALL, AND MAINTAINED AS NECESSARY TO ENSURE THEIR CONTINUED FUNCTIONING. IN ADDITION, TEMPORARY SILTATION PONDS AND ALL TEMPORARY SILTATION CONTROLS SHALL BE MAINTAINED IN A SATISFACTORY CONDITION UNTIL SUCH TIME THAT CLEARING AND/OR CONSTRUCTION IS COMPLETED, PERMANENT DRAINAGE FACILITIES ARE OPERATIONAL, AND THE POTENTIAL FOR EROSION HAS PASSED. WRITTEN RECORDS SHALL BE KEPT DOCUMENTING THE REVIEWS OF THE ESC FACILITIES.
11. THE ESC FACILITIES ON INACTIVE SITES SHALL BE INSPECTED AND MAINTAINED A MINIMUM OF ONCE A MONTH OR WITHIN 48 HOURS FOLLOWING A STORM EVENT.
12. STABILIZED CONSTRUCTION ENTRANCES SHALL BE INSTALLED AT THE BEGINNING OF CONSTRUCTION AND MAINTAINED FOR THE DURATION OF THE PROJECT. ADDITIONAL MEASURES, SUCH AS WASH PADS, MAY BE REQUIRED TO ENSURE THAT ALL PAVED AREAS ARE KEPT CLEAN FOR THE DURATION OF THE PROJECT.
13. ALL DENUDED SOILS MUST BE STABILIZED WITH AN APPROVED TESC METHOD (E.G. SEEDING, MULCHING, PLASTIC COVERING, CRUSHED ROCK) WITHIN THE FOLLOWING TIMELINES:
   - MAY 1 TO SEPTEMBER 30 - SOILS MUST BE STABILIZED WITHIN 7 DAYS OF GRADING.
   - OCTOBER 1 TO APRIL 30 - SOILS MUST BE STABILIZED WITHIN 2 DAYS OF GRADING.
   - STABILIZE SOILS AT THE END OF THE WORKDAY PRIOR TO A WEEKEND, HOLIDAY, OR PREDICTED RAIN EVENT.
14. WHERE SEEDING FOR TEMPORARY EROSION CONTROL IS REQUIRED, FAST GERMINATING GRASSES SHALL BE APPLIED AT AN APPROPRIATE RATE (EXAMPLE: ANNUAL OR PERENNIAL RYE APPLIED AT APPROXIMATELY 80 POUNDS PER ACRE).
15. WHERE STRAW MULCH IS REQUIRED FOR TEMPORARY EROSION CONTROL, IT SHALL BE APPLIED AT A MINIMUM THICKNESS OF 2".
16. ALL LOTS ADJOINING OR HAVING ANY NATIVE GROWTH PROTECTION EASEMENTS (NGPE) SHALL HAVE A 6' HIGH TEMPORARY CONSTRUCTION FENCE (CHAIN LINK WITH PIER BLOCKS) SEPARATING THE LOT (OR BUILDABLE PORTIONS OF THE LOT) FROM THE AREA RESTRICTED BY THE NGPE AND SHALL BE INSTALLED PRIOR TO ANY GRADING OR CLEARING AND REMAIN IN PLACE UNTIL THE PLANNING DEPARTMENT AUTHORIZES REMOVAL.
17. CLEARING LIMITS SHALL BE DELINEATED WITH A CLEARING CONTROL FENCE. THE CLEARING CONTROL FENCE SHALL CONSIST OF A 6-FT. HIGH CHAIN LINK FENCE ADJACENT THE DRIP LINE OF TREES TO BE SAVED, WETLAND OR STREAM BUFFERS, AND SENSITIVE SLOPES. CLEARING CONTROL FENCES ALONG WETLAND OR STREAM BUFFERS OR UPSLOPE OF SENSITIVE SLOPES SHALL BE ACCOMPANIED BY AN EROSION CONTROL FENCE. IF APPROVED BY THE CITY, A FOUR FOOT HIGH ORANGE MESH CLEARING CONTROL FENCE MAY BE USED TO DELINEATE CLEARING LIMITS IN ALL OTHER AREAS.
18. OFF-SITE STREETS MUST BE KEPT CLEAN AT ALL TIMES. IF DIRT IS DEPOSITED ON THE PUBLIC STREET SYSTEM, THE STREET SHALL BE IMMEDIATELY CLEANED WITH POWER SWEEPER OR OTHER EQUIPMENT. ALL VEHICLES SHALL LEAVE THE SITE BY WAY OF THE CONSTRUCTION ENTRANCE AND SHALL BE CLEANED OF ALL DIRT THAT WOULD BE DEPOSITED ON THE PUBLIC STREETS.
19. ROCK FOR EROSION PROTECTION OF ROADWAY DITCHES, WHERE REQUIRED, MUST BE OF SOUND QUARRY ROCK, PLACED TO A DEPTH OF 1' AND MUST MEET THE FOLLOWING SPECIFICATIONS: 4"-8" ROCK/40%-70% PASSING; 2"-4" ROCK/30%-40% PASSING; AND 1"-2" ROCK/10%-20% PASSING. RECYCLED CONCRETE SHALL NOT BE USED FOR CONSTRUCTION ENTRANCE OR TEMPORARY STABILIZATION ELSEWHERE ON THE SITE.
20. IF ANY PART(S) OF THE CLEARING LIMIT BOUNDARY OR TEMPORARY EROSION/SEDIMENTATION CONTROL PLAN IS/ARE DAMAGED, IT SHALL BE REPAIRED IMMEDIATELY.
21. ALL PROPERTIES ADJACENT TO THE PROJECT SITE SHALL BE PROTECTED FROM SEDIMENT DEPOSITION AND RUNOFF.
22. AT NO TIME SHALL MORE THAN 1' OF SEDIMENT BE ALLOWED TO ACCUMULATE WITHIN A CATCH BASIN. ALL CATCH BASINS AND CONVEYANCE LINES SHALL BE CLEANED IMMEDIATELY FOLLOWING REMOVAL OF EROSION CONTROL BMPS. THE CLEANING OPERATION SHALL NOT FLUSH SEDIMENT-LADEN WATER INTO THE DOWNSTREAM SYSTEM.
23. ANY PERMANENT RETENTION/DETENTION FACILITY USED AS A TEMPORARY SETTLING BASIN SHALL BE MODIFIED WITH THE NECESSARY EROSION CONTROL MEASURES AND SHALL PROVIDE ADEQUATE STORAGE CAPACITY. IF THE PERMANENT FACILITY IS TO FUNCTION ULTIMATELY AS AN INFILTRATION OR DISPERSION SYSTEM, THE FACILITY SHALL NOT BE USED AS A TEMPORARY SETTLING BASIN. NO UNDERGROUND DETENTION TANK, DETENTION VAULT, OR SYSTEM WHICH BACKS UNDER OR INTO A POND SHALL BE USED AS A TEMPORARY SETTLING BASIN.
24. ALL EROSION/SEDIMENTATION CONTROL PONDS WITH A DEAD STORAGE DEPTH EXCEEDING 6" MUST HAVE A PERIMETER FENCE WITH A MINIMUM HEIGHT OF 3'.
25. THE WASHED GRAVEL BACKFILL ADJACENT TO THE FILTER FABRIC FENCE SHALL BE REPLACED AND THE FILTER FABRIC CLEANED IF IT IS NONFUNCTIONAL BY EXCESSIVE SILT ACCUMULATION AS DETERMINED BY THE CITY OF KIRKLAND. ALSO, ALL INTERCEPTOR SWALES SHALL BE CLEANED IF SILT ACCUMULATION EXCEEDS ONE-QUARTER DEPTH.
26. PRIOR TO THE OCTOBER 1 OF EACH YEAR (THE BEGINNING OF THE WET SEASON), ALL DISTURBED AREAS SHALL BE REVIEWED TO IDENTIFY WHICH ONES CAN BE SEEDED IN PREPARATION FOR THE WINTER RAINS. THE IDENTIFIED DISTURBED AREA SHALL BE SEEDED WITHIN ONE WEEK AFTER OCTOBER 1. A SITE PLAN DEPICTING THE AREAS TO BE SEEDED AND THE AREAS TO REMAIN UNCOVERED SHALL BE SUBMITTED TO THE PUBLIC WORKS CONSTRUCTION INSPECTOR. THE INSPECTOR CAN REQUIRE SEEDING OF ADDITIONAL AREAS IN ORDER TO PROTECT SURFACE WATERS, ADJACENT PROPERTIES, OR DRAINAGE FACILITIES.
27. ANY AREA TO BE USED FOR INFILTRATION OR PERVIOUS PAVEMENT (INCLUDING A 5-FOOT BUFFER) MUST BE SURROUNDED BY SILT FENCE PRIOR TO CONSTRUCTION AND UNTIL FINAL STABILIZATION OF THE SITE TO PREVENT SOIL COMPACTION AND SILTATION BY CONSTRUCTION ACTIVITIES.
28. IF THE TEMPORARY CONSTRUCTION ENTRANCE OR ANY OTHER AREA WITH HEAVY VEHICLE LOADING IS LOCATED IN THE SAME AREA TO BE USED FOR INFILTRATION OR PERVIOUS PAVEMENT, 6" OF SEDIMENT BELOW THE GRAVEL SHALL BE REMOVED PRIOR TO INSTALLATION OF THE INFILTRATION FACILITY OR PERVIOUS PAVEMENT (TO REMOVE FINES ACCUMULATED DURING CONSTRUCTION).
29. ANY CATCH BASINS COLLECTING RUNOFF FROM THE SITE, WHETHER THEY ARE ON OR OFF THE SITE, SHALL HAVE ADEQUATE PROTECTION FROM SEDIMENT. CATCH BASINS DIRECTLY DOWNSTREAM OF THE CONSTRUCTION ENTRANCE OR ANY OTHER CATCH BASIN AS DETERMINED BY THE CITY INSPECTOR SHALL BE PROTECTED WITH A "STORM DRAIN PROTECTION INSERT" OR EQUIVALENT.
30. IF A SEDIMENT POND IS NOT PROPOSED, A BAKER TANK OR OTHER TEMPORARY GROUND AND/OR SURFACE WATER STORAGE TANK MAY BE REQUIRED DURING CONSTRUCTION, DEPENDING ON WEATHER CONDITIONS.
31. DO NOT FLUSH CONCRETE BY-PRODUCTS OR TRUCKS NEAR OR INTO THE STORM DRAINAGE SYSTEM. IF EXPOSED AGGREGATE IS FLUSHED INTO THE STORM SYSTEM, IT COULD MEAN RE-CLEANING THE ENTIRE DOWNSTREAM STORM SYSTEM, OR POSSIBLY RE-LAYING THE STORM LINE.
32. CONSTRUCTION DEWATERING DISCHARGES SHALL ALWAYS MEET WATER QUALITY GUIDELINES LISTED IN COK POLICY E-1. SPECIFICALLY, DISCHARGES TO THE PUBLIC STORMWATER DRAINAGE SYSTEM MUST BE BELOW 25NTU, AND NOT CONSIDERED A PROHIBITED DISCHARGE (PER KMC 15.52.090). TEMPORARY DISCHARGES TO SANITARY SEWER REQUIRE PRIOR AUTHORIZATION AND PERMIT FROM KING COUNTY INDUSTRIAL WASTE PROGRAM (206-263-3000) AND NOTIFICATION TO THE PUBLIC WORKS CONSTRUCTION INSPECTOR.
33. RECYCLED CONCRETE SHALL NOT BE STOCKPILED ON SITE, UNLESS FULLY COVERED WITH NO POTENTIAL FOR RELEASE OF RUNOFF.

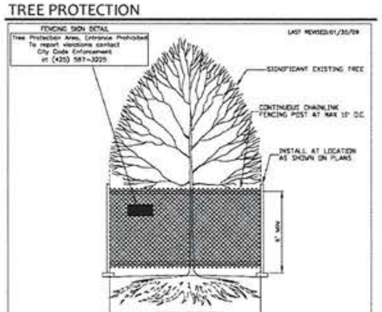
STRAW WATTLES



SILT FENCE



TREE PROTECTION



NOTES

1. MINIMUM SIX (6) FOOT HIGH TEMPORARY CHAINLINK FENCE SHALL BE PLACED AT THE CRITICAL ROOT ZONE OR DESIGNATED LIMIT OF DISTURBANCE OF THE TREE TO BE SAVED. FENCE SHALL COMPLETELY ENCIRCLE TREE(S). INSTALL FENCE POSTS USING PIER BLOCK ONLY. AVOID POST OR STAKES INTO MAJOR ROOTS. MODIFICATIONS TO FENCING MATERIAL AND LOCATION MUST BE APPROVED BY PLANNING OFFICIAL.
2. TREATMENT OF ROOTS EXPOSED DURING CONSTRUCTION: FOR ROOTS OVER ONE (1) INCH DIAMETER DAMAGED DURING CONSTRUCTION, MAKE A CLEAN STRAIGHT CUT TO REMOVE DAMAGED PORTION OF ROOT. ALL EXPOSED ROOTS SHALL BE TEMPORARILY COVERED WITH DAMP BURLAP TO PREVENT DRYING, AND COVERED WITH SOIL AS SOON AS POSSIBLE.
3. NO STOCKPILING OF MATERIALS, VEHICULAR TRAFFIC, OR STORAGE OF EQUIPMENT OR MACHINERY SHALL BE ALLOWED WITHIN THE LIMIT OF THE FENCING. FENCING SHALL NOT BE MOVED OR REMOVED UNLESS APPROVED BY THE CITY PLANNING OFFICIAL. WORK WITHIN PROTECTION FENCE SHALL BE DONE MANUALLY UNDER THE SUPERVISION OF THE ON-SITE ARBORIST AND WITH PRIOR APPROVAL BY THE CITY PLANNING OFFICIAL.
4. FENCING SIGNAGE AS DETAILED ABOVE MUST BE POSTED EVERY FIFTEEN (15) FEET ALONG THE FENCE. SIGN TO BE MINIMUM 11"X17", AND MADE OF WEATHERPROOF MATERIAL.

CITY OF KIRKLAND
PLAN NO. CK-R.49
TREE PROTECTION

NO.	DATE	BY	REVISIONS

APPLICANT KUO

811 Know what's below. Call before you dig.

THIS DEVELOPMENT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE 2017 CITY OF KIRKLAND STANDARD SPECIFICATIONS AND DETAILS.

DATE: Jun 16, 2017
JOB# 1525
DRAFTED: DESIGN
DIGITAL SIGNATURE

CIVIL ENGINEERING SOLUTIONS
2244 NW MARKET STREET, SUITE B SEATTLE, WA 98107
PHONE: 206.930.0342 DUFFY@CESOLUTIONS.US

EROSION CONTROL NOTES & DETAILS
PROPOSED 10265 RESIDENCE
10265 124TH AVE NE, KIRKLAND 98033

DRAWING NO: C1.1
APN 663990-0280
BSF17-01267

SANITARY SEWER IMPROVEMENTS DETAILS C3.2

- 1 -4" PVC SIDE SEWER STUB @ MIN 2.0% PER KIRKLAND DETAIL CK-S.19 AND CK-S.20. INSTALL MARKER POST PER CK-S.18. (SHALLOW CROSSING-USE C900 PVC)
- 2 -
- 3 -
- 4 -
- 7 -

WATER IMPROVEMENTS

- 10 -
- 11 -1.5" DIA WATER SERVICE, 250 PSI HDPE WATER (ASTM D2239) FROM METER TO HOUSE. RECOMMENDED MIN DEPTH=36". COORDINATE HOUSE ENTRY WITH BUILDER/OWNER.
- 12 -
- 13 -
- 14 -WATER METER UPGRADE? CONFIRM WITH BUILDING DEPT REVIEW.

STORM DRAIN

- 19 -4" STORM DRAIN (3034 PVC) @ MIN 2.0% GRADE
- 19 -
- 22 -
- 23 -
- 24 -
- 25 -

STORM DRAIN STRUCTURES

- 30 -
- 31 -
- 32 -
- 33 -
- 34 -
- 35 -
- 36 -
- 37 -
- 38 -NDS DURASLOPE CHANNEL DRAIN OR EQUAL. MINIMUM 6" DEEP CHANNEL. VEHICLE-RATED GRATE.
- 40 -TYPE 40 PRIVATE CATCH BASIN PER KIRKLAND DETAIL CK-D.05A. INSTALL OVERFLOW PIPE OUT TO BUFFER.

STORMWATER FLOW CONTROL BMP's DETAILS C3.5

- 50 -RESTORE SOILS WITH COMPOST AMENDED SOIL PER CITY DETAIL CK-E.10 AND DOE BMP DETAIL T5.13. COORDINATE WITH LANDSCAPING CONTRACTOR.
- 51 -
- 52 -SPLASHBLOCK (FULL DISPERSION) MINIMUM 100' VEGETATED FLOWPATH PER 2016 KC SWDM C.2.1.3. SEE DETAIL (FIGURE C.2.1.A) ON SHEET C3.5.
- 53 -
- 54 -
- 55 -
- 56 -
- 57 -
- 58 -

STREET IMPROVEMENTS DETAILS C3.4

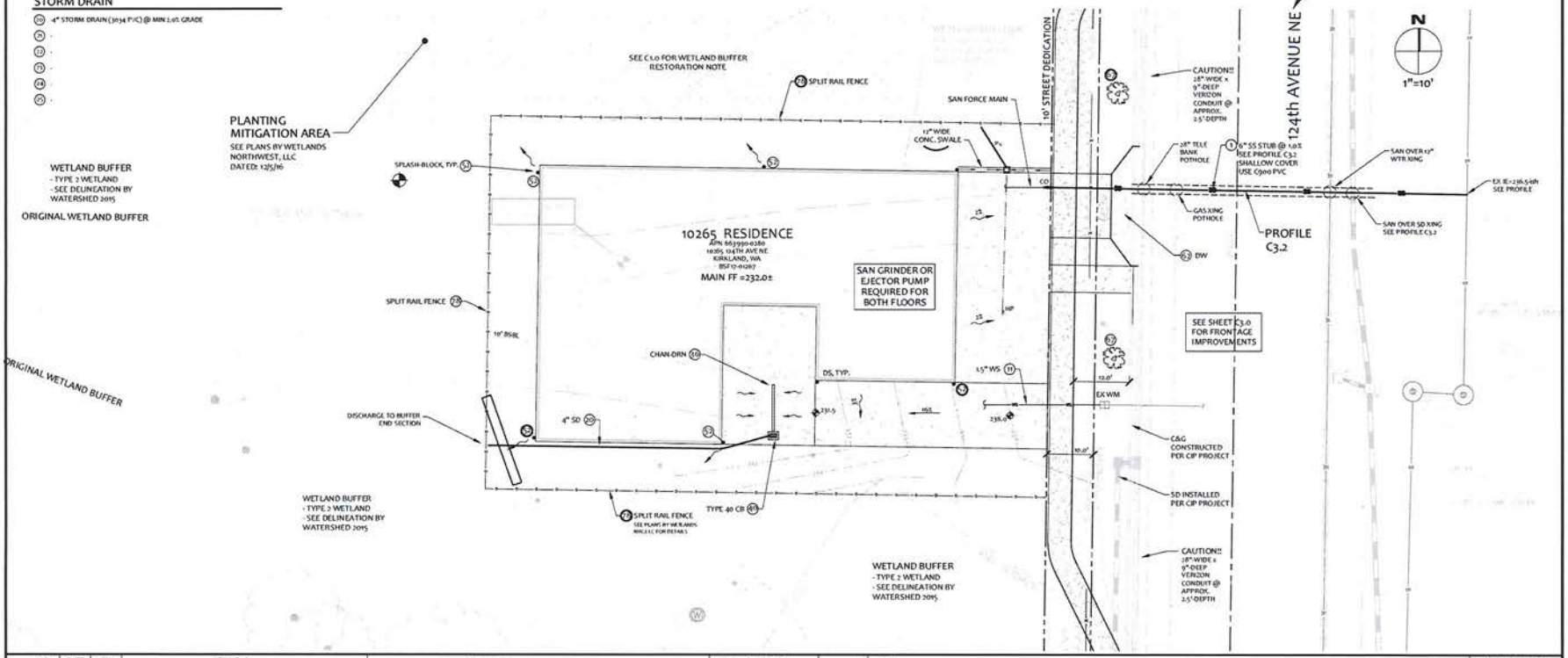
- 60 -
- 61 -5' WIDE PERVIOUS SIDEWALK PER DETAIL CK-L.06 ON SHEET C3.4.
- 62 -DRIVEWAY PER DRIVEWAY DETAIL CK-R.21 ON SHEET C3.4. SEE ARCH. PLAN FOR WIDTH.
- 63 -
- 64 -
- 67 -STREET TREE PER KIRKLAND DETAIL CK-R.48, C3.4. CENTER IN PLANTER STRIP. FOR TREE SELECTION, SEE KIRKLAND POLICY R.10.
- 68 -
- 69 -
- 71 -2" ASPHALT OVERLAY REQUIRED WHERE 3 OR MORE UTILITY TRENCHES CROSSINGS OCCUR WITHIN 150 LF STRETCH. CONFIRM WITH INSPECTOR.
- 72 -RESPONSIBILITY OF APPLICANT TO TO RELOCATE ANY ABOVE OR BELOW GROUND UTILITIES WHICH CONFLICT WITH STREET IMPROVEMENTS.
- 73 -
- 74 -

SURVEYOR

BOUNDARY & TOPOGRAPHIC SURVEY BY:
EASTSIDE CONSULTANTS, INC.
1320 NW MALL STREET, SUITE B
ISSAQUAH, WA 98027
PH (425) 392-5350

BENCHMARK

CONTACT SURVEYOR FOR BENCHMARK.



NO.	DATE	BY	REVISIONS

APPLICANT
KJO

811 Know what's below. Call before you dig.

CITY OF KIRKLAND WASHINGTON

THIS DEVELOPMENT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE 2017 CITY OF KIRKLAND STANDARD SPECIFICATIONS AND DETAILS.

DATE: Jun 16, 2017
JOB# 15-25
DRAFTED: CH DESIGN: DE
DIGITAL SIGNATURE

CIVIL ENGINEERING SOLUTIONS
2244 NW MARKET STREET, SUITE B SEATTLE, WA 98107
PHONE: 206.930.0342 DUFFY@CESOLUTIONS.US

DRAINAGE/BMP PLAN

PROPOSED 10265 RESIDENCE
10265 124TH AVE NE, KIRKLAND 98033

DRAWING NO: C2.0

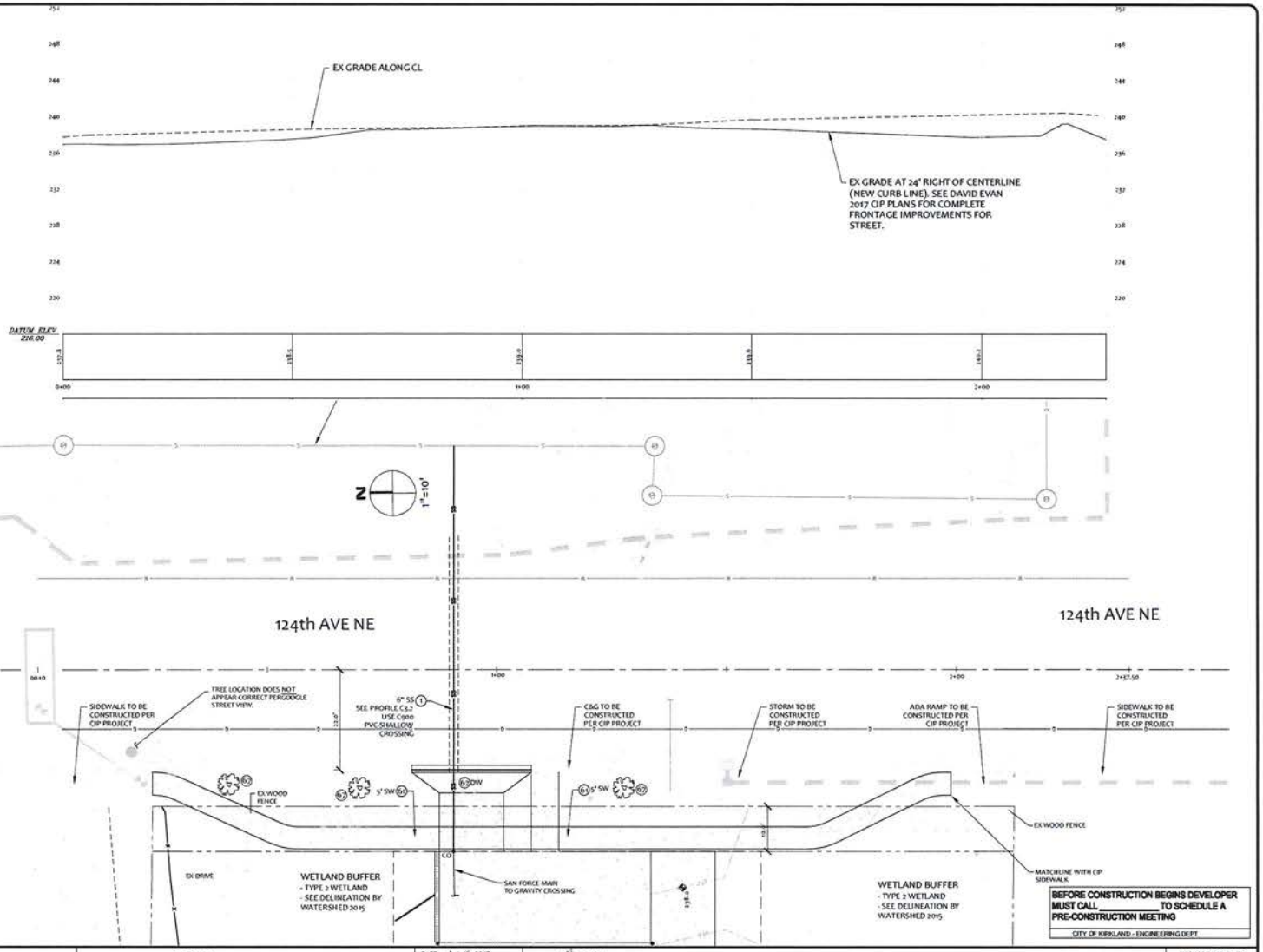
APN 663990-0280
BSF17-01267

SAR18-02983
ATTACHMENT 10
APPLICANT ENVIRONMENTAL REPORT V.2

STREET IMPROVEMENTS

DETAILS C3.4

- (R6) -
- (R7) -PERMEABLE SIDEWALK
- (R8) -DRIVEWAY CUT PER WSDOT DETAIL F-80.10-03. SEE PLAN FOR WIDTH. SEE C3.4 FOR WSDOT DETAIL. MAX SIDEWALK GRADE IS 8.3%(12:1) TO DRIVEWAY.
- (R9) -
- (R10) -
- (R11) -
- (R12) -STREET TREES AT 30-FOOT ON CENTER PER KIRKLAND DETAIL CK-R.48, C3.4. CENTER IN PLANTER STRIP. FOR TREE SELECTION, SEE KIRKLAND POLICY R-10. TO FIND, GOOGLE" KIRKLAND PRE-APPROVED ROADWAY", LOOK FOR POLICY R-10 UNDER ROADWAY DETAILS.
- (R13) -
- (R14) -
- (R15) -2" ASPHALT OVERLAY REQUIRED WHERE 3 OR MORE UTILITY TRENCHES CROSSINGS OCCUR WITHIN 150 LF STRETCH. CONFIRM WITH INSPECTOR.
- (R16) -RESPONSIBILITY OF APPLICANT TO TO RELOCATE ANY ABOVE OR BELOW GROUND UTILITIES WHICH CONFLICT WITH STREET IMPROVEMENTS.
- (R17) -
- (R18) -PAVEMENT PATCH PER KIRKLAND DETAIL CK-R.12. USE CLASS B HMA. EXCEED EXISTING PVMT DEPTH BY 2". MAX 6" DEPTH.
- (R19) -
- (R20) -
- (R21) -
- (R22) -



NO.	DATE	BY	REVISIONS

APPLICANT
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CITY OF KIRKLAND WASHINGTON

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DATE: Jun 16, 2017
JOB# 1525
DRAFTED: CH DESIGN: DC
DIGITAL SIGNATURE

Jun 16, 2017

CIVIL ENGINEERING SOLUTIONS
2244 NW MARKET STREET, SUITE B SEATTLE, WA 98107
PHONE: 206.930.0342 DUFFY@CESOLUTIONS.US

124th AVE NE IMPROVEMENTS

PROPOSED 10265 RESIDENCE
10265 124TH AVE NE, KIRKLAND 98033

DRAWING NO: C3.0

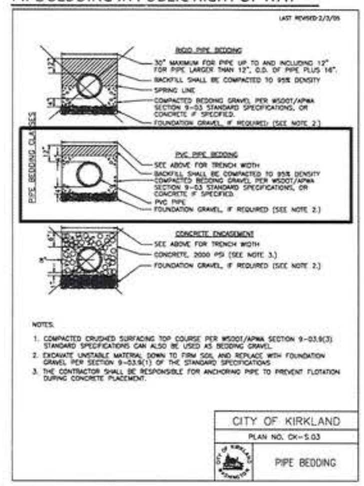
APN 663990-0280
BSF17-01267

SAR 16-02995
ATTACHMENT 10
APPLICANT ENVIRONMENTAL REPORT V.2

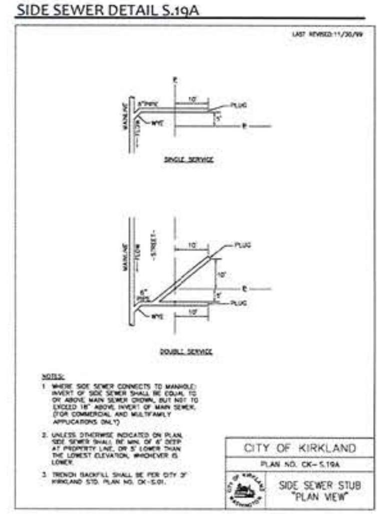
CITY OF KIRKLAND STORM DRAINAGE PLAN NOTES

1. A PRE-CONSTRUCTION CONFERENCE SHALL BE HELD PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SECURING ALL NECESSARY PERMITS PRIOR TO CONSTRUCTION.
2. BEFORE ANY CONSTRUCTION MAY OCCUR, THE CONTRACTOR SHALL HAVE PLANS WHICH HAVE BEEN SIGNED AND APPROVED BY THE CITY OF KIRKLAND PUBLIC WORKS DEPARTMENT, OBTAINED ALL CITY, COUNTY, STATE, FEDERAL AND OTHER REQUIRED PERMITS, AND HAVE POSTED ALL REQUIRED BONDS.
3. ALL STORM DRAINAGE IMPROVEMENTS SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE LATEST EDITION OF THE CITY OF KIRKLAND PUBLIC WORKS PRE-APPROVED PLANS AND POLICIES AND THE STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND MUNICIPAL CONSTRUCTION, PREPARED BY WSDOT AND THE AMERICAN PUBLIC WORKS ASSOCIATION (APWA).
4. ANY DEVIATION FROM THE APPROVED PLANS WILL REQUIRE WRITTEN APPROVAL. ALL CHANGES SHALL BE SUBMITTED TO THE CITY.
5. A COPY OF THE APPROVED STORM WATER PLANS MUST BE ON THE JOB SITE WHENEVER CONSTRUCTION IS IN PROGRESS.
6. ALL DISTURBED AREAS SHALL BE SEEDED AND MULCHED OR SIMILARLY STABILIZED TO THE SATISFACTION OF THE CITY OF KIRKLAND DEPARTMENT OF PUBLIC WORKS FOR THE PREVENTION OF ON-SITE EROSION AFTER THE COMPLETION OF CONSTRUCTION.
7. MINIMUM COVER OVER STORM DRAINAGE PIPES IN ROW OR VEHICULAR PATH SHALL BE 18 INCHES, UNLESS OTHER DESIGN IS APPROVED.
8. STEEL PIPE SHALL HAVE ASPHALT TREATMENT #1 OR BETTER INSIDE AND OUTSIDE.
9. ALL CATCH BASINS SHALL BE TYPE I UNLESS OTHERWISE NOTED. CATCH BASINS WITH A DEPTH OF OVER FIVE FEET (5') TO THE PIPE INVERT SHALL BE A TYPE II CATCH BASIN. TYPE II CATCH BASINS EXCEEDING FIVE FEET (5') IN DEPTH SHALL HAVE A STANDARD LADDER INSTALLED.
10. ALL STORM DRAINAGE MAIN EXTENSIONS WITHIN THE PUBLIC RIGHT-OF-WAY OR IN EASEMENTS MUST BE STAKED FOR LINE AND GRADE PRIOR TO STARTING CONSTRUCTION.
11. ROCK FOR EROSION PROTECTION OF ROADWAY DITCHES, WHERE REQUIRED, MUST BE OF SOUND QUARRY ROCK, PLACED TO A DEPTH OF ONE FOOT (1') AND MUST MEET THE FOLLOWING SPECIFICATIONS: 4"-8" ROCK/40%-70% PASSING; 2"-4" ROCK/30%-40% PASSING; 2"-MINUS ROCK/10%-20% PASSING.
12. ALL PIPE, MANHOLES, CATCH BASINS, AND APPURTENANCES SHALL BE LAID ON A PROPERLY PREPARED FOUNDATION IN ACCORDANCE WITH THE CURRENT STATE OF WASHINGTON STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION (WSDOT). THIS SHALL INCLUDE NECESSARY LEVELING OF THE TRENCH BOTTOM OR THE TOP OF THE FOUNDATION MATERIAL AS WELL AS PLACEMENT AND COMPACTION OF REQUIRED BEDDING MATERIAL TO UNIFORM GRADE SO THAT THE ENTIRE LENGTH OF THE PIPE WILL BE SUPPORTED ON A UNIFORMLY DENSE, UNYIELDING BASE. IF THE NATIVE MATERIAL IN THE BOTTOM OF THE TRENCH MEETS THE REQUIREMENTS FOR "GRAVEL BACKFILL FOR PIPE BEDDING," THE FIRST LIFT OF PIPE BEDDING MAY BE OMITTED PROVIDED THE MATERIAL IN THE BOTTOM OF THE TRENCH IS LOOSENED, REGRADED, AND COMPACTED TO FORM A DENSE UNYIELDING BASE. ALL PIPE BEDDING SHALL BE APWA CLASS B, TYPE I, OR BETTER. PIPE SHALL NOT BE INSTALLED ON SOD, FROZEN EARTH, LARGE BOULDERS, OR ROCK. PIPE BEDDING FOR FLEXIBLE PIPES SHALL BE PEA GRAVEL TO THE SPRINGLINE OF THE PIPE.
13. CONSTRUCTION OF DEWATERING (GROUNDWATER) SYSTEMS SHALL BE IN ACCORDANCE WITH THE APWA STANDARD SPECIFICATIONS.
14. ISSUANCE OF A BUILDING OR LAND SURFACE MODIFICATION PERMIT BY THE CITY OF KIRKLAND DOES NOT RELIEVE THE OWNER OF THE CONTINUING LEGAL OBLIGATION AND/OR LIABILITY CONNECTED WITH STORM SURFACE WATER DISPOSITION. FURTHER, THE CITY OF KIRKLAND DOES NOT ACCEPT ANY OBLIGATION FOR THE PROPER FUNCTIONING AND MAINTENANCE OF THE SYSTEM DURING OR FOLLOWING CONSTRUCTION EXCEPT AS OUTLINED IN THE CITY OF KIRKLAND PUBLIC WORKS STANDARDS.
15. ALL TRENCH BACKFILL SHALL BE COMPACTED TO 95 PERCENT DENSITY IN ROADWAYS, ROADWAY SHOULDERS, ROADWAY PRISM AND DRIVEWAYS, AND 85 PERCENT DENSITY IN UNPAVED AREAS. ALL PIPE ZONE COMPACTION SHALL BE 95 PERCENT.
16. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ADEQUATE SAFEGUARDS, SAFETY DEVICES, PROTECTIVE EQUIPMENT, CONFINED SPACE PROTECTION, FLAGGERS, AND ANY OTHER NEEDED ACTIONS TO PROTECT THE LIFE, HEALTH, AND SAFETY OF THE PUBLIC, AND TO PROTECT PROPERTY IN CONNECTION WITH THE PERFORMANCE OF WORK COVERED BY THE CONTRACT. ANY WORK WITHIN THE TRAVELED RIGHT-OF-WAY THAT MAY INTERRUPT NORMAL TRAFFIC FLOW SHALL REQUIRE A TRAFFIC CONTROL PLAN APPROVED BY THE CITY OF KIRKLAND. ALL SECTIONS OF THE WSDOT STANDARD SPECIFICATIONS, TRAFFIC CONTROL, AND THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) SHALL APPLY.
17. NO FINAL CUT OR FILL SLOPE SHALL EXCEED SLOPES OF TWO (2) HORIZONTAL TO ONE (1) VERTICAL WITHOUT STABILIZATION BY ROCKERY OR BY A STRUCTURAL RETAINING WALL.
18. ALL MANHOLE LADDERS SHALL BE FIRMLY ATTACHED AND EXTEND TO WITHIN 1' OF THE BOTTOM OF THE STRUCTURE.
19. APPROXIMATE LOCATIONS OF EXISTING UTILITIES HAVE BEEN OBTAINED FROM AVAILABLE RECORDS AND ARE SHOWN FOR CONVENIENCE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF EXISTING UTILITY LOCATIONS WHETHER OR NOT THESE UTILITIES ARE SHOWN ON THE PLANS. THE CONTRACTOR SHALL EXERCISE ALL CARE TO AVOID DAMAGE TO ANY UTILITY. IF CONFLICTS WITH EXISTING UTILITIES ARISE DURING CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE CITY CONSTRUCTION INSPECTOR AND ANY CHANGES REQUIRED SHALL BE APPROVED BY THE DEVELOPMENT ENGINEER PRIOR TO COMMENCEMENT OF RELATED CONSTRUCTION ON THE PROJECT.
20. THE UNDERGROUND UTILITY LOCATION SERVICE SHALL BE CONTACTED FOR FIELD LOCATION OF EXISTING UTILITIES PRIOR TO ANY CONSTRUCTION. THE OWNER OR HIS REPRESENTATIVE SHALL BE CONTACTED IF A UTILITY CONFLICT EXISTS. FOR UTILITY LOCATION IN KING COUNTY, CALL 1-800-424-5555. THE CONTRACTOR IS RESPONSIBLE TO ENSURE THAT UTILITY LOCATES ARE MAINTAINED THROUGHOUT THE LIFE OF THE PROJECT.
21. THE CONTRACTOR SHALL VERIFY THE LOCATIONS, WIDTHS, THICKNESSES, AND ELEVATIONS OF ALL EXISTING PAVEMENTS AND STRUCTURES THAT ARE TO INTERFACE WITH NEW WORK. PROVIDE ALL TRIMMING, CUTTING, SAW CUTTING, GRADING, LEVELING, SLOPING, COATING, AND OTHER WORK, INCLUDING MATERIALS AS NECESSARY, TO CAUSE THE INTERFACE WITH EXISTING WORKS TO BE PROPER, ACCEPTABLE TO THE ENGINEER AND THE CITY OF KIRKLAND, COMPLETE IN PLACE AND READY TO USE.
22. ALL INLET, MANHOLE, AND CATCH BASIN FRAMES AND GRATES SHALL NOT BE ADJUSTED TO GRADE UNTIL IMMEDIATELY PRIOR TO FINAL PAVING. ALL CATCH BASIN GRATES SHALL BE SET 0.10' BELOW PAVEMENT LEVEL.
23. OPEN CUT ROAD CROSSINGS FOR UTILITY TRENCHES ON EXISTING TRAVELED ROADWAY SHALL BE BACKFILLED ONLY WITH 5/8" MINUS CRUSHED ROCK AND MECHANICALLY COMPACTED (UNLESS OTHERWISE APPROVED BY THE CITY). FOR STREETS CLASSIFIED AS ARTERIALS OR COLLECTORS, BACKFILL FOR CROSSINGS SHALL BE CDF. CUTS INTO THE EXISTING ASPHALT SHALL BE NEAT LINE CUT WITH SAW OR JACKHAMMER IN A CONTINUOUS LINE. A TEMPORARY COLD MIX PATCH MUST BE PLACED IMMEDIATELY AFTER BACKFILL AND COMPACTION. A PERMANENT HOT MIX PATCH SHALL BE PLACED WITHIN 30 DAYS AND SHALL BE A MINIMUM OF 1" THICKER THAN THE ORIGINAL ASPHALT WITH A MINIMUM THICKNESS OF 2". SEE STANDARD D.02.
24. ALL DAMAGES INCURRED TO PUBLIC AND/OR PRIVATE PROPERTY BY THE CONTRACTOR DURING THE COURSE OF CONSTRUCTION SHALL BE PROMPTLY REPAIRED TO THE SATISFACTION OF THE CITY CONSTRUCTION INSPECTOR BEFORE PROJECT APPROVAL AND/OR THE RELEASE OF THE PROJECT'S PERFORMANCE BOND.
25. GROUT ALL SEAMS AND OPENINGS IN ALL INLETS, CATCH BASINS, AND MANHOLES. JETSET GROUT IS NOT ALLOWED.
26. WHEN WIDENING AN EXISTING ROADWAY WHERE AN EXISTING TYPE I CATCH BASIN WILL REMAIN IN THE TRAVEL LANE, THE EXISTING FRAME AND COVER SHALL BE REPLACED WITH A ROUND, LOCKING FRAME AND COVER.
27. FOR OTHER THAN SINGLE-FAMILY DWELLINGS, ALL EXPOSED OR READILY EXPOSED INDOOR STORM DRAINAGE PIPING/PLUMBING SHALL BE LABELED WITH THE WORDS "STORM DRAIN" WITH MINIMUM 1 INCH HIGH LETTERS.

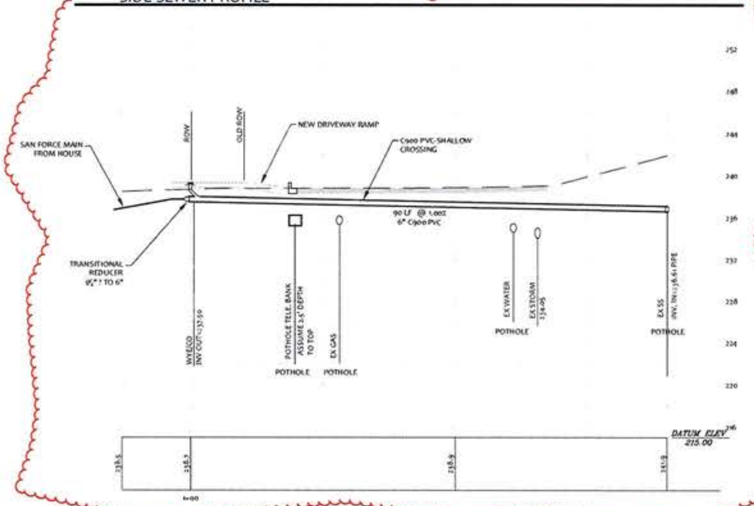
PIPE BEDDING IN PUBLIC RIGHT OF WAY



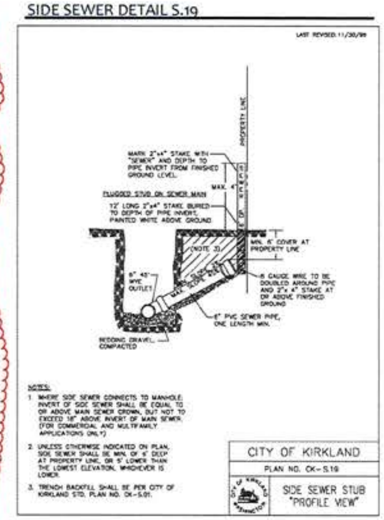
SIDE SEWER DETAIL S.19A



SIDE SEWER PROFILE



SIDE SEWER DETAIL S.19



NO.	DATE	BY	REVISIONS

APPLICANT
KUO

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CITY OF KIRKLAND WASHINGTON

THIS DEVELOPMENT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE 2017 CITY OF KIRKLAND STANDARD SPECIFICATIONS AND DETAILS.

DATE: Jun 15, 2017
JOB# 1525
DRAFTED: CH DESIGN: DE
DIGITAL SIGNATURE

CIVIL ENGINEERING SOLUTIONS
2244 NW MARKET STREET, SUITE B SEATTLE, WA 98107
PHONE: 206.930.0347 DUFFY@CESOLUTIONS.US

STORM & SEWER DETAILS

PROPOSED 10265 RESIDENCE
10265 124TH AVE NE, KIRKLAND 98033

DRAWING NO: C3.2

APN 663990-0280
BSF17-01267

ATTACHMENT 10
APPLICANT ENVIRONMENTAL REPORT V.2

PERMITTED GROUNDCOVER IN LANDSCAPE STRIP

DEPARTMENT OF PUBLIC WORKS
PRE-APPROVED PLANS POLICY

Policy R-15: Permitted Groundcover in Public Landscape Strip

In addition to grass, the following types of groundcover can be planted in a landscape strip (the planting area between curb and sidewalk) in the public right-of-way.

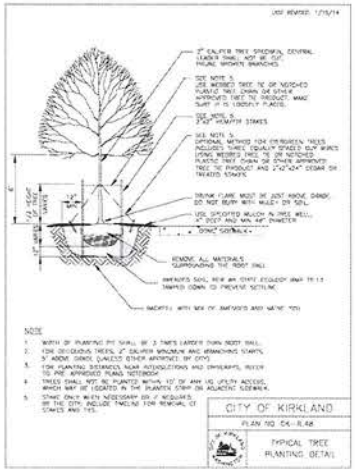
- Lowfast Cotoneaster
- Pyracantha
- Kinnikinnick
- Sedum
- Heather and Heath
- Vinca Minor (for shade areas)
- Ornamental grasses such as:
  - Blue fescue
  - Carex sedge
  - Dwarf Lavender
  - Rhesu
  - Others as approved

Maintenance of the groundcover, including watering, trimming, and weeding, is the responsibility of the adjacent property owner.

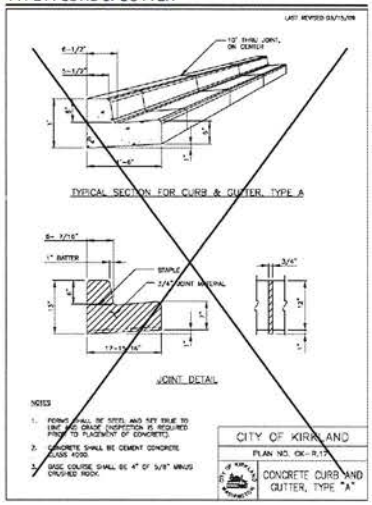
Plantings shall be as follows:

- 6" minimum pot size
- 9" minimum spacing on center
- Growth shall be no higher than 12". Adjacent property owner is responsible for keeping height below this 12" maximum
- Pavement planting dates between October and February

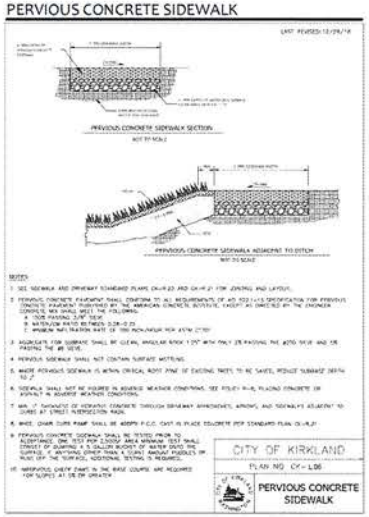
TREE PLANTING DETAIL CK-R.48



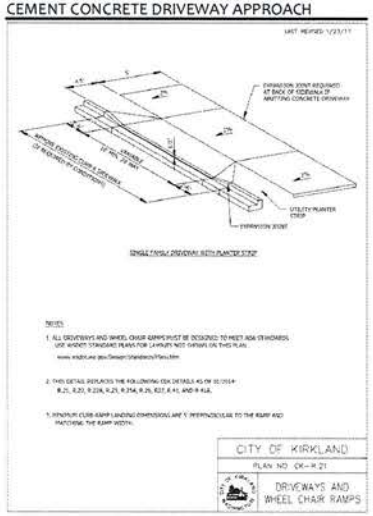
TYPE A CURB & GUTTER



PERVIOUS CONCRETE SIDEWALK



CEMENT CONCRETE DRIVEWAY APPROACH



NO.	DATE	BY	REVISIONS

APPLICANT
KUD

811 Know what's below. Call before you dig.

CITY OF KIRKLAND WASHINGTON

THIS DEVELOPMENT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE 2017 CITY OF KIRKLAND STANDARD SPECIFICATIONS AND DETAILS.

DATE: Jun 16, 2017
JOB# 1525
DRAFTED: CH DESIGN: DE
DIGITAL SIGNATURE

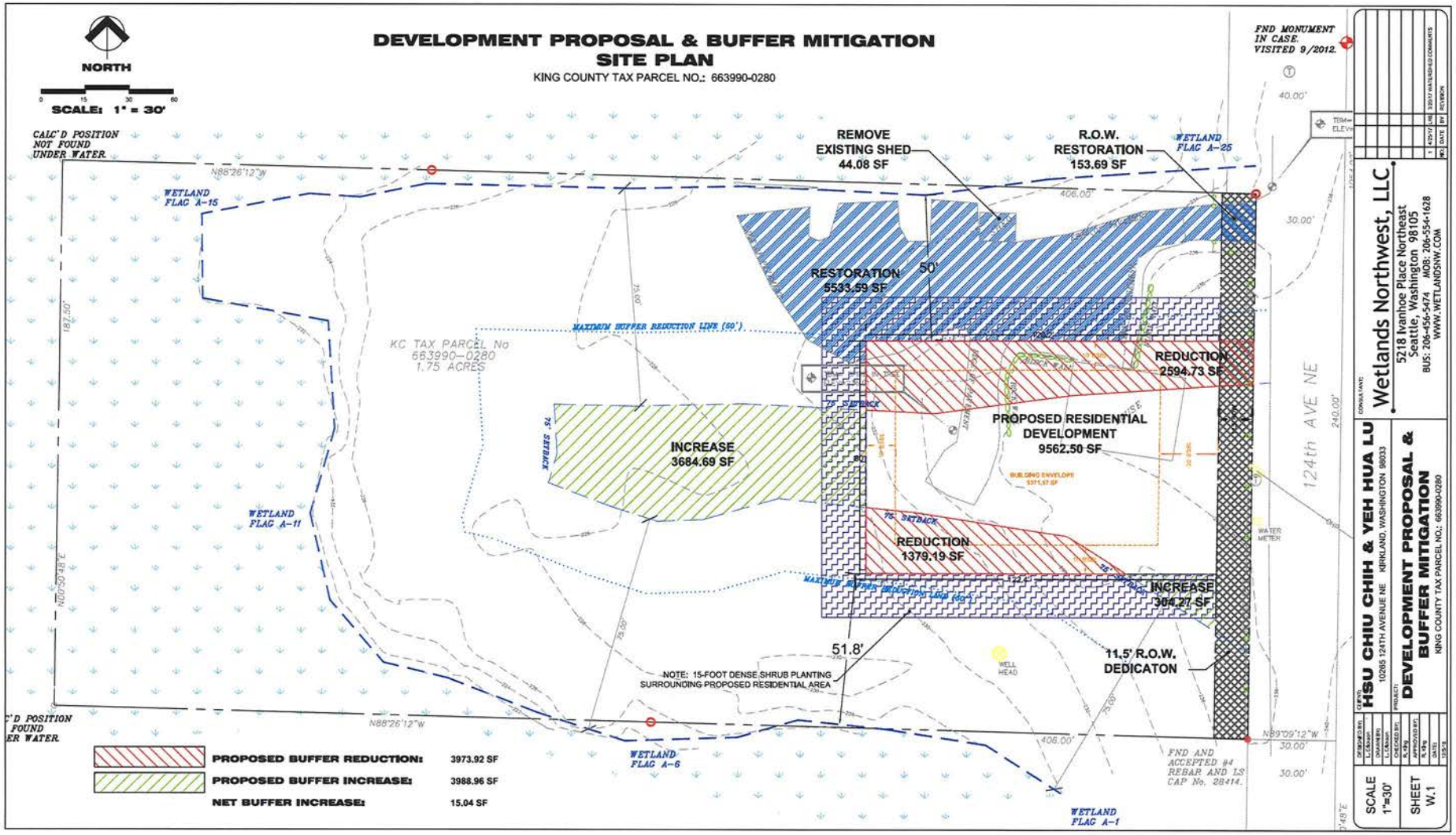
CIVIL ENGINEERING SOLUTIONS
2244 NW MARKET STREET, SUITE B SEATTLE, WA 98107
PHONE: 206.930.0342 DUFFY@CESOLUTIONS.US

CITY OF KIRKLAND ROAD DETAILS

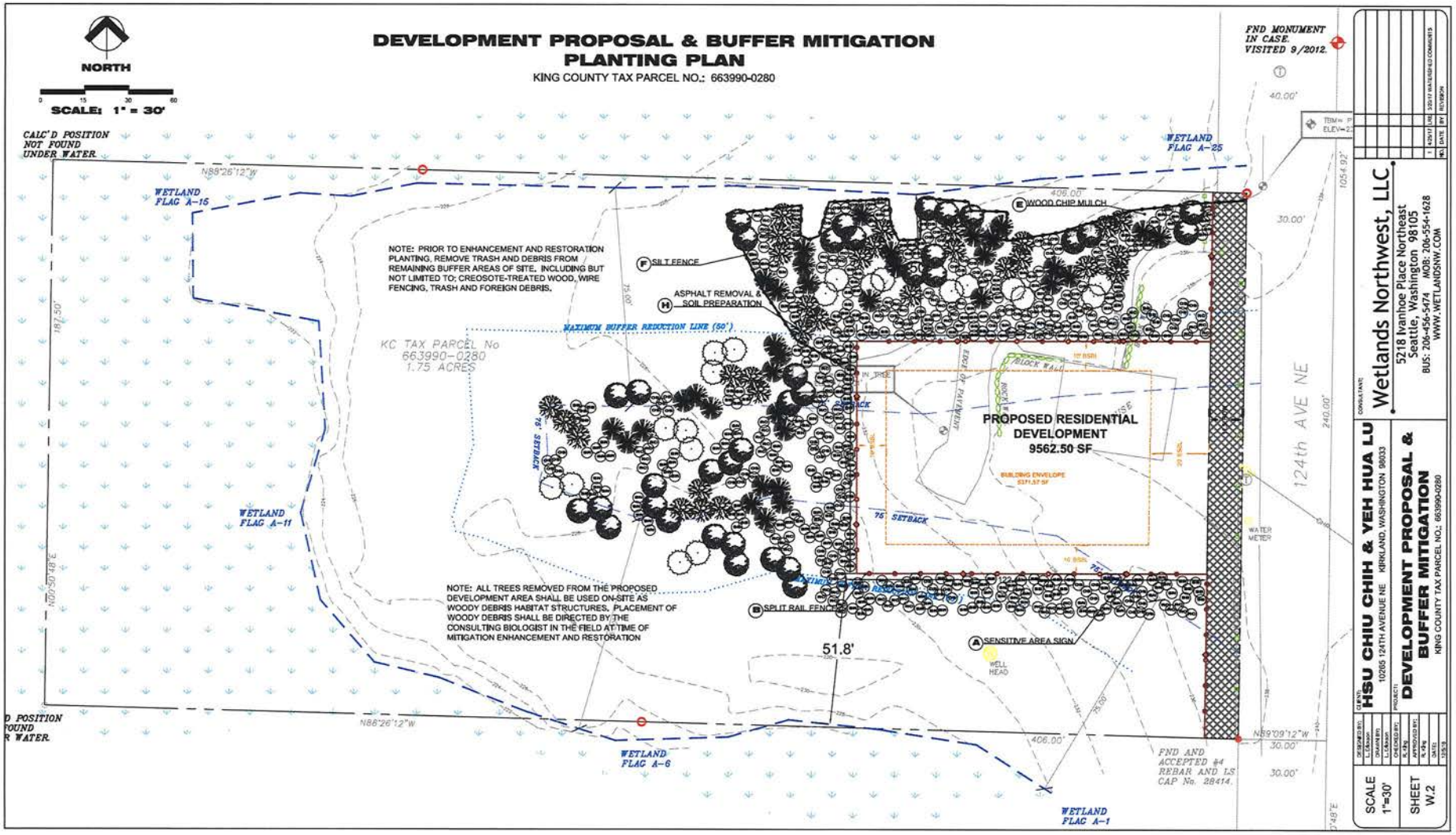
PROPOSED 10265 RESIDENCE
10265 124TH AVE NE, KIRKLAND 98033

DRAWING NO: C3.4

APN 663990-0280
BSF17-01267



SAR 10-02993
ATTACHMENT 10
APPLICANT ENVIRONMENTAL REPORT V.2



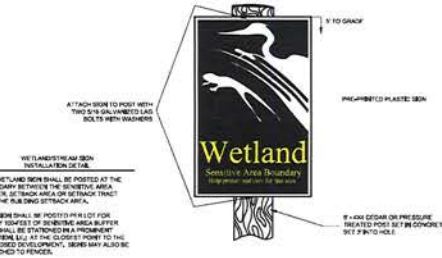
SAR 18-02993
ATTACHMENT 10
APPLICANT ENVIRONMENTAL REPORT V.2

DEVELOPMENT PROPOSAL & BUFFER MITIGATION DETAILS

KING COUNTY TAX PARCEL NO.: 663990-0280

A SENSITIVE AREA SIGN

NOT TO SCALE



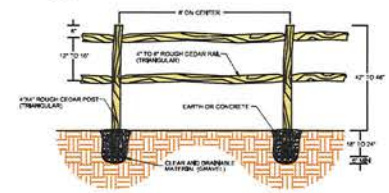
WETLAND/STREAM SIGN INSTALLATION DETAIL

THE WETLAND SIGN SHALL BE POSTED AT THE BOUNDARY BETWEEN THE SENSITIVE AREA BUFFER, SETBACK AREA OR SETBACK TRACT AND THE BUILDING SETBACK AREA.

ONE SIGN SHALL BE POSTED PER LOT FOR EVERY 100 FEET OF SENSITIVE AREA BUFFER AND SHALL BE STATIONED IN A PROMINENT LOCATION (E.G. AT THE CLOSEST POINT TO THE PROPOSED DEVELOPMENT). SIGNS MAY ALSO BE ATTACHED TO FENCES.

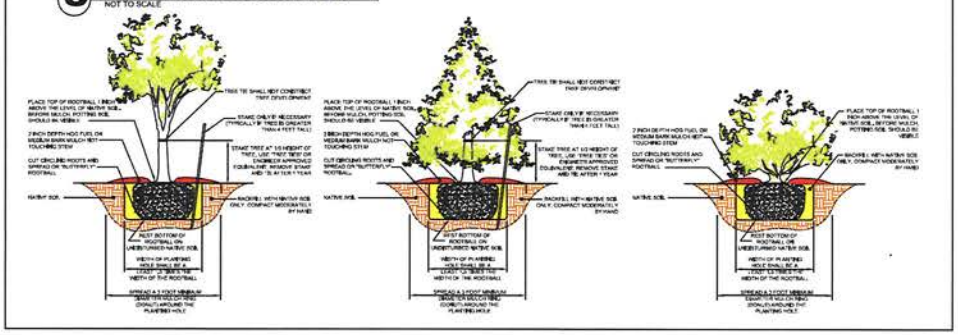
B SPLIT RAIL FENCE

NOT TO SCALE



C PLANTING & STAKING

NOT TO SCALE



D PLANT SCHEDULE

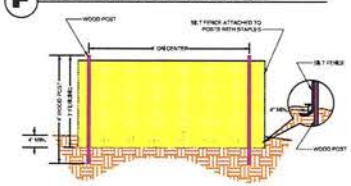
SYMBOL	COMMON NAME	SCIENTIFIC NAME	QTY.	SIZE
	BIG-LEAF MAPLE	ACER MACROPHYLLUM	30	2 GAL
	RED ALDER	ALNUS RUBRA	35	2 GAL
	DOUGLAS FIR	PSEUDOTSUGA MENZIESII	35	5 GAL
	WESTERN RED CEDAR	THUJA PLICATA	20	2 GAL
OS	OCEANSPRAY	HOLODISCUS DISCOLOR	100	1 GAL
RC	RED-FLOWERING CURRANT	RIBES SANGUINEUM	100	1 GAL
BR	BALDHIP ROSE	ROSA GYMNOCARPA	100	1 GAL
SB	SALMONBERRY	RUBUS SPECTABILIS	100	1 GAL
SN	SNOWBERRY	SYMPHORICARPOS ALBUS	100	1 GAL

PLANTING NOTES:
TREE AND SHRUB LOCATIONS AREA APPROXIMATE AND MAYBE RELOCATED IN THE FIELD BASED ON SITE CONDITIONS AND LOCATIONS OF EXITISTING VEGETATION

E WOOD CHIP MULCH

1. APPLY WOOD CHIP MULCH TO ALL BARE SOIL AREAS FOLLOWING INSTALLATION OF ENHANCEMENT/RESTORATION PLANTINGS.
2. WOOD CHIP MULCH SHOULD BE APPLIED AT A THICKNESS OF 1-2 INCHES.

F SILT FENCE DETAIL



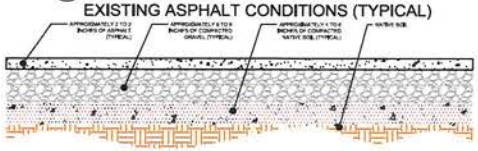
CONSTRUCTION NOTES

1. ALL STRUCTURES AND ASPHALT DRIVEWAYS ARE TO BE REMOVED FROM BUFFER PRIOR TO MITIGATION PLANTING
2. ANY COMPACTED SOILS SHALL HAVE APPROPRIATE DECONSOLIDATON METHODS USED TO CREATE MORE SUITABLE SOIL CONDITIONS (SEE DETAIL H)
3. PLANT LOCATIONS ARE APPROXIMATE AND MAY NEED TO BE RELOCATED IN FIELD BASED ON SITE CONDITIONS.
4. SILT FENCE SHALL BE INSTALLED ALONG THE DOWNSLOPE SIDE OF THE CONSTRUCTION AREA PRIOR TO ANY EARTH WORK ACTIVITIES (SEE DETAIL F)

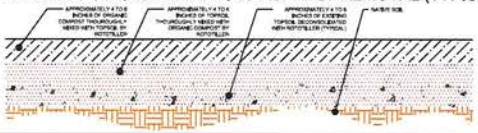
H ASPHALT REMOVAL AND SOIL PREPARATION

NOT TO SCALE TYPICAL

EXISTING ASPHALT CONDITIONS (TYPICAL)



SOIL CONDITIONING FOLLOWING ASPHALT REMOVAL (TYPICAL)



NOTES:
1. REMOVE ALL ASPHALT, GRAVEL AND COMPACTED MATERIALS FROM THE BUFFER RESTORATION AREA AND DISPOSE OF OFF-SITE IN A LEGAL MANNER.
2. DECONSOLIDATE COMPACTED NATIVE SOILS WITH ROTOTILLER PRIOR TO INSTALLATION OF TOPSOIL AND ORGANIC COMPOST
3. THOUROUGHLY MIX ORGANIC COMPOST AND TOPSOIL WITH ROTOTILLER PRIOR TO PLANT INSTALLATION
4. CONSULTING BIOLOGIST SHALL APPROVE SOIL CONDITIONS PRIOR TO MITIGATION PLANTING

NO.	DATE	BY	REVISION
1	4/25/17	LHL	3/20/17 AGENCY REVIEW COMMENTS

CONSULTANT:
Wetlands Northwest, LLC
5218 Ivanhoe Place Northeast
Seattle, Washington 98105
BUS: 206-456-5474 MOB: 206-554-1628
WWW.WETLANDSNW.COM

CLIENT:
HSU CHIU CHIH & YEH HUA LU
10265 124TH AVENUE NE KIRKLAND, WASHINGTON 98033

PROJECT:
DEVELOPMENT PROPOSAL & BUFFER MITIGATION
KING COUNTY TAX PARCEL NO.: 663990-0280

DESIGNED BY: L. Erickson
DRAWN BY: L. Erickson
CHECKED BY: K. Kay
APPROVED BY: K. Kay
DATE: 12/5/16

SCALE VARIES

SHEET W.3

SAR 15-02993
ATTACHMENT 10
APPLICANT ENVIRONMENTAL REPORT V.2

DEVELOPMENT PROPOSAL & BUFFER MITIGATION
MITIGATION TEXT

KING COUNTY TAX PARCEL NO.: 663990-0280

1.0 Executive Summary

A regulated wetland is present on-site along the north, west and south portions of the property extending off-site in the same directions. Per City of Kirland the on-site wetland is required to have a 75-foot buffer. City of Kirkland allows reduction of the buffer for averaging purposes with compensatory mitigation. The applicant proposes buffer averaging, reducing the require buffer along the north and south sides of the property by 3,973.92 square feet and increasing the buffer along the western side of the property by 3,988.96 square feet. The net gain in buffer area will be 15.04 square feet following averaging. In addition, 5,509.70 square feet of existing asphalt driveway and a shed will be removed from the northern portion of the buffer. Compacted soils in this area will be deconsolidated, organic topsoil will be install and incorporated into the restoration area and native trees and shrubs will be planted as mitigation for impacts. Additionally, area immediately adjacent to the proposed western edge of the development area will be planted with native trees and shrubs to mitigate for buffer averaging impacts. Split rail fence and sensitve area signs will be installed to delineate the edge of the new wetland buffer. Native plant species will increase plant diversity, wildlife habitat and prevent the establishment of invasive species.

1.1 Goals and Objectives

The goal of mitigation is to increase the functions and values of the existing wetland buffer through enhancement. Enhancement will be through removal of impervious surfaces and installation of native trees and shrubs. In its current state, the buffer does not provide the functions necessary to adequately protect the off-site wetland. The objectives necessary to meet the above stated goal area as follows:

- Remove asphalt and shed from the buffer
- Deconsolidate compacted soils and install organic compost
- Install native vegetation within the buffer
- Maintain and monitor the enhancement area for a period of five years or until the site meets the specified performance standards
- Install split rail fence and sensitive area signs at the limit of the buffer to detour future intrusions into the sensitive area
- Record the sensitive area in a "Notice on Title"
- If the enhancement area fails to meet performance standards provide a contingency plan to rectify the situation.

2.0 Site Conditions

The Contractor shall immediately notify the Landscape Designer and/or Wetland Biologist of drainage or soil conditions likely to be deterimental to the growth or survival of plants. Locations shall be as depicted in the approved plan set. The Landscape Designer and/or Wetland Biologist may adjust the locations of plantings shown on plans based on field conditions. Planting operations shall not be conducted under the following conditions: freezing weather, when the ground is frozen, excessively wet weather, excessively windy weather, or in excessive heat. Changes should be documented and as-built drawings submitted to City of Kirkland upon request for formal construction approval.

3.0 Plants

3.1 Origin: Plant materials shall be Northwest native plants, nursery grown in the Puget Sound region of Washington.

3.2 Plant Names: Plant names shall comply with those generally accepted in the native plant nursery trade. Any questions regarding plant species or variety shall be referred to the Landscape Designer or Wetland Biologist. All plant materials shall be true to species and variety.

3.3 Plant Substitutions: Same species substitutions of larger size do not require special permission. However, small plants often experience less transplant shock and adapt more quickly to site conditions, resulting in a higher success rate. As such, smaller plants will be approved as substitutions based on certain site-specific conditions (trees not less than 1 gallon size however). All plant substitutions shall be approved by Landscape Designer and/or Wetland Biologist.

3.4 Quality and Condition: Plants shall be normal in pattern of growth, healthy, well-branched, vigorous, with well-developed root systems, and free of pests and diseases. Damaged, diseased, pest-infested, scraped, bruised, dried-out, burned, broken, or defective plants will be rejected.

3.5 Handling: Plants shall be handled so as to avoid all damage, including breaking, bruising, root damage, sunburn, drying, freezing or other injury. Plants must be covered during transport. Plants shall not be bound with wire or rope in a manner that could damage branches. Protect plant roots with shade and wet soil in the time period between delivery and installation. Do not lift container stock by trunks, stems, or tops. Do not remove from containers until ready to plant. Water all plants as necessary to keep moisture levels appropriate to the species horticultural requirements. Plants shall not be allowed to dry out. All plants shall be watered thoroughly immediately upon installation. Soak all containerized plants thoroughly prior to installation. Bare root plants are subject to the following special requirements, and shall not be used unless planted between November 1 and March 1, and only with the permission of the Landscape Designer, Wetland Biologist, and/or City of Kirkland Staff. Bare root plants must have enough fibrous root to insure plant survival. Roots must be covered at all times with mud and/or wet straw, moss, or other suitable packing material until time of installation. Plants whose roots have dried out from exposure will not be accepted at installation inspection.

3.6 Damaged Plants: Damaged, dried out, or otherwise mishandled plants will be rejected at installation inspection. All rejected plants shall be immediately removed from the site.

3.7 Roots: All plants shall be balled and burlapped or containerized, unless explicity authorized by the Landscape Designer and/or Wetland Biologist. Root bound plants or B&B plants with damaged, cracked or loose rootballs (major damage) will be rejected. Immediately before installation, plants with minor root damage (some broken and/or twisted) must be root-pruned. Matted or circling roots of containerized plantings must be pruned or straightened and the sides of the root ball must be roughened from top to bottom to a depth of approximately half and inch in two to four places. Bare root plantings of woody material is allowed only with permission from the Landscape Designer, Wetland Biologist, and/or City of Kirkland Staff.

3.8 Sizes: Plant sizes shall be the size indicated in the plant schedule. Larger stock may be acceptable provided that it has not been cut back to size specified, and that the root ball is proportionate to the size of the plant. Smaller stock may be acceptable, and under some circumstances perferable, based on site-specific conditions. Measurements, caliper, branching and balling and burlapping shall conform to the American Standard of Nursery Stock by the American Assoiciation of Nurserymen (latest edition).

3.9 Form: Evergreen trees, if used, shall have single trunks and symmetrical, well-developed form. Deciduous trees shall be single trunked unless specified as multi-stem in the plant schedule. Shrubs shall have multiple stems, and be well-branched.

3.10 Planting: Planting shall be done in accordance with illustrated details in the mitigation plan set and accepted industry standards. Plant locations shall also be inspected and approved prior to planting.

3.11. Timing of Planting: Unless otherwise approved by City of Kirkland, all planting shall occur between September 1 and March 31.

3.12 Planting in Pits: Planting pits shall be circular or square with vertical sides, and shall be 6" larger in diameter than the root ball of the plant. Break up the sides of the pit in compacted soils. Set plants upright in pits, as illustrated in planting detail. Burlap shall be removed from the planting pit. Backfill shall be worked back into holes such that air pockets are removed without adversely compacting soils.

3.13 Mulch: The soil surface surrounding all planting pit areas shall receive no less than 3"-4" of hog fuel or medium bark mulch after planting. Hog fuel or mulch shall be kept well away (at least 3") from the trunks and stems of woody plants.

3.14 Water: Plants shall be watered upon completion of backfilling. For spring plantings (if approved), a rim of earth shall be mounded around the base of the tree or shrub no closer than the drip line, or no less than 30" in diameter, except on steep slopes or in hollows. Plants shall be watered a second time within 24-48 hours after installation. The earthen rim/dam should be leveled prior to the second growing season.

3.15 Staking: Most shrubs and many trees do not require any staking. If the plant can stand alone without staking in a moderate wind, do not use a stake. If the plant needs support, then strapping or webbing should be used as low as possible on the trunk to loosely brace the tree with one stake (see Planting Detail). Do not brace the tree tightly or too high on the trunk. If the tree is unable to sway, it will further lose the ability to support itself. As soon as supporting the plant becomes unnecessary, remove the stakes. All stakes must be removed within two years of installation.

3.16 Wildlife Control: As determined by the Landscape Designer and/or Wetland Biologist, fencing or deer repellants may be needed to limit deer intrusion while installed plants are becoming established.

4.0 Maintenance

Maintenance shall be required in accordance with City of Kirkland guidelines and approved plans.

4.1 Duration and Extent: In order to achieve performance standards, the Permittee shall have the mitigation area maintained twice annually for the duration of the monitoring period, 5 years. All maintenance shall be directed by the Landscape Designer and/or Wetland Biologist.

Maintenance will include:

- watering
- weeding around base of installed plants
- pruning
- replacement
- restaking
- removal of all classes of noxious weeds (see Washington State Noxious Weeds List, WAC 16-7150-005) as well as Himalayan blackberry
- any other measures needed to insure plant survival
- general maintenance activities which include the replacement of any vandalized or damaged signs, habitat features, fences or other structural component of the mitigation site.

4.2 Survival: The Permittee shall be responsible for the health of 100% of all newly installed plants for one growing season after installation has been accepted by City of Kirkland (see Performance Standards). A growing season for these purposes is defined as occurring from March 1 to October 31. For fall installation (often required), the growing season will begin the following spring. The Permittee shall replace any plants that are failing, weak, defective in a manner of growth, or dead during this growing season, as directed by the Landscape Designer, Wetland Biologist, and/or City of Kirkland.

4.3 Installation Timing for Replacement Plants: Replacement plants shall be installed between September 1 and March 31, unless otherwise determined by the Landscape Designer, Wetland Biologist, and/or City of Kirkland.

4.4 Standards for Replacement Plants: Replacement plants shall meet the same standards for size and type as those specified for original installation unless otherwise directed by the Landscape Designer, Wetland Biologist, and/or City of Kirkland. Replacement plants shall be inspected as described above for the original installation.

4.5 Replanting: Plants that have settled in their planting pits too deep, too shallow, loose, or crooked shall be replanted as directed by the Landscape Designer, Wetland Biologist, and/or City of Kirkland.

4.6 Herbicides/Pesticides: Chemical controls shall not be used in the mitigation area, sensitive areas or their buffers. However, limited use of herbicides may be approved depending on site specific conditions, only if approved by City of Kirkland.

4.7 Irrigation/Watering: Water shall be provided during the dry season (July 1-October 15) for the first two years after installation to ensure plant survival and establishment. Water should be provided by a temporary above ground irrigation system. Water should be applied at a rate of 1" of water two times a week for Year 1 and 1" of water one time a week during Year 3.

5.0 Performance Standards - Plant Cover and Survival

- Plant survival and cover standards are established to measure mitigation success as follows:

	Year 1	Year 2	Year 3	Year 4	Year 5
Shrub and Sapling Tree Cover*	>10%	>15%	>20%	>30%	>35%
Shrub and Sapling Tree Survival	100%	>85%	>80%		

*Includes beneficial native plants in that category that are naturally recruiting volunteers

- Less than 10% invasive vegetation during any monitoring event.
- The establishment of 3 species of native trees and 4 species of native shrubs at the end the the monitoring period.
- Unplanted buffer areas are to remain free from new impacts. Prohibited activities include but are not limited to clearing, grading, excavating, filling, mowing, pruning of existing vegetation, and/or planting or seeding non-native species.

6.0 Monitoring

Monitoring shall be conducted twice annually (mid spring and fall) for 5 years in accordance with the approved mitigation monitoring plan.

6.1 Vegetation Monitoring: Sample points or transects will be established for vegetation monitoring. Linear transects are the preferred method for vegetation monitoring for this site. No less than one (1) 100-foot transect per 10,000 square feet of area will be established in the mitigation area. Permanent transect location(s) must be identified on mitigation site plans in the first monitoring report (they may be drawn on approved mitigation plans by hand). Plots located at the end of each transect shall detail herb, shrub, and tree aerial cover at radii of 1m, 5m, and 10m respectively, using the Braun-Blanquet releve method or other acceptable field method. Monitoring of vegetation transects shall occur annually between August 1 and September 30 (prior to leaf drop), unless otherwise specified.

6.2 Photopoints: No less than four (4) permanent photo points will be established within the mitigation area. Photographs will be taken from these points to visually record the condition of the mitigation area. Photos shall be taken annually between August 1 and September 30 (prior to leaf drop), unless otherwise specified.

6.3 Reports: Monitoring reports shall be submitted by December 31 of each year during the monitoring period. As applicable, monitoring reports must include description/data for:

- Site plan and location map
- Historic description of project, including date of installation, current year of monitoring, restatement of mitigation goals, and performance standards
- Plant survival, vigor, and aerial coverage from every plant community (transect data), and explanation of monitoring methodology in the context of assessing performance standards
- Slope condition, site stability, any structures or special features
- Buffer conditions, e.g. surrounding land use, use by humans, wild and domestic creatures
- Observed wildlife, including amphibians, avians and others
- Assessment of nuisance/exotic biota and recommendations for management
- Color photographs taken from permanent photo points as shown in the first as-built plan or the first monitoring report.
- Summary of maintenance and contingency measures proposed for next season and completed for past season

6.4 Deficiences: Any deficiency discovered during any monitoring or inspection visit must be corrected within 60 days of approval by City of Kirkland.

6.5 Contingency Plan: Should any monitoring report reveal the mitigation has failed in whole or in part, and should that failure be beyond the scope of routine maintenance, a Contingency Plan will be submitted. The Contingency Plan may range in complexity from a list of plants substituted, to cross-sections of proposed engineered structures. Once approved, it may be installed, and will replace the approved mitigation plan. If the failure is substantial, City of Kirklandmay extend the monitoring period for that mitigation.

7.0 Bond

Prior to beginning any work, the Permittee must provide a mitigation bond or assignment of funds per City of Kirkland. A bond quantity worksheet has been completed based on all elements of the mitigation plan. The total cost, plus contingency fees has been determined to be $ 44,813.81 , which will be the amount of the mitigation bond the Permittee is required to provide. Bonds are eligible for reduction to maintenance status upon successful installation inspection, providing that it also meets performance standards established in the mitigation plan and City of Kirkland guidelines.

NO.	1
DATE	4/25/17
BY	LRE
REVISION	3/20/17 WATERSHED COMMENTS

CONSULTANT:
Wetlands Northwest, LLC
5218 Ivanhoe Place Northeast
Seattle, Washington 98105
BUS: 206-456-5474 MOB: 206-554-1628
WWW.WETLANDSNW.COM

CLIENT:
HSU CHIU CHIH & YEH HUA LU
10265 124TH AVENUE NE KIRKLAND, WASHINGTON 98033

PROJECT:
DEVELOPMENT PROPOSAL & BUFFER MITIGATION
KING COUNTY TAX PARCEL NO.: 663990-0280

DESIGNED BY: L. Erikson
DRAWN BY: L. Erikson
CHECKED BY: R. King
APPROVED BY: R. King
DATE: 12/2/16

SCALE NONE
SHEET W.4

SAR16-02993
ATTACHMENT 10
APPLICANT ENVIRONMENTAL REPORT V.2

Critical Areas Mitigation
Bond Quantity Worksheet

Date: ######## **Prepared by:** L. Erickson

Project Number:

Project Description: Buffer Reduction & Enhancement of the Thi & Nguyen Property

Location:

Applicant: Chih & Lu Property **Phone:**

PLANT MATERIALS (Includes labor cost for plant installation)

Type	Unit Price	Unit	Quantity	Description	Cost
PLANTS: Potted, 4" diameter, medium	$5.00	Each			$ -
PLANTS: Container, 1 gallon, medium soil	$11.50	Each	500.00		$ 5,750.00
PLANTS: Container, 2 gallon, medium soil	$20.00	Each	85.00		$ 1,700.00
PLANTS: Container, 5 gallon, medium soil	$36.00	Each	35.00		$ 1,260.00
PLANTS: Seeding, by hand	$0.50	SY			$ -
PLANTS: Slips (willow, red-osier)	$2.00	Each			$ -
PLANTS: Stakes (willow)	$2.00	Each			$ -
PLANTS: Stakes (willow)	$2.00	Each			$ -
PLANTS: Flats/plugs	$2.00	Each			$ -
				TOTAL	$ 8,710.00

INSTALLATION COSTS (LABOR, EQUIPMENT, & OVERHEAD)

Type	Unit Price	Unit			Cost
Compost, vegetable, delivered and spread	$37.88	CY	51.00		$ 1,931.88
Decompacting till/hardpan, medium, to 6" depth	$1.57	CY	51.00		$ 80.07
Decompacting till/hardpan, medium, to 12" depth	$1.57	CY			$ -
Hydroseeding	$0.51	SY			$ -
Labor, general (landscaping other than plant installation)	$40.00	HR	20.00		$ 800.00
Labor, general (construction)	$40.00	HR	20.00		$ 800.00
Labor: Consultant, supervising	$55.00	HR	4.00		$ 220.00
Labor: Consultant, on-site re-design	$95.00	HR	4.00		$ 380.00
Rental of decompacting machinery & operator	$70.00	HR	12.00		$ 840.00
Sand, coarse builder's, delivered and spread	$42.00	CY			$ -
Staking material (set per tree)	$7.00	Each			$ -
Surveying, line & grade	$250.00	HR			$ -
Surveying, topographical	$250.00	HR			$ -
Watering, 1" of water, 50' soaker hose	$3.62	MSF	25.00		$ 90.50
Irrigation - temporary	$3,000.00	Acre	0.27		$ 810.00
Irrigation - buried	$4,500.00	Acre			$ -
Tilling topsoil, disk harrow, 20hp tractor, 4"-6" deep	$1.02	SY			$ -
				TOTAL	$ 5,952.45

HABITAT STRUCTURES*

ITEMS	Unit Cost	Unit			Cost
Fascines (willow)	$ 2.00	Each			$ -
Logs, (cedar), w/ root wads, 16"-24" diam., 30' long	$1,000.00	Each			$ -
Logs (cedar) w/o root wads, 16"-24" diam., 30'	$400.00	Each			$ -
Logs, w/o root wads, 16"-24" diam., 30' long	$245.00	Each			$ -
Logs w/ root wads, 16"-24" diam., 30' long	$460.00	Each			$ -
Rocks, one-man	$60.00	Each			$ -
Rocks, two-man	$120.00	Each			$ -
Root wads	$163.00	Each			$ -
Spawning gravel, type A	$22.00	CY			$ -
Weir - log	$1,500.00	Each			$ -
Weir - adjustable	$2,000.00	Each			$ -
Woody debris, large	$163.00	Each			$ -
Snags - anchored	$400.00	Each			$ -
Snags - on site	$50.00	Each	10.00		$ 500.00
Snags - imported	$800.00	Each			$ -
* All costs include delivery and installation				TOTAL	$ 500.00

EROSION CONTROL

ITEMS	Unit Cost	Unit			Cost
Backfill and Compaction-embankment	$ 4.89	CY			$ -
Crushed surfacing, 1 1/4" minus	$30.00	CY			$ -
Ditching	$7.03	CY			$ -
Excavation, bulk	$4.00	CY			$ -
Fence, silt	$1.60	LF	305.00		$ 488.00
Jute Mesh	$1.26	SY			$ -
Mulch, by hand, straw, 2" deep	$1.27	SY			$ -
Mulch, by hand, wood chips, 2" deep	$3.25	SY	51.00		$ 165.75
Mulch, by machine, straw, 1" deep	$0.32	SY			$ -
Piping, temporary, CPP, 6"	$9.30	LF			$ -
Piping, temporary, CPP, 8"	$14.00	LF			$ -
Piping, temporary, CPP, 12"	$18.00	LF			$ -
Plastic covering, 6mm thick, sandbagged	$2.00	SY			$ -
Rip Rap, machine placed, slopes	$33.98	CY			$ -
Rock Constr. Entrance 100'x15'x1'	$3,000.00	Each			$ -
Rock Constr. Entrance 50'x15'x1'	$1,500.00	Each			$ -
Sediment pond riser assembly	$1,695.11	Each			$ -
Sediment trap, 5' high berm	$15.57	LF			$ -
Sediment trap, 5' high berm w/spillway incl. riprap	$59.60	LF			$ -
Sodding, 1" deep, level ground	$5.24	SY			$ -
Sodding, 1" deep, sloped ground	$6.48	SY			$ -
Straw bales, place and remove	$600.00	TON			$ -
Hauling and disposal	$20.00	CY			$ -
Topsoil, delivered and spread	$35.73	CY	51.00		$ 1,822.23
				TOTAL	$ 2,475.98

GENERAL ITEMS					
ITEMS	Unit Cost	Unit			Cost
Fencing, chain link, 6' high	$18.89	LF			$ -
Fencing, chain link, corner posts	$111.17	Each			$ -
Fencing, chain link, gate	$277.63	Each			$ -
Fencing, split rail, 3' high (2-rail)	$10.54	LF	427.00		$ 4,500.58
Fencing, temporary (NGPE)	$1.20	LF			$ -
Signs, sensitive area boundary (inc. backing, post, install)	$28.50	Each	8.00		$ 228.00
				TOTAL	$ 4,728.58
OTHER				*(Construction Cost Subtotal)*	$ 22,367.01
ITEMS	Percentage of Construction Cost	Unit			Cost
Mobilization	10%	1			$ 2,236.70
Contingency	30%	1			$ 6,710.10
				TOTAL	$ 8,946.80
MAINTENANCE AND MONITORING	NOTE: Projects with multiple permit requirements may be required to have longer monitoring and maintenance terms. This will be evaluated on a case-by-case basis for development applications. Monitoring and maintance ranges may be assessed anywhere from 5 to 10 years.				
Maintenance, annual (by owner or consultant)					
Less than 1,000 sq.ft. and buffer mitigation only	$ 1.08	SF		(3 X SF total for 3 annual events; Includes monitoring)	$ -
Less than 1,000 sq.ft. with wetland or aquatic area mitigation	$ 1.35	SF		(3 X SF total for 3 annual events; Includes monitoring)	$ -
Larger than 1,000 sq. ft. but less than 5,000 sq.ft. of buffer mitigation	$ 180.00	EACH		(4hr @$45/hr)	$ -
Larger than 1,000 sq. ft. but less than 5,000 sq.ft. of wetland or aquatic area mitigation	$ 270.00	EACH		(6hr @$45/hr)	$ -
Larger than 5,000 sq.ft. but < 1 acre -buffer mitigation only	$ 360.00	EACH	10.00	(8 hrs @ 45/hr)	$ 3,600.00
Larger than 5,000 sq.ft. but < 1 acre with wetland or aquatic area mitigation	$ 450.00	EACH		(10 hrs @ $45/hr)	$ -
Larger than 1 acre but < 5 acres - buffer and / or wetland or aquatic area mitigation	$ 1,600.00	DAY		(WEC crew)	$ -
Larger than 5 acres - buffer and / or wetland or aquatic area mitigation	$ 2,000.00	DAY		(1.25 X WEC crew)	$ -
Monitoring, annual (by owner or consultant)					
Larger than 1,000 sq.ft. but less than 5,000 wetland or buffer mitigation	$ 720.00	EACH		(8 hrs @ 90/hr)	$ -
Larger than 5,000 sq.ft. but < 1 acre with wetland or aquatic area impacts	$ 900.00	EACH	11.00	(10 hrs @ $90/hr)	$ 9,900.00
Larger than 1 acre but < 5 acres - buffer and / or wetland or aquatic area impacts	$ 1,440.00	DAY		(16 hrs @ $90/hr)	$ -
Larger than5 acres - buffer and / or wetland or aquatic area impacts	$ 2,400.00	DAY		(24 hrs @ $90/hr)	$ -
				TOTAL	$ 13,500.00
				Total	**$44,813.81**

Critical Areas Mitigation
Bond Quantity Worksheet

Date: ######## **Prepared by:** L. Erickson

Project Number:

Project Description: Buffer Reduction & Enhancement of the Thi & Nguyen Property

Location:

Applicant: Chih & Lu Property **Phone:**

PLANT MATERIALS (includes labor cost for plant installation)

Type	Unit Price	Unit	Quantity	Description	Cost
PLANTS: Potted, 4" diameter, medium	$5.00	Each			$ -
PLANTS: Container, 1 gallon, medium soil	$11.50	Each	500.00		$ 5,750.00
PLANTS: Container, 2 gallon, medium soil	$20.00	Each	85.00		$ 1,700.00
PLANTS: Container, 5 gallon, medium soil	$36.00	Each	35.00		$ 1,260.00
PLANTS: Seeding, by hand	$0.50	SY			$ -
PLANTS: Slips (willow, red-osier)	$2.00	Each			$ -
PLANTS: Stakes (willow)	$2.00	Each			$ -
PLANTS: Stakes (willow)	$2.00	Each			$ -
PLANTS: Flats/plugs	$2.00	Each			$ -
				TOTAL	**$ 8,710.00**

INSTALLATION COSTS (LABOR, EQUIPMENT, & OVERHEAD)

Type	Unit Price	Unit			Cost
Compost, vegetable, delivered and spread	$37.88	CY	51.00		$ 1,931.88
Decompacting till/hardpan, medium, to 6" depth	$1.57	CY	51.00		$ 80.07
Decompacting till/hardpan, medium, to 12" depth	$1.57	CY			$ -
Hydroseeding	$0.51	SY			$ -
Labor, general (landscaping other than plant installation)	$40.00	HR	20.00		$ 800.00
Labor, general (construction)	$40.00	HR	20.00		$ 800.00
Labor: Consultant, supervising	$55.00	HR	4.00		$ 220.00
Labor: Consultant, on-site re-design	$95.00	HR	4.00		$ 380.00
Rental of decompacting machinery & operator	$70.00	HR	12.00		$ 840.00
Sand, coarse builder's, delivered and spread	$42.00	CY			$ -
Staking material (set per tree)	$7.00	Each			$ -
Surveying, line & grade	$250.00	HR			$ -
Surveying, topographical	$250.00	HR			$ -
Watering, 1" of water, 50' soaker hose	$3.62	MSF	25.00		$ 90.50
Irrigation - temporary	$3,000.00	Acre	0.27		$ 810.00
Irrigation - buried	$4,500.00	Acre			$ -
Tilling topsoil, disk harrow, 20hp tractor, 4"-6" deep	$1.02	SY			$ -
				TOTAL	**$ 5,952.45**

HABITAT STRUCTURES*

ITEMS	Unit Cost	Unit			Cost
Fascines (willow)	$ 2.00	Each			$ -
Logs, (cedar), w/ root wads, 16"-24" diam., 30' long	$1,000.00	Each			$ -
Logs (cedar) w/o root wads, 16"-24" diam., 30'	$400.00	Each			$ -
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				(Construction Cost Subtotal)	**$ 22,367.01**

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				TOTAL	**$ 13,500.00**

Total	**$44,813.81**