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1.0 INTRODUCTION

This Wetland Buffer Mitigation Plan has been prepared to identify proposed impacts to sensitive areas and describe compensatory mitigation requirements for construction of a single family home. The Tax ID of the subject property is (1238500670); it is also known as Lot 3 located on Forbes Lake on Slater Street NE in Kirkland, Washington (**Figure 1**). This report has been prepared for submittal to the City of Kirkland and has been prepared according to the City of Kirkland Zoning Code (KZC) Chapter 90.05.

2.0 CRITICAL AREAS and EXISTING CONDITIONS

One wetland associated with Forbes Lake is present on the property (**Figure 2**). The wetland was delineated by Aquatica on January 6, 2008. The wetland, identified as "Wetland A" is a Type 1 wetland, located in a primary drainage basin and requires a 100-foot standard buffer (KZC 90.45(1)). The wetland delineation, category and buffer were reviewed and approved by the City's consultant, The Watershed Company, in January 2008. Additional information on the wetland was included in a wetland report prepared by The Watershed Company dated December 13, 2007. The wetland is located on the eastern third of the property and is contiguous with Forbes Lake. The 100-foot buffer extends through the majority of the lot, excluding the western edge near Slater Avenue NE.

The on-site wetland is dominated primarily by scrub shrub vegetation including Douglas' spiraea (*Spiraea douglasii*), Nootka rose (*Rosa nutkana*), and species of willow (*Salix lasiandra* and *S. sitchensis*). The majority of the buffer is dominated by Himalayan blackberry (*Rubus discolor*). The western edge of the lot and wetland buffer also includes several large trees (**Figure 2**).

3.0 PROPOSED PROJECT and REGULATORY REQUIREMENTS

The proposed project includes the construction of a new home and carport on the western edge of the lot (**Figure 3**). Due to a 20-foot front yard setback and the extent of the wetland and 100-foot buffer, it was not possible to construct a house and avoid all sensitive areas. Excluding these areas left only a 15-foot strip of unencumbered property. For these reasons, the applicant is requesting a one-third reduction of the standard buffer to accommodate a house with a modest footprint of only approximately 1,000 sf and an associated parking area (carport).

4.0 BUFFER MODIFICATION REQUIREMENTS

The KZC requires that a number of criteria be met prior to granting a buffer modification. These criteria are listed below in bold type; how the project will meet the criteria follow.

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).**

As stated in The Watershed Company report, primary functions of wetlands located in urban basins include water quality maintenance and flood/stormwater conveyance. The Watershed report also notes that protection and enhancement of urban wetlands and buffers is needed. The proposed project will address these items as needed. The on-site wetland is substantially vegetated with native vegetation and not in need of significant enhancement. However, the remaining portion of the reduced buffer is severely degraded and will be protected and enhanced

with native vegetation. The enhanced buffer will eventually provide additional wildlife habitat as vegetation grows and matures (see Question 3 for additional information).

Recommendations in the Adolfsen report relevant to this project include limiting the reduction of wetland buffers by one-third and requiring enhancement of the remaining buffer. The project will not reduce the buffer by more than a third and is enhancing the remaining buffer and is therefore, consistent with this report.

2. It will not adversely affect water quality

Water quality maintenance on this site occurs through the uptake of nutrients by plant roots. The wetland and buffer is presently vegetated, and will be vegetated post-construction. Following invasive species removal, the wetland buffer will be planted with native shrubs and trees. Maintaining a vegetated buffer will maintain water quality. The proposed house will be connected to the City sewer system and will have limited landscaping, further reducing the possibility for water quality contamination.

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

The enhanced buffer will not adversely affect fish or wildlife habitat. The project will include removing non-native Himalayan blackberry and English ivy in the buffer area. The reduced buffer area that is presently exclusively covered with Himalayan blackberry will be planted with a variety of native trees and shrubs. The native vegetation will provide a wildlife food source through the seeds and berries that the native vegetation will produce. Better habitat will eventually develop as the vegetation matures, which will create a more structurally diverse buffer. The area that is exclusively Himalayan blackberry will eventually include multiple vegetation layers with small and large shrubs as well evergreen and deciduous trees. The project is expected to have a positive affect on wildlife and their habitat. While fish are present in Forbes Lake, no fish are present close to the proposed house location. As noted above in the section describing water quality impacts, no adverse affect to fish is expected from construction of the project.

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

The increase in impervious surfaces that the project will create is relatively small in relation to the size of the lot, the vast majority of which will remain undeveloped and vegetated. Runoff from driveways and roofs will infiltrate into the soil and are not expected to leave the property as surface runoff. Currently stormwater from Slater Avenue flows through the property in an easterly direction through the center of the western portion of the lot. All of this water infiltrates approximately 70 feet west of the wetland boundary, indicating that the soil is relatively permeable. This ditch will be relocated to near the northern property boundary and water will continue to flow in a similar manner as in its present configuration. Due to the physical properties of the site and the limited nature of the proposed development, no effect on either wetland groundwater recharge or stormwater drainage is expected.

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

The wetland and buffer are located on a gradual slope. Since the slope is gradual and is currently vegetated, erosion or other possible instability is unlikely. As the vegetation planted in the buffer becomes established, the plants will provide further erosion control through root systems that are more expansive than the roots of the existing blackberries. In addition, the project will adhere to best management practices such as the installation of a silt fence at the buffer edge.

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

The proposed buffer reduction and enhancement is a minor project with minor impacts. Impacts will be fully mitigated through buffer enhancement. Overall the project will improve the wetland and buffer, and therefore will not cause any detrimental effects to the City or other properties.

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

Fill material will not contain potentially harmful organic or inorganic material. Fill material will be clean and will come from an approved source.

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

As described in Section 4.2 the vegetation proposed to be installed in the enhancement area will be native the lowland Puget Sound. The species were selected based on their ability to thrive in the soil and light conditions present on the site. Species proposed to be planted in the enhancement area are present in undisturbed areas on adjacent properties.

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

The proposed alterations to the wetland buffer represent the least damaging practicable alternative, as determined by evaluating the environmental impacts and the ability of the project to perform its intended purpose. The reduced buffer was necessary to provide sufficient area to construct a modestly sized house. The foot print of the house is only approximately 1,000 square feet and utilizes space conservatively by being constructed on two levels. The house is proposed to be constructed in the northwest corner of the property, which will preserve several large trees in the southwest corner of the property. Since the majority of the wetland buffer is degraded, the reduction of the buffer with enhancement will not adversely impact the wetland buffer.

10. The project will demonstrate that it will not adversely affect wetland functions and values.

The functions and values that wetlands and buffers provide include a) water quality maintenance, b) stormwater storage and conveyance, c) ground water recharge, d) providing wildlife habitat,

and e) aesthetic and other functions valued by humans. Details regarding how the project will not adversely affect these functions are described/and or referenced below.

- a). Water Quality Function. This was described above in Question 2.
- b). Stormwater Storage. This was described above in Question 4.
- c). Ground Water Recharge. This was also addressed above in Question 4.
- d). Wildlife Habitat. This was described above in Question 3.
- e). Social Functions. The mitigation project is expected to increase the appearance of the buffer. The wetland is degraded and has an abundance of non-native, unattractive, weedy vegetation. After enhancement with native plants, the wetland and remaining buffer will be more aesthetically pleasing. The native plants will include native deciduous and evergreen plants, many of which will produce flowers and colorful berries. Signage and fencing will serve to educate the adjacent land owners of the presence of a wetland and buffer.

5.0 MITIGATION

The project proposes to reduce the wetland buffer by 3,149 sf, for the construction of a house and carport. The remaining wetland and buffer (5,465 sf) will be enhanced through invasive species removal and installation of native trees and shrubs (**Figure 3**).

5.1 Goal, Objectives, and Performance Standards

The following goal, objectives, and performance standards have been established to evaluate and ensure success of the enhancement project.

Goal:

Mitigate for buffer reduction by enhancing 5,465 sf of buffer. The buffer enhancement area will be planted with trees and shrubs to eventually create a forested buffer. A narrow view corridor will be planted with shrubs to allow for some lake views.

Objective A: Increase the woody species diversity in the enhancement area.

Performance Standard A: Any plants that die the first year after planting shall be replaced to ensure 100% survival at the end of the first year. For years two through five, at least 7 native woody species shall be present in the existing blackberry area.

Objective B: Increase the woody coverage in the enhancement area through planting native shrub and tree species.

Performance Standard B: Woody coverage (sapling and shrub cover) will be at least 60% by the end of the third year after planting and at least 80% cover by the end of the fifth year after planting. Cover may be composed of both planted and native volunteer species.

Objective C: Remove invasive plants and maintain at no more than 10% cover in the enhancement areas.

Performance Standard C: After construction and following every monitoring event for a period of five years, exotic and invasive plant species will be maintained at levels below 10% total cover. In addition, all ivy shall be removed from the property. Ivy has been infesting the western edge of the property and removal of ivy will help to ensure the health of the large trees

that will remain, as well as protect the newly enhanced area. Invasive species include those listed on the King County Noxious Weed List.

5.2 Wetland Buffer Enhancement

An abundance of invasive weeds, primarily Himalayan blackberry and English Ivy are present on the property within the areas proposed for enhancement (**Figure 2**). Prior to planting, these species shall be cut down and their roots shall be grubbed out. Repeated site visits to grub these species will likely be necessary. As noted on **Figure 5**, weedy areas shall be sheet mulched with cardboard topped with a coarse mulch to suppress weeds and prevent herbaceous plant material from competing with planted species.

Areas devoid of woody vegetation will be planted with native deciduous and evergreen trees and shrubs (**Figure 4**). Plant layout in these areas should be reviewed by a biologist prior to planting.

The plant species depicted on the mitigation plan were chosen for a variety of qualities, including: adaptation to specific water regimes, value to wildlife, pattern of growth (structural diversity), and aesthetic values. Plants proposed to be installed include those native to the lowlands of western Washington. Plant materials may consist of a combination of bare-root shrubs (during the dormant season) and container plants. Plants shall not be installed during the dry, summer months (June through early September) or during periods of freezing weather.

Habitat features including either brush piles or large woody debris will be placed in the enhancement area (**Figure 3**). Larger logs or stumps will provide refuge for small mammals or amphibians while contributing to the soil as they decay. Brush piles provide cover for small mammals, as well as birds (such as juncos, wrens and sparrows), which are particularly attracted to them. Material for habitat features shall be obtained from trees that will need to be removed for construction.

5.3 Temporary Irrigation System

An above ground temporary irrigation must be installed to provide irrigation to mitigation plantings during the dry season. At a minimum, the system must be operational for the first year following installation. If a significant number of plants die, replacement plantings must also be irrigated for their first year following installation. Mitigation areas shall be irrigated between June 15 (or earlier if needed) and October 15. The irrigation system shall be programmed to provide 1" of water per week.

6.0 MONITORING PROGRAM

Performance monitoring of the mitigation areas will be conducted by a qualified biologist for a period of five years. Monitoring will include assessments of vegetation and wildlife usage, maintenance needs, as well as photo documentation. The results of each monitoring event will be summarized in a report to be submitted to the City. Maintenance reviews will be conducted by a biologist during the spring of each year with monitoring occurring in the late summer. A report summarizing both the spring maintenance review and the summer monitoring event will be submitted to the City in the fall.

6.1 Vegetation

The growth and survival of the vegetation will be evaluated during monitoring events. The shrub/sapling and invasive coverage and survival of planted species will be estimated throughout the site.

6.2 Reports

Monitoring reports will include a summary of woody and invasive coverage as well as survival rates of planted material. Observations of wildlife usage will also be noted, such as actual sightings, tracks, songs, calls, or scat. Photographs of the mitigation area will also be included with the report.

Reports will be submitted to the City according to the schedule presented in **Table 1**. If the performance standards for the project are met (**Section 4.1**), monitoring will cease after the fifth year, post-construction.

Table 1: Projected Calendar for Performance Monitoring

Year	Date*	Maintenance Review	Performance Monitoring	Report Due to City
1	Spring	X		
	Summer	X	X	X
2	Spring	X		
	Summer	X	X	X
3	Spring	X		
	Summer	X	X	X
4	Spring	X		
	Summer	X	X	X
5	Spring	X		
	Summer	X	X	X*

*Request project approval from the City (presumes performance criteria are met).

6.3 MAINTENANCE (M) and CONTINGENCY (C)

Maintenance will be performed regularly to address any conditions that could jeopardize the success of the mitigation areas. During maintenance reviews by the wetland biologist (schedule shown in **Table 1**), any maintenance items requiring attention will be identified and reported to the property owner and summarized in the annual report.

Established performance standards for the project will be compared to the monitoring results to judge the success of the mitigation project. If there is a significant problem with the mitigation achieving its performance standards, the Bond-holder shall work with the City to develop a Contingency Plan. Contingency plans can include, but are not limited to: additional plant installation, erosion control, and plant substitutions of type, size, quantity, and location. Such contingency Plan shall be submitted to the City along with annual monitoring reports.

Contingency and maintenance items may include many of the items listed below and would be implemented if performance standards are not met. Maintenance and remedial action on the site

will be implemented immediately upon completion of the monitoring event (unless otherwise specifically indicated below).

- During year one, replace all dead plant material. (M)
- Water all plantings at a rate of 1” of water at least every week between June 15 – September 15 during the first year after installation, and for the first year after any replacement plantings. (C & M)
- Replace dead plants with the same species or a substitute species that meets the goal and objectives of the mitigation plan, subject to the approval of the wetland biologist. (C)
- Re-plant area after reason for failure has been identified (e.g., moisture regime, poor plant stock, disease, shade/sun conditions, wildlife damage, etc.). (C)
- Weed trees and shrubs to the drip line, by hand. Maintain mulch rings around trees and shrubs at a depth of 3 inches. Weeding of mulch rings should occur twice per year until shrubs have become established. Do not use mechanized devices, herbicides, or pesticides adjacent to installed plant material.
- Due to the abundance of invasive weeds on the property, removal of invasive species throughout the site should occur regularly during the growing season. It is anticipated that during the first year, weeding will be required monthly from April through September. If weeding is thoroughly addressed during the first year, weeding may only be necessary during the spring and fall during subsequent years of the monitoring period. Specific maintenance needs will be summarized for the property owner during the spring maintenance review by the wetland biologist. All non-native vegetation must be removed and dumped off site. (M)
- Clean up trash and other debris. (M)
- Selectively thin volunteer species (such as alder) to prevent domination by a single species. (M)

7.0 PERFORMANCE GUARANTEES

A maintenance/monitoring bond or other acceptable surety device equal to 125% of the estimated installation, maintenance, monitoring, and contingency costs for the five-year monitoring period shall be posted with the City prior to finalization of the building permit. The bond may be released in partial amounts at the reasonable discretion of the City. Partial release of the bonding obligation would be in proportion to work successfully completed over the five-year monitoring period.

8.0 REFERENCES

Adolfson Associates, Inc. 1998. *City of Kirkland Sensitive Areas Recommendations Report*. August.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. U.S. Fish and Wildlife Service, Department of the Interior. FWSOBS-70/31.

Hitchcock, C.L., and A. Cronquist. 1973. *Flora of the Pacific Northwest*. University of Washington Press. 730 pp.

Kirkland, City of. Kirkland Zoning Code.

The Watershed Company. 1998. *Kirkland's Streams, Wetlands, and Wildlife Study*. July.

APPENDIX A

Bond Quantity Worksheet



SOURCE: RAND McNALLY & COMPANY, THE THOMAS GUIDE, 2007; KING COUNTY



AQUATICA

ENVIRONMENTAL CONSULTING, LLC

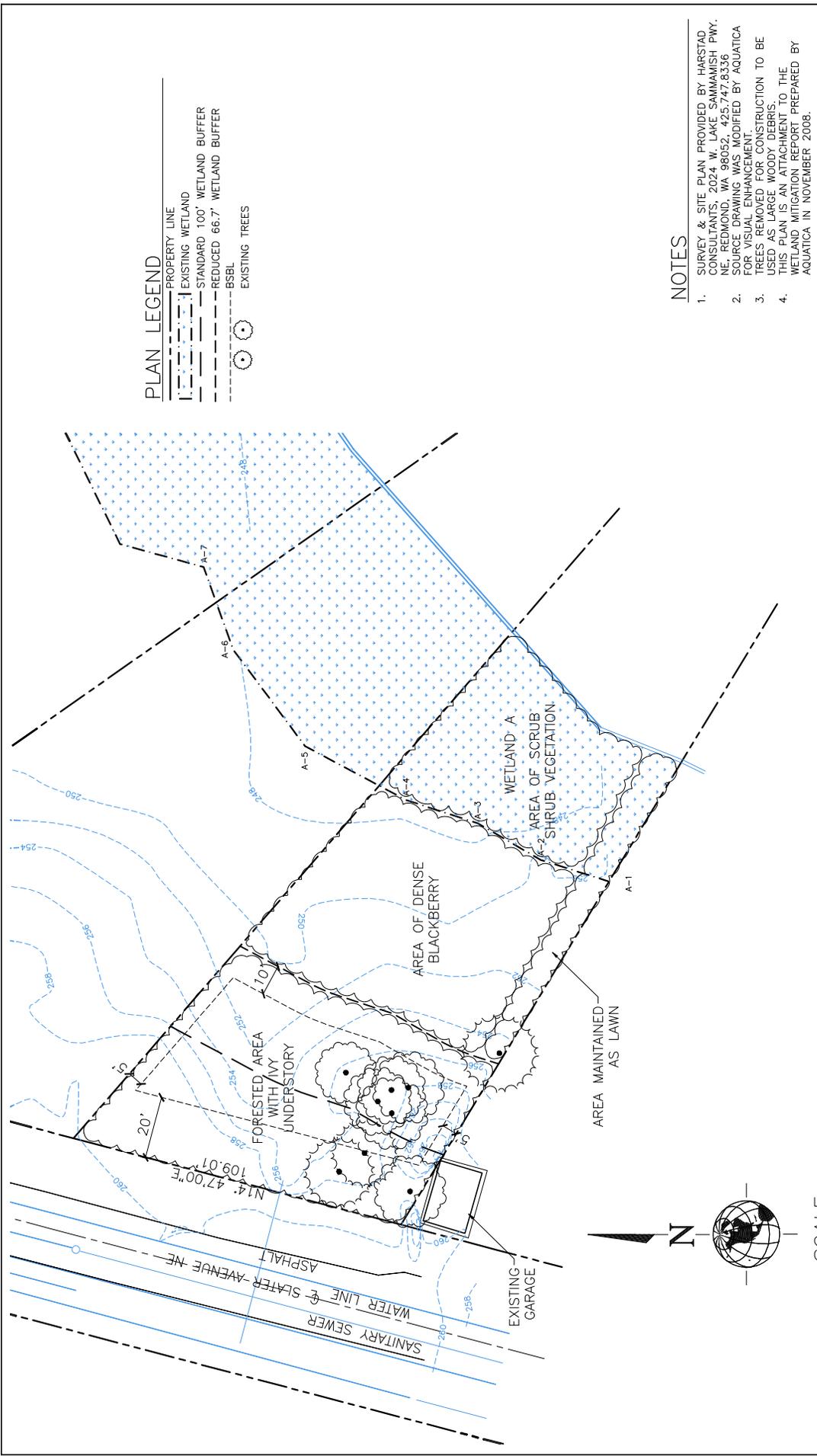
21214 RIMROCK ROAD
MONROE, WA 98272

T (425) 802-8988
F (360) 805-9608

VICINITY MAP MAXINE KEESLING

KIRKLAND, WASHINGTON

DRAWN BY KG	CHECKED BY TO
SCALE NTS	DATE 11.25.08
PROJECT NO.	07-102
FIGURE 1	OF 5



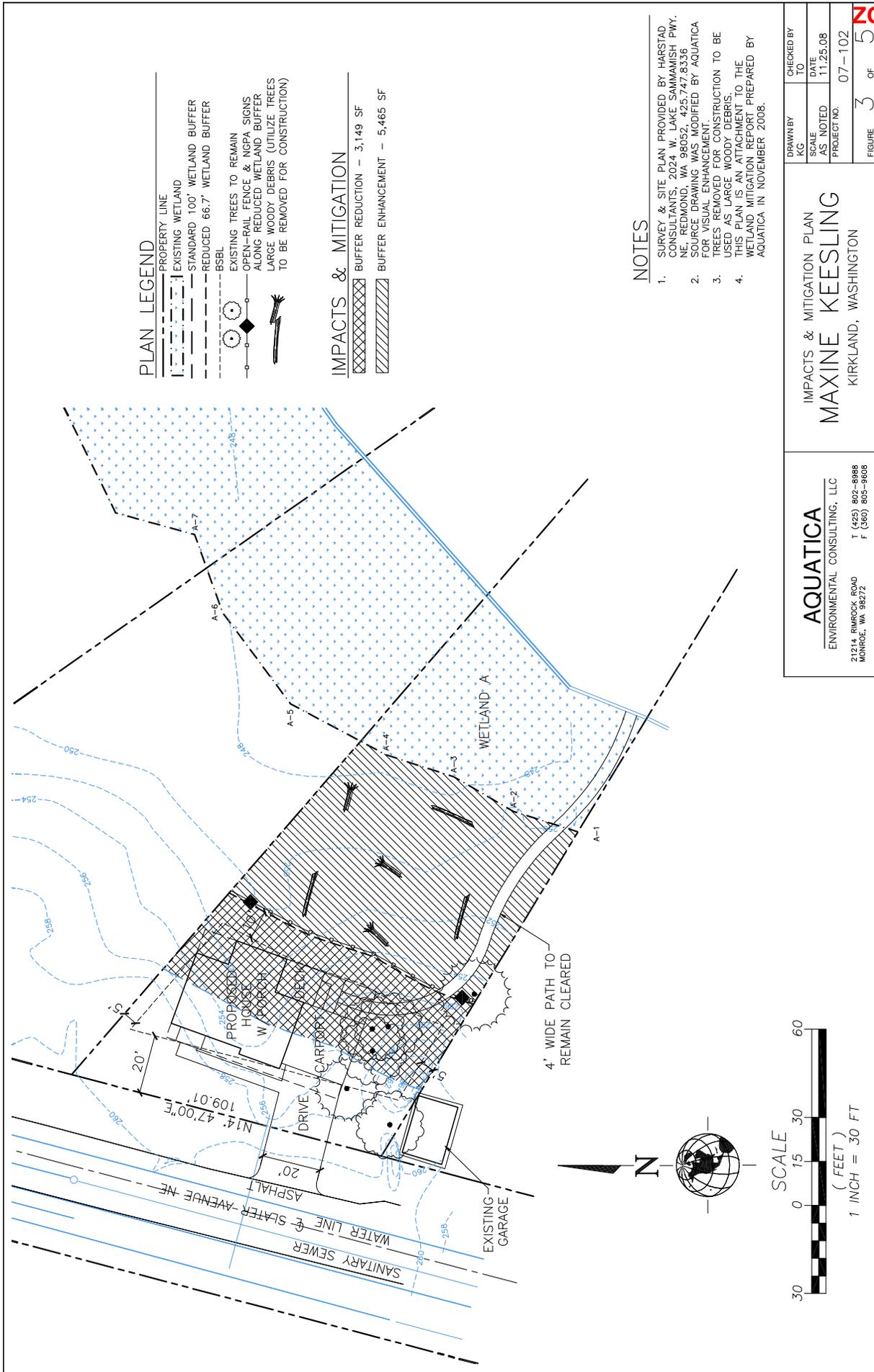
PLAN LEGEND

	PROPERTY LINE
	EXISTING WETLAND
	STANDARD 100' WETLAND BUFFER
	REDUCED 66.7' WETLAND BUFFER
	BSBL
	EXISTING TREES

NOTES

1. SURVEY & SITE PLAN PROVIDED BY HARSTAD CONSULTANTS, 2024 W. LAKE SAMAMISH PKY. NE, REDMOND, WA 98052 425.747.8336
2. SOURCE DRAWING WAS MODIFIED BY AQUATICA FOR VISUAL ENHANCEMENT
3. TREES REMOVED FOR CONSTRUCTION TO BE USED AS LARGE WOODY DEBRIS.
4. THIS PLAN IS AN ATTACHMENT TO THE WETLAND MITIGATION REPORT PREPARED BY AQUATICA IN NOVEMBER 2008.

<p>AQUATICA ENVIRONMENTAL CONSULTING, LLC 21214 RIMROCK ROAD MONROE, WA 98272 T (425) 802-8988 F (360) 805-9608</p>	<p>EXISTING CONDITIONS PLAN MAXINE KEESLING KIRKLAND, WASHINGTON</p>		<p>CHECKED BY KG</p>
	<p>SCALE AS NOTED 11.25.08</p>		<p>DATE 11.25.08</p>
<p>PROJECT NO. 07-102</p>		<p>FIGURE 2 OF 5</p>	<p>© COPYRIGHT - AQUATICA ENVIRONMENTAL CONSULTING</p>



07-102-11-25-08.DWG

PLANT SCHEDULE

TREES

KEY	SCIENTIFIC NAME	COMMON NAME	SPACING	QTY	SIZE (MIN.)
AR	ALNUS RUBRA	RED ALDER	9' O.C.	15	2 GAL.
BP	BETULA Papyrifera	PAPER BIRCH	9' O.C.	8	2 GAL.
TP	THUJA PLICATA	WESTERN RED CEDAR	9' O.C.	20	2 GAL.

SHRUBS

KEY	SCIENTIFIC NAME	COMMON NAME	SPACING	QTY	SIZE (MIN.)
CC	CORYLUS CORNUSTA	WESTERN HAZELNUT	6' O.C.	10	1 GAL.
L	LONGICERA INVOLUCRATA	BLACK TWIN-BERRY	6' O.C.	42	1 GAL.
N	ROSA NUTKANA	NOOTKA ROSE	6' O.C.	109	1 GAL.
R	RUBUS SPECTABILIS	SALMONBERRY	6' O.C.	46	1 GAL.
SR	SAMBUCUS RACEMOSA	RED ELDERBERRY	6' O.C.	13	1 GAL.



NOTES

1. SURVEY & SITE PLAN PROVIDED BY HARSTAD CONSULTANTS, 2024 W. LAKE SAMMAMISH PKY. NE, REDMOND, WA 98052, 425.747.8336
2. SOURCE DRAWING WAS MODIFIED BY AQUATICA FOR VISUAL ENHANCEMENT
3. TREES REMOVED FOR CONSTRUCTION TO BE USED AS LARGE WOODY DEBRIS.
4. THIS PLAN IS AN ATTACHMENT TO THE WETLAND MITIGATION REPORT PREPARED BY AQUATICA IN NOVEMBER 2008.



AQUATICA ENVIRONMENTAL CONSULTING, LLC 21214 RIMROCK ROAD MONROE, WA 98272 T (425) 802-8988 F (360) 805-9608	PLANTING PLAN MAXINE KEESLING KIRKLAND, WASHINGTON		DRAWN BY KGS	CHECKED BY TO
	SCALE AS NOTED	DATE 11.25.08	PROJECT NO. 07-102	FIGURE 4 OF 5
	© COPYRIGHT -- AQUATICA ENVIRONMENTAL CONSULTING.			

SPECIFICATIONS

CONSTRUCTION/SPECIFICATIONS

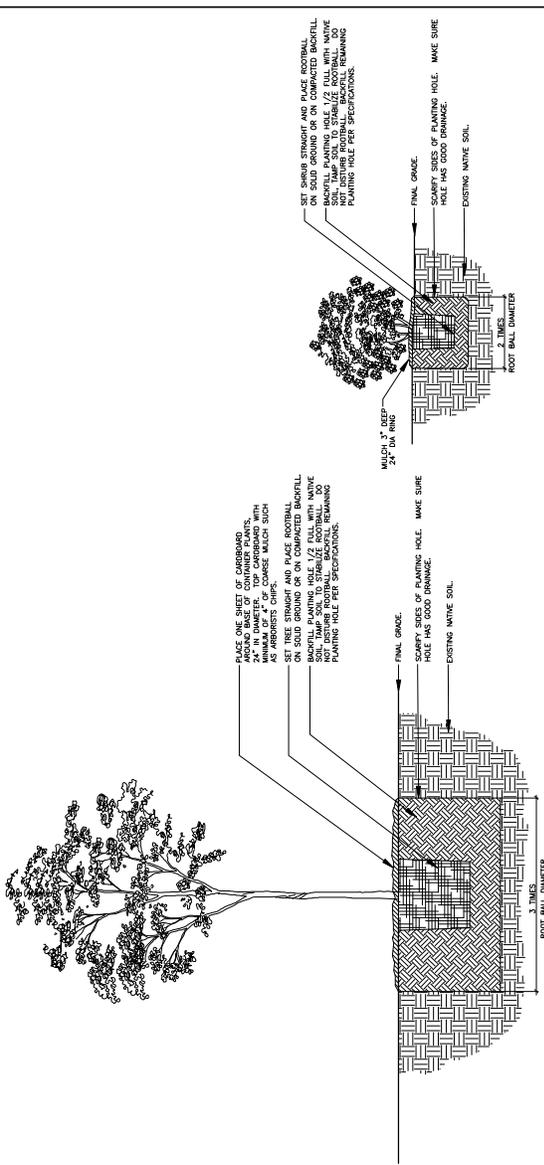
- Prior to construction, the limits of work will be clearly staked at 20-foot intervals and all temporary erosion and sedimentation controls in place.
- Prior to planting, blackberries shall be removed from the planting area.
- Following blackberry removal, place cardboard over soil and top with four inches of coarse wood chips.
- Species substitution shall not be made without approval of wetland biologist.
- Plants shall be locally grown (western Washington or Oregon), of normal health, vigorous, and free of weeds, diseases, insects, insect eggs and larvae.
- Container grown plants shall not be loose in container and shall not be pot-bound.
- B&B plant material shall not have cracked or mushroomed root balls.
- Root balls shall be firm, natural balls of earth of sufficient size to encompass the fibrous and feeding rooting system necessary for establishment and health of plant.
- Do not prune plants prior to delivery or planting.
- Take all precautions and customary good trade practices in preparing plants for transport. Cover plants transported on open vehicles with a protective covering to prevent wind burn.
- Protect plants from drying out. Bare root and B&B plant material shall have their roots kept moist at all times. Protect from freezing, wind, and sun. If planting is delayed by more than 24 hours, cover roots/root balls with sawdust, compost, or soil. Water plants as necessary.
- Water plants within 24 hours of planting.
- All receipts for labor and materials shall be retained for submittal to the County if requested.
- The bond holder shall replace any plants that die within the first year following approval of installation.

SHRUB AND TREE SOURCES

- STORM LAKE GROWERS
MONROE, WA
(360) 794-4842
- TADPOLE HAVEN NATIVE PLANTS
WOODINVILLE, WA
(425) 788-6100
- FORTH CORNER NURSERY
BELLINGHAM, WA
(360) 592-2250
- SOUND NATIVE PLANTS
OLYMPIA, WA
(360) 352-4122

- PLANTAS NATIVA
BELLINGHAM, WA
(360) 715-9655
- INSIDE PASSAGE SEEDS
PORT TOWNSEND, WA
(360) 385-6114
- FROSTY HOLLOW ECOLOGICAL RESTORATION
LANGLEY, WA
(360) 579-2332

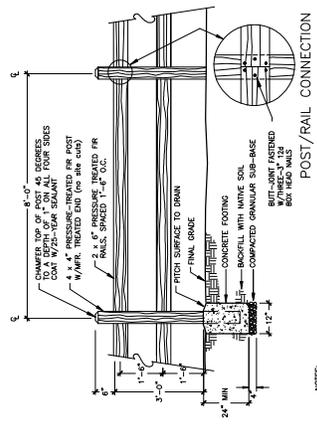
SEED SOURCES:



1 TREE PLANTING

2 SHRUB PLANTING

3 OPEN-RAIL FENCE



- NOTES:
- 1. FENCE TO BE GALV. WITH 1/4\"/>
- 2. TREAT WITH CLEAR PRESERVATIVE UPON COMPLETION OF INSTALLATION.
- 3. ALL FASTENERS TO BE GALVANIZED STEEL.

3 OPEN-RAIL FENCE

DRAWN BY KG		CHECKED BY	
SCALE AS NOTED		DATE 11.25.08	
PROJECTING.		PROJECTING.	
FIGURE 5		OF 5	
SPECIFICATIONS & DETAILS MAXINE KEESLING KIRKLAND, WASHINGTON			
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King County

Critical Areas Mitigation Bond Quantity Worksheet

Project Name: Keesling Lot 3 (AQ#07-102)

Date: 11/24/2008

Prepared by: t.opolka

Applicant: Maxine Keesling

Location: Keesling Lot 3

PLANT MATERIALS*

Type	Unit Price	Unit	Quantity	Description	Cost	
PLANTS: Potted, 4" diameter, medium	\$5.00	Each	0.00		\$ -	
PLANTS: Container, 1 gallon, medium soil	\$11.50	Each	220.00		\$ 2,530.00	
PLANTS: Container, 2 gallon, medium soil	\$20.00	Each	43.00		\$ 860.00	
PLANTS: Container, 5 gallon, medium soil	\$36.00	Each			\$ -	
PLANTS: Seeding, by hand	\$0.50	SY	0.00		\$ -	
PLANTS: Slips (willow, red-osier)	\$2.00	Each			\$ -	
PLANTS: Stakes (willow)	\$2.00	Each			\$ -	
PLANTS: Stakes (willow)	\$2.00	Each			\$ -	
					\$ -	
					\$ -	
* All costs include installation					TOTAL	\$ 3,390.00

INSTALLATION COSTS (LABOR, EQUIPMENT, & OVERHEAD)

Type	Unit Price	Unit	Quantity	Description	Cost
wood chips	\$37.88	CY	58.00		\$ 2,197.04
Decompacting till/hardpan, medium, to 6" depth	\$1.57	CY			\$ -
Decompacting till/hardpan, medium, to 12" depth	\$1.57	CY			\$ -
Hydroseeding	\$0.51	SY			\$ -
Labor, general (landscaping)	\$40.00	HR	20.00		\$ 800.00
Labor, general (construction)	\$40.00	HR	0.00		\$ -
Labor: Consultant, supervising	\$55.00	HR	20.00		\$ 1,100.00
Labor: Consultant, on-site re-design	\$95.00	HR			\$ -
Rental of decompacting machinery & operator	\$70.00	HR			\$ -
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			\$ -
Irrigation - temporary	\$3,000.00	Acre	0.20		\$ 600.00
Irrigation - buried	\$4,500.00	Acre			\$ -
Tilling topsoil, disk harrow, 20hp tractor, 4"-6" deep	\$1.02	SY			\$ -
					\$ -
					\$ -
TOTAL					\$ 4,697.04

HABITAT STRUCTURES*

ITEMS	Unit Cost	Unit	Quantity	Description	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			\$	-	
brush piles - obtained off-site	\$40.00	Each	0.00		\$	-	
Snags - anchored	\$400.00	Each			\$	-	
Snags - on site	\$50.00	Each	6.00		\$	300.00	
Snags - imported	\$800.00	Each			\$	-	
					\$	-	
					\$	-	
* All costs include delivery					TOTAL	\$	300.00

Monitoring, annual					\$ -
Larger than 1,000 sq.ft. but < 0.5 acre -buffer impact only	\$ 720.00	EACH	0.00	(8 hrs @ \$90/hr)	\$ -
Larger than 1,000 sq.ft. but < 0.5 acre with wetland or aquatic area impacts	\$ 900.00	EACH	5.00	(10 hrs @ \$90/hr)	\$ 4,500.00
Larger than 0.5 acre but < 1.0 acre -buffer impact only	\$ 900.00	EACH		(10 hrs @ \$90/hr)	\$ -
Larger than 0.5 acre but < 1.0 acre with wetland or aquatic area impacts	\$ 1,080.00	EACH		(12 hrs @ \$90/hr)	\$ -
Larger than 1 acre but < 5 acres - buffer and / or wetland or aquatic area impacts	\$ 1,620.00	DAY		(18 hrs @ \$90/hr)	\$ -
Larger than 5 acres - buffer and / or wetland or aquatic area impacts	\$ 2,400.00	DAY		(24 hrs @ \$90/hr)	\$ -
Maintenance and Monitoring Inspection (city), annual	\$362.25	EACH	4.00	\$144.90/hr)	\$ 1,449.00
Maintenance and Monitoring Inspection (city), final	\$579.60	EACH	1.00	(4 hrs @ \$144.90/hr)	\$ 579.60
TOTAL					\$ 8,778.60

Total	\$24,652.43
--------------	--------------------



February 20, 2009

Desiree Goble
City of Kirkland Planning and Community Development
123 – Fifth Avenue
Kirkland, WA 98033

Re: Slater Street Keesling Lot 3 Wetland Buffer Modification

The Watershed Company Reference Number: 060701.47

Dear Desiree:

Thank you for the opportunity to review the Wetland Buffer Mitigation Plan for the above-mentioned project. The plan consists of an eight-page report with figures and an appendix (bond quantity worksheet).

The plan is well prepared and addresses all criteria required by Kirkland Zoning Code Chapter 90 for wetland buffer modification. Only a few comments are warranted.

While blackberry vines dominate the buffer, there are a few native plants that should be protected during invasive weed clearing. Specifically, there is a large hazelnut tree in the southwest corner of the enhancement area. A cluster of wild rose is also found in this area. The roses are intermingled with the blackberry vines, so preservation of these should be undertaken only to the extent practicable.

The shrub and tree species and density are appropriate. No groundcover species are proposed. Most native groundcover species fair poorly in mitigation sites. However, sword fern appears to be the exception and would add value to this planting plan. No alteration of cover performance standards is needed despite this change.

Three large black cottonwood trees are shown as preserved off the southeast corner of the carport. These trees appear to be leaning towards or over the proposed house location and may pose a future hazard to the structure. These trees should be evaluated by a certified arborist and, if deemed hazardous, be “snagged” at a recommended height. Alternatively, complete removal with replacement trees may be acceptable per relevant Kirkland significant tree regulations.

The bond quantity worksheet lists 70 linear feet of chain link fence in addition to corner posts and a gate. The proposed split rail fence is wildlife-passable and sufficient for this

Slater Street Keesling Buffer Modification Review
Desiree Goble, City of Kirkland Planning
February 20, 2009
Page 2

plan. No additional fencing is necessary. If the applicant chooses additional chain link fencing, it need not be included in the bond quantity.

Recommendations

1. The plans should note that the hazelnut at the southwest corner of the planted area be preserved. Additionally, the plans should note that any other desirable native plants identified by the on-site biologist be protected where possible.
2. Add a modest number of sword ferns and/or other suitable groundcover species.
3. Evaluate potential hazard trees and propose a solution if needed.
4. Revise the bond quantity worksheet as needed.

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

Sincerely,



Hugh Mortensen, PWS
Senior Ecologist

2002



2005



2007



NATURAL GREENBELT PROTECTIVE EASEMENT

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

Grantee: The City of Kirkland, a municipal corporation.

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

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

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

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

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

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

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

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

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

DRAFT

(Partnerships Only)

OWNER(S) OF REAL PROPERTY

(Name of Partnership or Joint Venture)

By General Partner

By General Partner

By General Partner

(Partnerships Only)

STATE OF WASHINGTON)

) SS.
)

County of King

On this _____ day of _____, _____, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, _____ personally appeared

_____ and _____ to me, known to be _____ general _____ partners of

_____, the partnership that executed the Natural Greenbelt Protective Easement and acknowledged the said instrument to be the free and voluntary act and deed of each personally and of said partnership, for the uses and purposes therein set forth, and on oath stated that they were authorized to sign said instrument.

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

Notary's Signature

Print Notary's Name

Notary Public in and for the State of Washington, Residing at:

My commission expires: _____

(Corporations Only)

OWNER(S) OF REAL PROPERTY

(Name of Corporation)

By President

By Secretary

(Corporations Only)

STATE OF WASHINGTON)

) SS.

County of King)

On this _____ day of _____, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, _____ personally appeared

_____ and

_____ to

me, known to be the President and Secretary, respectively, of

_____, the

corporation that executed the Natural Greenbelt Protective Easement and acknowledged the said instrument to be the free and voluntary act and deed of said corporation, for the uses and purposes therein set forth, and on oath stated that they were authorized to sign said instrument and that the seal affixed is the corporate seal of said corporation.

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

Notary's Signature

Print Notary's Name

Notary Public in and for the State of Washington, Residing at:

My commission expires: _____



SAVE HARMLESS AGREEMENT - WETLAND

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

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

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

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

(Sign in blue ink)

(Individuals Only)

OWNER(S) OF REAL PROPERTY (INCLUDING SPOUSE)

(Individuals Only)

STATE OF WASHINGTON)

County of King

) SS.
)

On this _____ day of _____, _____, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, _____ personally appeared _____ and _____

_____ to me known to be the individual(s) described herein and who executed the Save Harmless Agreement - Wetland and acknowledged that _____ signed the same as _____ free and voluntary act and deed, for the uses and purposes therein mentioned.

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

Notary's Signature

Print Notary's Name

Notary Public in and for the State of Washington, Residing at: _____

My commission expires: _____

(Partnerships Only)

OWNER(S) OF REAL PROPERTY

(Name of Partnership or Joint Venture)

By General Partner

By General Partner

By General Partner

(Partnerships Only)

STATE OF WASHINGTON)

) SS.
)

County of King

On this _____ day of _____, _____, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, _____ personally appeared _____ and _____

_____ to me, _____ known to be general partners of _____, the partnership that executed the Save Harmless Agreement - Wetland and acknowledged the said instrument to be the free and voluntary act and deed of each personally and of said partnership, for the uses and purposes therein set forth, and on oath stated that they were authorized to sign said instrument.

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

Notary's Signature

Print Notary's Name

Notary Public in and for the State of Washington, Residing at:

My commission expires: _____

(Corporations Only)

OWNER(S) OF REAL PROPERTY

(Name of Corporation)

By President

By Secretary

(Corporations Only)

STATE OF WASHINGTON)

County of King

) SS.
)

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

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

Notary's Signature

Print Notary's Name

Notary Public in and for the State of Washington, Residing at: _____

My commission expires: _____

The foregoing Agreement is accepted by the City of Kirkland this _____ day of _____, _____

CITY OF KIRKLAND

BY: _____



International Forestry

CONSULTANTS, INC.

11415 NE 128th Street, Suite 110, Kirkland, WA 98034 USA
(425) 820-3420 • Fax (425) 820-3437 • www.inforestry.com

TREE PLAN FOR MAXINE KEESLING LOT 3 Kirkland, WA

Located southeast of the intersection of Slater Ave. and NE 97th Street



September 11, 2008

Table of Contents

1. Introduction	1
2. Description.....	1
3. Methodology	1
4. Observations.....	2
5. Discussion	2
6. Tree Protection Measures.....	2
7. Tree Replacement	3
8. Monitoring Tree Health	3

Appendix

Site/Tree Photos – pages 5 - 7

Site Plan Specifications (To Be Incorporated onto Site Plan) – page 8

Tree Summary Table - attached

Copy of Site Plan - attached

1. Introduction

International Forestry Consultants (INFO) was contacted by Maxine Keesling on September 5th, and was asked to compile a 'Tree Plan report' for a portion of 1 parcel located within the City of Kirkland, WA.

The proposed development will be in the north portion of Lot 3. Our assignment is to prepare a written report on present tree conditions, which is to be filed with the preliminary permit application.

This report encompasses all of the criteria set forth under the City of Kirkland's tree regulations (Chapter 95 of the Kirkland Zoning Code). The required minimum tree density for lot 3 (16,227 sq. ft.) is 11 tree credits.

Date of Field Examination: September 9, 2008

2. Description

The subject property is vacant. No improvements were identified on the parcel. The subject lot abuts Forbes Lake. The eastern portion of the lot has been classified as a wetland.

It is my understanding that only the northwest portion of lot 3 will be developed. This report has been compiled on that premise. This area has been flagged in the field with red ribbon and is shown on the attached plan.

13 "significant" trees were located on Lot 3. 10 of these are black cottonwood trees. The only noteworthy trees on the property are 2 mature western red cedars, which are situated near the southwest corner in the area that will not be developed. The majority of trees on the portion to be developed are immature black cottonwood and red alder. The trees on lot 2 are comprised of young black cottonwoods, 8" to 16" DBH.

The east portion of lot 3 is covered mainly with invasive species of blackberry and morning glory, with a minor component of natives - baldhip rose, spirea (hardhac) and elderberry.

There are no concerns regarding trees on neighboring properties whose branches encroach onto the subject property. None were identified.

All of the significant trees on the parcel were identified in the field with a numbered aluminum tag, attached to the tree at DBH (diameter at breast height, 4.5 feet above ground). The cluster of 7 black cottonwood trees in the south portion was not tagged.

3. Methodology

Each tree in this report was visited. Tree diameters were measured by tape. The tree heights were measured using a Spiegel Relaskop. Each tree was visually examined for defects and vigor. The tree assessment procedure involves the examination of many factors:

- The crown of the tree is examined for current vigor. This is comprised of inspecting the crown (foliage, buds and branches) for color, density, form, and annual shoot growth, limb dieback and disease. The percentage of live crown is estimated for coniferous species only and scored appropriately.
- The bole or main stem of the tree is 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.
- The root collar and roots are inspected for the presence of decay, insects and/or damage, as well as if they have been injured, undermined or exposed, or original grade has been altered.

Based on these factors a determination of viability is made. Trees considered not viable are trees that are in a poor condition due to disease, extensive decay and/or cumulative structural defects, which exacerbate failure potential.

A “viable” tree is a tree found to be in good health, in a sound condition with minimal defects and is suitable for its location. Also, it will be wind firm if isolated or left as part of a grouping or grove of trees.

4. Observations

There are only 2 trees (#1 & #2) greater than 6” DBH on the portion of the lot to be developed. Both of these are black cottonwood. Tree #1 is in poor condition and considered non-viable. It has a recent broken top and is suppressed by tree #2. Tree #2 has forked top and is considered a moderate to high-risk tree.

Tree #3 is a mature black cottonwood in the center of the west portion of lot 3. This tree leans toward the proposed building footprint. Removal is recommended.

Trees #4 and #5 are mature western red cedars. Both are completely covered in ivy, which made an inspection of the lower trunk difficult. Decay was identified on the lower trunk of #5, and similar is expected for #4, which is typical for the species. Both trees are suppressed and overtopped by the cluster of cottonwood trees to the east. The top of tree #5 has recently died back. Vigor appears low. This tree should be monitored over the years. At this time, tree #4 is considered to be in fairly good condition and tree #5 only in fair condition. Both are low risk and feasible to retain.

Tree #6 is actually 2 trees, which are Douglas-firs growing directly adjacent to each other. The largest tree is 12” DBH. Damage to the root crown occurred during grade work on the adjacent property that was recently developed. Long-term effects of this injury could lead to pre-mature mortality. At this time, these are in fair condition and a low risk.

The majority of tree cover on this lot is resulting from a cluster of 7 closely spaced large cottonwood trees, identified on the plan. It is reasonable to retain this cluster, although you need to be aware that these trees will shed large branches from time to time. These trees appear healthy with minimal structural defects. The root systems are not subjected to saturated soils. Failure risk for the entire cluster is considered moderate, due to specie characteristics.

5. Discussion

3 trees will need to be removed for this proposal – trees #1, #2 and #3. All of the remaining trees on the south portion of the lot will be retained. A tree protection barrier should be installed as per the attached plan. Grade cuts and alterations for the new residence will not have adverse effects on preserved trees.

Limits of disturbance for the subject trees have been evaluated on the ground. The extent of driplines (farthest reaching branches) and recommended “Limits of Disturbance” can be found on the tree summary table at the back of this report. This information, as well as the recommended positioning of tree protection fencing has been plotted on a copy of the site plan, which is attached and part of this report.

The removal of ivy from all preserved trees is recommended.

6. Tree Protection Measures

The following guidelines are recommended to ensure that the designated space set aside for the preserved trees are protected and construction impacts are kept to a minimum. Standards have been set forth under Kirkland Zoning Code 95.35.6 of Chapter 95. Please review these standards prior to any development activity.

1. Tree protection fencing should be erected at the drip-lines prior to moving any heavy equipment on site. Doing this will set clearing limits and avoid compaction of soils within root zones of retained trees. Fencing should only be moved to the "Limit of Disturbance" just prior to commencement of work.
2. Any clearance pruning required should also occur before any large equipment is brought on site. Any branches that may be damaged should be tied back or properly pruned back if warranted.
3. Excavation limits should be laid out in paint on the ground to avoid over excavating.
4. Excavations within the drip-lines or up to the "Limits of Disturbance" shall be monitored by a qualified tree professional so necessary precautions can be taken to decrease impacts to tree parts. A qualified tree professional shall monitor excavations when work is required and allowed within the "limits of disturbance".
5. To establish sub grade for foundations, curbs and pavement sections near the trees, soil should be removed parallel to the roots and not at 90 degree angles to avoid breaking and tearing roots that lead back to the trunk within the drip-line. Any roots damaged during these excavations should be exposed to sound tissue and cut cleanly with a saw. Cutting tools should be sterilized with alcohol.
6. Areas excavated within the drip-line of retained trees should be thoroughly irrigated weekly during dry periods.

7. Tree Replacement

Supplemental trees should not be required to meet the minimum tree density requirement for this lot. The tree density calculation can be found on the last page of this report (site plan specifications). The trees to be retained exceed the required minimum density for the lot. However, tree plantings may be preferred to enhance new landscaping. The site is suitable for a large variety of ornamental tree species. The best replacement tree locations for this site are on the perimeter and around the dwelling where growing space is available. Refer to the *Kirkland Plant List* for desirable species.

For ornamental trees to be planted in the front and side yards, trees that mature at 20 to 40 feet are recommended. These trees could include the many cultivated varieties of red maple, cherry, plum, Callery pear, crab apple, ash, hawthorn, dogwood, and magnolia. Japanese stewardia, European hornbeam, Tartarian maple, or Amur maple are also smaller noteworthy specimen trees.

The required minimum size of supplemental trees shall be at least 6 feet in height for conifer species and at least 2 inches in caliper for deciduous trees. Caliper is measured at 1-foot above ground. For planting and maintenance specifications, refer to chapters 95.45 and 95.50 of the Kirkland Zoning Code.

8. Monitoring Tree Health

As your trees mature, you should be aware of the following conditions that may be indicators of declining tree health.

- Appearance of fungal fruiting bodies which will appear as small "shelves" on the bole and branches or mushroom-like growths near the base of the tree.
- Dead or soft flaky wood in cavities or under the bark.
- Thinning crowns.
- The appearance of yellow or orange needles other than near the stem. (Cedar trees may exhibit orange needles in the fall; called "flagging" that is a normal response to drought and not a symptom of long-term decline.)

- Leaning stems, extraordinary bark flaking, stem swelling or any other abnormalities on the bole.
- Extraordinary cone production.
- Insect entry holes. These are about the size of a pencil lead and probably are accompanied by “sawdust”.
- Premature leaf-fall or the appearance of dead limb tips. Droopy top or thinning crown. Dying treetop.

There is no warranty suggested for any of the trees subject to this report. Weather, latent tree conditions, and future man-caused activities could cause physiologic changes and deteriorating tree condition. Over time, deteriorating tree conditions may appear and there may be conditions, which are not now visible which, could cause tree failure. This report or the verbal comments made at the site in no way warrant the structural stability or long term condition of any tree, but represent my opinion based on the observations made.

Nearly all trees in any condition standing within reach of improvements or human use areas represent hazards that could lead to damage or injury.

The client is encouraged to contact his/her local government jurisdiction to get information regarding permits required before removing or trimming trees and shrubs.

Please call if you have any questions or I can be of further assistance.

Sincerely,



Bob Layton
ISA Certified Arborist #PN-2714A

Trees #1 and #2



Interior of Lot 3



North line of lot 3



Western red cedars – trees #4 and #5 – covered in ivy



Cluster of mature cottonwood



Crown of cottonwood cluster



City of Kirkland-Tree Protection Standards

1. Tree Protection Fencing shall be erected at prescribed distance per arborist report. Fences shall be constructed of chain link and be at least 4 feet high.
2. Install highly visible signs on protection fencing spaced no further than 15 feet apart. Signs shall state "Tree Protection Area-Entrance Prohibited", and "City of Kirkland" code enforcement phone number.
3. No work shall be performed within protection fencing unless approved by Planning Official. In such cases, activities will be approved and supervised by a "Qualified Professional".
4. The original grade shall not be elevated or reduced within protection fencing without the Planning Official authorization based on recommendations from a qualified professional.
5. No building materials, spoils, chemicals or substances of any kind will be permitted within protection fencing.
6. Protection Fencing shall be maintained until the Planning Official authorizes its removal.
7. Ensure that any approved landscaping within the protected zone subsequent to the approved removal of protection fencing be performed with light machinery or hand labor.

In addition to the above, the Planning Official may require the following:

- a. If equipment is authorized to operate within the root zone, the area will be mulched to a depth of 6" or covered with plywood or similar material to protect roots from damage caused by heavy equipment.
- b. Minimize root damage by excavating a 2-foot deep trench, at edge of protection fencing to cleanly sever the roots of protected trees.
- c. Corrective pruning to avoid damage from machinery or building activity.
- d. Maintenance of trees throughout construction period by watering and fertilization.

Trees on Lot 3

Tag #	Species	DBH	Condition	Credits	Proposal
1	black cottonwood	15	fair-poor	na	Remove
2	black cottonwood	34	fair	na	Remove
3	black cottonwood	42	fair	na	Remove
4	western red cedar	29	fair	10.5	Retain
5	western red cedar	33	fair	12.5	Retain
6	Douglas-fir	12	fair	2.0	Retain
	Cluster of 7 large cottonwood	16-40	fair	42	Retain

Tree Density Calculation

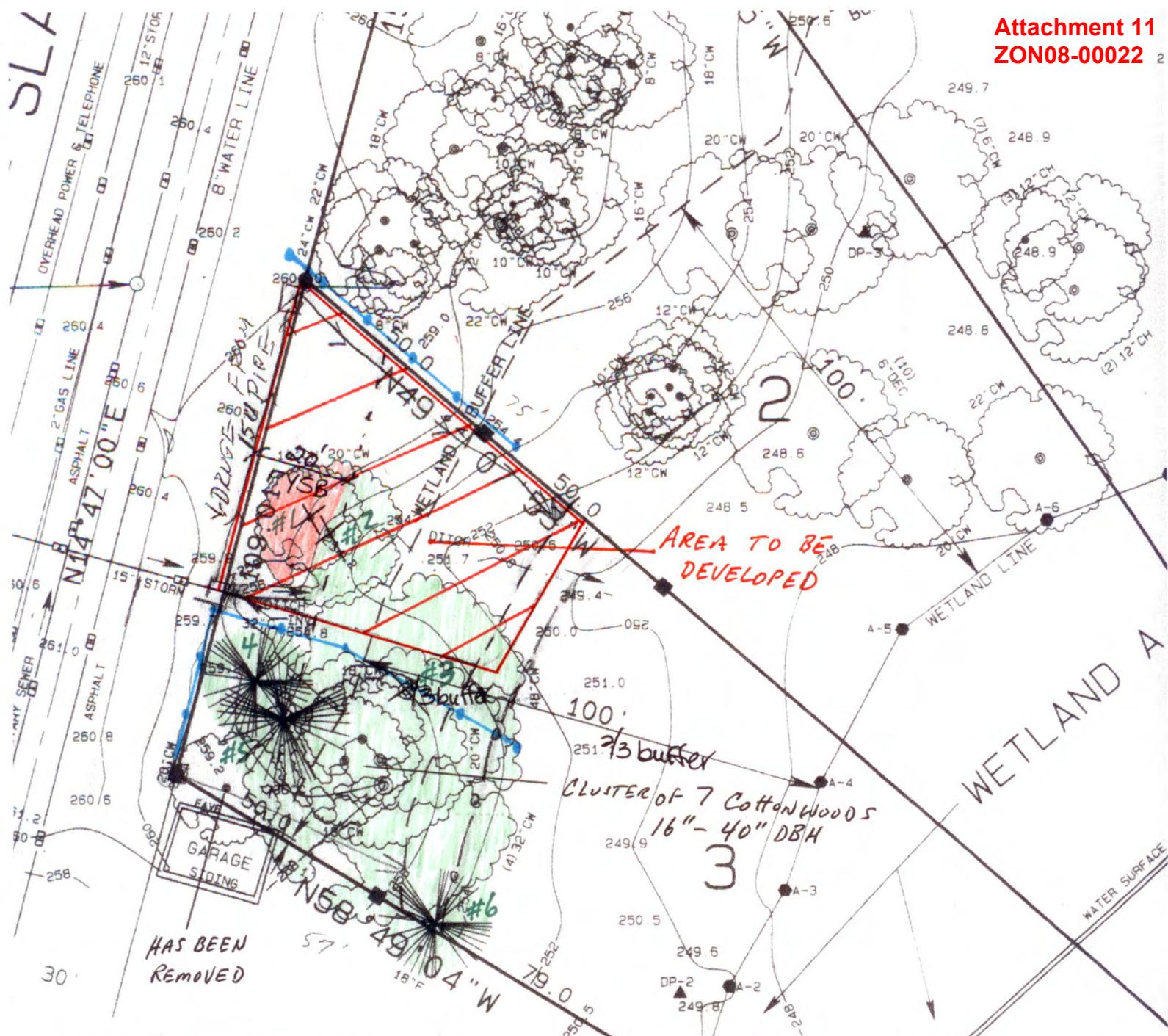
Lot Size – 7,500 sq.ft.

$16227/43560 \times 30 = 11.2$

Required Minimum Tree Density = 11 tree credits

Tree credits Retained = 67

Supplemental Tree Credits Required = 0



Scale 1" = 30'
Tree Legend

- # 1 Tree #
- Non-viable
- Viable

Tree Protection Barrier

DDDED W	2-06-08	JEFF HARSTAD
WAT		
WETLA	1-16-08	JEFF HARSTAD
A-9 AND REMOVING "OLD" POINTS A-1 TO A-20.		
D A-34.		
REVISIONS	DATE	APPROVAL

*rec'd
2-9-08
w/ BUFFER
LINED*

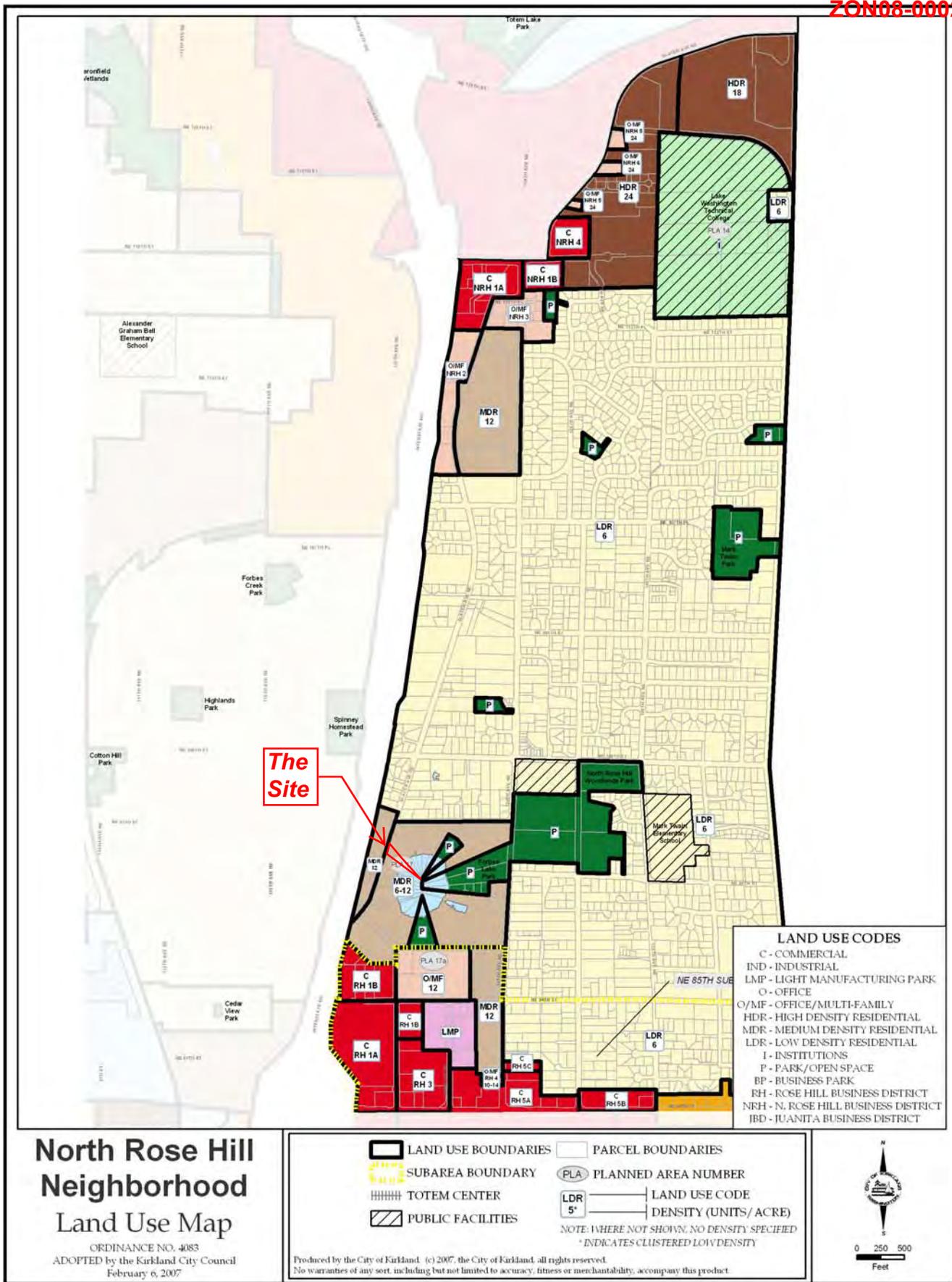


Figure NRH-4: North Rose Hill Land Use

