



October 24, 2014

Christian Geitz
City of Kirkland
Planning and Community Development
123 – 5th Avenue
Kirkland, WA 98125

Re: Wallstrom Property Wetland Delineation & Classification Review
The Watershed Company Ref. No.: 120622.50

Dear Christian:

This letter presents the findings of an environmental review of a wetland delineation and classification study completed by Wetland Resources, Inc. on behalf of Krystal Wallstrom. The study area consists of one parcel located at 10841 NE 108th Street (parcel number 1235700080).

The following document was reviewed for this study:

Sensitive Areas Study for Wallstrom – NE 108th Street, Kirkland, WA, prepared by Wetland Resources, Inc. October 3, 2014.

I visited the site on October 23, 2014 to verify the wetland boundary and classification findings reported by Wetland Resources, Inc. .

The wetland delineation boundary was field-verified following the Corps Manual and Regional Supplement and determined to be accurate. The Type 2 wetland classification, which is consistent with the approved delineation study on the same wetland done for the neighboring property to the west, was also confirmed.

There is also a small tributary stream to Forbes Creek that enters the property near the eastern property line and flows roughly parallel to the wetland boundary for most of its on-site length. The stream is wider than 2-feet and of a low enough gradient that salmonids and other fish from Forbes Creek could use the channel. In Primary Basins such as Forbes Creek Basin, the standard wetland buffer and Type 2 stream buffers are both 75-feet. It is not necessary to delineate and flag this tributary since the wetland buffer is more encumbering to the site. However, the Wetland Resources report should be revised to document the presence of this tributary stream channel.

The applicant may proceed with surveying the wetland boundary flags with one noted clarification. The wetland boundary along the western property line was not flagged; it extends north, up to the existing large black cottonwood tree as shown on the attached copy of the survey for that site (Dawson short plat). The wetland boundary on the property line has a buffer that is more encumbering to the Wallstrom property than the Wetland Resources flags would indicate. Future submittals should display the standard 75-foot wetland buffer as it projects north and east from the northernmost extent of the wetland boundary. The surveyor for the Dawson Short Plat may be able to provide the file with the delineation data. The name listed on the plan is Greene Land Surveying in Edmonds, (425) 697-6604; job number 2005.20.

It appears two or more deciduous trees have been removed within the buffer of Wetland A. The trees are evident in the May 2013 aerial photo on Google Earth. Also, a new fence was built on the eastern property line. Finally, a raised bed garden with gravel paths appears to have been recently installed abutting the wetland boundary and adjacent to the new fence.

I recommend the City accept the Wetland Resources report and verify the wetland boundary along the western property line is correctly displayed on the forthcoming survey. Please call if you have any questions or if I can provide you with any additional information.

Sincerely,



Hugh Mortensen, PWS
Senior Ecologist

From: jackiemiller.1@netzero.net
Sent: Monday, November 14, 2016 8:20 AM
To: Susan Lauinger
Subject: Permit #SUB16-01624 & SAR16-01623

Hello,

My name is Jacqueline Miller, I live at 10856 NE 108th St Kirkland, WA 98033 email : jackiemiller.1@netzero.com

This is regarding Permit #SUB16-01624 & SAR16-01623.

I am opposed to reducing the wet land buffer from 75' to 50'.

The wetlands are to be conserved/protected not reduced. Wetland buffers are essential for wetlands protection. Wetland buffers also provide important habitat for wildlife which utilize wetlands and buffer areas for essential life needs. Buffers reduce wetland impacts by moderating impacts of stormwater runoff including stabilizing soil to prevent erosion; filtering suspended solids, nutrients, and harmful or toxic substances; and moderating water level fluctuations. They reduce the adverse impacts of human disturbance on wetland habitat including blocking noise and glare; reducing sedimentation and nutrient input; reducing direct human disturbance from dumped debris, cut vegetation, and trampling; and providing visual separation. They also provide essential habitat for wetland-associated species for use in feeding; roosting; breeding and rearing of young; and cover for safety, mobility and thermal protection.

Land uses associated with significant construction and post-construction impacts need greater buffers. Construction impacts include erosion and sedimentation, debris disposal, vegetation removal and noise. Post-construction impacts are variable depending on the land use, but residential land use, in particular, can have significant impacts. Residential land use is associated with yard maintenance debris, domestic animal predation, removal of vegetation and trampling. Wetland areas and their buffers should not be included in residential lots.

Thank you,
Jacqueline Miller

CRITICAL AREAS MITIGATION PLAN

WALLSTROM RESIDENTIAL PROJECT

KIRKLAND, WASHINGTON

Prepared For:
KRISTAL & STEVE WALLSTROM

Prepared By:
TALASAEA CONSULTANTS, INC.
Woodinville, Washington

12 May 2016

Critical Areas Mitigation Plan
Wallstrom Residential Project
Kirkland, Washington

Prepared For:
Kristal & Steve Wallstrom
10841 NE 108th Street
Kirkland, Washington 98033

Prepared By:
Talasaea Consultants, Inc.
15020 Bear Creek Road NE
Woodinville, Washington 98077
(425) 861-7550

12 May 2016

EXECUTIVE SUMMARY

REPORT TYPE: Critical Areas Mitigation Plan

REPORT NAME: Wallstrom Residential Project

SITE LOCATION: The Wallstrom's property is a 1.26-acre parcel located at 10841 Northeast 108th Street within the City of Kirkland, Washington. The King County Tax Parcel Number is 12357-0080. The Public Land Survey System location of the project is the SW ¼ of NE ¼ of Section 32, T26N, R5E, Willamette Meridian.

PROJECT STAFF: Bill Shiels, Principal; Jennifer M. Marriott, Senior Ecologist; Alicia Schultz, Mitigation Designer

CLIENT: Kristal & Steve Wallstrom

DETERMINATION: Critical areas were previously evaluated by Wetland Resources (13 November 2014) and vetted by The Watershed Company (24 October 2014). Both accounts are attached as appendices.

PROJECT DESCRIPTION and CRITICAL AREA IMPACTS: The Wallstrom family wishes to subdivide their parcel into two, and add a second single family home within the new parcel. This project will not directly impact any critical areas, but will require a modification to the wetland buffer that is currently maintained as lawn with a small garden.

PROPOSED MITIGATION: Mitigation will be provided by restoring approximately 13,255 sf of wetland buffer that is currently a maintained lawn. This area will be grubbed of all non-native vegetation and replanted with native trees, shrubs, and grasses. Critical area signage and a perimeter fence will be provided around the on-site wetland and its buffer.

MAINTENANCE and MONITORING: Long term monitoring and maintenance of the mitigation areas will be provided according to City requirements.

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- Appendix A:** Sensitive Areas Study, Wetland Resources, Inc., dated 13 November 2014
- Appendix B:** Wallstrom Property Wetland Delineation & Classification Review, The Watershed Company, dated 24 October 2014

CHAPTER 1. PROJECT OVERVIEW

1.1 Document Purpose

The proposed mitigation plan was designed in accordance with the policies and guidance provided in the Critical Areas Regulations set forth in the Kirkland Zoning Code (KZC), Chapter 90 (City of Kirkland May 2014). Reference the Sensitive Areas Study dated 14 November 2014 prepared by Wetland Resources, Inc. for information regarding wetland and stream determinations and their corresponding buffers, and the subsequent approval provided by The Watershed Company (Appendices A and B).

This report will provide and describe the following information:

- Project location;
- Proposed mitigation;
- Goals, objectives and performance standards;
- Monitoring program;
- Maintenance and Contingency plan; and
- Summary.

1.2 Project Location

The Wallstrom's property is a 1.26-acre parcel located at 10841 Northeast 108th Street within the City of Kirkland, Washington (**Figure 1**). The King County Tax Parcel Number is 12357-0080. The Public Land Survey System location of the project is the SW $\frac{1}{4}$ of NE $\frac{1}{4}$ of Section 32, T26N, R5E, Willamette Meridian.

1.3 Project Description and Critical Area Impacts

The Wallstroms are requesting to subdivide their parcel and build a single family residence within the new parcel. An unnamed tributary to Forbes Creek flows across the southern portion of the parcel that was classified as a Class 2 stream capable of supporting salmonids. This stream was identified as having a 75-foot standard buffer as it occurs within a primary basin (Forbes Creek). A large adjacent wetland occurs north of the stream that extends across the the south boundary of the Site that was classified as a Type 2 wetland. This wetland was identified as having 75-foot standard buffers as it occurs within a primary basin (Forbes Creek). Standard buffers for these two (2) critical areas encompass roughly half of the parcel, limiting the potential for expansion into the new parcel given other development requirements.

No wetlands or streams will be impacted for the proposed work, but minor modifications to the wetland buffer onsite will be necessary to provide a reasonably sized lot that can be built upon while remaining consistent with the neighborhood appearance. Critical area buffers onsite are currently maintained as lawn and have been for at least 20 years. Buffer enhancement activities performed in conjunction with the proposed buffer reduction will be a substantial improvement over the current condition to buffer quality. A total of 13,255 square feet of buffer will be enhanced to compensate for a standard 1/3 reduction (6,336 sf) in buffer width from 75-feet to 50-feet.

CHAPTER 2. PROPOSED MITIGATION

2.1 Agency Policies and Guidance

The mitigation proposed for critical areas impacts is in accordance with the following policies, codes, and regulatory guidance:

- Kirkland Zoning Code, Chapter 90 – Drainage Basins.

2.2 Proposed Mitigation

Buffers for both a stream and a wetland extend onto the Site. The full stream buffer will remain intact within the reduced wetland buffer, so this mitigation only references a wetland buffer reduction and its subsequent compensation. However, the enhancement of the wetland buffer will also positively impact the stream buffer since much of these areas overlap. The Project will reduce the onsite wetland buffer from the standard 75 feet to 50 feet, a reduction of 1/3, consistent with KZC 90.100.1b. The remaining areas of wetland buffer onsite will be enhanced through the removal of lawn grasses and planting of native plant species to compensate for the allowable buffer reduction. An existing garden is currently located within the remaining buffer and will be relocated outside of the critical area buffers. The garden area will be restored in conjunction with the other buffer enhancement activities (**Figure 2**).

The mitigation design took into account habitat diversity needs and the proximity of the existing and proposed homes. Any plantings that remove the maintained lawn and provide a cover of native vegetation will be a significant improvement from the current condition for both habitat and water quality. For safety concerns, large trees are restricted to the back half of the buffer to minimize the future risk of trees falling onto structures or where children may be playing.

An area along the outer portion of the buffer will be seeded with a native bunchgrass/wildflower blend to provide an open meadow setting for diversity of habitat structure and available niches onsite for wildlife usage. This area of blended annual and perennial bunchgrasses and wildflowers will need to be mowed each fall to prevent the incursion of woody species. This portion of the restored buffer is expected to provide habitat for a variety of medium to small mammals, as well as birds. In addition, it should provide excellent foraging grounds for pollinators in addition to the woody species planted. Upon cessation of mowing, in the absence of natural wildfires, this meadow area would naturally evolve into a forested area, consistent with the typical climax community in this region.

This report is intended to provide the detailed mitigation plan for the wetland buffer enhancement proposed to occur onsite. Minor enhancement activities are proposed within the wetland through the planting of strategically placed conifer trees that will shade out the reed canary grass as they mature.

Buffer Enhancement

Approximately 13,255 sf of the on-site wetland buffer will be restored with native vegetation species. Buffer restoration measures in this area will include:

- Remove existing garden and lawn from within buffer
- Hydroseeding an area with a Washington perennial/annual native flower and bunchgrass blend to include 45% native bunchgrass species, 30% native wildflowers, and 25% native perennial lupine species,
- Planting Sitka spruce (*Picea sitchensis*), western red cedar (*Thuja plicata*), and western hemlock (*Tsuga heterophylla*) trees,

- Planting black cottonwood (*Populus balsamifera*), quaking aspen (*Populus tremuloides*), and Pacific willow (*Salix lasiandra*),
- Planting 6 species of massing shrubs with proposed species to include baldhip rose (*Rosa gymnocarpa*), Nootka rose (*Rosa nutkana*), evergreen huckleberry (*Vaccinium ovatum*), scouler willow (*Salix scouleriana*), salmonberry (*Rubus spectabilis*), and snowberry (*Symphoricarpos albus*) planted 4' O.C. (except scouler willow), totaling 262 shrubs.
- Planting vine maple (*Acer circinatum*), Pacific dogwood (*Cornus nuttallii*), Bittercherry (*Prunus emarginata*) and red current (*Ribes sanguineum*) within the buffer area, totaling 18 plants, and
- Providing 3 inches of wood mulch throughout the enhanced buffer area, except in the meadow habitat.

2.3 Mitigation Goals, Objectives and Performance Standards

The goal of the mitigation plan is to enhance the functions and values to the wetland buffer through the removal of invasive species and plantings of native plant species. To accomplish this goal, the proposed mitigation plan will:

- Restore 13,255 sf of wetland buffer.

Mitigation actions will be evaluated through the following objectives and performance standards. Mitigation monitoring will be performed by a qualified biologist.

Objective A: Create structural and plant species diversity in the wetland buffer mitigation area.

Performance Standard A1 (Forested component): At least 3 species of desirable native woody plant species will be present in the mitigation area outside of the meadow area during the monitoring period. Percent survival of planted woody species must be at least 100% at the end of Year 1 (per contractor warranty), and at least 80% for each subsequent year of the monitoring period.

Performance Standard A2 (Forested component): Total percent aerial woody plant coverage in the mitigation enhancement areas outside of the meadow area must be at least 50% by Year 4 and 80% by Year 5. Woody coverage may be comprised of both planted and recolonized native species; however, to maintain species diversity, at least 8 species of native woody species shall have an aerial cover of at least 10 square feet.

Performance Standard A3 (Meadow component): Total percent aerial herbaceous plant coverage in the meadow component of the mitigation area will be at least 30% by Year 1 and 75% by Year 5. Herbaceous coverage may be comprised of both planted and recolonized species; however to maintain species diversity, at least 5 species of forbs and grasses shall have an aerial cover of at least 5 square feet.

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

Performance Standard B1: After construction and for the entirety of the monitoring period, exotic and invasive plant species will be maintained at levels below 20% total cover throughout the mitigation buffer areas. These species include Scot's broom, Himalayan and evergreen blackberry, purple loosestrife, hedge bindweed, Japanese knotweed, reed canarygrass and creeping nightshade.

2.4 Mitigation Design Elements

2.4.1 Removal of Existing Lawn and Garden

The wetland buffer is currently maintained lawn, which will be removed and planted with native plant species.

2.4.2 Clearing and Grubbing Invasive Species

Invasive species such as Himalayan blackberry shall be completely grubbed out from buffer enhancement area, as necessary. Grubbing shall be by either hand or machine, depending on access and the conditions of the area to be grubbed. Talasaea shall review grubbing areas with contractor prior to work to determine areas of desirable native vegetation to remain, and which areas may be suitable for grubbing by machine. All grubbing work shall avoid damage to remaining native vegetation. Roots of invasive species shall be entirely grubbed out to the maximum extent practicable. All vegetative debris from grubbing operations shall be disposed of off-site at an approved dump location.

2.4.3 Plantings

A variety of native tree, shrub, groundcover, and herbaceous species will be planted in the wetland buffer mitigation area (**Figure 3**). Plant species have been chosen for a variety of qualities, including: adaptation to specific water regimes, value to wildlife, value as a physical or visual barrier, pattern of growth (structural diversity), and aesthetic values. Native species were chosen to increase both the structural and species diversity of the mitigation areas, thereby increasing the value of the area to wildlife for food and cover. Plant materials will consist of a combination of bare-root stock (if available), containers, and custom seed blends. A full plant list with the proposed plant species, including quantities, size, and spacing, is provided on **Figure 4**.

2.4.4 Temporary Irrigation System

A temporary irrigation system is not anticipated to be needed for enhancement plantings within existing vegetated buffer areas. Plantings shall be installed in the dormant season to help reduce transplant shock and encourage successful establishment. Plants shall be watered immediately after planting, and shall be provided with supplemental irrigation during the dry season if drought stress is evident during the establishment period (generally the first two growing seasons after planting). Supplemental irrigation can be provided by hand if necessary. A soil moisture retention agent may be incorporated into the backfill of planting pits to help minimize the potential for plant desiccation in the mitigation areas.

2.4.5 Mulch

The Client shall provide 3 inches of medium bark mulch throughout the entire site, excluding the meadow. Mulch shall be derived from fir, pine or hemlock species and shall not contain trash, rocks, or other debris that may be detrimental to plant growth.

2.4.6 Critical Area Fence and Signs

Permanent fencing and critical areas signs shall be installed at the perimeter of all wetland and stream buffers on the site. The fencing will be a rail style fence, split or 2-board type.

CHAPTER 3. CONSTRUCTION MANAGEMENT

3.1 Mitigation Construction Sequencing

The following provides a general sequence of activities anticipated to be necessary to complete this mitigation project. Some of these activities may be conducted concurrently as the project progresses.

1. Conduct a site meeting between the contractor, Talasaea Consultants, and the owner's representative to review the project plans,
2. Survey clearing limits and wetland boundary, flag and protect vegetation to remain,
3. Install silt fence and any other erosion and sedimentation control BMPs necessary for work in the critical area buffers,
4. Remove existing lawn,
5. Clear and grub non-native/invasive vegetation from the wetland buffer,
6. Inspect plant stock and review plant layout with contractor,
7. Install plant material as indicated on the planting plan,
8. Provide 3-inches of mulch throughout the entire site (except the meadow),
9. Complete site cleanup,
10. Install split-rail fence and critical area signs.

3.2 Post-Construction Approval

Talasaea Consultants shall notify the City of Kirkland in writing when the mitigation planting is completed to set up for a final site inspection and subsequent approval. Once final approval is obtained in writing from the City of Kirkland, the monitoring period will begin.

3.3 Post-Construction Baseline Assessment

A qualified wetland ecologist/biologist shall conduct a post-construction assessment after receipt of the post-construction approval from the City of Kirkland. The purpose of this assessment will be to establish baseline conditions at Year 0 of the required monitoring period. A Baseline Assessment Report, which will include as-built drawings, will be submitted to the City. The as-built plan set will depict any field changes to the mitigation plan (planting locations, habitat features, etc.) from the original approved mitigation plan.

CHAPTER 4. MONITORING PLAN

4.1 Monitoring Schedule

Pursuant to KZC 90.55(4) – Compensatory Mitigation, monitoring of the mitigation areas will be conducted for a minimum of five years for the City according to the schedule presented in **Table 1**.

1. Monitoring will be performed by a qualified biologist.

Table 1. Projected Schedule for Performance Monitoring and Maintenance Events

Year	Date	Maintenance Review	Performance Monitoring	Report Due to City
BA ¹	Winter/Spring	X	X	X
1	Spring	X	X	
	Fall	X	X	X
2	Spring	X		
	Fall	X	X	X
3	Spring	X		
	Fall	X	X	X
4	Spring	X		
	Fall	X	X	X
5	Spring	X		
	Fall	X	X	X ²

¹ BA = Baseline Assessment following construction completion.

² Obtain final approval from City of Kirkland (presumes performance criteria are met).

4.2 Monitoring Reports

Each monitoring report will adhere to applicable City of Kirkland requirements. The reports will include: 1) Project Overview, 2) Requirements, 3) Summary Data, 4) Maps and Plans, and 5) Conclusions. If the performance criteria are met, monitoring for the City will cease at the end of year five, unless objectives are met at an earlier date and the City accepts the mitigation project as successfully completed.

4.3 Monitoring Methods

The following monitoring methods will be used to evaluate the approved performance standards.

4.3.1 Methods for Monitoring Vegetation Establishment

Vegetation monitoring methods may include counts; photo-points; random sampling; sampling plots, quadrats, or transects; stem density; visual inspection; and/or other methods deemed appropriate by the City. Vegetation monitoring components shall include general appearance, health, mortality, colonization rates, percent cover, percent survival, volunteer plant species, and invasive weed cover.

Permanent vegetation sampling plots, quadrats, and/or transects will be established at selected locations to adequately sample and represent all of the plant communities within the mitigation project areas. The number, exact size, and location of transects, sampling plots, and quadrats will be determined at the time of the baseline assessment.

Percent areal cover of woody vegetation will be evaluated through the use of point-intercept sampling methodology. Using this methodology, a tape will be extended between two permanent markers at each end of an established transect. Trees and shrubs intercepted by the tape will be identified, and the intercept distance recorded. Percent cover by species will then be calculated by adding the intercept distances and expressing them as a total proportion of the tape length.

The established vegetation sampling locations will be monitored and compared to the baseline data during each performance monitoring event to aid in determining the success of plant establishment. Percent survival of shrubs and trees will be evaluated in a 10-foot-wide strip along each established transect. The species and location of all shrubs and trees within this area will be recorded at the time of the baseline assessment, and will be evaluated during each monitoring event to determine percent survival.

4.4 Photo Documentation

Locations will be established within the mitigation area from which panoramic photographs will be taken throughout the monitoring period. These photographs will document general appearance and relative changes within the plant community. Review of the photos over time will provide a semi-quantitative representation of success of the planting plan. Vegetation sampling transect/plot/quadrat and photo-point locations will be shown on a map and submitted with the baseline assessment report and yearly performance monitoring reports.

4.5 Wildlife

Birds, mammals, reptiles, amphibians, and invertebrates observed in the wetland and buffer areas (either by direct or indirect means) will be identified and recorded during scheduled monitoring events, and at any other times observations are made. Direct observations include actual sightings, while indirect observations include tracks, scat, nests, song, or other indicative signs. The kinds and locations of the habitat with greatest use by each species will be noted, as will any breeding or nesting activities.

4.6 Water Quality

Water quality will be assessed qualitatively; unless it is evident there is a serious problem.

4.7 Site Stability

Observations will be made of the general stability of slopes and soils in the mitigation area during each monitoring event. Any erosion of soils or slumping of slopes will be recorded and corrective measures will be taken.

CHAPTER 5. MAINTENANCE AND CONTINGENCY

Regular maintenance reviews will be performed according to the schedule presented in **Table 1** above to address any conditions that could jeopardize the success of the mitigation project. Following maintenance reviews by the biologist or ecologist, required maintenance on the site will be implemented within ten (10) business days of submission of a maintenance memo to the maintenance contractor and permittee.

Established performance standards for the project will be compared to the yearly monitoring results to judge the success of the mitigation. If, during the course of the monitoring period, there appears to be a significant problem with achieving the performance standards, the permittee shall work with the City to develop a Contingency Plan in order to get the project back into compliance with the performance standards. Contingency plans can include, but are not limited to, the following actions: additional plant installation, erosion control, modifications to hydrology, and plant substitutions of type, size, quantity, and/or location. If required, a Contingency Plan shall be submitted to the City by December 31st of any year when deficiencies are discovered.

The following list includes examples of maintenance (M) and contingency (C) actions that may be implemented during the course of the monitoring period. This list is not intended to be exhaustive, and other actions may be implemented as deemed necessary.

- During Year One, replace all dead woody plant material (M).
- Water all plantings at a rate of 1" of water every week between June 15 – October 15 during the first two years after installation, and for the first two years after any replacement plantings (C & M), or as needed.
- Replace dead plants with the same species or a substitute species that meets the goals and objectives of the mitigation plan, subject to Talasaea and agency approval (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).
- Remove/control weedy or exotic invasive plants (e.g., Scot's broom, Himalayan blackberry, purple loosestrife, Japanese knotweed, etc.) by manual or chemical means approved by the City. Use of herbicides or pesticides within the mitigation area would only be implemented if other measures failed or were considered unlikely to be successful, and would require prior agency approval. All non-native vegetation must be removed and disposed of off-site. (C & M).
- Weed all trees and shrubs to the dripline and provide 3-inch deep mulch rings 24 inches in diameter for shrubs and 36 inches in diameter for trees (M).
- Remove trash and other debris from the mitigation areas twice a year (M).
- Selectively prune woody plants at the direction of Talasaea Consultants to meet the mitigation plan's goal and objectives (e.g., thinning and removal of dead or diseased portions of trees/shrubs) (M).

- Repair or replace damaged structures including signs and fences (M).
- Mow meadow component of mitigation area one (1) time in the fall of each year at the end of the typical growing season but before the start of the winter rains in order to restrict the encroachment of woody species.

CHAPTER 6. FINANCIAL GUARANTEES

Pursuant to KZC §90.55, a financial guarantee for required mitigation, maintenance, and monitoring shall be provided by the Applicant. The financial guarantee shall be in a form and amount approved by the Planning Director, Finance Director, and City Attorney (e.g., bond, assignment of funds, letter of credit, etc.). The Applicant shall provide the financial guarantee upon approval of the final mitigation plan.

CHAPTER 7. SUMMARY

This mitigation plan has been prepared to describe the mitigation measures taken to compensate for the standard buffer reduction at the Wallstrom's Residential property in Kirkland, Washington. The proposed Project would allow the Applicant to subdivide their parcel and build a single family house on the new parcel. There will be no impacts to wetlands or streams, but a standard buffer modification is proposed which will be mitigated for on-site through enhancement of the remaining buffer. The proposed site plan has been designed to minimize impacts to the critical areas on the project site to the maximum extent practicable, while meeting the criteria for a viable project and conforming to City of Kirkland guidance, regulations, and zoning requirements.

Wetland buffer restoration will be provided by enhancing 13,255 sf of wetland buffer through the removal existing lawn and converting it back to a natural area with replanting of native trees, shrubs, and herbaceous vegetation. Permanent fencing and signs shall be installed at the perimeter of all wetland and stream buffers on-site. This mitigation has been designed to result in no net loss of critical functions and values to the on-site wetland. The conversion of lawn to native plant species will constitute a significant improvement in buffer function and quality.

FIGURES

- Figure 1:** Vicinity Map & Directions
- Figure 2:** Existing Conditions & Vegetation Communities Plan
- Figure 3:** Proposed Impacts and Mitigation
- Figure 4:** Planting Plan
- Figure 5:** Plant Schedule and Details
- Figure 6:** Plant Schedule and Notes

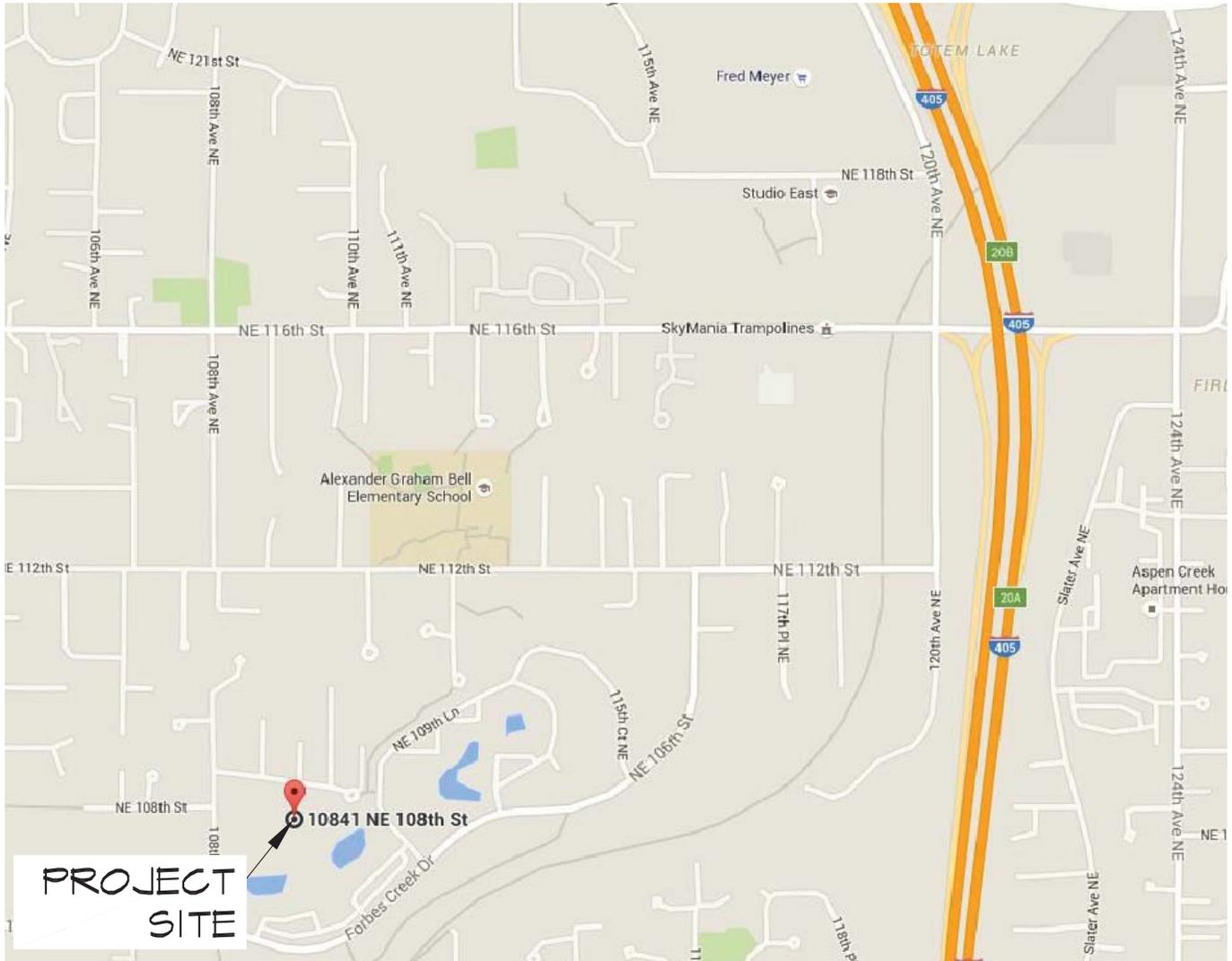


IMAGE SOURCE: GOOGLE MAPS, WWW.MAPS.GOOGLE.COM (ACCESSED 20 APRIL 2016)

DRIVING DIRECTIONS:

1. FROM SEATTLE, TRAVEL NORTH ON INTERSTATE 5 TOWARD VANCOUVER
2. TAKE EXIT 168B FOR WA-520 E TOWARD BELLEVUE/KIRKLAND (TOLL ROAD)
3. EXIT TO MERGE ONTO I-405 N TOWARD EVERETT
4. TAKE EXIT 20A FOR NORTHEAST 116TH STREET
5. TURN LEFT ONTO NE 116TH STREET
6. TAKE NEXT LEFT FOR 120TH AVE NE
7. TURN RIGHT AT NE 112TH STREET
8. TURN LEFT ONTO 116TH AVENUE NE/FORBES CREEK DRIVE
9. TURN RIGHT ONTO 108TH AVE NE
10. TURN RIGHT ONTO NE 108TH STREET

ARRIVE AT DESTINATION ON RIGHT:
10841 NE 108TH ST, KIRKLAND, WA 98033



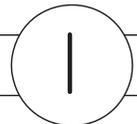
TALASAEA
CONSULTANTS, INC.

Resource & Environmental Planning
15020 Bear Creek Road Northeast
Woodinville, Washington 98077
Bus (425)861-7550 - Fax (425)861-7549

FIGURE #1

VICINITY MAP & DIRECTIONS
WALLSTROM RESIDENCE
KIRKLAND, WASHINGTON

DESIGN	DRAWN	PROJECT
JM/ABS	ABS	1557
SCALE		
NTS		
DATE		
4-20-2016		
REVISED		



Z:\DRAWING\1500-1599\TAL1557\Plans\TAL-1557WP 4-20-2016.dwg

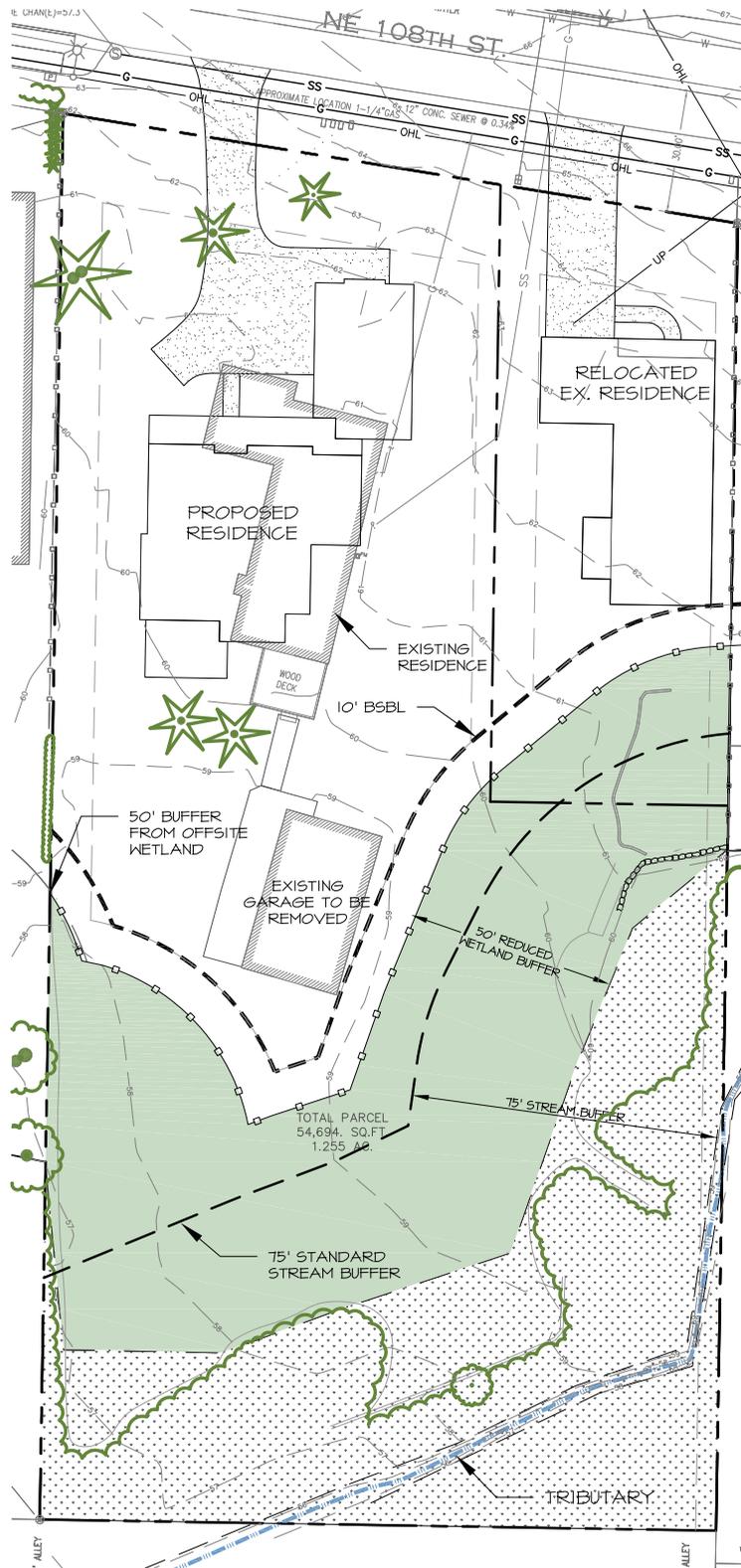
MITIGATION

BUFFER RESTORATION FOR CRITICAL AREA BUFFER REDUCTION

 13,217 SF

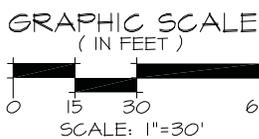
WITHIN WETLAND CREATION AND BUFFER RESTORATION MITIGATION AREAS:

- REMOVE A MINIMUM OF 6" (APPROX.) OF SOD, SOIL, ETC.
- HAND GRUB/REMOVE INVASIVE SPECIES
- ADD SOIL AMENDMENTS AS NECESSARY
- PLANT PER SCHEDULE AND NOTES ON FIGURE 5 & 6



LEGEND

-  EXISTING WETLAND
-  EXISTING TREE CANOPY
-  POST-CONSTRUCTION WETLAND BUFFER AND CRITICAL AREAS FENCE



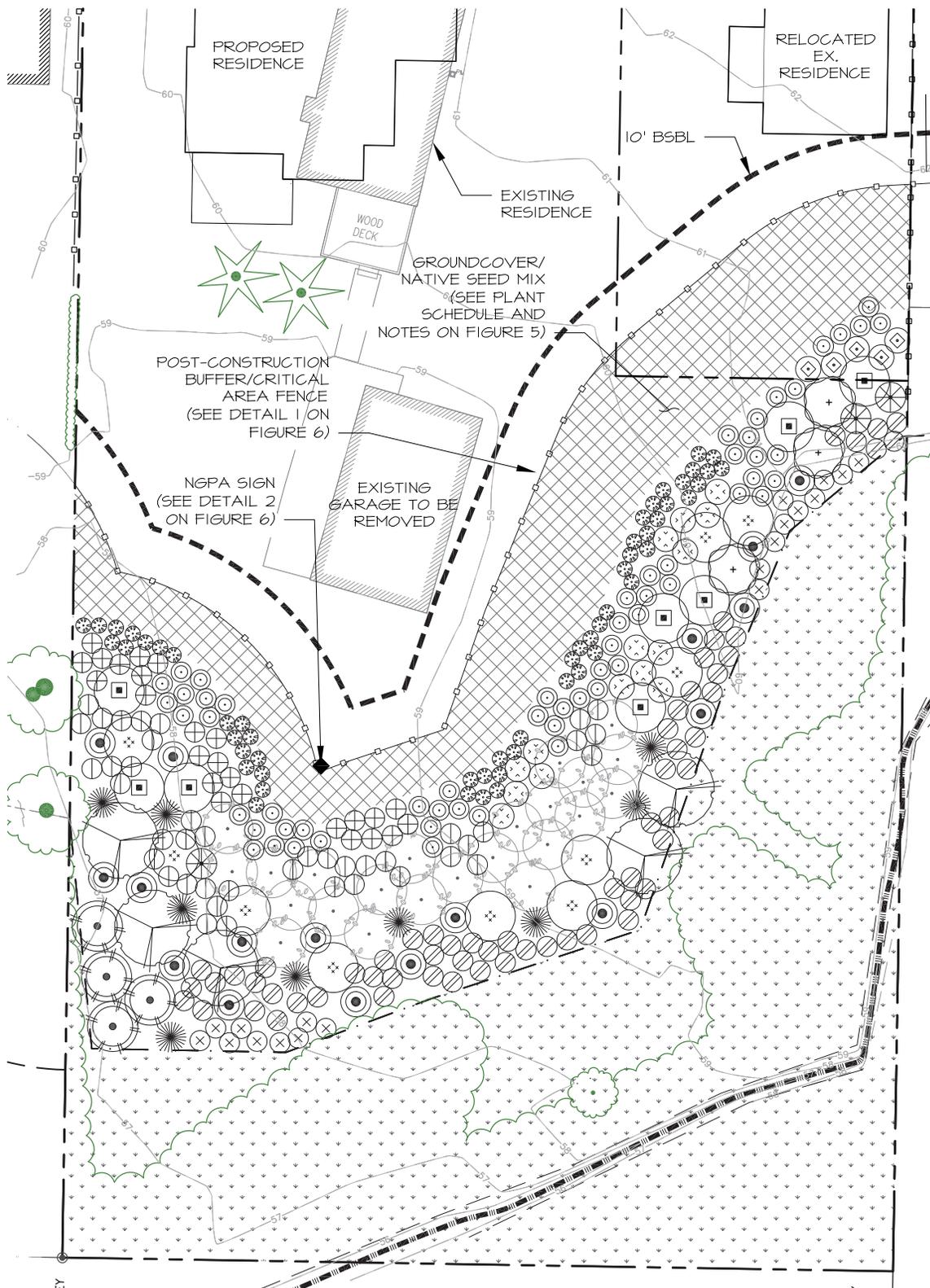
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Woodinville, Washington 98077
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FIGURE #3
PROPOSED IMPACTS AND MITIGATION
WALLSTROM RESIDENCE
KIRKLAND, WASHINGTON

DESIGN	DRAWN	PROJECT
JM/ABS	ABS	1557
SCALE AS SHOWN		
DATE 5-20-2016		
REVISED 6-23-2016		

3

Z:\DRAWING\1500-1598\TAL1557\Plans\TAL-1557WP 6-23-2015.dwg

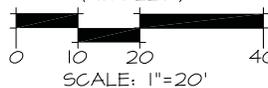


LEGEND

-  EXISTING WETLAND
-  EXISTING TREE CANOPY

NOTE: SEE PLANT SCHEDULE AND NOTES ON FIGURE 5

GRAPHIC SCALE (IN FEET)



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FIGURE #4
 PLANTING PLAN
 WALLSTROM RESIDENCE
 KIRKLAND, WASHINGTON

DESIGN	DRAWN	PROJECT
ABS/JM	ABS	1557
SCALE AS SHOWN		
DATE 4-29-2016		
REVISED		

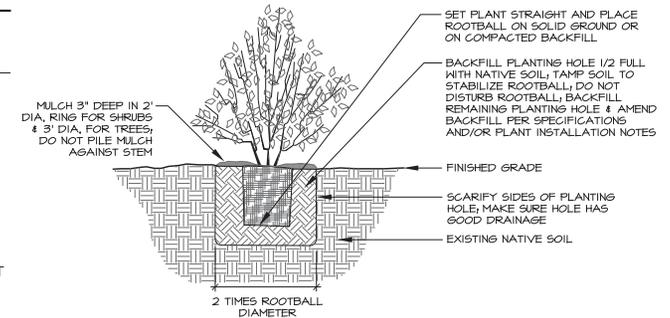


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PLANT SCHEDULE

TREES

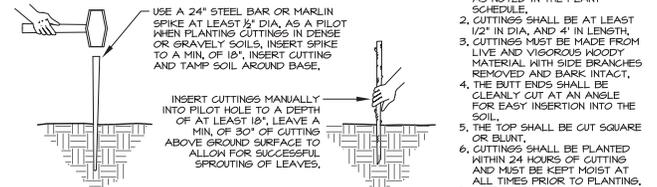
SYMBOL	SCIENTIFIC NAME	COMMON NAME	WL STATUS	SPACING	QTY.	SIZE (MIN.)	NOTES
	PICEA SITCHENSIS	SITKA SPRUCE	FAC	AS SHOWN	9	2-3' HT.	2 GAL., FULL & BUSHY
	POPULUS BALSAMIFERA (TRICHOCARPA)	BLACK COTTONWOOD	FAC	AS SHOWN	5	4-5' HT.	SINGLE TRUNK, WELL BRANCHED
	POPULUS TREMULOIDES	QUAKING ASPEN	FACU	AS SHOWN	23	4-5' HT.	SINGLE TRUNK, WELL BRANCHED
	SALIX LASIANDRA	PACIFIC WILLOW	FACN	3 PER SYMBOL	4	4' CUTTING 1/2" DIA. MIN., BARK INTACT	
	THUJA PLICATA	WESTERN RED CEDAR	FAC	AS SHOWN	17	2-3' HT.	2 GAL., FULL & BUSHY
	TSUGA HETEROPHYLLA	WESTERN HEMLOCK	FACU	AS SHOWN	3	2-3' HT.	2 GAL., FULL & BUSHY



1 CONTAINER STOCK PLANTING DETAIL
N.T.S.

SMALL TREES & LARGE SHRUBS

SYMBOL	SCIENTIFIC NAME	COMMON NAME	WL STATUS	SPACING	QTY.	SIZE (MIN.)	NOTES
	ACER CIRCINATUM	VINE MAPLE	FAC	AS SHOWN	10	4' HT.	MULTI-STEM (3 MIN.)
	CORNUS NUTTALLII	PACIFIC DOGWOOD	FACU	AS SHOWN	3	4-5' HT.	SINGLE TRUNK, WELL BRANCHED
	PRUNUS EMARGINATA	BITTERCHERRY	FACU	AS SHOWN	8	4-5' HT.	SINGLE TRUNK, WELL BRANCHED
	RIBES SANGUINEUM	RED CURRANT	NL	5' O.C.	5	24" HT.	MULTI-CANE (3 MIN.)



2 CUTTING INSTALLATION DETAIL
N.T.S.

MASSING SHRUBS

SYMBOL	SCIENTIFIC NAME	COMMON NAME	WL STATUS	SPACING	QTY.	SIZE (MIN.)	NOTES
	ROSA GYMNOCARPA	BALDHIP ROSE	FACU	4' O.C.	59	18" HT.	MULTI-CANE (3 MIN.)
	ROSA NUTKANA	NOOTKA ROSE	FAC	4' O.C.	25	18" HT.	MULTI-CANE (3 MIN.)
	RUBUS SPECTABILIS	SALMONBERRY	FAC	4' O.C.	62	18" HT.	MULTI-CANE (3 MIN.)
	SALIX SCOULERIANA	SCOULER WILLOW	FAC	3 PER SYMBOL	19	4' CUTTING 1/2" DIA. MIN., BARK INTACT	
	SYMPHORICARPOS ALBUS	COMMON SNOWBERRY	FACU	4' O.C.	42	18" HT.	MULTI-CANE (3 MIN.)
	VACCINIUM OVATUM	EVERGREEN HUCKLEBERRY	FACU	4' O.C.	55	1 GAL.	FULL & BUSHY

GROUND COVER/NATIVE SEED MIX*

SYMBOL	COMMON NAME	COVERAGE	NOTES
	WASHINGTON PERENNIAL/ANNUAL NATIVE FLOWER AND BUNCHGRASS BLEND	4,099 SF	45% WA NATIVE BUNCHGRASS 30% WA NATIVE WILDFLOWERS 25% PERENNIAL LUPINE

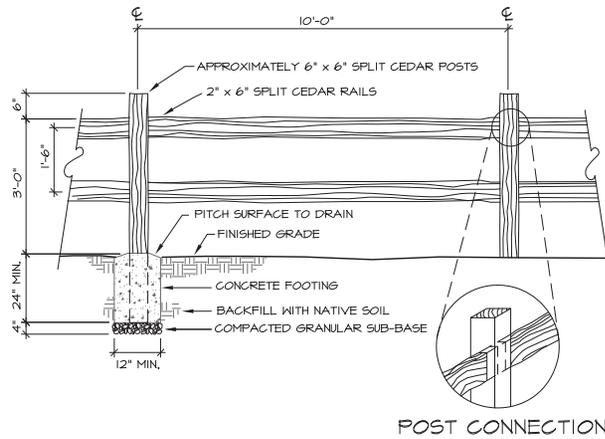
*SEED MIX SHALL BE APPROPRIATE FOR WESTERN WASHINGTON, CONSULT PROJECT ECOLOGIST TO CONFIRM ADEQUACY IN SELECTION AND/OR QUALITY OF SEED. CONSULT SUPPLIER FOR SEED DISPERSAL RATES AND METHODS OF APPLICATION.



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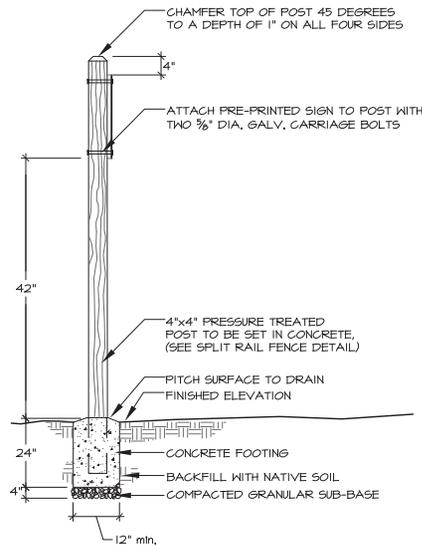
FIGURE #5
PLANT SCHEDULE AND DETAILS
WALLSTROM RESIDENCE
KIRKLAND, WASHINGTON

DESIGN	DRAWN	PROJECT
JM	AB5	1557
SCALE		
NTS		
DATE		
4-29-2016		
REVISED		
5		



POST CONNECTION

1 SPLIT 2-RAIL FENCE DETAIL
N.T.S.



2 NGPA SIGN DETAIL TYP.
N.T.S.

GENERAL PLANT INSTALLATION NOTES

1. PLANT TREES AND/OR SHRUBS 1" HIGHER THAN DEPTH GROWN AT NURSERY.
2. FOR CONTAINER TREES AND/OR SHRUBS, SCORE FOUR SIDES OF ROOTBALL PRIOR TO PLANTING. BUTTERFLY ROOTBALL IF ROOT CIRCLING IS EVIDENT.
3. STAKE DECIDUOUS AND EVERGREEN TREES 4 FEET AND OVER IN HEIGHT WITH ONE (1) STAKE PER TREE. STAKE TREES IMMEDIATELY AFTER PLANTING, PLACE STAKE AT THE OUTER EDGE OF THE ROOTS OR ROOTBALL, IN LINE WITH THE PREVAILING WIND. STAKES SHALL BE LOOSELY ATTACHED USING CHAIN-LOCK TREE TIES TO ALLOW FOR SOME TRUNK MOVEMENT. STAKES TO BE VERTICAL, PARALLEL, EVEN-TOPPED, UNSCARRED AND DRIVEN INTO UNDISTURBED SUBGRADE. REMOVE AFTER ONE YEAR.
4. WATER PLANTS IMMEDIATELY UPON PLANTING, THEN PROVIDE MANUAL WATERING OR A TEMPORARY IRRIGATION SYSTEM TO PREVENT PLANT MORTALITY AND ENSURE PROPER PLANT ESTABLISHMENT. PLANTS SHALL RECEIVE A MINIMUM OF APPROXIMATELY ONE INCH OF WATER EVERY WEEK DURING THE DRY SEASON (GENERALLY JUNE 15TH - OCTOBER 15TH, OR EARLIER OR LATER IF CONDITIONS WARRANT) FOR THE FIRST SEASON AFTER PLANTING. IRRIGATION AMOUNTS MAY NEED TO BE INCREASED DURING PROLONGED PERIODS OF HOT, DRY WEATHER.
5. ALL PLANTING AREAS SHALL HAVE A SLOW-RELEASE GENERAL PURPOSE GRANULAR FERTILIZER OR SLOW-RELEASE TABLETS AT MANUFACTURER'S SPECIFIED RATE.
6. ALL PLANTING AREAS SHALL HAVE A MINIMUM 9-INCH DEPTH OF TOPSOIL. IF TOPSOIL IS INSUFFICIENT IN EITHER QUANTITY OR QUALITY WITHIN PLANTING AREAS, AS DETERMINED BY TALASAEA CONSULTANTS, TOPSOIL SHALL BE RESTORED BY EITHER RE-INSTALLING PREVIOUSLY STOCKPILED TOPSOIL, IMPORTING NEW TOPSOIL, OR AMENDING EXISTING SOILS IN PLACE WITH ORGANIC MATTER TO ACHIEVE A 9" MINIMUM DEPTH. ALL TOPSOIL SHALL HAVE A BULK ORGANIC CONTENT OF AT LEAST 10 PERCENT AND NOT GREATER THAN 20 PERCENT, AS DETERMINED BY AASHTO-T-194. TOPSOIL THAT HAS BEEN STOCKPILED ON-SITE FOR REUSE IN PROJECT AREA(S) OR IMPORTED FROM OFF-SITE SOURCES SHALL BE FERTILE, FRIABLE, SANDY LOAM SURFACE SOIL, FREE OF SUBSOIL, CLAY LUMPS, BRUSH, WEEDS, ROOTS, STUMPS, STONES LARGER THAN 1 INCH IN ANY DIMENSION, LITTER, OR ANY OTHER EXTRANEIOUS OR TOXIC MATTER HARMFUL TO PLANT GROWTH.
7. PROVIDE 3-INCH MINIMUM DEPTH OF MEDIUM BARK MULCH IN ALL PLANTING AREAS. **NOTE:** 3 INCHES IS THE MINIMUM DEPTH AFTER SETTLING. IF MULCH IS INSTALLED BY BLOWER TRUCK IT SHALL BE INSTALLED AT A 4-INCH DEPTH TO ENSURE A MINIMUM 3-INCH DEPTH AFTER SETTLING. MULCH SHALL BE DERIVED FROM FIR, PINE, OR HEMLOCK SPECIES AND SHALL NOT CONTAIN TRASH, ROCKS, OR OTHER DEBRIS OR MATERIALS DETRIMENTAL TO PLANT GROWTH. MULCH SHALL BE MEDIUM-COURSE GROUND WITH AN APPROXIMATELY 3-INCH MINUS PARTICLE SIZE. FINE PARTICLES SHALL BE MINIMIZED SO THAT NOT MORE THAN 30 PERCENT, BY LOOSE VOLUME, WILL PASS THROUGH A U.S. NO. 4 SIEVE.



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FIGURE #6
PLANTING DETAILS AND NOTES
WALLSTROM RESIDENCE
KIRKLAND, WASHINGTON

DESIGN	DRAWN	PROJECT
JM	ABS	1557
SCALE NTS		
DATE 4-29-2016		
REVISED		

6

APPENDIX A

**Sensitive Areas Study, Wetland Resources, Inc.,
dated 13 November 2014**



Delineation / Mitigation / Restoration / Habitat Creation / Permit Assistance

9505 19th Avenue S.E.
Suite 106
Everett, Washington 98208
(425) 337-3174
Fax (425) 337-3045

SENSITIVE AREAS STUDY

FOR

WALLSTROM—NE 108TH STREET CITY OF KIRKLAND, WA

Wetland Resources, Inc. Project #14214

Prepared By:

Wetland Resources, Inc.
9505 19th Ave. SE, Suite 106
Everett, WA 98208
(425) 337-3174

Prepared For:

Kristal Wallstrom
10841 NE 108th Street
Kirkland, WA 98033

November 13, 2014

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WETLAND CLASSIFICATION – CITY OF KIRKLAND	2
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BOUNDARY DETERMINATION FINDINGS	4
FUNCTIONS AND VALUES ASSESSMENT	5
WILDLIFE	6
USE OF THIS REPORT	7
REFERENCES	8

ATTACHMENTS:

**APPROXIMATE WETLAND DELINEATION MAP
CITY OF KIRKLAND WETLAND FIELD DATA FORM
CORPS WETLAND DETERMINATION DATA FORMS**

INTRODUCTION

On September 23, 2014 *Wetland Resources, Inc.* (WRI) conducted a site visit to identify on-site wetlands and/or streams on the 1.26-acre parcel located at 10841 NE 108th Street in the City of Kirkland, WA (a portion of Section 32, Township 26N, Range 5E, W.M.). WRI identified one Type 2 wetland and one Class B stream in the southern portion of the subject site.

Access to the site is via NE 108th Street, along the northern side of the property. The site is situated on a gentle south-facing slope. The majority of the subject site was historically cleared of native vegetation and converted to lawn several decades ago. There is an existing single-family residence (built in 1939) and a detached garage on the site, as well as a large actively maintained lawn and small garden. Surrounding land use consists of single and multi-family (apartments) residential use and open space.

A regulated wetland occurs along the southern vegetated fringes of the subject property. This wetland exists mostly off-site to the south, east and west. It connects hydrologically to a larger wetland complex to the west. It also contains a salmon-bearing stream known as Forbes Creek. These waters drain to Lake Washington, located within one mile to the west of the investigated site.

The typical vegetation found within the on-site fringes of this wetland include: Scouler's willow (*Salix scouleriana*), pacific willow (*Salix lucida*), red alder (*Alnus rubra*), black cottonwood (*Populus balsamifera*), reed canarygrass (*Phalaris arundinacea*), creeping buttercup (*Ranunculus repens*), field horsetail (*Equisetum arvense*), and Himalayan blackberry (*Rubus armeniacus*).

On the City of Kirkland Wetland Field Data Form, the on-site (Wetland A) does not meet the criteria of a Type 1 wetland. It receives a total score of 35 points, thereby meeting the criteria of a Type 2 wetland. This appears to be consistent with the rating of the same wetland system for the neighboring property to the west. The on-site wetland is located within the Forbes Creek drainage basin, which is considered a primary basin in Kirkland. Type 2 wetlands are dedicated 75-foot protective buffers in primary basins, per Kirkland Municipal Code (KMC), Chapter 90.45.

A tributary to Forbes Creek flows through the on-site portion of this wetland, along the eastern property line and then turns to the west and becomes braided just off-site to the south. Because it is wider than two-feet and directly connected to Forbes Creek, it appears that it could be classified as a Class A stream.

Forbes Creek flows off-site approximately 60 feet from the southeastern corner of the subject property. It meets the criteria of a Class A stream because it supports salmonid habitat. It is dedicated a 75-foot protective buffer. A small portion of this buffer would extend on the subject site. Since the on-site wetland and its associated buffer supersede the protection requirements for Forbes Creek, the remainder of this report will focus on the protection requirements and boundary determination findings for the wetland.

WETLAND CLASSIFICATION - COWARDIN SYSTEM

According to the Cowardin System, as described in Classification of Wetlands and Deepwater Habitats of the United States, the on-site wetland is classified as follows:

On-site Wetland: Palustrine, Forested Wetland, Broad Leaved Deciduous, Seasonally flooded.

On-site Stream: Riverine, Lower Perennial, Streambed, Sand.

WETLAND CLASSIFICATION – CITY OF KIRKLAND

Pursuant to Kirkland Zoning Code, Chapter 90, the on-site wetland is classified as follows:

Wetland A (Type 2 Wetland): This is a depressional/riverine wetland complex that supports a salmonid-bearing stream and moderate habitat functions. It is surrounded by suburban development, which limits its potential for offering high levels of typical wetland functions. This wetland is not a Type 1 wetland, and receives a total score of 35 points on the City of Kirkland Wetland Field Data Form. With a score well above 22 points, this wetland system shall be classified as a Type 2 wetland.

This wetland is located within the Forbes Creek drainage basin, which is designated as a primary basin in Kirkland. Type 2 wetlands in primary basins in the city of Kirkland are dedicated 75-foot protective buffers.

Tributary to Forbes Creek (Class A Stream): The on-site tributary enters the site from the east, flows south and then west within the on-site wetland. It generally parallels the wetland boundary. The stream is greater than 2 feet wide and has a direct connection to Forbes Creek. Based on these conditions, it appears that this stream could support salmonid habitat; and it is therefore classified as a Class A stream with a 75-foot protective buffer.

BUILDING SETBACK

Pursuant to KZC 90.45(2) and 90.90(2), structures must be set back at least 10 feet from the designated or modified buffer or a wetland or stream.

ENVIRONMENTALLY SENSITIVE AREAS

The on-site stream and buffer shall be designated as an Environmentally Sensitive Area (ESA). Environmentally Sensitive Areas are not to be disturbed in compliance with the city of Kirkland restrictions. An example of a Sensitive Area Sign is as follows:

ENVIRONMENTALLY SENSITIVE AREA
*THIS WETLAND IS PROTECTED TO PROVIDE WILDLIFE HABITAT AND
MAINTAIN WATER QUALITY
PLEASE DO NOT DISTURB THIS VALUABLE RESOURCE*

BOUNDARY DETERMINATION REPORT

Methodology

Wetlands were identified using the on-site, routine methodology described in the 1987 *Corps of Engineers Wetlands Delineation Manual* and the U.S. Army Corps of Engineers *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (May*

2010). Where differences in the manuals occur, the Regional Supplement takes precedence over the 1987 Manual for applications in the Western Mountains, Valleys, and Coast Region.

In general, wetland delineation consisted of two tasks: (1) assessing vegetation, soil, and hydrologic characteristics to identify areas meeting the wetland identification criteria and recording the observations on field data forms, and 2) marking wetland boundaries. Access was denied to the parcel located off-site to the north and therefore it was not evaluated for wetland conditions.

Under the state and federal methodologies described above, the process for making a wetland determination is based on three sequential steps:

- 1.) Examination of the site for hydrophytic vegetation (species present and percent cover);
- 2.) If hydrophytic vegetation is found, then the presence of hydric soils is determined.
- 3.) The final step is determining if wetland hydrology exists in the area examined under the first two steps.

The following criteria descriptions were used in the boundary determination:

Vegetation Criteria

The 2010 Regional Supplement defines hydrophytic vegetation as “the community of macrophytes that occurs in areas where inundation or soil saturation is either permanent or of sufficient frequency and duration to exert a controlling influence of the plant species present.” Field indicators were used to determine whether the vegetation meets the definition for hydrophytic vegetation.

Wetland Soils Criteria and Mapped Description:

The National Technical Committee for Hydric Soils, as described in the 2010 Regional Supplement, defines hydric soils as “a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part.” Field indicators were used to determine whether a given soil meets the definition for hydric soils.

The soils underlying this site are mapped in the *Natural Resources Conservation Service Web Soil Survey*, as Indianola loamy fine sand, 0 to 4 percent slopes. The Indianola series is described as very deep, somewhat excessively drained soils on terraces and outwash plains. These soils formed in sandy glacial outwash. The typical texture is loamy sand. Generally, the profile of this unit includes: very dark grayish brown (10YR 3/2) loamy sand and brown (10YR 5/3) within the upper 4 inches and dark yellowish brown (10YR 4/4) and light yellowish brown (10YR 6/4) from 4 to 24 inches. Indianola is not listed as a hydric soil.

Potential inclusions may consist of Norma, Shalcar, or Tukwila soils; all of which are listed as hydric soils.

Hydrology Criteria

As stated in the 2010 Regional Supplement, the “term wetland hydrology encompasses all hydrologic characteristics of areas that are periodically inundated or have soils saturated to the surface for a sufficient duration during the growing season.” It also explains “areas with evident characteristics of wetland hydrology are those where the presence of water has an overriding influence on characteristics of vegetation and soils due to anaerobic and chemically reducing conditions, respectively.”

Additionally, the US Army Corps of Engineers 1987 Wetland Delineation Manual states that “areas which are seasonally inundated and/or saturated to the surface for a consecutive number of days ≥ 12.5 percent of the growing season are wetlands, provided the soil and vegetation parameters are met. Areas inundated or saturated between 5 and 12.5 percent of the growing season in most years may or may not be wetlands. Areas saturated to the surface for less than 5 percent of the growing season are non-wetlands.” Field indicators were used to determine whether wetland hydrology parameters were met on this site.

BOUNDARY DETERMINATION FINDINGS

Wetland A: The typical vegetation found within the on-site fringes of this wetland include: Scouler’s willow (*Salix scouleriana*, Fac), Sitka willow (*Salix sitchensis*, FacW) pacific willow (*Salix lucida*, FacW), red alder (*Alnus rubra*, Fac), black cottonwood (*Populus balsamifera*, Fac), reed canarygrass (*Phalaris arundinacea*, FacW), creeping buttercup (*Ranunculus repens*, FacW), field horsetail (*Equisetum arvense*, Fac), Himalayan blackberry (*Rubus armeniacus*, FacU), and creeping nightshade (*Solanum dulcamara*, Fac).

Typical soils in this wetland have a surface layer color of very dark grayish brown (10YR 3/2) and a depleted sublayer of dark grayish brown with approximately 7% dark yellowish brown (10YR 4/4) redoximorphic features throughout. Also observed were gleyed sub-layers (Gley 2 5/10G) with up to 30% dark yellowish brown (10YR 4/4) redoximorphic features. The soils within the areas designated as wetlands were moist at the time of the site visit.

While saturation or inundation were not present at the time of the September 23rd site visit, the dominance of species rated “Facultative” or wetter, and the presence of hydric soil indicators and the geomorphic position in the landscape are all positive indicators that the areas identified as wetlands on this site are saturated to the surface for more than 12.5 percent of the growing season, thereby fulfilling wetland hydrology criteria.

Non-wetland: The non-site wetland areas primarily consist of tightly mowed lawn areas, which have been maintained this way for several decades. Plant species found in these areas include: red clover (*Trifolium pretense*, Fac), bentgrass (*Agrostis sp.*, Fac), creeping buttercup (*Ranunculus repens*, FacW), and trace amounts of common dandelion (*Taraxicum officinale*, FacU), English plantain (*Plantago lanceolata*, Fac), and dovefoot geranium (*Geranium molle*, FacU).

Typical soils in the upland portions of the property consist of very dark grayish brown (10YR 3/2), dark brown (10YR 3/3) or and dark grayish brown (10YR 4/2) loamy sand within the upper 16 inches. Very few (<2%) to no redoximorphic features were found within these soils. The soils examined in these areas identified as non-wetlands were dry at the time of the site visit.

Based on the lack of field indicators, it appears that areas of the site mapped as non-wetland are not saturated to the surface for more than 12.5 percent of the growing season, thereby not fulfilling wetland hydrology criteria.

FUNCTIONS AND VALUES ASSESSMENT

Methodology

The methodology for this functions and values assessment is based on professional opinion developed through past field analyses and interpretation. This assessment pertains specifically to the on-site wetland and stream system, but is typical for assessments of similar systems common to Western Washington.

Wetland Functional Components

Wetlands and streams in Western Washington perform a variety of ecosystem functions. Included among the most important functions provided by wetlands are stormwater control, water quality improvement, fish and wildlife habitat, aesthetic value, recreational opportunities and education. The most commonly assessed functions and their descriptions are listed below. Assessments of these functions for the project site are provided in the “Existing Conditions Analysis” section of this report.

Hydrologic Functions

Wetlands often function as natural water storage areas during periods of precipitation and flooding. By storing water that otherwise might be channeled into open flow systems, wetlands can attenuate or modify potentially damaging effects of storm events, reducing erosion and peak flows to downstream systems. Additionally, the soils underlying wetlands are often less permeable, providing long-term storage of stormwater or floodflow and controlling baseflows of downstream systems. Stormwater storage capacity and floodflow attenuation are generally a function of the size of the wetland and their topographic characteristics.

Water Quality

Surface water quality improvement is another evaluated function. Surface runoff during periods of precipitation increases the potential for sediments and pollutants to enter surface water. Wetlands improve water quality by acting as filters as water passes through them, trapping sediments and pollutants from surface water. Pondered areas within depressional wetlands also allow sediments to drop out of suspension, thereby increasing water quality. As development increases, the potential for polluted water to reach wetlands and streams also increases. Unnaturally high inputs of pollutants, which are often found in urbanized areas, along with the size of the wetlands and the vegetation structure within them are the main limiting factors of this function.

Wildlife Habitat

Wetlands have potential to provide diverse habitat for aquatic, terrestrial, and avian species for nesting, rearing, resting, cover, and foraging. Wildlife species are commonly dependent upon a variety of intermingled habitat types, including: wetlands, adjacent uplands, large bodies of water, and movement corridors

between them. Human intrusion, including development within and adjacent to wetlands, and impacts to movement corridors are the most limiting factors for wildlife habitat functions.

Existing Conditions Analysis

The subject wetland contains both depressional and riverine hydrogeomorphic classes. It also contains a salmon-bearing stream, known as Forbes Creek, which flows off-site though approximately the center of the wetland. The hydrology of this wetland/stream complex connects to another larger wetland complex to the west and eventually to out to Lake Washington. Much of the eastern half of Forbes Creek basin, including the location of the subject property, has been developed with suburban residential development and road crossings. As such, the subject wetland is somewhat disjointed from the larger, contiguous Lake Washington systems to the west.

The subject wetland has potential to control and treat seasonal stormwater flows, due to its dense coverage of woody vegetation and depressional nature. These are increasingly important functions as development increases in upland areas surrounding the wetland.

The wetland also has potential to provide moderate habitat functions. It contains forest and shrub vegetation classes and some relatively small, permanently ponded components that are naturally occurring. Forbes Creek has been documented to contain Coho salmon, Sockeye salmon, and cutthroat trout. These fish species depend on the shade and protection provided by the forested/scrub-shrub vegetation communities within the wetland.

On the subject property, buffer vegetation has been cleared up to the edge of the wetland. A new development would not require any removal of native forest habitat on the site. Improvements to habitat functions could be achieved through enhancement in the form of native vegetation planting.

Overall, the on-site wetland offers moderate levels of typical wetland functions, which is evidenced by its score of 35 points on the City of Kirkland Wetland Field Data Form.

WILDLIFE

At the time of our investigation, few wildlife species were heard or observed.

The following avian species expected to use this site include: house sparrow (*Passer domesticus*), American crow (*Corvus brachyrhynchos*), American robin (*Turdus migratorius*), stellar's jay (*Cyanocitta stelleri*), black-capped chickadee (*Poecile atricapillus*), dark eyed junco (*Junco hyemalis*), red-winged black dia), winter wren (*Troglodytes troglodytes*) house finch (*Carpodacus mexicanus*), brown creeper (*Certhia americana*), swainson's thrush (*Hyocichla ustulata*), varied thrush (*Ixoreus naevius*), barred owl (*Strix varia*), and sharp-shinned hawk (*Accipiter striatus*).

Mammalian species that may utilize this site include species that easily adapt to similar environments, such as: Eastern cottontail rabbits (*Sylvilagus floridanus*), shrews (*Sorex* spp.), moles (*Scapanus* spp.), bats (*Myotis* spp.), raccoons (*Procyon lotor*), skunks (*Mephitis* spp.), *Tamiasciurus douglasii*), deer mice (*Peromyscus maniculatus*), Virginia opossums (*Didelphis virginiana*), gray squirrel (*Sciurus carolinensis*), and Douglas squirrel (*Tamiasciurus douglasii*).

Expected reptilian/amphibian species include: northwestern garter snake (*Thamnophis ordinoides*), pacific tree frog (*Hyla regilla*), bullfrog (*Rana catesbeiana*), and northwestern salamander (*Ambystoma gracile*).

Documented fish species in Forbes Creek include: resident coastal cutthroat trout (*Oncorhynchus clarki*), Sockeye salmon (*Oncorhynchus nerka*), and Coho salmon (*Oncorhynchus kisutch*).

This list is not intended to be all-inclusive, and may omit species that currently utilize or could utilize the site.

USE OF THIS REPORT

This Sensitive Areas Study is supplied to Kristal Wallstrom, Inc. as a means of describing jurisdictional wetland conditions, as required by the City of Kirkland during the permitting process. This report is based largely on readily observable conditions and to a lesser extent, on readily ascertainable conditions. No attempt has been made to determine hidden or concealed conditions. Reports may be adversely affected due to the physical condition of the site and the difficulty of access, which may lead to observation or probing difficulties.

The laws applicable to wetlands are subject to varying interpretations and may be changed at any time by the courts or legislative bodies. This report is intended to provide information deemed relevant in the applicant's attempt to comply with the laws now in effect.

The work for this report has conformed to the standard of care employed by wetland ecologists. No other representation or warranty is made concerning the work or this report and any implied representation or warranty is disclaimed.

Wetland Resources, Inc.



Andrea Bachman
Senior Ecologist, PWS

REFERENCES

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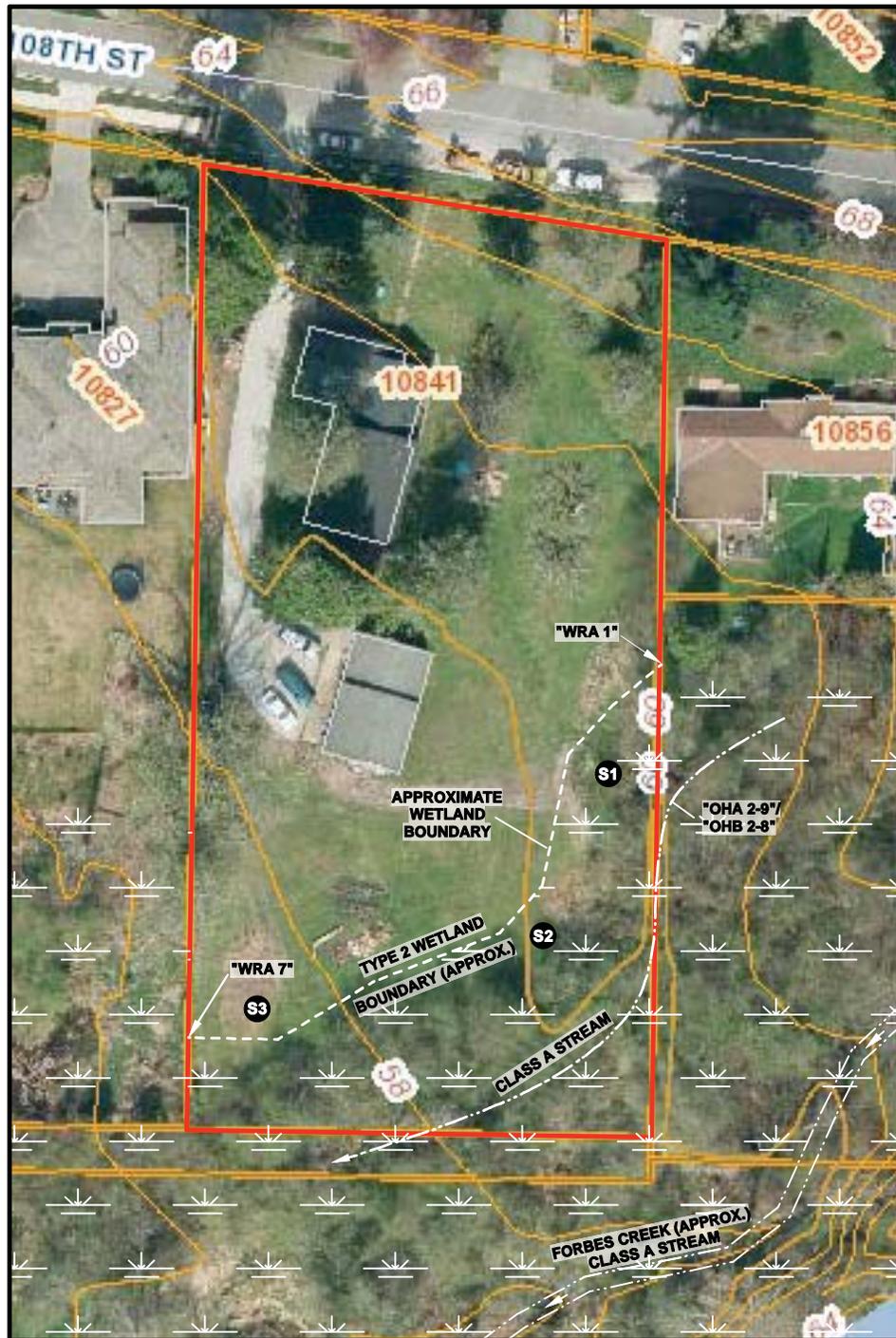
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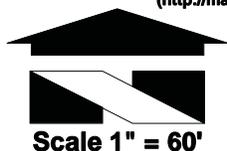
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APPROXIMATE WETLAND DELINEATION MAP
WALLSTROM - NE 108TH STREET
PORTION OF SECTION 32, TOWNSHIP 26N, RANGE 5E, W.M.

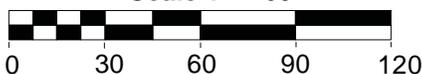


NOTE: THIS MAP IS APPROXIMATE FOR DISCUSSION & SURVEYOR USE ONLY. DELINEATION FLAGS ARE BRIGHT PINK & LABELED "WRA 1-7" FOR THE WETLAND AND "OHA 2-9" / "OHB 2-8" FOR THE ON-SITE STREAM CHANNEL ("OH 1" FLAGS WERE REMOVED BECAUSE THEY WERE INITIALLY PLACED TOO FAR OFF-SITE). SOURCE OF AERIAL IMPAGE & GIS DATA IS COURTESY OF CITY OF KIRKLAND (<http://maps.kirklandwa.gov/SilverlightViewer>).

S1 - S3 = FIELD DATA SITES 1, 2 & 3



Scale 1" = 60'



Wetland Resources, Inc.
Delineation / Mitigation / Restoration / Habitat Creation / Permit Assistance
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Email: mailbox@wetlandresources.com

APPROXIMATE WETLAND DELINEATION MAP
WALLSTROM - NE 108TH STREET
CITY OF KIRKLAND, WA

Kristal Wallstrom
10841 NE 108th Street
Kirkland, WA 98033

Sheet 1/1
WRI Job #14214
Drawn by: AB
Date: 11/13/14

Plate 26—Wetland A (Wallstrom – NE 108th Street) WETLAND FIELD DATA FORM

(Note: Applicable to Chapter 90 KZC, but not Chapter 83 KZC)

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	

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

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

3. Plant species diversity.

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

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

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

4. Structural diversity.

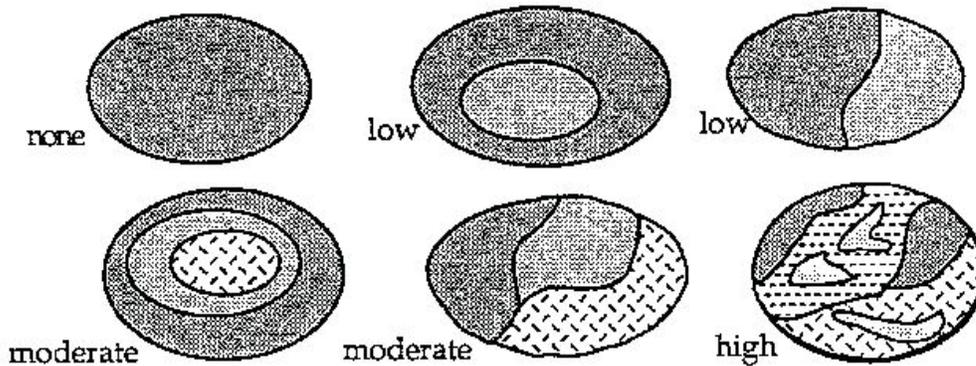
If the wetland has a forested class, add 1 point for each of the following attributes present:

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

5. Interspersion between wetland classes.

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

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



6. Habitat features

- Add points associated with each habitat feature listed: = 3
- Is there evidence of current use by beavers? = 2
- Is a heron rookery located within 300'? = 1
- 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**

7. Connection to streams

- Is the wetland connected at any time of the year via surface water? (score one answer only)
- Is the wetland connected at any time of the year via surface water?
- To a perennial stream or a seasonal stream with fish = 5**
- To a seasonal stream without fish = 3
- Is not connected to any stream = 0

8. Buffers

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

	% of Buffer	Step 1	Width Factor	Step 2
Roads, buildings or parking lots	10% X 0 =	0	=1	
Lawn, grazed pasture, vineyards or annual crops	40% X 1 =	40	=1	40
Ungrazed grassland or orchards	0% X 2 =	0	=	0
Open water or native grasslands	0% X 3 =	0	=	
Forest or shrub	50% X 4 =	200	=1	200
			Add buffer total	240

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

9. Connection to other habitat areas:

Is there a riparian corridor to other wetlands within 0.25 of a mile, or a corridor >100' wide with good forest or shrub cover to any other habitat area?	=	5
Is there a narrow corridor <100' wide with good cover or a wide corridor >100' wide with low cover to any other habitat area?	=	3
Is there a narrow corridor <100' wide with low cover or a significant habitat area within 0.25 mile but no corridor?	=	1
Is the wetland and buffer completely isolated by development and/or cultivated agricultural land?	=	0

10. Scoring

Add the scores to get a total: 35

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

Answer:

Yes = Type 2, in a primary basin = 75'buffer

No = Type 3

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

Project/Site: Wallstrom - NE 108th Street City/County: Kirkland / King County Sampling Date: 9/23/14
 Applicant/Owner: Kristal Wallstrom State: WA Sampling Point: 1
 Investigator(s): AB Section, Township, Range: S32, T26N, R5E
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): <1%
 Subregion (LRR): LRR-A Lat: 47.696753° Long: -122.195718° Datum: _____
 Soil Map Unit Name: Indianola loamy fine sand, 0 to 4 percent slopes NWI classification: None

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

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: _____	

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: _____)				
1. <u>Salix sitchensis</u>	45	Y	FacW	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
2. _____				
3. _____				
4. _____				
	45	= Total Cover		
Sapling/Shrub Stratum (Plot size: _____)				
1. <u>Rubus armeniacus</u>	15	Y	FacU	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: OBL species _____ x 1 = <u>0</u> FACW species _____ x 2 = <u>0</u> FAC species _____ x 3 = <u>0</u> FACU species _____ x 4 = <u>0</u> UPL species _____ x 5 = <u>0</u> Column Totals: <u>0</u> (A) <u>0</u> (B) Prevalence Index = B/A = <u>4</u>
2. _____				
3. _____				
4. _____				
5. _____				
	15	= Total Cover		
Herb Stratum (Plot size: _____)				
1. <u>Phalaris arundinacea</u>	35	Y	FacW	Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Wetland Non-Vascular Plants ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Ranunculus repens</u>	20	Y	FacW	
3. <u>Equisetum arvense</u>	15	N	Fac	
4. <u>Solanum dulcamara</u>	10	N	Fac	
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
	80	= Total Cover		
Woody Vine Stratum (Plot size: _____)				
1. _____				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
2. _____				
% Bare Ground in Herb Stratum _____ = Total Cover				
Remarks: _____				

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

Project/Site: Wallstrom - NE 108th Street City/County: Kirkland / King County Sampling Date: 9/23/14
 Applicant/Owner: Kristal Wallstrom State: WA Sampling Point: 2
 Investigator(s): AB Section, Township, Range: S32, T26N, R5E
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): <1%
 Subregion (LRR): LRR-A Lat: 47.696753° Long: -122.195718° Datum: _____
 Soil Map Unit Name: Indianola loamy fine sand, 0 to 4 percent slopes NWI classification: None

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

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: _____	

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status		
Tree Stratum (Plot size: _____)					
1. <u>Salix sitchensis</u>	35	Y	FacW	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>7</u> (A) Total Number of Dominant Species Across All Strata: <u>8</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>88</u> (A/B)	
2. <u>Populus balsamifera</u>	30	Y	Fac		
3. <u>Alnus rubra</u>	30	Y	Fac		
4. _____					
	95	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: OBL species _____ x 1 = <u>0</u> FACW species _____ x 2 = <u>0</u> FAC species _____ x 3 = <u>0</u> FACU species _____ x 4 = <u>0</u> UPL species _____ x 5 = <u>0</u> Column Totals: <u>0</u> (A) <u>0</u> (B) Prevalence Index = B/A = <u>4</u>	
Sapling/Shrub Stratum (Plot size: _____)					
1. <u>Rubus armeniacus</u>	20	Y	FacU		
2. _____					
3. _____					
4. _____					
5. _____					
	20	= Total Cover			
Herb Stratum (Plot size: _____)					
1. <u>Phalaris arundinacea</u>	60	Y	FacW	Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input checked="" type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Wetland Non-Vascular Plants ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
2. <u>Scirpus microcarpus</u>	20	Y	Obl		
3. <u>Ranunculus repens</u>	20	Y	FacW		
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
9. _____					
10. _____					
11. _____					
	100	= Total Cover			
Woody Vine Stratum (Plot size: _____)					
1. _____				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
2. _____					
% Bare Ground in Herb Stratum _____ = Total Cover					

Remarks: _____

SOIL

Sampling Point: 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features			Loc ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹			
0-10	10YR 3/2						loamy sand	moist
10-18	Gley2 5/10G		10YR 4/4	30			loamy sand	moist

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)	Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) <input checked="" type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8)
	<input type="checkbox"/> 2 cm Muck (A10) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) <input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) <input type="checkbox"/> Other (Explain in Remarks)
	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) <input type="checkbox"/> Frost-Heave Hummocks (D7)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

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

Project/Site: Wallstrom - NE 108th Street City/County: Kirkland / King County Sampling Date: 9/23/14
 Applicant/Owner: Kristal Wallstrom State: WA Sampling Point: 3
 Investigator(s): AB Section, Township, Range: S32, T26N, R5E
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): <1%
 Subregion (LRR): LRR-A Lat: 47.696753° Long: -122.195718° Datum: _____
 Soil Map Unit Name: Indianola loamy fine sand, 0 to 4 percent slopes NWI classification: None

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

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: Upland vegetation consists of mowed/maintained lawn.	

VEGETATION – Use scientific names of plants.

<u>Tree Stratum</u> (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
				_____ = Total Cover
<u>Sapling/Shrub Stratum</u> (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
				_____ = Total Cover
<u>Herb Stratum</u> (Plot size: _____)				
1. <u>Trifolium pratense</u>	35	Y	Fac	
2. <u>Agrostis sp.</u>	15	Y	Fac	
3. <u>Ranunculus repens</u>	15	Y	FacW	
4. <u>Geranium molle</u>	10	N	FacU	
5. <u>Taraximcum officinale</u>	5	N	FacU	
6. <u>Plantago lanseolata</u>	5	N	Fac	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
				85 = Total Cover
<u>Woody Vine Stratum</u> (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 = 0
 FACW species _____ x 2 = 0
 FAC species _____ x 3 = 0
 FACU species _____ x 4 = 0
 UPL species _____ x 5 = 0
 Column Totals: 0 (A) 0 (B)
 Prevalence Index = B/A = 4

Hydrophytic Vegetation Indicators:
 Rapid Test for Hydrophytic Vegetation
 Dominance Test is >50%
 Prevalence Index is ≤3.0¹
 Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 Wetland Non-Vascular Plants¹
 Problematic Hydrophytic Vegetation¹ (Explain)
¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes No

Remarks:
 vegetation was tightly mowed and exact species identification was difficult.

SOIL

Sampling Point: 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features			Loc ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹			
0-6	10YR 3/2						sal	dry
6-16	10YR 4/2						sal	dry, no redox

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4)	Indicators for Problematic Hydric Soils³: <input type="checkbox"/> 2 cm Muck (A10) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
--	---

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

Restrictive Layer (if present): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
--	---

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) <input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) <input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) <input type="checkbox"/> Frost-Heave Hummocks (D7)	
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

APPENDIX B

**Wallstrom Property Wetland Delineation & Classification Review,
The Watershed Company, dated 24 October 2014**



October 24, 2014

Christian Geitz
City of Kirkland
Planning and Community Development
123 – 5th Avenue
Kirkland, WA 98125

Re: Wallstrom Property Wetland Delineation & Classification Review
The Watershed Company Ref. No.: 120622.50

Dear Christian:

This letter presents the findings of an environmental review of a wetland delineation and classification study completed by Wetland Resources, Inc. on behalf of Krystal Wallstrom. The study area consists of one parcel located at 10841 NE 108th Street (parcel number 1235700080).

The following document was reviewed for this study:

Sensitive Areas Study for Wallstrom – NE 108th Street, Kirkland, WA, prepared by Wetland Resources, Inc. October 3, 2014.

I visited the site on October 23, 2014 to verify the wetland boundary and classification findings reported by Wetland Resources, Inc. .

The wetland delineation boundary was field-verified following the Corps Manual and Regional Supplement and determined to be accurate. The Type 2 wetland classification, which is consistent with the approved delineation study on the same wetland done for the neighboring property to the west, was also confirmed.

There is also a small tributary stream to Forbes Creek that enters the property near the eastern property line and flows roughly parallel to the wetland boundary for most of its on-site length. The stream is wider than 2-feet and of a low enough gradient that salmonids and other fish from Forbes Creek could use the channel. In Primary Basins such as Forbes Creek Basin, the standard wetland buffer and Type 2 stream buffers are both 75-feet. It is not necessary to delineate and flag this tributary since the wetland buffer is more encumbering to the site. However, the Wetland Resources report should be revised to document the presence of this tributary stream channel.

Wallstrom Wetland Delineation Review
Geitz, C., City of Kirkland Planning
October 24, 2014
Page 2 of 3

The applicant may proceed with surveying the wetland boundary flags with one noted clarification. The wetland boundary along the western property line was not flagged; it extends north, up to the existing large black cottonwood tree as shown on the attached copy of the survey for that site (Dawson short plat). The wetland boundary on the property line has a buffer that is more encumbering to the Wallstrom property than the Wetland Resources flags would indicate. Future submittals should display the standard 75-foot wetland buffer as it projects north and east from the northernmost extent of the wetland boundary. The surveyor for the Dawson Short Plat may be able to provide the file with the delineation data. The name listed on the plan is Greene Land Surveying in Edmonds, (425) 697-6604; job number 2005.20.

It appears two or more deciduous trees have been removed within the buffer of Wetland A. The trees are evident in the May 2013 aerial photo on Google Earth. Also, a new fence was built on the eastern property line. Finally, a raised bed garden with gravel paths appears to have been recently installed abutting the wetland boundary and adjacent to the new fence.

I recommend the City accept the Wetland Resources report and verify the wetland boundary along the western property line is correctly displayed on the forthcoming survey. Please call if you have any questions or if I can provide you with any additional information.

Sincerely,



Hugh Mortensen, PWS
Senior Ecologist



August 24, 2016

Susan Lauinger
City of Kirkland Planning Department
123 5th Avenue
Kirkland, WA 98033

Re: Wallstrom Property Wetland and Buffer Mitigation Review

The Watershed Company Reference Number: 120622.50

Dear Susan:

On August 9, 2016, I visited the Wallstrom property located at 10841 NE 108th Street in the City of Kirkland (Parcel #1235700080). The purpose of the visit was to conduct a review of a critical areas report and wetland and buffer mitigation plan prepared for the property (*Critical Areas Mitigation Plan Wallstrom Residential Project Kirkland, Washington*. Talasaea Consultants, Inc. May 20, 2016) (CAR). Additionally, I reviewed relevant section of the Kirkland Zoning Code (KZC) and had direct correspondence with you regarding specific code interpretations. This letter summarizes my review.

The CAR proposes wetland and stream buffer reduction through enhancement and converting wetland to buffer (paper fill) to allow for subdivision of the property, construction of a new single-family residence, and to maintain a garden area currently located within the standard wetland buffer. Following buffer reduction, the CAR proposes to remove an existing garage currently located within the standard wetland buffer. The proposal seeks to reduce the standard 75-foot wetland buffer to the minimum-allowed 50 feet across the entirety of the property and reduce a small area (965 square feet) of the partially overlapping standard 75-foot stream buffer to 50 feet. As mitigation for 1,129 square feet of paper fill, the applicant proposes to create a minimum of 2,258 square feet of wetland adjacent to the existing wetland area.

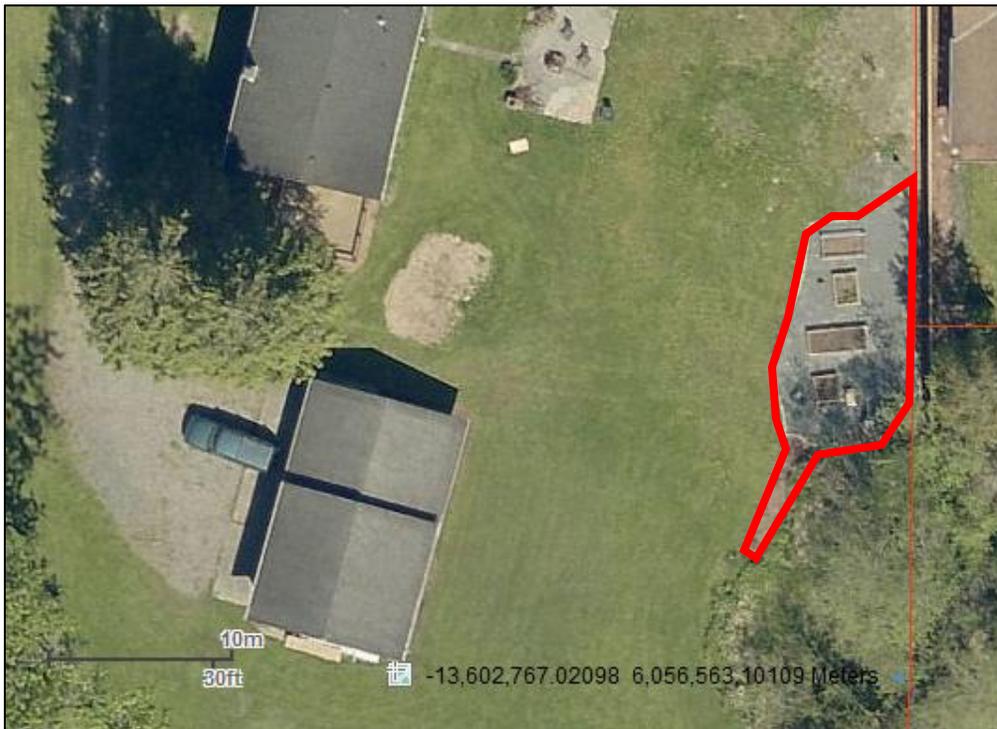
Under KZC 90.55.1.j & 90.60.2.b.9, wetlands and Type 2 wetland buffers may only be modified if there is no practicable or feasible alternative development proposal that results in less impact to the wetland and/or buffer. The City has consistently interpreted these provisions to allow for construction of a suitable residence, but these are not typically interpreted to allow for expansive lawn or garden areas. Based on the proposed site plan, it appears feasible to construct the new single-family residence while

only reducing the wetland buffer to 50 feet in the southeast portion of the site. This approach may require shifting the house a few feet (~5 feet) to the north, slightly reducing the house size, or reorienting the house; however, this seems feasible, since the proposal includes a driveway/parking area north of the house that appears larger than is necessary to serve the residence.

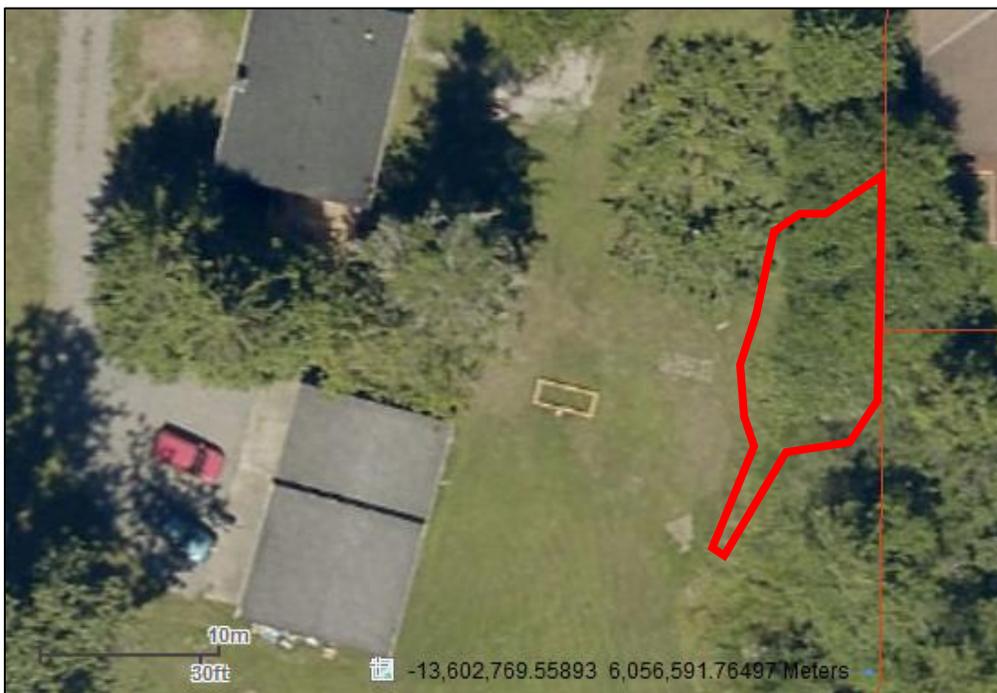
The applicant has not provided any justification as to why it is necessary to reduce the wetland buffer in the southwest portion of the site. The existing garage is partially located within the standard buffer, but the structure is a legal non-conformance, and its removal does not necessitate a buffer reduction. Under KZC 90.60.2.b.8, when a buffer modification is proposed, *“all exposed areas are stabilized with vegetation normally associated with native wetland buffers, as appropriate.”* Therefore, if the wetland buffer reduction is approved anywhere on the property and the existing garage is removed, the area within the buffer should be restored according to an approved restoration plan (see below).

As stated above, wetland fill, including paper fill, is only permissible when there is no feasible alternative to the development proposal. Since the proposed new residence can be constructed without converting a portion of the wetland to buffer, it appears that the reason for the paper fill proposal is to allow the garden currently located in the wetland and stream buffer to remain. Unlike the garage discussed above, the garden, which includes a gravel pad and planter boxes, is not a legal non-conformance. Rather, the garden appears to have been constructed inside a wetland buffer without a permit, and its construction included the removal of multiple deciduous trees in the buffer. A review of historic aerial photographs show that the trees were removed and the garden area constructed sometime during or after 2013. A garden does not provide sufficient protection or buffer function for the adjacent wetland. The gravel pad is effectively impervious, which increase runoff volumes and flows into the wetland and associated stream. The habitat value is extremely limited for native wildlife species, as the degree of cover and forage opportunities are substantially reduced under the current conditions as compared to a functioning native buffer.

Since the garden is a violation, as part of a buffer reduction proposal, the garden and associated gravel fill pad should be removed, and the area should be restored with a native tree and shrub community. The garden may be relocated into other area on the property outside of the wetland and/or stream buffers.



2015 Aerial View of Garden Area



2013 Aerial View Prior to Construction of Garden Area

The CAR proposes an area within the reduced buffer (southwest of the garden) to be installed as a meadow populated with native bunchgrass, wildflowers, and lupine, while also including a provision to allow annual mowing of the area to prevent the intrusion of woody vegetation. A meadow does not represent a significant improvement in buffer function compared to lawn such that it would sufficiently compensate for reduction of the standard buffer. Additionally, such a meadow would not meet the KZC 90.60.2.b.8 requirement of “*normally associated with native wetland buffers, as appropriate.*” Meadows are not a natural condition in the region, as they required periodic burns historically, and would require regular mowing on the property to prevent natural succession to a shrub and/or forest community. Additionally, a meadow does not provide equivalent or greater buffer function compared to a shrub or forested community, as they do not provide the variety of habitat niches for wildlife nor do they provide equivalent erosion and water quality protection due to the lack of rigid vertical structure. This is exasperated if the area is mowed at the beginning of the rainy season such as is proposed in the CAR. For optimal buffer function, all areas enhanced as part of the buffer reduction proposal should be densely planted with native trees and shrubs typical of wetland buffers in the Puget lowlands.

The proposed plant schedule includes black cottonwood, quaking aspen, and willow species. These species are appropriate for the landscape setting and, if protected, should perform very well at the site. However, it should be cautioned that beavers are very active in the area, including the wetland and buffer mitigation site on the adjacent property to the west. The aforementioned species are preferred food sources for beavers and would likely be highly browsed. We recommend considering beaver exclusion fencing to reduce plant mortality.

Recommendations

1. Reduce the buffer reduction area such that it is the minimum necessary to allow for construction of the proposed single-family residence, and restore the reduced buffer at a minimum 1:1 ratio to the reduction area. It may be necessary for a very minor modification in the location and/or configuration of the proposed structure to maintain the 50-foot buffer and 10-foot BSBL.
2. Remove the garden and associated gravel fill pad areas within the buffer. Restore the area by amending soils and planting native woody species per an approved restoration plan.
3. Eliminate paper fill and the associated wetland creation area.

Susan Lauinger, City of Kirkland

August 24, 2016

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4. Remove the meadow from any portion of the reduced buffer. If the existing garage is voluntarily removed, portions of the standard buffer within the footprint must be restored with a dense, native tree and shrub community.
5. Consider using beaver exclusion fencing to protect mitigation plantings, particularly black cottonwood, quaking aspen, and willows.

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

Sincerely,



Ryan Kahlo, PWS
Ecologist



November 14, 2016

Susan Lauinger
City of Kirkland, Planning Department
123 Fifth Avenue
Kirkland, WA 98033

Re: Wallstrom Residence Buffer Modification, 2nd Review Letter

The Watershed Company Reference Number: 120622.50

Dear Susan:

This letter represents our review of the revised *Critical Areas Mitigation Plan Wallstrom Residential Project, Kirkland, Washington* (Talasaea Consultants, 5/12/2016) (CAR). The CAR has been revised following peer review comments from The Watershed Company (*Wallstrom Property Wetland and Buffer Mitigation Plan Review 8/24/2016*) (TWC Review). The following five recommendations (italicized) were included in the TWC Review. The current status of each item follows in standard text:

1. *Reduce the buffer reduction area such that it is the minimum necessary to allow for construction of the proposed single-family residence, and restore the reduced buffer at a minimum 1:1 ratio to the reduction area. It may be necessary for a very minor modification in the location and/or configuration of the proposed structure to maintain the 50-foot buffer and 10-foot BSBL.*

The City has decided to allow reducing the standard 75-foot buffer to 50 feet across the entirety of the property, based on a similar determination for an adjacent property. The site plan has been substantially altered to prevent the need for stream buffer modification and paper fill. Generally, sufficient buffer restoration is proposed at more than a 1:1 ratio as mitigation for the buffer reduction area.

2. *Remove the garden and associated gravel fill pad areas within the buffer. Restore the area by amending soils and planting native woody species per an approved restoration plan.*

The proposal now includes removal of the garden and fill pad within the buffer. However, the plan does not presently include restoration of the area with an appropriate native shrub community. The Existing Conditions figure describes

Susan Lauinger
November 14, 2016
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this area as a “pre-existing non-conformance.” As described in the TWC Review, this feature was constructed sometime during or after 2013. Therefore, it is not considered an existing non-conformance but is, instead, a violation of the provisions in Chapter 90. The current plan depicts a portion of the area as being installed with an appropriate woody plant community; however, much of the area is shown as “meadow.” Since this area was composed of trees and shrubs prior to the violation, it is appropriate to restore the entire affected area with a tree and shrub community as the Planning Official may require in KZC 90.65. Smaller trees or larger shrubs may be used given the proximity to the proposed relocated residence.

3. *Eliminate paper fill and the associated wetland creation area.*

This recommendation has been satisfied in the revised plan.

4. *Remove the meadow from any portion of the reduced buffer. If the existing garage is voluntarily removed, portions of the standard buffer within the footprint must be restored with a dense, native tree and shrub community.*

The current plan still depicts a meadow in the outer 10-30 feet of the reduced buffer. Since the entire buffer is currently mowed lawn, a meadow planted with native species represents only a slight improvement in buffer function, specifically water quality function. Current best available science indicates that a diversity of vegetation communities (forested, scrub-shrub, and emergent) is a desirable condition for wetland buffers. However, the CAR notes that the meadow area “will need to be mowed each fall to prevent the incursion of woody species.” Mowing of the lawn grasses is currently allowed as an ongoing activity, but with the land use change and associated buffer reduction and consistent with past approved buffer modifications, mowing inside of the wetland buffer should no longer be allowed. Furthermore, mowing the meadow area will severely limit the ability of the area to provide any protective functions in the rainy season, when water quality and hydrology functions are particularly important, and it creates a disturbance for wildlife, while also eliminating cover. The CAR continues, “Upon cessation of mowing, in the absence of natural wildfires, this meadow area would naturally evolve into a forested area, consistent with the typical climax community in this region.” Protective buffers are intended to naturally evolve in the absence of human intrusion or manipulation. If the applicant chooses to install a meadow in the outer portion of the reduced buffer (not allowed where the garden and fill pad will be removed), the area should not be subjected to mowing at any time. Natural succession should be allowed to occur uninhibited, with the exception of invasive species removal, as necessary.

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November 14, 2016

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5. *Consider using beaver exclusion fencing to protect mitigation plantings, particularly black cottonwood, quaking aspen, and willows.*

This recommendation is based upon the monitoring reports from the adjacent property where beaver herbivory was a problem. The applicant has not included any provisions for protecting plants from beaver damage. This recommendation was provided only as general guidance and is not required by the City. The applicant will be responsible for plant survival and cover as stipulated in the performance standards.

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

Sincerely,



Ryan Kahlo, PWS
Ecologist

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 1.12, Kirkland Municipal 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 _____, _____.

(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)
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 general partners of _____, the partnership that executed the Public Ingress and Egress 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 }
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 Public Ingress and Egress 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 _____, _____.

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

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

Notary's Signature

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

(Corporations Only)

OWNER(S) OF REAL PROPERTY

(Name of Corporation)

By President

By Secretary

(Corporations Only)

STATE OF WASHINGTON }
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 for a Wetland and acknowledged the said instrument to be the free and voluntary act and deed of said corporation, for the uses and purposes therein set forth, and on oath stated that they were authorized to sign said instrument and that the seal affixed is the corporate seal of said corporation.

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

Notary's Signature

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

ATTACHMENT C

Gary A. Flowers, PLLC
Geological & Geotechnical Consulting
19532 12th Avenue NE
Shoreline, WA 98155-1106

May 29, 2016
Project No. 16-027

Steve and Kristal Wallstrom
10841 NE 108th Street NE
Kirkland, WA 98033

Subject: Geotechnical Services Report
Planned New Single Family Residence
10841 NE 108th Street NE,
Kirkland, Washington

Dear Steve and Kristal:

This report summarizes the results of our geological and geotechnical evaluation of the property located at the above noted address in Kirkland. The property is currently occupied by a 2 story, wood frame, single family residence. It is our understanding that the property will be divided to create an additional building lot immediately to the east of the existing residence. Access will be via NE 108th Street.

Existing Conditions

The site is relatively level with a very slight southward descending slope. Elevation change over the entire approximate 320 foot long property is on the order of 7 feet. Vegetation on the site is mostly lawn grass with trees and bramble bushes along the southeastern and southern areas where the property abuts a wetland. There was no visual evidence of any standing or flowing water on the property at the time of our field work. We understand that standing water does occasionally occur on the property around the area of the existing detached garage. The property is bordered by single family residences to the east and west, by NE 108th Street to the north and by a wetland to the south and southeast.

In order to confirm subsurface conditions on this site geologic research was performed regarding existing mapping of the property, nearby surface explorations were researched and reviewed, a site reconnaissance was performed and 4 exploration pits were excavated on the site. See Figure 1 Site and Exploration Plan. The logs of the exploration pits are attached with this report.

Subsurface Conditions

On May 11, 2016, 4 exploration pits were excavated on the subject site using a mini-excavator provided by Revolution Custom Builders. See Figure 1, Site and Exploration Plan for pit locations. The pits generally encountered 1 ½ to 2 ½ feet of loose, dark brown silty fine sand with scattered and/or organics over 2 ½ to 3 ½ feet of very loose to loose, light brown to gray brown, silty, fine to very fine sand. Underlying the loose soils was medium dense to dense, brown, silty sand with gravel to gravelly sand with silt. In exploration pit EP-3 the loose soils were not penetrated due to rapid ground water intrusion and caving of the pit walls. Rapid ground water seepage was observed in EP-3 and EP-4 below a depth of 3.5 feet. These pits were located on the lower elevations of the site, nearest to the mapped wetland. Exploration pit EP-1, closest to the adjacent street did not encounter any ground water and EP-2, near the southern extension of the planned house, only had light ground water at a depth of 5.5 feet. The exploration pit logs are attached with this report.

Hydrology

As noted in the exploration pits, significant ground water intrusion into the excavations was observed in the pits south of the planned new house location. Light seepage was observed in the pit nearest the south end of the planned house and no seepage was observed in the pit at the north end of the house.

Ground water levels can generally be expected to change with the seasons becoming lower in the summer and fall and rising in the winter and spring. Due to the proximity to Forbes Creek and the adjacent wetland the observed ground water may be a permanent condition on this site. It is incumbent that the contractor be prepared to deal with high ground water conditions during construction.

Mappings

According to the Geology Map of King County, by Both, Troost and Wisner, 2007, the site is mapped near the contact between Vashon age advance outwash deposits and Pre-Fraser fine grained deposits. Both of the units have been glacially consolidated.

Seismic Hazards

The parcel is located approximately 5 miles north of the Seattle Fault Zone and 5 miles south of the South Whidbey Fault Zone. Generally there are four types of potential geologic hazards associated with large seismic events: 1) surficial ground rupture; 2) seismically induced landslides; 3) liquefaction; and 4) ground motion. This risk of ground rupture is very low as no fault splays have been recognized within the immediate area. Due to the flatting nature of the site and surrounding area there is no risk of a seismically induced landslide. There is a low risk of liquefaction, especially on the southern portion of the property. In the location of the planned

residence medium dense to dense granular soils were observed at the bottom of the exploration pits. These soils are not prone to liquefaction during a seismic event. Based on the encountered site conditions, and the planned construction, it is our opinion that the proposed construction will not be affected by any of these hazards other than ground motion. For this project the structural engineer should follow 2012 International Building Code recommendations for Site Class D soils.

Conclusions and Recommendations

Based on the results of our site reconnaissance, subsurface investigation and literature review, it is our opinion that the subject parcel is located in an area that is underlain by glacially consolidated sediments that will provide suitable bearing for the project. However, the bearing soils were observed at least 5 feet below existing ground surface and it will be necessary to extend the foundation loads to these underlying soils. Also, it must be noted that exploration pit EP-3, located south of the south footing line of the planned residence, did not fully penetrate through the loose soils due to rapid ground water intrusion into the pit.

The bearing soils are also fine grained and moisture sensitive. As such they will be easily disturbed, especially during inclement weather conditions. If the bearing soils become disturbed during construction it will be necessary to either remove the disturbed soils or recompact them back to a medium dense or better condition prior to footing concrete placement.

Foundations

All new building foundations must extend down through any existing fill soils or loose native soils to bear on the underlying medium dense or better silty sand sediments that were observed approximately 5 feet below existing grade. An allowable soil bearing value of 2,000 psf, a passive earth pressure of 250 pcf and a soil friction factor of 0.35 may be used in the design of these new foundations. Backfill around foundation units must be placed and compacted in lifts to a medium dense or better condition in order for the passive earth pressure value to apply. Anticipated settlement over a 20 foot span should be less than $\frac{3}{4}$ inch total and $\frac{1}{4}$ to $\frac{1}{2}$ inch differential for equally loaded foundations.

If the footing trench line cannot be safely held open due to ground water and caving conditions it will be necessary to provide a structural trench to support the footings. The trench can be filled with 2 inch diameter crushed ballast rock, recycled concrete, pit run sand and gravel, or lean mix concrete. The recommended width of the trench will be dependent upon the material chosen for backfill. For lean mix concrete the trench would only need to be 6 inches wider than the planned footing width. For 2 inch diameter crushed ballast rock the trench should be a minimum of 4 feet wide. For pit run sand and gravel and recycled concrete the trench should be on the order of 10 feet wide. In all cases the footing must be centered exactly over the structural trench.

Lean mix concrete requires no compaction. Ballast rock requires compaction with the bucket of the trackhoe in 2 foot lifts. Recycled concrete and pit run sand and gravel require compaction of

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maximum 10 inch thick lifts with each lift compacted to a dense and unyielding condition prior to placement of a subsequent lift.

Retaining Walls

It is our understanding that there are no planned free standing retaining walls or basement walls for this project. If any walls are planned we should be contacted to provide geotechnical design parameters for the wall.

Drainage

Due to the depth of excavation required to reach suitable bearing soils footing drains should not be required for this project.

Storm water from impermeable surfaces should be collected and discharged into a city approved storm water drainage system. On-site infiltration of storm water is not applicable for this site.

Erosion

Suitable best management practice (BMP) erosion control measures should be implemented for the project. A silt fence should be installed as per Kirkland requirements along the lower portions of the site. Soil stockpiles should be covered with plastic sheeting to contain in-situ moisture and prevent storm water runoff. Areas of disturbance should be limited to necessary construction areas. Cleared areas that are not being worked should be covered with straw mulch. A rocked construction entrance should be established at the driveway location. Typical construction entrances are on the order of 20 feet long but should be sized to meet Kirkland standards. The rocked entrance should be underlain by a non-woven filter cloth such as Mirafi 140N or equivalent.

Concrete Slab on Grade

Based on the observed conditions the existing soils in the area of the garage are loose and not suitable for concrete slab support. At a minimum 2 feet of soil beneath bottom of slab elevation should be removed and the exposed soils compacted to a firm and unyielding condition. Once the exposed soils are firmly compacted the area should be filled to grade with an easily compacted material. The on-site soils may be suitable for this use if they can be maintained near optimum moisture content. If not, then either recycled concrete or granular pit run sand or a screened product such as Type 17 should be selected. Backfill should be placed in maximum 8 to 10 inch loose lifts and each lift compacted to a firm and unyielding condition prior to placement of subsequent lifts.

Slab-on-grade concrete floors where moisture vapor intrusion is unwanted should be cast atop a minimum of 6 inches of clean, coarse, sand and gravel, washed crushed rock, or washed pea gravel to act as a capillary break. It should also be protected from dampness by placement of minimum

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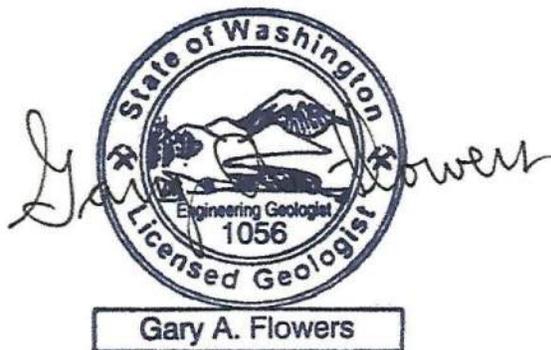
10-mil plastic sheeting atop the capillary break layer. The plastic sheeting must be lapped and sealed to prevent moisture intrusion. In addition, any projections through the plastic sheet must be properly wrapped and sealed.

Summary

Construction monitoring and consultation services should be provided in order to verify that subsurface conditions are consistent throughout the property, will provide suitable bearing for the new footings and stability of excavation sidewalls. Other construction monitoring activities may be required by city officials. We should also review those portions of the plans and specifications that pertain to geotechnical recommendations presented herein.

Our findings and recommendations provided in this report were prepared in accordance with generally accepted principles of engineering geology and geotechnical engineering as practiced in the Puget Sound area at the time this report was submitted. We make no other warranty, either express or implied.

Respectfully submitted,



The image shows a handwritten signature of Gary A. Flowers in blue ink. To the right of the signature is a circular professional seal for the State of Washington. The seal features a landscape with mountains and water, and contains the text: "State of Washington", "Licensed Geologist", and "1056". Below the seal is a rectangular box containing the name "Gary A. Flowers".

Gary A. Flowers, P.G., P.E.G.
Principal Engineering Geologist



The image shows a handwritten signature of Robert M. Pride in blue ink. To the right of the signature is a circular professional seal for the State of Washington. The seal features a portrait of a woman and contains the text: "ROBERT M. PRIDE", "STATE OF WASHINGTON", "16271", "REGISTERED", and "PROFESSIONAL ENGINEER".

Robert M. Pride, P.E.
Geotechnical Engineer

Attachments: Exploration Pit Logs
Figure 1: Site & Exploration Plan

