

Prepared for:

Critical Areas Report Killarney Glen Buffer Reduction

Aim Holdings
227 Bellevue Way NE #543
Bellevue, WA 98004

April 2015
TWC Reference #070618



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CRITICAL AREAS REPORT

KILLARNEY GLEN BUFFER REDUCTION – BELLEVUE, WA

1 INTRODUCTION

1.1 Background and Purpose

On April 2, 2013, Ecologist Nell Lund, PWS conducted a wetland delineation study at the property located just south of and adjacent to 1911 104th Avenue SE (Figure 1). The study followed an earlier study conducted by Watershed Company staff in July 2007. A report titled *Wetland Delineation Update at 1911 104th Avenue SE – TWC Ref# 070618* and dated April 16, 2013 was prepared for the project site. An additional site visit on April 3, 2015 was conducted to confirm previous findings. This report summarizes the findings of the wetland delineation report and subsequent site visit and also documents how a proposed reduction of the on-site wetland buffer can be achieved with no net loss of on-site or off-site ecological functions. As required by Bellevue Land Use Code (LUC) 20.25H.230, a critical areas report is required as part of any critical area buffer modification proposal.

1.2 Description of Project Area

The subject property is located along the western side of 104th Avenue SE just north of SE 20th Street. The parcel (tax parcel number 3860900125) is rectangular shaped and approximately 0.43 acre in size. It slopes downward rather steeply from 104th Avenue SE before becoming relatively flat over the western two-thirds of the property. The parcel is currently undeveloped with the exception of a paved driveway providing access to the site from an access easement located on the parcel to the south. The driveway currently passes through the eastern portion of the site from south to north and continues onto the adjacent parcel to the north. In addition to containing the access easement, the adjacent southern parcel provides access and parking for Killarney Glen Park. The park borders the subject parcel on the south and west. The park provides two tennis courts, a sports court, open spaces, play and picnic areas, and restrooms. The park is approximately 10.32 acres in size.

Medium-sized Douglas-fir (*Pseudotsuga menziesii*, FACU) trees form a canopy in the eastern third of the property, adjacent to 104th Avenue SE. Several large black cottonwood (*Populus balsamifera* var *trichocarpa*, FAC) trees dominate the canopy in the western third of the subject property, near Killarney Glen Park. The understory near the park is composed of black hawthorn (*Crataegus douglasii*,

FAC), beaked hazelnut (*Corylus cornuta*, FACU), bitter cherry (*Prunus emarginata*, FACU), English laurel (*Prunus laurocerasus*, NI), and osoberry (*Oemleria cerasiformis*, FACU), with some English ivy (*Hedera helix*, NI) and English holly (*Ilex aquifolium*, NI) also present. As exhibited in the photographs of the site below (Figures 2-3), dense native groundcover is largely absent from the site. Invasive weeds English laurel, English holly and English ivy, all of which are on King County's noxious weed list, have significant cover in the western third of the property, including a hedge along the southern edge of the property.

The previous 2007 study identified two small wetlands in the southwest corner of the study area. The 2013 site delineation identified one continuous wetland in the same general area and the 2015 site visit confirmed this. The wetland is a depressional hydrogeomorphic class. Vegetation is characterized by mature black cottonwood trees with an understory of black hawthorn, pacific crabapple, twinberry, and slough sedge. Soils exhibit Redox Dark Surface and Depleted Matrix hydric soil indicators. Soils were saturated within six to 12 inches of the surface and at a low point ground water was 11 inches below the surface on the day of the April 2013 delineation.

The wetland boundary includes several mature black cottonwood trees, which likely causes the ground water table to drop by late spring. As these trees leaf-out they remove significant quantities of moisture from the soil through evapotranspiration. In 2010 the Corps issued a Regional Supplement, which changed the ranking of various wetland hydrology indicators. Under current guidance, the flagged wetland area would meet wetland hydrology parameters even if saturation was not directly observed.

No other critical areas were found on-site during field investigations. No additional critical areas are known to occur on properties immediately adjacent to the project site.

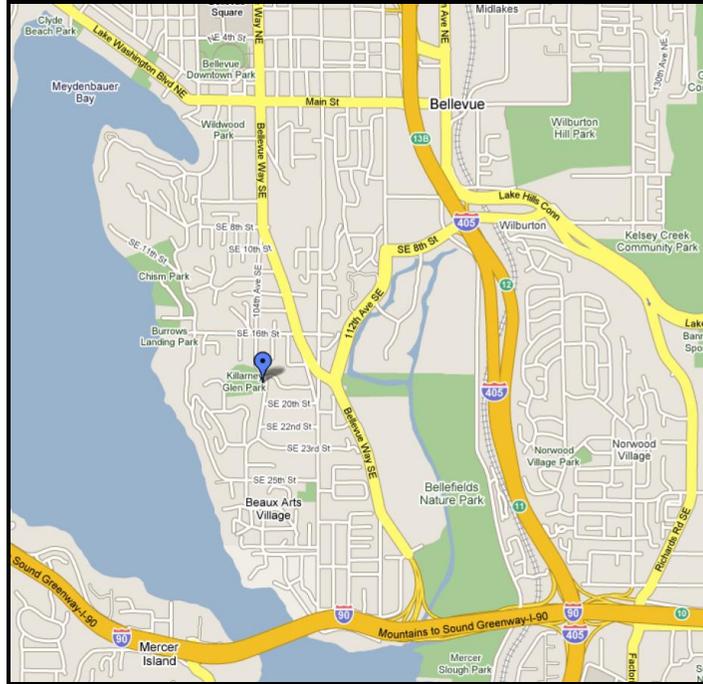


Figure 1. Vicinity Map (Google Maps).

Sensitive Species

According to WDFW PHS data (April 2015), the project site and surrounding properties do not contain any sensitive habitat or species. Furthermore, pursuant to LUC 20.25H.150, no species of local importance have been identified on-site.



Figure 2. View of the wetland (looking east and south from the western wetland boundary) – photo taken 04-02-2013.



Figure 3. View of invasive weeds within the buffer (looking northwest) – photo taken 04-02-2013.



Figure 4. Looking south from north edge of property into the proposed buffer enhancement area – photo taken 04-03-2015.



Figure 5. Proposed wetland and buffer enhancement areas – photo taken 04-03-2015.

2 LOCAL REGULATIONS

In Bellevue, wetlands are regulated under the Critical Areas Ordinance. According to Bellevue land use code (LUC) 20.25H.095, wetland buffer widths are determined based on wetland category, individual functions scores using Ecology's Western Washington Rating System, site condition (developed or undeveloped), and wetland size. Wetland A scores 12 points for habitat functions and 36 points for total functions. It is a Category III wetland. Category III wetlands in the City of Bellevue with habitat scores less than 20 points require a 60-foot buffer. Bellevue also requires that there be a structure setback of 15 feet beyond the buffer of a Category III wetland.

Buffer widths may be modified under two options detailed in LUC 20.25H.095.C.2 and 20.25H.230. First, an applicant may be allowed to modify the buffer using a buffer averaging plan. Buffer averaging may be approved if the applicant demonstrates that buffer functions will be maintained, the buffer is contiguous, and the total buffer area is not reduced. Second, the applicant may reduce the buffer through the critical areas report process if it can be shown that an enhancement plan will improve buffer function overall despite the buffer intrusion. Enhancement may involve removing invasive plant species, planting native vegetation, etc. An approved enhancement plan would require monitoring and maintenance in accordance with LUC 20.25H.210. Buffers modified under a buffer averaging plan must be at least 75 percent of the standard buffer width. There is no buffer minimum for buffers modified through a critical areas report.

3 PROPOSED BUFFER MODIFICATION

The existing project site is currently undeveloped. It is proposed that a single-family residence be constructed on the project site in the near future. The proposed residence will be approximately 55 feet wide (east-to-west) and 73 feet deep (north-to-south), and will contain a landscaped yard area approximately 15 feet deep. Development of the single-family residence and associated yard will require that the eastern portion of the existing wetland buffer be modified to allow for the proposed improvements. The existing standard 60-foot buffer in this area is highly degraded with marginal wetland buffer functions and values. The buffer reduction request will result in a buffer 35 feet wide at its narrowest point. An additional 15-foot structure setback will result in the proposed structure being located at least 50 feet from the edge of the on-site wetland.

Modification of the existing and degraded 60-foot wetland buffer will allow for portions of the standard buffer to be used for portions of the home and a landscaped yard area, while the remaining degraded on-site buffer will be enhanced with the removal of existing invasive and non-native species and the addition of dense native plantings. Additionally, the existing wetland will be enhanced with native plantings.

The modified wetland buffer will be situated in a north-south direction and will prevent encroachments into the entire western third of the project site. The southernmost and northernmost portions of the buffer will be extended southward and northward perpendicularly to the property lines to increase the size of the reduced buffer. In these areas, the buffer will have a maximum width of approximately 45 feet.

Two rain gardens, totaling approximately 980 square feet in size, will be located within the proposed wetland buffer near the eastern perimeter. Stormwater runoff from the entire eastern portion of the project site will sheet flow to the proposed rain gardens, where it will be detained and treated before overflowing into the wetland buffer. The entire modified buffer area will be designated as a Native Growth Protection Easement (NGPE) and will be kept free from all development and disturbance. At least three signs identifying the area as an NGPE will be placed along the buffer boundary on a split-rail fence marking the NGPE edge.

Buffer modifications are only requested along the eastern portion of the existing standard 60-foot buffer and only on the subject property. The standard 60-foot buffer will remain intact on adjacent properties. The adjacent parcel to the north contains an existing single-family residence situated approximately 88 feet from the nearest wetland edge with a substantial number of significant trees and vegetation within the 60-foot buffer. The adjacent parcel to the west occupied by Killarney Glen Park contains only lawn areas within the 60-foot wetland buffer, while the nearest structures are tennis courts located approximately 110 feet from the nearest wetland edge. Therefore, assuming that the standard buffer of the on-site wetland extends outward for 60 feet in all directions, the total wetland buffer area is 21,911 square feet. This report requests a net reduction of 2,523 square feet in the size of the on-site buffer. Therefore, requested modifications are proposed to impact approximately 11.5 percent of the total wetland buffer. The remaining 88.5 percent of the standard wetland buffer will remain intact at 60 feet on adjacent properties to the north, west, and south.

In addition, 5,776 square feet of the on-site wetland buffer will be enhanced through the removal of invasive and non-native species and the planting of native trees, shrubs, and groundcover. An additional 1,041 square feet of the on-site wetland will be enhanced through invasive removal and in-fill plantings. The proposed wetland and buffer enhancement will provide an additional level of protection of the on-site wetland functions and values and will offset the loss of 2,523 square feet of degraded buffer area. Overall, a net gain in wetland and wetland buffer functions is proposed.

4 FUNCTIONAL LIFT ANALYSIS

As mentioned in the previous section, portions of the new residence and yard will be located within the standard 60-foot wetland buffer. Therefore, a reduction in the buffer,

from 60-feet to 35-feet, is proposed. To offset the on-site loss of 2,523 SF of buffer, a total of 5,776 square feet of wetland buffer will be enhanced and a total of 1,041 square feet of the wetland will be enhanced. Proposed native vegetation is intended to improve the overall functions and values of the wetland and wetland buffer. An analysis of the specific functions and values provided by the existing site and the post-project site is provided in Table 1.

Table 1. Functional Lift Analysis

Critical Area/ Buffer Functions	Existing Conditions	Proposed Conditions	Functional Improvement?
Water Quality	A portion of the existing wetland buffer is managed as mowed lawn. The remainder of the buffer either has a sparse understory or invasive plants. The filtration capacity of existing vegetation is not optimal.	Wetland and wetland buffer enhancements will collectively improve water quality functions despite the proposed buffer reduction. Invasive species will be removed and replaced with native plants and native plant density will be increased. The new adjacent impervious surface will be managed using rain gardens, thereby increasing infiltration.	Yes; water quality will be improved. New native plantings and rain gardens will help to filter storm water prior to it reaching the wetland. A dense native plant community is efficient at filtering stormwater and will constitute an improvement over the existing condition.
Hydrology	The existing buffer, a mix of mowed lawn, invasive plants and patchy native vegetation, has little vertical structure that could slow stormwater flows discharging into the wetland from nearby impervious surfaces.	Restore the modified buffer and enhance the wetland with native trees, shrub and groundcover, and add woody debris. Control and manage runoff from new impervious surfaces using two rain gardens in the outer buffer.	Yes; new native plantings and woody debris will provide increased density and resistance to storm flows, and rain gardens will manage runoff, thus reducing peak stormwater velocities entering the wetland.
Habitat	The existing buffer contains a few patches of native trees and shrubs, but generally lacks structural diversity, which limits food and cover opportunities for most wildlife species.	Converting lawn to native trees, shrubs and groundcover, in-fill planting sparse areas, adding woody debris, and creating microtopography in the rain gardens, will all increase the wetland's potential to provide habitat functions.	Yes; 5,776 square feet of the reduced buffer and 1,041 square feet of the wetland will be enhanced with new native plantings, which will provide a net increase in species and structural diversity. Further, new plantings will provide organic matter and foraging

			and nesting opportunities for terrestrial wildlife, including several songbird species.
Net Condition	Degraded wetland buffer and sparsely vegetated wetland.	Lawn and invasive species are removed from the site; native trees, shrubs, and groundcover are planted in the wetland and buffer, large woody debris is added, and rain gardens are constructed.	Wetland habitat restored with an increase in native vegetation; filtering of stormwater by native plantings; increased habitat structural and compositional complexity, and an increase in organic material to the food chain.

The only vegetation to be removed from the reduced buffer as part of the proposed project is invasive species; therefore, temporal loss will be minimal. The change from existing state to restored state will represent an increase in the quality of habitat from the perspective of the site potential. A greater area of diverse, native habitat will result from the proposal. The property will be more suitable overall for urban songbird and small mammal species than it is presently; the understory will contain more woody vegetation and a greater structural complexity, which is more attractive to songbirds and small mammals than is low-growing, homogeneous vegetation. As well, a greater mix of flowering, fruiting and seeding plants will provide forage over a longer yearly timespan than the relatively uniform existing vegetation. Wildlife species of the Pacific Northwest are also better adapted to forage provided by native plants than non-native species.

5 CRITICAL AREAS REPORT CRITERIA

As previously mentioned, wetland buffers may be modified pursuant to LUC 20.25H.230. The Director may approve a modification of the buffer if it can be shown that, through enhancement, the modification will result in no loss of buffer function. Furthermore, the critical areas report must meet specific decision criteria in order for the Director to approve a proposal to reduce the regulated critical area buffer. Compliance with the critical areas report criteria listed in LUC 20.25H.255(B) is addressed below.

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

A wetland and wetland buffer enhancement plan has been prepared (see Appendix A) that details the areas proposed for enhancement as a result of the requested buffer modification. This plan mitigates for the proposed reduction of the standard 60-foot critical area buffer. Mitigation will involve the removal of approximately 1,000 square feet of invasive and non-native species and the planting of 5,776 square feet of native vegetation (trees, shrubs, and groundcover) within the modified wetland buffer and 1,041 square feet within the wetland. This planting layout incorporates a diversity of native plant species configured in a naturalistic fashion.

Proposed wetland and buffer plantings, rain gardens, and fallen trees increase species and structural diversity, thereby increasing the number of available habitat niches. The proposed native plantings, particularly those within the rain gardens, will improve stormwater treatment within the buffer. The enhancement plan will provide for substantially improved critical area and buffer functions and values relative to the existing condition. A monitoring and maintenance plan for the proposed mitigation area is also included in this report.

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

A wetland and wetland buffer enhancement plan has been prepared (see Appendix A) that details the areas proposed for enhancement as a result of the requested buffer modification. This plan mitigates impacts for the proposed reduction of the standard 60-foot critical area buffer. Mitigation will involve the removal of approximately 1,000 square feet of invasive and non-native species and the planting of 5,776 square feet of native vegetation within the modified wetland buffer and 1,041 square feet within the wetland. This planting layout incorporates a diversity of native plant species configured in a naturalistic fashion. Proposed plantings include trees, shrubs, groundcover, and habitat structures.

The most important critical area functions provided by the on-site wetland are stormwater treatment and wildlife habitat value. The proposed enhancement will help improve the quality of water flowing into the wetland, with the addition of two rain gardens and dense emergent and scrub-shrub vegetation in the buffer. The little habitat value the small wetland currently offers will likely be increased by the addition of native plants and fallen trees just outside of the wetland edge. Therefore, the enhancement plan will provide for substantially improved critical area functions and values. A net gain in critical area buffer functions is proposed.

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

As outlined in the wetland and wetland buffer enhancement plan (see Appendix A), mitigation for the proposed wetland buffer reduction will take place on-site in the form of wetland and wetland buffer enhancement. The enhancement will involve the removal of invasive and non-native species and the planting of dense native vegetation. The existing on-site wetland buffer areas consist of bare ground, and some native and non-native scrub-shrub species. The lack of dense emergent vegetation, known to help filter pollutants from storm water and sub-surface groundwater, prevents the buffer area from acting as a biofilter for runoff towards the wetland.

Enhancement within the reduced wetland buffer will include the planting of 5,776 square feet of native vegetation and the addition of two rain gardens, totaling approximately 980 square feet in size. The native plantings and rain gardens will help to treat on-site runoff and filter pollutants before they reach the wetland. Therefore, the planned reductions to the wetland buffer, coupled with the proposed rain gardens and dense native understory plantings within the critical area buffer, will increase the stormwater quality improvement function of the wetland buffer.

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

A wetland and wetland buffer enhancement plan has been prepared (see Appendix A) that details the areas proposed for enhancement as a result of the requested buffer modification. This plan ensures that an overall net gain in critical area functions will result from the proposed project. Additionally, a comprehensive five-year maintenance and monitoring plan, including detailed information on specific plant types and planting plans is included in this report. This plan will ensure that proposed enhancement plantings will be maintained, monitored and successfully established within the first five years following implementation. Furthermore, to ensure that the proposed plantings are installed and that the five-year maintenance and monitoring plan is implemented, the applicant will post an Installation Assurance Device and a Maintenance Assurance Device prior to permit issuance.

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

While no specific critical areas were found off-site during fieldwork, the standard 60-foot wetland buffer does encroach onto the Killarney Glen Park located immediately south and west of the project site and onto the single-family parcel immediately north of the project site. However, enhancement of the modified wetland buffer will provide improved protection of the wetland in those areas closest to the adjacent properties. Furthermore, enhancement of the wetland and the reduced on-site buffer will increase the overall habitat function of the area, thereby improving habitat functions on adjacent properties.

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

The proposed wetland buffer modification and resulting single-family development will be compatible with adjacent properties and surrounding development within the same land use district (Single Family R-2.5). Adjacent properties contain single-family land uses and a public park. Reductions in yard setbacks are not being requested. Therefore, the proposed home will not be located any closer to adjacent properties as was envisioned through application of the dimensional requirements of the R-2.5 zone.

To allow wetland buffer modifications through an approved critical areas report, the Director must also find compliance with the submittal requirements of LUC 20.25H.250. Compliance with the relevant sections listed in LUC 20.25H.250(B) is addressed below.

4. *An assessment of the probable cumulative impacts to critical areas resulting from development of the site and the proposed development.*

No impacts to on-site critical areas are planned as part of the proposed development. However, functions and values of on-site critical areas will be improved by enhancing portions of the wetland and the buffer immediately adjacent to the wetland. Additionally, a 15-foot structure setback will remain in place adjacent to the modified wetland buffer. The standard 15-foot structure setback will help to protect adjacent critical areas from adverse impacts during project construction and help to provide increased access around the proposed residence for maintenance and repair of the structure and for the ingress/egress of emergency services.

Mitigation will involve the removal of approximately 1,000 square feet of invasive and non-native species and the planting of 5,776 square feet of native vegetation within the modified wetland buffer. An additional 1,041 square feet of wetland enhancement will also occur. The proposed plantings will help to minimize the long-term impacts to the adjacent wetland areas associated

with the proposed development and also improve hydrological functions of the wetland.

The proposed plantings will provide ecological functions that are more protective of the on-site wetland than would be found if a standard buffer were proposed with no vegetative enhancement.

5. *An analysis of the level of protection of critical area functions and values provided by the regulations or standards of this Code, compared with the level of protection provided by the proposal. The analysis shall include:*
 - a. *A discussion of the functions and values currently provided by the critical area and critical area buffer on the site and their relative importance to the ecosystem in which they exist;*

The functions performed by the on-site wetland would not be affected under the proposed buffer reduction plan. The wetland will continue to hold and diffuse flood flow during storm events with or without a buffer modification. The little habitat value the wetland offers will likely be increased by the addition of plants within and outside of the wetland edge. Water quality entering the system will likely improve with the addition of two rain gardens and dense emergent and scrub-shrub vegetation in the buffer.

Standard regulatory requirements under LUC 20.25H.095 preserve a currently low- to moderately-functioning 60-foot buffer. Under the proposal, the 25-foot reduction along the east edge of the buffer would be compensated by raising the functions and values of the wetland and the remaining buffer area. The enhancement will greatly increase the water quality function and habitat function of the buffer.

Overall, the proposed plan would increase the buffer function and not affect the functions of the wetland.

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

The strict application of the regulations and standards of LUC 20.25H would require the proposed residential development to be situated at least 75 feet (60-foot wetland buffer and 15-foot structure setback) from the on-site wetland. The existing degraded wetland buffer would remain in its existing condition with no enhancement necessary to achieve approval of the proposed development. Other than providing a

substantial distance between the wetland and proposed development, the buffer would remain void of any vegetative enhancement that would help to improve ecological functions over existing conditions. Further, since the wetland buffer is presently somewhat overrun with invasive species, without a comprehensive maintenance and monitoring plan, the buffer is more likely to become extensively overgrown with invasive weeds, including Himalayan blackberry and English ivy.

Through the process outlined in LUC 20.25H.095.C.2, the applicant had the opportunity to consider using buffer averaging to reduce the on-site wetland buffer. However, because the wetland buffer extends so far eastward and is orientated in a nearly north-south direction, expanding the buffer further east would prohibit the development of a residence sized to be compatible with the surrounding neighborhood.

The applicant also considered reducing the 20-foot front yard setback pursuant to LUC 20.25H.040.B. However, due to the number of existing significant trees found within the front yard setback, the applicant chose to move the residence slightly closer to the on-site wetland and preserve a number of significant trees. Because limited significant trees exist in the middle portion of the site, the residential footprint can be positioned there while preserving the area of significant trees to the east. As a result, cumulative impacts are lessened by retaining a greater number of significant trees that can help to provide needed stormwater infiltration.

Therefore, buffer reduction and enhancement through the critical areas report process was selected as the preferred means of buffer modification to allow for the proposed residence and associated yard.

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

By requesting wetland buffer modifications pursuant to LUC 20.25H.230, the applicant is provided the opportunity to restore and enhance substantial portions of the on-site wetland and wetland buffer. A wetland and wetland buffer enhancement plan has been prepared (see Appendix A) that details the area proposed for enhancement as a result of the requested buffer modification. This plan mitigates for the proposed reduction of the standard 60-foot critical area buffer. Mitigation will involve the removal of approximately 1,000 square feet of invasive and non-native species and the planting of 5,776 square feet of native vegetation within the modified critical area buffer and 1,041 square feet

within the wetland. This planting layout incorporates a diversity of native plant species configured in a naturalistic fashion. Proposed plantings include trees, shrubs, groundcover, and habitat structures. A monitoring and maintenance plan for the proposed mitigation area is also included in this report. Overall, a net gain in critical area buffer functions is proposed.

Additionally, as proposed, the majority of the area of requested buffer reduction (2,523 square feet) will not be encroached upon by a structure, but instead will function as the structure setback and will remain a yard area of the future residence and will be substantially vegetated with a grass lawn and ornamental and native plantings.

The application of a standard 60-foot wetland buffer would have resulted in 8,923 square feet falling within the limits of the on-site buffer. The requested buffer modifications will result in 6,400 square feet falling within the limits of the wetland buffer, all of which will be placed within the boundaries of an NGPE. The area of buffer proposed for removal from the site (2,523 square feet) is highly degraded with sparse amounts of existing vegetation. This area is significantly less than the area of proposed wetland and buffer enhancement [6,817 square feet (1,041 + 5,776)]. Therefore, modification of the on-site wetland buffer will provide a substantially higher level of protection than the buffer provided through the application of the regulations of LUC 20.25H.095.

Modification of a critical area buffer requires the applicant to apply for and receive a Critical Areas Land Use Permit. Before issuing a Critical Areas Land Use Permit, the Director must find that the project meets specific decision criteria. Compliance with the applicable Critical Areas Land Use Permit decision criteria listed in LUC 20.30P.140 is addressed below.

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

The project applicant has applied for a Critical Areas Land Use Permit to reduce the on-site wetland buffer. No other City of Bellevue permits will be required of the project at this time. A Building Permit will be applied for after approval of the proposed buffer reduction.

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

The proposed project involves the reduction of an on-site wetland buffer. A standard 60-foot buffer for the Category III wetland is proposed to be reduced to a minimum of 35 feet. The proposed 35-foot buffer will be enhanced with the removal of existing invasive and non-native species and the addition of dense native plantings. A future residence is proposed to be situated approximately 50 feet from the edge of the on-site wetland.

The applicant has used the best available design and development techniques to conceptually design the footprint of the proposed residence, along with all associated hardscapes. The design and layout took into consideration the location and condition of existing on-site significant trees. In order to help provide added stormwater benefits to the site, the highest quality trees found on-site were proposed for retention. The residence and hardscapes were located in those areas primarily occupied by trees in fair to moderate condition. Additionally, total proposed impervious surfaces were calculated to help determine the total runoff expected from the improved portions of the site. These calculations were used to size and locate two rain gardens within the reduced wetland buffer to receive stormwater and mimic natural conditions. The proposed rain gardens are in accordance with the City of Bellevue's Natural Drainage Practices.

The development techniques mentioned above, coupled with 5,776 square feet of wetland buffer enhancement and 1,041 square feet of wetland enhancement, will result in the least impact on the critical area buffer.

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

20.25H.100 *Performance Standards*

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

- (A) *Lights shall be directed away from the wetland.*

The front of the proposed house will face east, away from the on-site wetland. Therefore, any lights associated with the driveway, garage, or front door of the residence will be directed away from the wetland. Lighting at the rear of the residence will be limited to that necessary to provide adequate access and security. Such lighting at the rear of the residence will be shielded to prevent light from reaching the on-site wetland.

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

The proposed residence will be situated in the eastern portion of the property approximately 50 feet from the edge of the wetland. The driveway, garage, and front door of the residence will be situated on the eastern side of the residence. Therefore, the majority of noise-generating activities will occur on the eastern side of the residence, in excess of 100 feet from the on-site wetland.

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

Runoff from new impervious surfaces will be directed via sheet flow into two proposed rain gardens located within the reduced wetland buffer. The rain gardens will treat the runoff by removing stormwater pollutants before overflowing into the wetland buffer.

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

As indicated in the prior response, on-site stormwater runoff will be treated in rain gardens located within the outer edge of the buffer, before flowing into the interior of the wetland buffer and finally into the wetland.

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

A wetland buffer enhancement plan has been prepared that details the areas proposed for enhancement. Specifically, dense, native vegetation will be planted within the proposed buffer, with higher densities along the outer edge of the buffer. Species proposed for planting along the buffer edge include sword and lady fern, low Oregon grape, Pacific ninebark, red-osier dogwood, Nootka rose, and other emergent groundcovers.

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

The proposed project will be served by adequate public facilities. No new streets will be needed to serve the site and the project site will utilize existing utilities found within 104th Avenue SE. Additionally, fire and police protection are currently available at the site.

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

A mitigation and restoration plan has been prepared in accordance with the requirements of LUC 20.25H.210.

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

The proposed project complies with all other applicable City of Bellevue Land Use Codes, including 20.25H.

6 RESTORATION PLAN

This plan seeks to restore and enhance substantial portions of the wetland buffer found on the subject property. The wetland buffer has a high potential for enhancement to increase several important functions as it contains large patches of bare ground and non-native invasive plants. Approximately 1,000 square feet of invasive and non-native species are proposed for removal, with dense native plantings to be planted in the remaining understory.

An area within the modified wetland buffer measuring 5,776 square feet and within the wetland measuring 1,041 square feet will be restored and enhanced by removing and/or controlling non-native weeds, improving soil conditions, and revegetating with native plant species. A combination of trees, shrubs, groundcover, and habitat structures are proposed. Trees species include Douglas-fir, western red cedar, and western hemlock. Proposed shrubs include vine maple, red-osier dogwood, beaked hazelnut, black hawthorn, tall Oregon grape, low Oregon grape, Pacific ninebark, red-flowering currant, and Nootka rose. Groundcover species include salal and sword fern. Lady fern, slough sedge, and toughleaf iris will also be planted in the rain gardens. Additionally, seven fallen trees are proposed within the enhancement area.

6.1 Goals

- 1) Within the planted area of the wetland buffer, establish dense native vegetation in the understory of the restoration area that is appropriate to the ecoregion and site.
- 2) Where indicated on the plan, areas within the wetland buffer will remain substantially vegetated with a preponderance of native plants and will contain little invasive or noxious weed cover.
- 3) Increase habitat cover and refuge for amphibians, small mammals and invertebrates.

6.2 Performance Standards

The standards listed below shall be used to judge the success of the installation over time. If performance standards are met at the end of Year 5, the site will

then be deemed successful and the performance security bond will be eligible for release by the City of Bellevue.

- 1) Survival: Achieve 100% survival of installed plants by the end of Year 1. This standard can be met through plant establishment or through replanting as necessary to achieve the required numbers.
- 2) Native cover:
 - a. Achieve 60% understory cover of native shrubs by Year 3. Native volunteer species may count towards this cover standard.
 - b. Achieve 80% understory cover of native shrubs by Year 5. Native volunteer species may count towards this cover standard.
- 3) Species diversity: Establish at least three native shrub species by Year 5. Native volunteer species may count towards this standard.
- 4) Invasive cover: Aerial cover for all non-native, invasive and noxious weeds will not exceed 10% at any year during the monitoring period. Invasive plants include Himalayan blackberry (*Rubus armeniacus*), cut leaf blackberry (*Rubus laciniatus*), reed canarygrass (*Phalaris arundinacea*), cherry (hedge) laurel (*Prunus laurocerasus*), English holly (*Ilex aquifolium*), and ivy species (*Hedera spp.*).
- 5) Retain at least seven pieces of **woody debris** within the buffer and ensure good ground contact.

6.3 Monitoring Methods

This monitoring program is designed to track the success of the mitigation site over time and to measure the degree to which it is meeting the performance standards outlined elsewhere in this document.

An as-built plan will be prepared by the **restoration professional** (Watershed Company [(425) 822-5242] personnel, or other persons qualified to evaluate environmental restoration projects) prior to the beginning of the monitoring period. The as-built plan shall be a mark-up of the planting plans included in this plan set. The as-built plan will document any departures in plant placement or other components from the proposed plan.

Transects: During the as-built inspection, the monitoring **restoration professional** shall install monitoring transects. Approximate transect locations shall be marked on the as-built plan. Four 50-foot transects shall be established in the planted areas.

All other planted areas not directly covered by transects will be visually assessed and noted as to how they are meeting the performance standards.

Monitoring shall take place twice annually for five years. During each year there shall be a spring and a late summer or fall visit. Year 1 monitoring shall commence in the first spring subsequent to installation.

The spring monitoring visit will record maintenance needs such as plant replacement and weeding needs. Following the spring visit the restoration professional will notify the owner and/or maintenance crews of necessary early growing season maintenance. The second annual monitoring visit will contain the bulk of the site assessment and will take place in the late summer or early fall. The late-season formal monitoring visit shall record and report the following in an annual report submitted to the City of Bellevue:

- 1) General summary of the spring visit.
- 2) Year 1 counts of live and dead plants by species.
- 3) Counts of dead plants where mortality is significant in any monitoring year.
- 4) Estimate of native shrub cover using the line intercept method along established transects in planted areas.
- 5) Estimate of non-native, invasive weed cover using the cover class method site-wide.
- 6) Tabulation of established native species, including both planted and volunteer species.
- 7) Photographic documentation from four fixed reference points.
- 8) Any intrusions into or clearing of the planting areas, vandalism or other actions that impair the intended functions of the mitigation area.
- 9) Recommendations for maintenance or repair of any portion of the mitigation area.

6.4 Construction Notes and Specifications

Note: specifications for items in **bold** can be found below under “Material Specifications and Definitions.”

Note: The Watershed Company [(425) 822-5242] personnel, or other persons qualified to evaluate environmental restoration projects, shall monitor:

1. All site preparation
 - a. Soil preparation.
 - b. Mulch placement.
2. Plant material inspection
 - a. Plant material delivery inspection.
 - b. 50% plant installation inspection.
 - c. 100% plant installation inspection.

General Work Sequence

1. Salvage at least seven pieces of large **woody debris** from the areas to be cleared and place in the buffer as shown on the plan or at the direction of the **restoration professional**. Woody debris shall be placed to maximize ground contact.
2. All plant installation is to take place during the dormant season (October 15th – March 1st), for best survival.
3. Prepare a planting pit for each plant and install per the planting details.
4. Mulch each plant with a circular **wood chip mulch ring** (6.5 cubic yards needed), four inches thick and extending to a distance of 9 inches from the plant stem (18 inches in diameter).
5. Install a temporary, above ground **irrigation system** to provide full coverage to all plants within the restoration area.
6. Install a split-rail fence and sensitive area signage around the on-site buffer area per the plan details. At least three signs shall be installed.

Material Specifications and Definitions

1. **Fertilizer:** Slow release, granular PHOSPHOROUS-FREE fertilizer. Follow manufacturer's instructions for application. Keep fertilizer in a weather-tight container while on site. Note that fertilizer is to be applied only in Years two, three, four and five and not in the first year.
2. **Irrigation system:** Automated system capable of delivering at least two inches of water per week from June 1 through September 30 for the first two years following installation.
3. **Restoration Professional:** Watershed Company [(425) 822-5242] personnel, or other persons qualified to evaluate environmental restoration projects.
4. **Wood chip mulch:**
 - a. Wood chip mulch shall meet WSDOT Standard Specifications for Road, Bridge, and Municipal Construction for Wood Strand Mulch as defined 9-14.4(4). "Wood strand mulch shall be a blend of angular, loose, long, thin wood pieces that are frayed, with a high length-to-width ratio, and it shall be derived from native conifer or deciduous trees. A minimum of 95 percent of the wood strand shall have lengths between 2 and 10 inches. At least 50 percent of the length of each strand shall have a width and thickness between 1/16 and 1/2 inch. No single strand shall have a width or thickness greater than 1/2 inch. The mulch shall not contain salt, preservative, glue, resin, tannin, or other compounds in quantities that would be detrimental to plant life. Sawdust or wood chips or shavings will not be acceptable. The contractor shall provide Material Safety Data Sheet (MSDS) that demonstrates that the product is not harmful to plant life and a test report performed in accordance with WSDOT Test Method 125 demonstrating compliance to the specification prior to acceptance;

- b. Alternatively, on-site chipped mulch will be acceptable provide that the mulch meets the general dimensions of the specification above and likewise shall not contain salt, preservatives, glue, resin, tannin, or other compounds in quantities that would be detrimental to plan life. Sawdust or wood chips or shavings will not be acceptable. Quantity required: 12 cubic yards.
5. **Woody debris:** Large pieces of downed wood such as logs, root wads, and limbs, which are placed on the ground. These pieces of downed wood should have a diameter of at least 12 inches and a minimum length of 10 feet. Debris to be placed to maximize ground contact.

6.5 Contingencies

If there is a significant problem with the restoration areas meeting performance standards, a contingency plan will be developed and implemented. Contingency plans can include, but are not limited to: soil amendment; additional plant installation; and plant substitutions of type, size, quantity, and location.

6.6 Maintenance

The site will be maintained for five years following completion of the construction. Operate the temporary irrigation system during June through September of Years 1 and 2. The system should be set to provide at least 1.5 inches of water to all plants during June, July, August and September. Less water is needed during March, April, May and October. Replace each plant found dead in the summer monitoring visits during the upcoming fall dormant season (October 15 to March 1).

- 1) Follow the recommendations noted in the spring monitoring site visit.
- 2) General weeding for all planted areas:
 - a. At least twice yearly, remove all competing weeds and weed roots from beneath each installed plant and any desirable volunteer vegetation to a distance of 18 inches from the main plant stem. Weeding should occur at least twice during the spring and summer. Frequent weeding will result in lower mortality, lower plant replacement costs and will increase the likelihood that the plan meets performance standards by Year 5.
 - b. More frequent weeding may be necessary depending on weed conditions that develop after plan installation.
 - c. Do not weed the area near the plant bases with string trimmer (weed whacker/weed eater). Native plants are easily damaged or killed, and weeds easily recover after trimming.
- 3) Apply slow release granular fertilizer to each installed plant annually in the spring (by June 1) of Years two through five.
- 4) Replace mulch as necessary to maintain a 4-inch-thick layer, retain soil moisture and limit weeds.

- 5) The homeowner shall ensure that water is provided for the entire planted area with a minimum of 2 inches of water provided per week from June 1 through September 30 for the first two years following installation through the operation of a temporary irrigation system.

7 SUMMARY

A modification from the standard 60-foot wetland buffer is proposed. A reduction to 35 feet is requested along the eastern portions of the existing buffer to allow for the encroachment of a single-family residence and associated yard area into the wetland buffer. The net reduction in buffer square footage on-site will be 2,523 square feet. The proposed wetland buffer reduction request will allow for extensive restoration and enhancement, at a 2.7:1 ratio, within a substantial portion of the existing wetland and degraded buffer. A wetland and wetland buffer enhancement plan has been prepared that details the areas proposed for enhancement as a result of the requested buffer modification. The enhancement plan mitigates for the proposed reduction of the standard 60-foot critical area buffer. Mitigation will involve the removal of non-native weed species, the planting of 5,776 square feet of native vegetation within the modified critical area buffer, the planting of 1,041 square feet of native vegetation within the existing degraded wetland, and construction of two rain gardens to collect and treat stormwater runoff. The planting layout incorporates a great diversity of native plant species configured in a naturalistic fashion. Proposed plantings include trees, shrubs, groundcover, and habitat structures. The proposed enhancement plan will provide significantly better protection of those critical area functions and values than would be provided by application of the standard 60-foot wetland buffer. Therefore, an overall net gain in wetland and wetland buffer functions is proposed.

APPENDIX A

Restoration Plan

Monitoring and Maintenance Plan

This plan seeks to restore and enhance substantial portions of the wetland and wetland buffer found on the subject property. The wetland and wetland buffer, as they contain large patches of bare ground and non-native invasive plants, have a high potential for enhancement to increase several important functions. Approximately 1,000 square feet of invasive and non-native species are proposed for removal, with dense native plantings to be planted in the remaining understory.

An area within the modified wetland buffer measuring 5,776 square feet, and within the wetland measuring 1,041 square feet will be restored and enhanced by removing and/or controlling non-native weeds, improving soil conditions, and revegetating with native plant species. A combination of trees, shrubs, groundcover, and habitat structures are proposed. Trees species include Douglas-fir, western redcedar, and western hemlock. Proposed shrubs include vine maple, red cedar dogwood, leaved hazelnut, pacific crabapple, tall Oregon grape, low Oregon grape, pacific ninebark, red-flowering currant, and nootka rose. Groundcover species include sally and sword fern. Additionally, at least seven pieces of woody debris are proposed within the enhancement area.

Goals

- 1) Within the planted area of the wetland and wetland buffer, establish dense native vegetation in the understory of the restoration area that is appropriate to the ecoregion and site.
- 2) Where indicated on the plan, areas within the wetland and wetland buffer will remain substantially vegetated with a preponderance of native plants and will contain little invasive or noxious weed cover.
- 3) Increase habitat cover and refuge for amphibians, small mammals and invertebrates.

Performance Standards

The standards listed below shall be used to judge the success of the installation over time. If performance standards are met at the end of Year 5, the site will then be deemed successful and the performance security bond will be eligible for release by the City of Bellevue.

- 1) Survival: Achieve 100% survival of installed plants by the end of Year 1. This standard can be met through plant establishment or through replanting as necessary to achieve the required numbers.
- 2) Native cover:
 - Achieve 60% understory cover of native shrubs by Year 3. Native volunteer species may count towards this cover standard.
 - Achieve 80% understory cover of native shrubs by Year 5. Native volunteer species may count towards this cover standard.
- 3) Species diversity: Establish at least 3 native shrub species by Year 5. Native volunteer species may count towards this standard.
- 4) Invasive cover: Aerial cover for all non-native, invasive and noxious weeds will not exceed 10% at any time during the monitoring period. Invasive plants include, but are not limited to, Himalayan blackberry (*Rubus arvensis*), cut leaf blackberry (*Rubus laciniatus*), reed canarygrass (*Phalaris arundinacea*), cherry (hegde) laurel (*Prunus laurocerasus*), English holly (*Ilex aquifolium*), and ivy species (*Hedera spp.*).
- 5) Large Woody Debris: Retain at least seven pieces of large woody debris in the buffer restoration area and ensure good ground contact as specified on plans.

Monitoring Methods

This monitoring program is designed to track the success of the mitigation site over time and to measure the degree to which it is meeting the performance standards outlined elsewhere in this document. An as-built plan will be prepared by the restoration professional (Watershed Company [(425) 822-5242] personnel, or other persons qualified to evaluate environmental restoration projects) prior to the beginning of the monitoring period. The as-built plan shall be a mark-up of the planting plans included in this plan set. The as-built plan will document any departures in plant placement or other components from the proposed plan.

Transects During the as-built inspection, the monitoring restoration professional shall install monitoring transects. Approximate transect locations as well as photo points shall be marked on the as-built plan. Four 50-foot transects shall be established in the planted areas. All other planted areas not directly covered by transects will be visually assessed and noted as to how they are meeting the performance standards.

Monitoring shall take place twice annually for five years. During each year there shall be a spring and a late summer or fall visit. Year 1 monitoring shall commence in the first spring subsequent to installation.

The spring monitoring visit will record maintenance needs such as plant replacement and weeding needs. Following the spring visit the restoration professional will notify the owner and/or maintenance crews of necessary early growing season maintenance. The second annual monitoring visit will contain the bulk of the site assessment and will take place in the late summer or early fall. The late-season formal monitoring visit shall record and report the following in an annual report submitted to the City of Bellevue:

- 1) General summary of the spring visit.
- 2) Year 1 counts of live and dead plants by species.
- 3) Counts of dead plants where mortality is significant in any monitoring year.
- 4) Estimate of native shrub cover using the line intercept method along established transects in planted areas.
- 5) Estimate of non-native, invasive weed cover using the cover class method site-wide.
- 6) Tabulation of established native species, including both planted and volunteer species.
- 7) Photographic documentation from four fixed reference points.
- 8) Any intrusions into or clearing of the planting areas, vandalism or other actions that impair the intended functions of the mitigation area.
- 9) Recommendations for maintenance or repair of any portion of the mitigation area.

Construction Notes and Specifications

Note: specifications for items in bold can be found below under "Material Specifications and Definitions". The Watershed Company [(425) 822-5242] personnel, or other persons qualified to evaluate environmental restoration projects, shall monitor:

1. All site preparation
 - Invasive species removal.
 - Woody debris placement.
2. Plant material inspection
 - Plant material delivery inspection.
 - 50% plant layout inspection.
 - 100% plant installation inspection.
3. Final walk through
 - Mulch placement.

General Work Sequence

1. Verify with restoration professional all existing vegetation to be removed or preserved. Flag or otherwise verify in the field before start of work.
2. Protect existing native vegetation to remain. Minimize root and soil disturbance to the maximum extent possible. Do not use heavy machinery in the root zone of existing trees to remain.
3. Remove all invasive and any non-native species from the planting area. Species targeted for removal include, but are not limited to, English holly, English ivy, English laurel, Portuguese laurel, Himalayan blackberry, Scott's broom, Japanese knotweed, and morning glory.
4. Salvage at least 7 pieces of large woody debris from the areas to be cleared and place in the buffer as shown on the plan or at the direction of the restoration professional. Woody debris shall be placed to maximize ground contact.
5. All plant installation is to take place during the dormant season and frost-free period (October 15th - March 1st), for best survival.
6. Prepare a planting pit for each plant and install per the planting details. Water thoroughly after planting.
7. Mulch each plant with a circular wood chip mulch ring (approximately 12 cubic yards needed), four inches thick and extending to a distance of 9 inches from the plant stem (18 inches in diameter).
8. Provide a means to deliver adequate water to all plants within the restoration area during the first two consecutive dry seasons following installation.
9. Install a split-rail fence and sensitive area signage around the on-site buffer area per the plan and plan details. At least three signs shall be installed.

Material Specifications and Definitions

1. **Fertilizer:** Slow release, granular, PHOSPHOROUS-FREE fertilizer. Follow manufacturer's instructions for application. Keep fertilizer in a weather-tight container while on site. Note that fertilizer is to be applied only in Years two, three, four and five and not in the first year.
2. **Restoration Professional:** The Watershed Company [(425) 822-5242] personnel, or other persons qualified to evaluate environmental restoration projects.
3. **Wood chip mulch:**

Wood chip mulch shall meet WSDOT Standard Specifications for Road, Bridge, and Municipal Construction for Wood Strand Mulch as defined 9-14.4(4). "Wood strand mulch shall be a blend of angular, loose, long, thin wood pieces that are frayed, with a high length-to-width ratio, and it shall be derived from native conifer or deciduous trees. A minimum of 95 percent of the wood strand shall have lengths between 2 and 10 inches. At least 50 percent of the length of each strand shall have a width and thickness between 1/16 and 1/2 inch. No single strand shall have a width or thickness greater than 1/2 inch. The mulch shall not contain salt, preservatives, glue, resin, tannin, or other compounds in quantities that would be detrimental to plant life. Sawdust or wood chips or shavings will not be acceptable. The Contractor shall provide Material Safety Data Sheet (MSDS) that demonstrates that the product is not harmful to plant life and a test report performed in accordance with WSDOT Test Method 125 demonstrating compliance to this specification prior to acceptance.

Alternatively, on-site chipped mulch will be acceptable provided that the mulch meets the general dimensions of the specification above and likewise will not contain salt, preservatives, glue, resin, tannin, or other compounds in quantities that would be detrimental to plant life. Sawdust or wood chips or shavings will not be acceptable.

- Quantity required: approximately 12 cubic yards.
4. **Woody debris:** Large pieces of downed Douglas-fir tree trunks with rootwads and limbs attached that are salvaged on-site. Each log should have a diameter of at least 12 inches at the narrow end and a minimum length of 10 feet. Fallen trees are to be placed on ground to maximize soil contact.

Contingencies

If there is a significant problem with the restoration areas meeting performance standards, a contingency plan will be developed and implemented. Contingency plans can include, but are not limited to: soil amendment; additional plant installation; and plant substitutions of type, size, quantity, and location.

Maintenance

The site will be maintained for five years following completion of the construction. Site shall receive adequate water during June through September of Years 1 and 2. Less water is needed during March, April, May and October. Replace each plant found dead in the summer monitoring visits during the upcoming fall dormant season (October 15th to March 1st). Plant replacement must be equal to the species and size specified per plan unless otherwise specified in writing by the restoration professional.

- 1) Follow the recommendations noted in the spring monitoring site visit.
- 2) General weeding for all planted areas:
 - At least twice-yearly, remove all competing weeds and weed roots from beneath each installed plant and any desirable volunteer vegetation to a distance of 18 inches from the main plant stem. Weeding should occur at least twice during the spring and summer. Frequent weeding will result in lower mortality, lower plant replacement costs and will increase the likelihood that the plan meets performance standards by Year 5.
 - More frequent weeding may be necessary depending on weed conditions that develop after plan installation.
 - Do not weed the area near the plant bases with string trimmer (weed whacker/weed eater). Native plants are easily damaged or killed, and weeds easily recover after trimming.
- 3) Apply slow release granular fertilizer to each installed plant annually in the spring (by June 1) of Years two through five.
- 4) Replace mulch to as necessary to maintain a layer 4-inches thick and 18 inches in diameter to retain soil moisture and limit weeds. Replacement mulch must meet the specifications stated in this plan.
- 5) The homeowner shall ensure adequate water is delivered to the entire planted area with from June 1 through September 30 for the first two years following installation.

LEGEND

- WETLAND "A"
- AREAS OF BUFFER ENHANCEMENT, 5,776 SF
- AREAS OF WETLAND ENHANCEMENT, 1,041 SF
- CRITICAL AREA SIGNS
- SPLIT RAIL FENCING - SEE DETAIL D, SHEET 5



BUFFER REDUCTION PLAN

SCALE: 1" = 20'-0"



750 Sixth Street South
 Kirkland WA 98033
 p 425.822.5242 f 425.827.8136
 www.watershedco.com
 Science & Design

KILLARNEY GLEN
 BUFFER REDUCTION / RESTORATION PLAN
 PREPARED FOR: RICHARD LEEDS
 SITE ADDRESS:
 19XX 104TH AVENUE SE
 BELLEVUE, WA 98004

SUBMITTALS & REVISIONS			
NO.	DATE	DESCRIPTION	BY
1	04-11-13	REVIEW SET	MF
2	04-11-13	PERMIT PLAN	GB

SHEET SIZE:
 ORIGINAL PLANS IS 24" x 36"
 SCALE ACCORDINGLY.

PROJECT MANAGER: KB
 DESIGNED: MSF
 DRAFTED: MSF, GB
 CHECKED: KB/NL
 JOB NUMBER:

070618
 SHEET NUMBER:
2 OF 5

PLANT LEGEND:

TREES

BOTANICAL NAME / COMMON NAME	QTY.	SIZE / SPACING
PSEUDOTSUGA MENZIESII / DOUGLAS FIR	8	5 GAL. / 9'-0" OC
THUJA PLICATA / WESTERN REDCEDAR	7	5 GAL. / 9'-0" OC
TSUGA HETEROPHYLLA / WESTERN HEMLOCK	4	5 GAL. / 9'-0" OC

SHRUBS

ACER CIRCINATUM / VINE MAPLE	35	2 GAL. / 4'-6" OC
CORNUS SERICEA / RED-OSIER DOGWOOD	26	2 GAL. / 4'-6" OC
CORYLUS CORNUTA / BEAKED HAZELNUT	14	2 GAL. / 6'-0" OC
CRATAEGUS DOUGLASSII / BLACK HAWTHORN	16	2 GAL. / 6'-0" OC
MAHONIA AQUIFOLIUM / TALL OREGON GRAPE	23	2 GAL. / 3'-0" OC
MAHONIA NERVOSA / LOW OREGON GRAPE	31	1 GAL. / 2'-0" OC
PHYSCARPUS CAPITATUS / PACIFIC NINEBARK	58	2 GAL. / 4'-6" OC
ROSA NUTKANNA / NOOTKA ROSE	30	2 GAL. / 4'-6" OC
RIBES SANGUINUM / RED-FLOWERING CURRANT	9	2 GAL. / 4'-6" OC

GROUND COVER

GAULTHERIA SHALLON / SALAL	57	1 GAL. @ 2'-0" OC
POLYSTICHUM MUNITUM / SWORD FERN	64	1 GAL. / 2'-0" OC

RAIN GARDEN

ATHYRIUM FILIX-FEMINA / LADY FERN	82	1 GAL. @ 2'-0" OC
CAREX OBNUPTA / SLOUGH SEDGE	82	10 C.I. PLUGS @ 12" OC
IRIS TENAX / TOUGHLEAF IRIS	36	1 GAL. OR 4" POTS @ 1'-0" OC

HABITAT STRUCTURES

LARGE WOODY DEBRIS	7	SEE DETAIL C, SHEET 5
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NOTE: ALL DOUGLAS-FIR TREES CUT DOWN ON-SITE WILL BE RETAINED AS LARGE WOODY DEBRIS*

PLANTING NOTES

- PROTECT EXISTING NATIVE VEGETATION THAT IS TO REMAIN. MINIMIZE ROOT AND SOIL DISTURBANCE TO THE MAXIMUM EXTENT POSSIBLE. DO NOT USE HEAVY MACHINERY IN THE ROOT ZONE OF EXISTING TREES TO REMAIN.
- REMOVE ALL INVASIVE AND NON-NATIVE SPECIES FROM THE PLANTING AREA. SPECIES TARGETED FOR REMOVAL INCLUDE, BUT ARE NOT LIMITED TO, ENGLISH HOLLY, ENGLISH IVY, ENGLISH LAUREL, PORTUGUESE LAUREL, HIMALAYAN BLACKBERRY, SCOTTS BROOM, JAPANESE KNOTWEED, AND MORNING GLORY. VEGETATION TO BE REMOVED OR PRESERVED SHALL BE FLAGGED OR OTHERWISE VERIFIED IN THE FIELD BY THE RESTORATION PROFESSIONAL BEFORE START OF WORK.
- ALL PLANT INSTALLATION IS TO TAKE PLACE DURING THE DORMANT SEASON AND A FROST-FREE PERIOD (OCTOBER 15TH - MARCH 1ST), FOR BEST SURVIVAL.
- LOCATE ALL EXISTING UTILITIES WITHIN THE LIMIT OF WORK. THE CONTRACTOR IS RESPONSIBLE FOR ANY UTILITY DAMAGE AS A RESULT OF THE LANDSCAPE CONSTRUCTION.
- LOOSEN ANY COMPACTED SOILS IN THE PLANTING AREA.
- LAYOUT PLANT MATERIAL PER PLAN FOR INSPECTION BY THE RESTORATION PROFESSIONAL. PLANT SUBSTITUTIONS WILL NOT BE ALLOWED WITHOUT THE APPROVAL OF THE RESTORATION PROFESSIONAL.
- INSTALL PLANTS PER PLANTING DETAILS.
- WATER EACH PLANT THOROUGHLY TO REMOVE AIR POCKETS.
- INSTALL A 4" DEPTH, 9" RADIUS, COARSE WOOD-CHIP MULCH RING AROUND EACH PLANT. SEE MATERIAL SPECIFICATIONS.
- ENSURE DELIVERY OF ADEQUATE WATER TO ALL PLANTING AREAS FOR THE FIRST TWO CONSECUTIVE DRY SEASONS AFTER INSTALLATION.
- ONE YEAR AFTER INITIAL PLANT INSTALLATION, APPLY ORGANIC, SLOW-RELEASE FERTILIZER SUCH AS OSMOCOTE OR PERFECT BLEND 4-4-4 TO EACH PLANT.

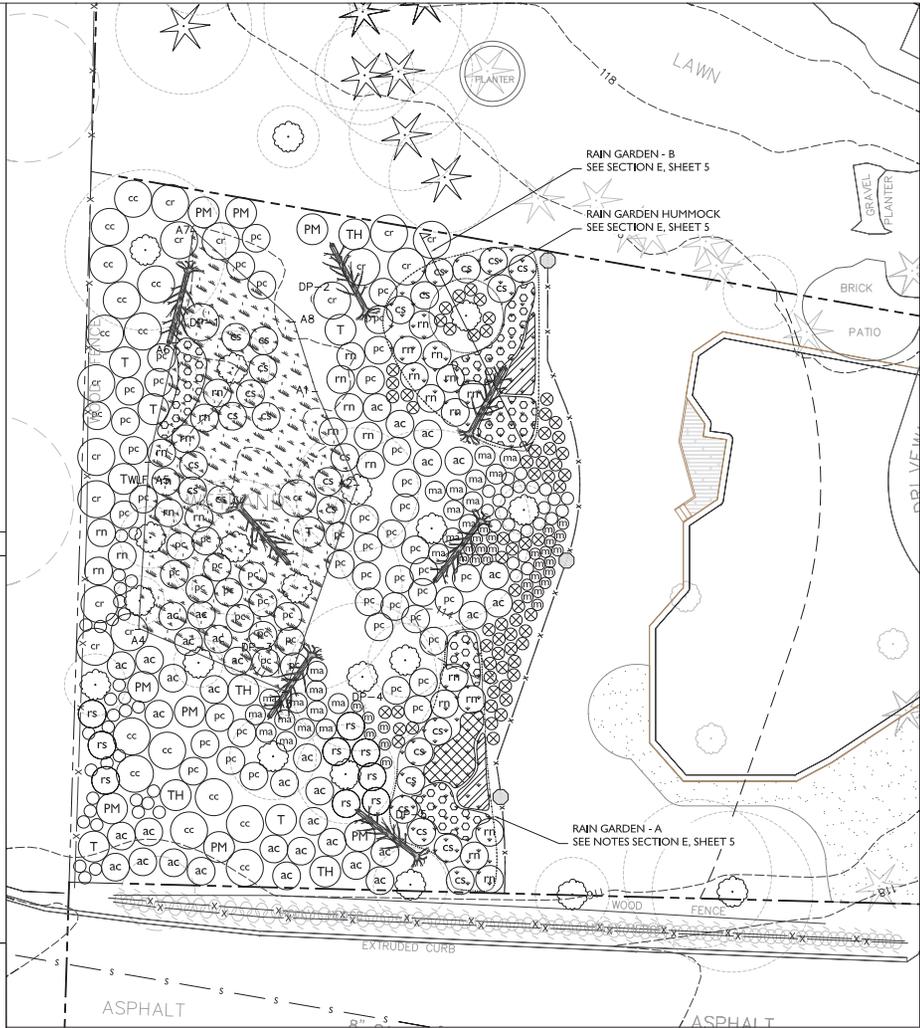
THE LANDSCAPE CONTRACTOR SHALL MAINTAIN ALL PLANT MATERIAL UNTIL FINAL INSPECTION AND APPROVAL BY THE OWNER OR OWNER'S REPRESENTATIVE. ALL PLANTINGS AND WORKMANSHIP SHALL BE GUARANTEED FOR ONE YEAR FOLLOWING FINAL OWNER ACCEPTANCE.

*** RAIN GARDEN NOTES:**

- RAIN GARDENS SIZED AS LISTED TO CONTROL RUNOFF FROM EASTERN PORTION OF SITE VIA SHEET FLOW.
- RAIN GARDENS SHALL BE 18" IN DEPTH WITH 3:1 MAXIMUM SIDE SLOPES.
- RAIN GARDEN SOIL SHALL BE AMENDED PER CITY OF BELLEVUE RECOMMENDATIONS.
- OVERFLOW IS TO BE DIRECTED INTO BUFFER AREA.
- RAIN GARDEN B: PROTECT EXISTING ALDER WITHIN RAIN GARDEN BY CREATING A RAISED HUMMOCK AROUND ROOT ZONE OF ALDER. DO NOT DAMAGE ROOTS OR TRUNK. PLACE LARGE WOODY DEBRIS ALONG SLOPE OF RAIN GARDEN PER DETAIL C, SHEET 5

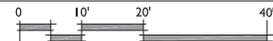
* REFER TO CIVIL MEMO FOR ENGINEERING INFORMATION.

SEE NEXT SHEET FOR PLANTING DETAILS AND INSTALLATION SPECIFICATIONS.



RESTORATION PLANTING PLAN

SCALE: 1" = 10'-0"



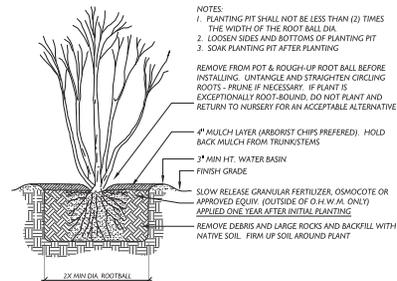
750 Sixth Street South
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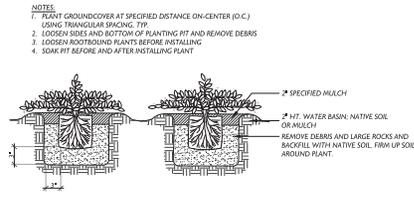
SUBMITTALS & REVISIONS	
NO.	DATE
1	04-11-23
2	04-11-23

SHEET SIZE:
ORIGINAL PLANS 24" x 36"
SCALE ACCORDINGLY.

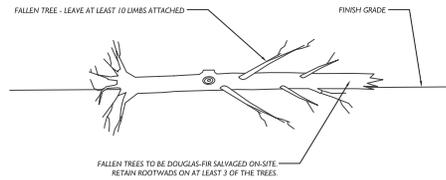
PROJECT MANAGER: KB
DESIGNED: MSF
DRAFTED: MSF, GB
CHECKED: KB/NL
JOB NUMBER:
070618
SHEET NUMBER:
4 OF 5



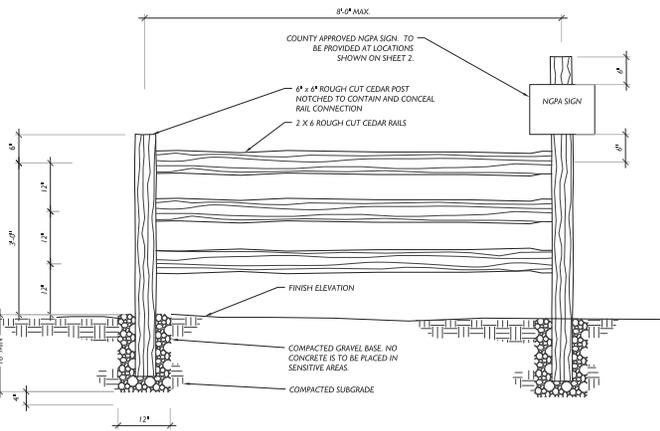
A SHRUB & TREE PLANTING DETAIL
NTS



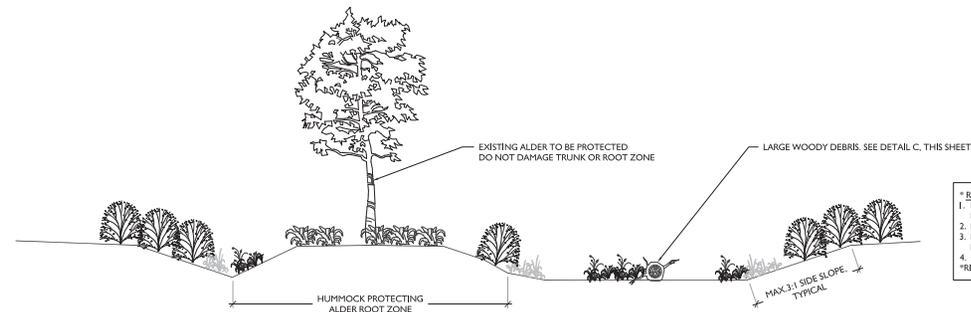
B GROUNDCOVER & PERENNIAL PLANTING DETAIL
NTS



C LARGE WOODY DEBRIS
NTS



D SPLIT RAIL FENCE DETAIL
NTS



E TYPICAL RAIN GARDEN SECTION
NTS

*** RAIN GARDEN NOTES: (APPLICABLE TO BOTH RAIN GARDENS)**
 1. RAIN GARDENS SIZED AS LISTED TO CONTROL RUNOFF FROM EASTERN PORTION OF SITE VIA SHEET FLOW.
 2. RAIN GARDENS SHALL BE 18\"/>

PLANT INSTALLATION SPECIFICATIONS

NOTE: THESE SPECIFICATIONS ARE A LEGALLY BINDING CONTRACT

GENERAL NOTES

QUALITY ASSURANCE

- PLANTS SHALL MEET OR EXCEED THE SPECIFICATIONS OF FEDERAL, STATE, AND LOCAL LAWS REQUIRING INSPECTION FOR PLANT DISEASE AND INSECT CONTROL.
- PLANTS SHALL BE HEALTHY, VIGOROUS, AND WELL-FORMED, WITH WELL DEVELOPED, FIBROUS ROOT SYSTEMS, FREE FROM DEAD BRANCHES OR ROOTS. PLANTS SHALL BE FREE FROM DAMAGE CAUSED BY TEMPERATURE EXTREMES, LACK OR EXCESS OF MOISTURE, INSECTS, DISEASE, AND MECHANICAL INJURY. PLANTS IN LEAF SHALL BE WELL FOLIAGED AND A GOOD COLOR. PLANTS SHALL BE HABITUATED TO THE OUTDOOR ENVIRONMENTAL CONDITIONS INTO WHICH THEY WILL BE PLANTED (HARDENED-OFF).
- TREES WITH DAMAGED, CROOKED, MULTIPLE OR BROKEN LEADERS WILL BE REJECTED. WOODY PLANTS WITH ABRASIONS OF THE BARK OR SUNSCALD WILL BE REJECTED.

DEFINITIONS

- PLANTS/PLANT MATERIALS. PLANTS AND PLANT MATERIALS SHALL INCLUDE ANY LIVE PLANT MATERIAL USED ON THE PROJECT. THIS INCLUDES BUT IS NOT LIMITED TO CONTAINER GROWN, B&B OR BAREROOT PLANTS, LIVE STAKES AND FASCINES (WATTLES), TUBERS, CORNS, BULBS, ETC., SPRIGS, PLUGS, AND LINERS.
- CONTAINER GROWN. CONTAINER GROWN PLANTS ARE THOSE WHOSE ROOTBALLS ARE ENCLOSED IN A POT OR BAG IN WHICH THAT PLANT GREW.

SUBSTITUTIONS

- IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN SPECIFIED MATERIALS IN ADVANCE IF SPECIAL GROWING, MARKETING OR OTHER ARRANGEMENTS MUST BE MADE IN ORDER TO SUPPLY SPECIFIED MATERIALS.
- SUBSTITUTION OF PLANT MATERIALS NOT ON THE PROJECT LIST WILL NOT BE PERMITTED UNLESS AUTHORIZED IN WRITING BY THE LANDSCAPE ARCHITECT, CONSULTANT.
- IF PROOF IS SUBMITTED THAT ANY PLANT MATERIAL SPECIFIED IS NOT OBTAINABLE, A PROPOSAL WILL BE CONSIDERED FOR USE OF THE NEAREST EQUIVALENT SIZE OR ALTERNATIVE SPECIES, WITH CORRESPONDING ADJUSTMENT OF CONTRACT PRICE.
- SUCH PROOF WILL BE SUBMITTED AND SUBMITTED IN WRITING TO THE CONSULTANT AT LEAST 30 DAYS PRIOR TO START OF WORK UNDER THIS SECTION.

INSPECTION

- PLANTS SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE CONSULTANT FOR CONFORMANCE TO SPECIFICATIONS, EITHER AT THE TIME OF DELIVERY ON-SITE OR AT THE GROWERS NURSERY. APPROVAL OF PLANT MATERIALS AT ANY TIME SHALL NOT IMPAIR THE SUBSEQUENT RIGHT OF INSPECTION AND REJECTION DURING PROGRESS OF THE WORK.
- PLANTS INSPECTED ON-SITE AND REJECTED FOR NOT MEETING SPECIFICATIONS MUST BE REMOVED IMMEDIATELY FROM SITE OR RE-TAGGED AND REMOVED AS SOON AS POSSIBLE.
- THE CONSULTANT MAY ELECT TO INSPECT PLANT MATERIALS AT THE PLACE OF GROWTH AFTER INSPECTION AND ACCEPTANCE. THE CONSULTANT MAY REQUIRE THE INSPECTED PLANTS BE LABELED AND RESERVED FOR PROJECT. SUBSTITUTION OF THESE PLANTS WITH OTHER INDIVIDUALS, EVEN OF THE SAME SPECIES AND SIZE, IS UNACCEPTABLE.

MEASUREMENTS OF PLANTS

- PLANTS SHALL CONFORM TO SIZES SPECIFIED UNLESS SUBSTITUTIONS ARE MADE AS OUTLINED IN THIS CONTRACT.
- HEIGHT AND SPREAD DIMENSIONS SPECIFIED REFER TO MAIN BODY OF PLANT AND NOT BRANCH OR ROOT TIP TO TIP. PLANT DIMENSIONS SHALL BE MEASURED WHEN THEIR BRANCHES OR ROOTS ARE IN THEIR NORMAL POSITION.
- WHERE A RANGE OF SIZE IS GIVEN, NO PLANT SHALL BE LESS THAN THE MINIMUM SIZE AND AT LEAST 50% OF THE PLANTS SHALL BE AS LARGE AS THE MEDIAN OF THE SIZE RANGE. (EXAMPLE: IF THE SIZE RANGE IS 12\"/>

SUBMITTALS

PROPOSED PLANT SOURCES

- WITHIN 45 DAYS AFTER AWARD OF THE CONTRACT, SUBMIT A COMPLETE LIST OF PLANT MATERIALS PROPOSED TO BE PROVIDED DEMONSTRATING CONFORMANCE WITH THE REQUIREMENTS SPECIFIED. INCLUDE THE NAMES AND ADDRESSES OF ALL GROWERS AND NURSERIES.

PRODUCT CERTIFICATES

- PLANT MATERIALS LIST - SUBMIT DOCUMENTATION TO CONSULTANT AT LEAST 30 DAYS PRIOR TO START OF WORK UNDER THIS SECTION THAT PLANT MATERIALS HAVE BEEN ORDERED. ARRANGE PROCEDURE FOR INSPECTION OF PLANT MATERIAL WITH CONSULTANT AT TIME OF SUBMISSION.
- HAVE COPIES OF VENDORS OR GROWER'S INVOICES OR PACKING SLIPS FOR ALL PLANTS ON SITE DURING INSTALLATION. INVOICE OR PACKING SLIP SHOULD LIST SPECIES SCIENTIFIC NAME, QUANTITY, AND DATE DELIVERED (AND GENETIC ORIGIN IF THAT INFORMATION WAS PREVIOUSLY REQUESTED).

DELIVERY, HANDLING, & STORAGE

NOTIFICATION
CONTRACTOR MUST NOTIFY CONSULTANT 48 HOURS OR MORE IN ADVANCE OF DELIVERIES SO THAT CONSULTANT MAY ARRANGE FOR INSPECTION.

PLANT MATERIALS

- TRANSPORTATION - DURING SHIPPING, PLANTS SHALL BE PACKED TO PROVIDE PROTECTION AGAINST CLIMATE EXTREMES, BREAKAGE AND DRYING. PROPER VENTILATION AND PREVENTION OF DAMAGE TO BARK, BRANCHES, AND ROOT SYSTEMS MUST BE ENSURED.
- SCHEDULING AND STORAGE - PLANTS SHALL BE DELIVERED AS CLOSE TO PLANTING AS POSSIBLE. PLANTS IN STORAGE MUST BE PROTECTED AGAINST ANY CONDITION THAT IS DETRIMENTAL TO THEIR CONTINUED HEALTH AND VIGOR.
- HANDLING - PLANT MATERIALS SHALL NOT BE HANDLED BY THE TRUNK, LIMBS, OR FOLIAGE BUT ONLY BY THE CONTAINER, BALL, BOX, OR OTHER PROTECTIVE STRUCTURE, EXCEPT BAREROOT PLANTS SHALL BE KEPT IN BUNDLES UNTIL PLANTING AND THEN HANDLED CAREFULLY BY THE TRUNK OR STEMS.
- LABELS - PLANTS SHALL HAVE DURABLE, LEGIBLE LABELS STATING CORRECT SCIENTIFIC NAME AND SIZE. TEN PERCENT OF CONTAINER GROWN PLANTS IN INDIVIDUAL POTS SHALL BE LABELED. PLANTS SUPPLIED IN FLATS, RACKS, BOXES, BAGS, OR BUNDLES SHALL HAVE ONE LABEL PER GROUP.

WARRANTY

PLANT WARRANTY
PLANTS MUST BE GUARANTEED TO BE TRUE TO SCIENTIFIC NAME AND SPECIFIED SIZE, AND TO BE HEALTHY AND CAPABLE OF VIGOROUS GROWTH.

REPLACEMENT

- PLANTS NOT FOUND MEETING ALL OF THE REQUIRED CONDITIONS AT THE CONSULTANT'S DISCRETION MUST BE REMOVED FROM SITE AND REPLACED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE.
- PLANTS NOT SURVIVING AFTER ONE YEAR TO BE REPLACED AT THE CONTRACTOR'S EXPENSE.

PLANT MATERIAL

GENERAL

- PLANTS SHALL BE NURSERY GROWN IN ACCORDANCE WITH GOOD HORTICULTURAL PRACTICES UNDER CLIMATIC CONDITIONS SIMILAR TO OR MORE SEVERE THAN THOSE OF THE PROJECT SITE.
- PLANTS SHALL BE TRUE TO SPECIES AND VARIETY OR SUBSPECIES. NO CULTIVARS OR NAMED VARIETIES SHALL BE USED UNLESS SPECIFIED AS SUCH.

QUANTITIES

SEE PLANT LIST ON ACCOMPANYING PLANS.

ROOT TREATMENT

- CONTAINER GROWN PLANTS (INCLUDES PLUGS): PLANT ROOT BALLS MUST HOLD TOGETHER WHEN THE PLANT IS REMOVED FROM THE POT. EXCEPT THAT A SMALL AMOUNT OF LOOSE SOIL MAY BE ON THE TOP OF THE ROOTBALL.
- PLANTS MUST NOT BE ROOT-BOUND; THERE MUST BE NO CIRCLING ROOTS PRESENT IN ANY PLANT INSPECTED.
- ROOTBALLS THAT HAVE CRACKED OR BROKEN WHEN REMOVED FROM THE CONTAINER SHALL BE REJECTED.



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Science & Design

KILLARNEY GLEN
BUFFER REDUCTION / RESTORATION PLAN
 PREPARED FOR: RICHARD LEEDS
 SITE ADDRESS:
 19XX 104TH AVENUE SE
 BELLEVUE, WA 98004

SUBMITTALS & REVISIONS		NO.	DATE	DESCRIPTION	BY	DATE	DESCRIPTION
1	2	3	4	5	6	7	8

SHEET SIZE:
 ORIGINAL PLANS IS 24" x 36"
 SCALE ACCORDINGLY.

PROJECT MANAGER: KB
 DESIGNED: MSF
 DRAFTED: MSF, GB
 CHECKED: KBN/IL
 JOB NUMBER:

070618
 SHEET NUMBER:
5 OF 5

DATE: 11/11/2015
 TIME: 10:00 AM
 USER: SCOTT_SILVERSTEIN