

CRITICAL AREA STUDY

Cheshire Residence: Wetland and Watercourse Buffer Reduction, Revised

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CRITICAL AREA STUDY

CHESHIRE RESIDENCE

1 INTRODUCTION

This critical area study is prepared as part of a proposal to permit proposed site improvements at 7615 E. Mercer Way in Mercer Island, Washington (parcel number 3024059036). Proposed site improvements consist of an addition to the existing single-family residence, driveway expansion, and construction of a detached accessory dwelling unit (ADU) on the property.

The site contains wetland and stream (watercourse) critical areas as documented in the *Cheshire Residence – Wetland and Watercourse Delineation Study* prepared by The Watershed Company in June 2016. A revised wetland and stream delineation figure was prepared and submitted in June 2017. The wetland is classified as a Category III wetland, which requires a standard buffer width of 50 feet. The open channel of the watercourse meets the criteria for Type 2, also requiring a standard buffer width of 50 feet; the piped portion of the watercourse requires a buffer width of 25 feet.

The applicant proposes to reduce the portions of the standard 50-foot buffer of on-site critical areas to 25 feet through buffer enhancement. Unavoidable buffer impacts will be mitigated through on-site enhancement of remaining portions of the standard 50-foot buffer. This report is intended to satisfy the requirements of the Mercer Island City Code (MICC). It provides a description of existing site conditions, proposed wetland and watercourse buffer reductions, and includes compensatory mitigation to ensure no net loss of critical area or buffer functions.

2 EXISTING CONDITIONS

2.1 Setting

The subject parcel (parcel number 3024059036) is located at 7615 E. Mercer Way in Mercer Island, Washington; in Section 30 of Township 24 North, Range 5 East of the Public Land Survey System (PLSS). It is approximately 2.1 acres in size and situated in the Mercer Island sub-basin of the Cedar-Sammamish Watershed (Water Resource Inventory Area [WRIA] 8; Figure 1). The subject parcel is zoned residential (R-9.6).

The study area currently includes a 2,660-square foot single-family residence with attached garage built in 1970, a gravel driveway, maintained lawn areas, and a children’s play structure. The site slopes downhill to the east.

The entire parcel is mapped as Kitsap silt loam, 15 to 30 percent slopes, by the Natural Resources Conservation Service’s (NRCS) Web Soil Survey (USDA 2016). Steep slope areas (40% or greater) dominate the west side of the site; the east side of the parcel also contains some steep slope areas, but to a lesser extent. One wetland and one stream are present near the project area and are discussed below.

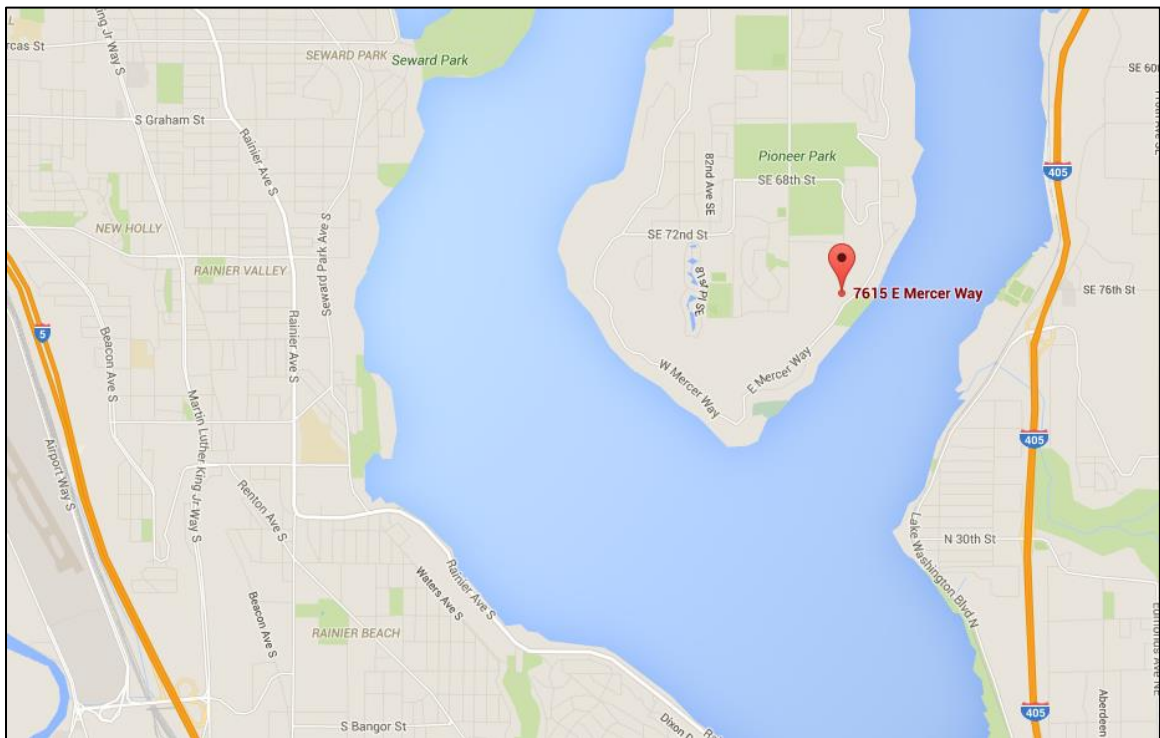


Figure 1. A vicinity map showing the location of the site (imagery source: Google Maps).



Figure 2. An aerial view of the subject property (imagery source: Mercer Island online mapping portal).

2.2 Wetland

One wetland (Wetland A) is present near the project area. Wetland A is located west of the existing single-family residence on the property at the base of the steep slope. It is a slope wetland that contains forested and emergent vegetation classes. Common plants observed in the wetland include western red cedar and bigleaf maple (partially rooted near wetland edges and growing in upland hummocks within the wetland boundary) in the canopy, with salmonberry, Devil's club, skunk cabbage, lady fern, and giant horsetail in the understory. The hydrologic regimes of wetland soils include saturated-only and occasionally flooded. Wetland A is supported by groundwater seeps. Surface water and groundwater flowing downslope through the wetland eventually form a distinct channel on the north side of the wetland, described in this study as Watercourse A. Wetland A is classified as a Category III wetland.

2.3 Watercourse

One watercourse (Watercourse A) is present in the project area. Watercourse A is approximately four feet wide and forms within the boundaries of Wetland A in the north-central portion of the property. It generally flows southeast through the study area and is eventually conveyed under E. Mercer Way upon leaving the subject property; Mercer Island's GIS Portal indicates that off-site, this watercourse flows through Clarke Beach Park then discharges into Lake Washington. Watercourse A is classified as a Type 2 watercourse.

2.4 Critical Area Buffers

Outside of wetland and watercourse critical areas and existing developed portions of the property, the site is predominantly forested. Much of the upland forested areas are also located on steep slopes (40% or greater). Forested areas are composed of mostly bigleaf maple; Douglas-fir and western red cedar are also present to a lesser extent. Tree size varies some, but is generally estimated at less than 20 inches diameter-at-breast-height (DBH) on average.

Understory vegetative structure is low on the east side of the residence; there is little to no sub-canopy present, and shrubs and groundcover plants are generally less than 10 feet in height (Figure 3). Understory plants are composed of native and non-native species. The most common plant species observed in this area include English ivy, sword fern, low Oregon grape, English laurel, beaked hazelnut, and Indian plum.



Figure 3. Photo of the forest understory east of the existing residence (photo taken 5/23/2016).

The critical area buffer immediately north and west of the residence is sparsely vegetated. Existing buffer intrusions are located in this area and include portions of a children's play structure with a compact gravel base and maintained lawn area (Figure 4). Vegetation in this portion of the buffer is maintained as lawn or is a sparsely

vegetated berm (Figures 4 and 5). Common plants include bigleaf maple in the canopy and giant horsetail in the understory.



Figure 4. Photo of critical area buffer located west of the existing residence (photo taken 5/23/3016).



Figure 5. Photo of sparsely vegetated understory of berm located in critical area buffer north and west of the existing residence (photo taken 5/23/2016).

2.5 Wildlife Habitat Conservation Areas

As indicated by both the City of Mercer Island's online mapping portal and PHS maps (WDFW 2016), an active bald eagle nest is present southwest of the subject property. The nest was visually confirmed during a May 2016 site inspection. The nest is located in a large and prominent Douglas-fir tree with a broken leader (Figure 6). According to online sources, the study area is located within 660 feet of the nest site (Figure 7). No other sensitive species are known to occur within or immediately adjacent to the project area.



Figure 6. Photo of Douglas-fir tree in which the nearby bald eagle nest is located (photo taken 5/23/2016).

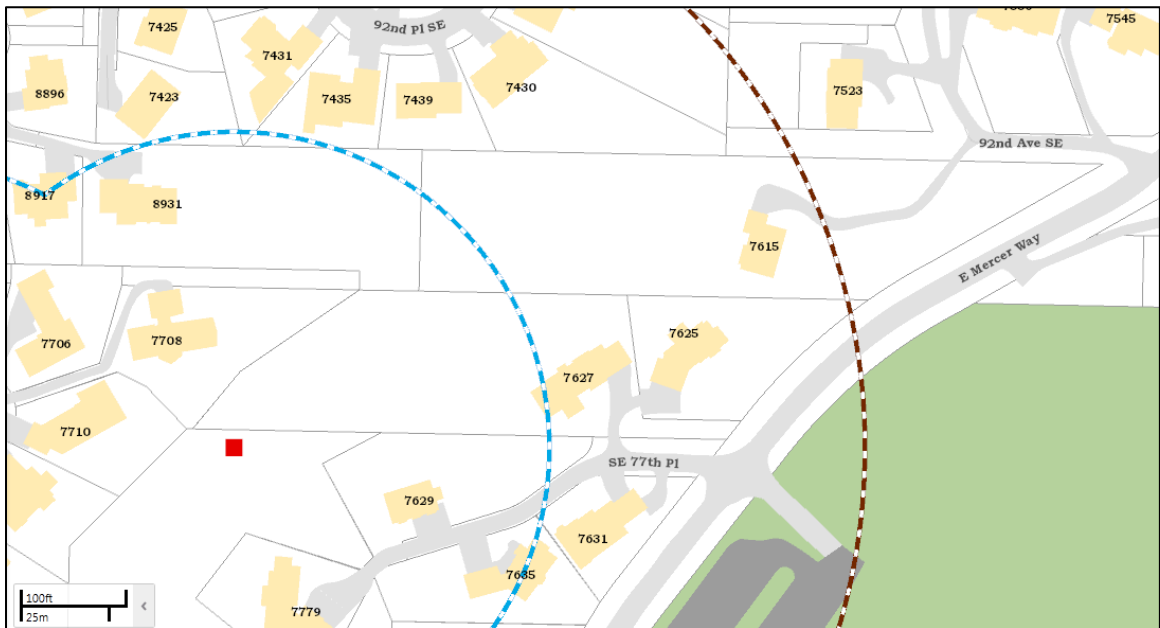


Figure 7. Mapped nest location (red square) in vicinity of subject parcel showing 330-foot buffer (blue dashed-line) and 660-foot buffer (brown dashed-line) from the nest (imagery source: Mercer Island online mapping portal).

3 REGULATIONS

3.1 Local Regulations

In the City of Mercer Island, wetlands are regulated under the Mercer Island City Code (MICC), Chapter 19.07 – Environment. Wetland buffers are designated based on the wetland classification (MICC 19.07.080). Wetlands on Mercer Island are classified using the 2004 Ecology Rating System (MICC 19.16.10). Wetland A rates as a Category III wetland, with a total functions score of 30 points (6 water quality function points, 10 hydrologic function points, and 14 habitat function points). Per MICC 19.07.080(C), Category III wetlands require a standard buffer width of 50 feet. Type 2 watercourses also require a standard buffer of 50 feet. Where the watercourse is piped, the standard buffer width is 25 feet.

Category III wetland buffers and Type 2 watercourse buffers may be reduced to 25 feet, provided it is shown that a smaller area is adequate to protect the wetland/watercourse, the impacts will be mitigated by using a combination of options, and the proposal will result in no net loss of wetland, watercourse, and buffer functions (MICC 19.07.070 and MICC 19.07.080). Buffer areas containing a steep slope may not be reduced.

Construction of new driveways may be allowed within critical area buffers as long as construction is consistent with best management practices, the facility is designed and located to minimize impacts to critical areas consistent with best available science, and impacts to critical areas are mitigated to the greatest extent reasonably feasible so there is no net loss of critical area functions (MICC 10.07.030[A][6]).

Wildlife habitat conservation areas are also regulated as critical areas; they are defined as “those areas the city council determine are necessary for maintaining species in suitable habitat within their natural geographic distribution so that isolated subpopulations are not created...” in MICC 19.16.010. Areas used by bald eagles for nesting and breeding were considered wildlife habitat conservation areas when the species was protected under the Endangered Species Act. Since the MICC was written, bald eagles have been de-listed and are no longer considered threatened or endangered. Currently, the City of Mercer Island directs applicants potentially conducting activities that may disturb bald eagles to follow recommendations outlined in the US Fish and Wildlife Service’s (FWS) *National Bald Eagle Management Guidelines* (FWS 2007).

4 PROJECT PURPOSE AND APPROACH

The purpose of the project is to construct an addition to the existing single-family residence and add a detached ADU on the property. These improvements also require an expansion of the existing driveway on-site per fire code requirements and a small (four-foot) retaining wall adjacent the proposed ADU. In addition, the project seeks to protect critical areas located on the property.

In order to achieve the purpose of the project and protect the wetland, watercourse, and buffer areas located on the property, wetland and watercourse buffer reduction is proposed with buffer enhancement. Buffer reduction will not extend into steep slope areas and is only proposed where necessary to allow for the proposed improvements. The proposed reduction will result in no net loss of critical area or buffer functions and will utilize the following mitigation options as provided by the MICC:

1. *Installation of biofiltration/infiltration mechanisms such as bioswales, created and/or enhanced wetlands, or ponds supplemental to existing storm drainage and water quality requirements;*
2. *Removal of noxious weeds, replanting with native vegetation and five-year monitoring.*

Additionally, existing intrusions into the buffer area west of the residence will be removed and the area restored with native vegetation. Proposed impacts to buffer areas are limited to the access driveways, as required by the fire department and allowed as an “allowed alteration” within critical area buffers per MICC 19.07.030(A)(6).

4.1 Mitigation Sequencing

The project has been designed to avoid, minimize and compensate for impacts to the greatest extent possible given the constraints of the site. The following describes how the mitigation sequencing requirements of the MICC have been met.

Avoid

The project area contains one wetland and one watercourse and their associated critical area buffers. Direct impacts to critical areas will be avoided. Buffer impacts will be avoided to the extent possible through thorough site planning and by reducing and enhancing the wetland and watercourse standard buffers. Buffer enhancement will ensure that the proposed conditions will achieve no net loss of critical area or buffer functions.

Minimize

Impacts to the reduced critical areas buffers will be a result of driveway expansion as required by the fire department. These impacts have been minimized by maintaining the existing location of the driveway to be expanded and by using a bioretention area to filter runoff from portions of the new driveway. The bioretention area will receive runoff from the upper portion of the driveway and parking area west of the proposed ADU. The bioretention area has been adequately sized to treat 91% of the runoff volume through the 18-inch thick bioretention soil layer, for the required water quality treatment. Due to the underlying low permeable native soils, native infiltration in the soil subgrade is not anticipated. The bioretention area will be equipped with a perforated underdrain located within a gravel sub-base that will collect the treated runoff from the bioretention soil layer and will convey the flows east, eventually connecting into the existing drainage system along the north side of East Mercer Way

During the construction phase, impacts will be minimized through implementation of best management practices (BMPs). Unavoidable buffer impacts will be mitigated at a 1.5:1 ratio through on-site buffer enhancement.

Mitigate

Compensatory mitigation measures are proposed for impacts resulting from driveway expansion in reduced on-site critical area buffers. All of the reduced 25-foot buffer will be enhanced to maintain equivalent buffer function. Despite the buffer reduction, it is not possible to construct the entirety of the access drive outside of the reduced buffer. A total of 2,722 square feet (SF) of the reduced buffer will be impacted by the driveway expansion. Mitigation for unavoidable impacts within the reduced buffer will be mitigated by enhancing a portion of the standard 50-foot buffer east of the new residence at a 1.5:1 ratio.

Buffer enhancement will include removal those portions of the existing play structure and compact gravel base from the reduced buffer area (72 SF) and replacing the structure entirely outside of the reduced buffer; removal of invasive species and installation of a dense native tree, shrub, and groundcover community; and installation of large woody debris. A total of 15,609 SF of critical area buffer will be enhanced on the property, including the entirety of the reduced buffer (11,361 SF) and 4,248 SF of the standard buffer. A total of 23 logs are proposed in the buffer enhancement areas. The logs, including bigleaf maple, Douglas-fir, western red cedar, and western hemlock, will be harvested on-site during approved clearing activities associated with the driveway expansion. Trees proposed for use as large woody debris are 18-24-inch in diameter. Since the vast majority of the trees that will be removed from buffer areas are located in the stream buffer, the large woody debris will be placed generally east of the proposed

residence within the enhanced stream buffer areas. A rain garden will also be installed as a biofiltration mechanism near the ADU as described above.

Table 1: Impacts and Mitigation Areas

Proposed Impact	Proposed Mitigation
Reduce standard buffer from 50' to 25'	Enhance entire reduced buffer – 11,361 sf
Permanent buffer loss from driveway expansion – 2,722 sf	Removal of play structure and gravel base from reduced buffer – 72 sf; Enhance portion of standard 50-foot buffer – 4,248 sf

Monitor

A five-year monitoring and maintenance plan is proposed to ensure the success of mitigation areas over time.

4.2 Unpermitted Vegetation Removal

The City has noted that vegetation removal occurred within the buffer areas sometime between 2012 and 2015, and there is no record of appropriate permits for this clearing activity (*Request for Information for File No. CAO16-003 Cheshire Critical Area Determination 7615 E Mercer Way / Mercer Island WA 98040; King County Tax Parcel #: 3024059036* [Robin Proebsting, Senior Planner, City of Mercer Island Development Services Group, 1/13/2016 (sic)]). Based on a review of Google Earth aerial photographs, the vegetation clearing took place prior to April 2015. According to the King County recorder’s office, the transfer of ownership to the current property owners took occurred after the clearing took place (transfer recorded May 30, 2014). As such, they cannot address the specifics of the prior permitting history, or lack thereof. However, under the current proposal, the areas which were cleared appear to be within the reduced 25-foot buffer or are within areas of the standard buffer, which are proposed for reduction under as part of this project. All portions of the reduced buffers will be restored and enhanced under this proposal, including any unauthorized clearing that occurred prior to the current ownership.

5 IMPACT ASSESSMENT

The proposal is to expand the existing residence from a footprint of 1,655 SF to 2,827 SF and build a detached 900-SF ADU with an associated 432 SF of pervious pavers comprising a deck off the east side of the ADU. The total footprint for the ADU, including the foundation and deck will be 1,440 SF. The proposal also includes widening the existing gravel driveway to approximately 20 feet and upgrading to

asphalt paving as required by the fire department. A four-foot retaining wall is proposed north of the expanded driveway. Except for the unavoidable driveway impacts, these site improvements will occur outside of the reduced wetland and watercourse buffers. Impacts to the reduced 25-foot critical area buffers is limited to driveway expansion as required by the fire department. Driveway impacts occurring in the reduced buffer total 2,722 SF; this does not include existing driveway areas located in the critical area buffers.

Buffer impacts will take the form of vegetation removal and minor grading and result in increased impervious surfaces. To compensate for these impacts and for reduction of the critical area buffer, buffer enhancement will occur. A total of 15,609 SF of critical area buffer will be enhanced on-site by removing existing buffer intrusions, removing non-native vegetation, and installing native plants and large woody debris. The total enhancement area includes 4,248 SF of the standard 50-foot wetland buffer to remain, as mitigation for unavoidable buffer impacts (ratio of 1.5:1). With mitigation, a net improvement of on-site buffers is expected.

5.1 No net loss

Without mitigation, a slight decrease in hydrologic, water quality, and habitat function could be anticipated to occur under the proposed project due to the increase of impervious surfaces on-site and some vegetation removal. The mitigation plan is designed to ensure no net loss of ecological function as a result of the proposed improvements.

Proposed mitigation will benefit on-site critical area buffers by increasing the ability of the buffer vegetation to store/trap sediments and nutrients, increasing the ability of the buffer to attenuate flood flow during heavy rain, and improving cover and forage opportunities for wildlife. Mitigation areas include all portions of the reduced buffer, including areas of previous unauthorized clearing activities that occurred prior to the current ownership, degraded portions of the existing 25-foot buffer, and a portion of the standard 50-foot buffer that will not be reduced.

Table 2, below, summarizes how the proposed mitigation will achieve no net loss of ecological functions on-site.

Table 2. Summary showing no net loss of critical area buffer functions with proposed conditions.

Critical Area Buffer Function	Existing Conditions	Proposed Conditions	Determination
Water Quality	The current water quality function of the critical area buffers is limited by sparsely vegetated buffer areas and buffer intrusions.	Vegetative density to be substantially increased in critical area buffers through planting of native trees, shrubs, and groundcovers. Bioswale to be installed.	Increasing amount of dense, rigid vegetation as well as the bioswale will improve the ability to slow surface water flowing towards the stream and help filter and capture nutrients and sediments that might otherwise enter the waterbody.
Hydrology	The current hydrologic function of the critical area buffers is limited by sparsely vegetated areas and buffer intrusions.	Vegetative density to be substantially increased in critical area buffers through planting of native trees, shrubs, and groundcovers. Rain garden to be installed.	The addition of trees, shrubs, groundcover plants, and rain garden will help attenuate flood flow during heavy rain events.
Habitat	The habitat function of the critical area buffers is limited by low understory vegetative density, low structural diversity, and prevalence on non-native plant species.	Non-native plant species to be removed. Vegetative density to be substantially increased in critical area buffers through planting of native trees, shrubs, and groundcovers. Woody debris to be installed.	Woody debris installation and understory planting of trees, shrubs, and groundcover plants will increase vegetative density and structural diversity, improving cover and forage opportunities for wildlife. Non-native plant species removed or significantly reduced.
Overall	Moderate to low functioning critical area buffer in the project area. Existing vegetated areas have significant amounts non-native plant species and are characterized by a relatively open or sparsely vegetated understory.	Removal of non-native plant species buffer areas. Planting of trees, shrubs, and groundcovers in existing vegetated stream buffer areas. Installation of rain garden.	The proposed project is expected to improve ecological functions over existing conditions. This includes habitat, hydrology, and water quality functions of the critical area buffers. Overall no net loss of functions is expected.

5.2 Bald Eagle Nest Management

A verified bald eagle nest is located approximately 500 feet southwest of the project area. The applicant has discussed the potential effects and limitations regarding the nest with USFWS staff. Since project construction is planned for July (the latter half of the nesting season), project activities will occur more than 330 feet from the nest, and existing vegetative screening areas will remain undisturbed, the project complies with regular building construction requirements; therefore, USFWS permits are not required (Jamie Hanson, USFWS, email communication, April 2017).

6 MITIGATION AND RESTORATION PLAN

6.1 Overview

A comprehensive five-year maintenance and monitoring plan is included as part of the buffer enhancement. The plan details methods of invasive species removal, specifies appropriate species for planting and planting techniques, describes proper maintenance activities, and sets forth performance standards to be met yearly during monitoring. This will ensure that restoration plantings will be maintained, monitored, and successfully established within the first five years following implementation.

Proposed restoration begins with removal of invasive weeds such as Himalayan blackberry, English ivy, and English laurel and placement of woody debris in the buffer. This will be followed by installation of native tree, shrub, and groundcover species suitable to the site (Appendix A). Four native tree species, six native shrub species, and thirteen native groundcover, perennial, or grass species are proposed in the mitigation area. The plan calls for new plantings within the reduced buffers of on-site critical areas. Native plantings and woody material are intended to increase native plant cover, improve native species diversity, increase vegetative structure, and provide food and other habitat resources for wildlife.

6.2 Goals

1. Enhance wetland and watercourse buffers.
 - a. Remove and control all invasive woody species in the restoration areas including but not limited to Himalayan blackberry, English ivy, and English laurel.
 - b. Establish dense and diverse native tree, shrub and groundcover vegetation throughout the mitigation areas.

6.3 Performance Standards

The standards listed below will be used to judge the success of the plan over time. If the standards are met at the end of the five-year monitoring period, the City shall issue release of the performance bond.

1. Survival:
 - a. 100% survival of all trees and shrubs at the end of Year One. This standard may be met through establishment of installed plants or by replanting as necessary to achieve the required numbers.

- b. 80% survival of all trees and shrubs at the end of Year Two. This standard may be met through establishment of installed plants or by replanting as necessary to achieve the required numbers.
 - i. Survival beyond Year Two is difficult to track. Therefore, a diversity standard is proposed in place of survival (see #3, below).
- 2. Native vegetation cover in planted areas:
 - a. Achieve at least 60% cover of native plants by the end of Year 3. Volunteer species may count towards this standard. Total native plant cover must include a minimum of 40% tree and shrub cover.
 - b. Achieve at least 80% cover of native plants by the end of Year 5. Volunteer species may count towards this standard. Total native plant cover must include a minimum of 60% tree and shrub cover.
- 3. Species diversity in planted areas:
 - a. Establish at least two native tree species, four native shrub species and five native groundcover, perennial, or grass species throughout the buffer area by Year 5. Volunteer species may count towards this standard.
- 4. Invasive species standard: No more than 10% cover of invasive species in the planting area, in any monitoring year. Invasive species are defined as any Class A, B, or C noxious weeds as listed by the King County Noxious Weed Control Board.

6.4 Monitoring Methods

This monitoring program is designed to track the success of the mitigation site over time by measuring the degree to which the performance standards listed above are being met. An as-built plan will be prepared within 30 days of substantially complete construction of the mitigation areas. The as-built plan will document conformance with these plans and will disclose any substitutions or other non-critical departures. The as-built plan will establish baseline plant installation quantities, photopoints, and three 50-foot monitoring transects that will be used throughout the monitoring period to measure the performance standards.

Monitoring will occur twice annually for five years. The first monitoring visit will take place in the spring. This visit will record necessary weeding, invasive control, and other maintenance needs. The **restoration specialist** will then notify the owner and/or maintenance crews of necessary early season maintenance. The late-season visit will occur in late summer or fall and will record the following and be submitted in an annual report to the City:

- 1. General summary of the spring visit.

2. First- and second-year counts of surviving and dead/dying plants by species in the planting areas.
3. Estimates of native species cover using the line-intercept method along the monitoring transects.
4. Estimates of invasive species cover using the line-intercept method along the monitoring transects.
5. Counts of established native species to determine species richness.
6. Photographic documentation at permanent photopoints.
7. Intrusions into the planting areas, erosion, vandalism, trash, and other actions detrimental to the overall health of the mitigation areas.
8. Recommendations for maintenance in the mitigation areas.
9. Recommendations for replacement of all dead or dying plant material with same or like species and number as on the approved plan.

6.5 Construction Notes and Specifications

Specifications for items in **bold** can be found under "Material Specifications and Definitions."

General Notes

The restoration specialist will oversee the following:

1. Clearing, soil preparation, and placement of **woody debris**;
2. Invasive weed clearing; and
3. Plant material inspection.
 - a) Plant delivery inspection.
 - b) 50% plant installation/layout inspection.
 - c) 100% plant installation inspection.

Work Sequence

1. Clear the planting area of all invasive woody vegetation including but not limited to Himalayan blackberry, English ivy, and English laurel.
2. Manually or mechanically remove all invasive woody vegetation roots. Cut ivy growing on trees at approximately eye-level and remove roots from the soil. Rake out remaining roots to the maximum extent practical.

3. Remove gravel pad surrounding the play structure, and loosen all compacted soils in the area. Rototill three inches of **compost** into the upper nine inches of the soil where decompaction is necessary.
4. Place **woody debris** retained from constructions activities in critical area buffers as shown in plans. **Woody debris** will be placed by hand, when feasible. Alternatively, for those pieces too large for manual transport, **woody debris** shall be placed by a boom truck from adjacent paved areas. **Woody debris** will not be placed in the active stream channel; log anchors are not necessary.
5. All plant installation will take place during the dormant season (October 15 to March 1).
6. Layout vegetation to be installed per the planting plan and plant schedule.
7. Prepare a planting pit for each plant and install per the planting details.
8. Mulch each tree, shrub and fern with a circular **wood chip mulch** ring, 4 inches thick and extending 9 inches from the base of the plant (18-inch diameter).
9. Install a temporary or permanent irrigation system as needed to insure that all plants receive at least one inch of water per week from June 1st – September 30th. Maintain irrigation system in working condition for at least two summers after initial plant installation.

6.6 Maintenance

This site will be maintained for five years following completion of the plant installation. Specifications in **bold** can be found under "Material Specifications and Definitions."

1. Replace each plant found dead in the summer monitoring visit during the upcoming fall dormant season (October 15 to March 1).
2. Follow the recommendations noted in the spring monitoring site visit.
3. Invasive species maintenance plan:
 - a) Himalayan blackberry, English ivy, English laurel, and other invasive woody vegetation will be grubbed out by hand on an ongoing basis, with care taken to grub out roots except where such work will jeopardize the roots of installed or volunteer native plants.
 - b) If it is likely that hand removal will not be completely effective or will damage desirable species, then application of an herbicide approved for use in aquatic areas may be used. Herbicide applications must be conducted only by a state-licensed applicator. Applications should be done between mid-spring and mid-summer to maximize uptake by plants. Application should be a targeted method such as spot spray (preferred for Himalayan blackberry), or wick.

4. At least twice yearly, remove by hand 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 as needed during the spring and summer. Frequent weeding will result in lower mortality and lower plant replacement costs.
5. Do not weed the area near the plant bases with string trimmer (weed whacker). Native plants are easily damaged or killed, and weeds easily recover after trimming.
6. Apply slow release granular **fertilizer** to each installed plant annually in the spring (by June 1) of Years 2 through 5.
7. Mulch the weeded areas beneath each plant with **wood chip mulch** as necessary to maintain a minimum 4-inch-thick, 18-inch-diameter mulch ring.
8. The temporary irrigation system will be operated to ensure that plants receive a minimum of one inch of water per week from June 1 through September 30 for the first two years following installation. Irrigation beyond the second year may be needed based on site performance or significant replanting.

6.7 Material Specifications and Definitions

1. **Compost:** Cedar Grove Compost or equivalent product. 100% vegetable compost with no appreciable quantities of sand, gravel, sawdust, or other non-organic materials.
2. **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 2 through 5 and **not in the first year**.
3. **Restoration specialist:** The Watershed Company [(425) 822-5242] personnel or other person qualified to evaluate environmental restoration projects.
4. **Wood chip mulch:** Chipped woody material approximately 1 inch minimum to 3 inches in maximum dimension (not sawdust or coarse hog fuel). Mulch shall not contain appreciable quantities of garbage, plastic, metal, soil, and dimensional lumber or construction/ demolition debris. Pacific Topsoil sells suitable woodchip mulch called "Wood Chip Mulch" at many of their locations. Pacific Topsoil: (800) 884-7645. Note: Arborist woodchips generally contain weed seeds and are not a reliable alternative.
5. **Woody debris:** Large pieces of downed wood such as logs, rootwads, 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.

7 SUMMARY

The applicant proposes the expansion of an existing single-family residence and driveway and construction of a detached ADU on a property encumbered by steep slope, wetland, and watercourse critical areas and their associated buffers. In order to allow the proposed improvements, a 50 percent reduction critical area buffers is proposed, where necessary, through the buffer reduction allowances outlined in MICC 19.07.070 and 19.07.080. Reduction of the buffer will be mitigated through the removal of existing buffer intrusions, removal of non-native vegetation, installation of native plantings and large woody material, and installation of a rain garden. Driveway and parking expansion would occur within the reduced 25-foot wetland/watercourse buffer area as an allowed alteration to critical area buffers (MICC 19.07.030). Impacts for these unavoidable buffer impacts will be mitigated by enhancing portions of the standard 50-foot buffer, which will not be reduced. The buffer reduction/enhancement proposal will also restore areas where unauthorized vegetation removal took place prior to the current ownership. An enhancement plan has been developed that details the plantings proposed to mitigate for the allowed buffer impacts and buffer reduction. A total of 15,609 SF of native plantings is proposed within the on-site buffer areas, including the entirety of the reduced 25-foot buffer and 4,248 SF of the standard 50-foot buffer.

The mitigation plantings and large woody material proposed within the reduced wetland and watercourse buffers would increase habitat function value and improve overall buffer functions. The proposed planting plan incorporates a diversity of native plant species, including trees, shrubs, and groundcover plants. The proposed plan will provide better protection of the on-site critical area functions and values than exists under current conditions.

Additionally, a comprehensive five-year maintenance and monitoring plan has been prepared. This plan will ensure that proposed enhancement plantings will be maintained, monitored, and successfully established within the first five years following implementation. Overall, a net gain in on-site critical area functions and values is the expected result of the implemented project.

REFERENCES

Jamie Hanson (FWS). April 2017. Personal email communication.

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<http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>.

US Fish and Wildlife Service (FWS). May 2007. National Bald Eagle Management Guidelines. Available online:

<https://www.fws.gov/southdakotafieldoffice/NationalBaldEagleManagementGuidelines.pdf>.

Washington Department of Fish and Wildlife (WDFW). Accessed May 2016. Priority Habitats and Species (PHS): PHS on the Web. Website: <http://wdfw.wa.gov/mapping/phs/>.

APPENDIX A

Mitigation and Restoration Plan

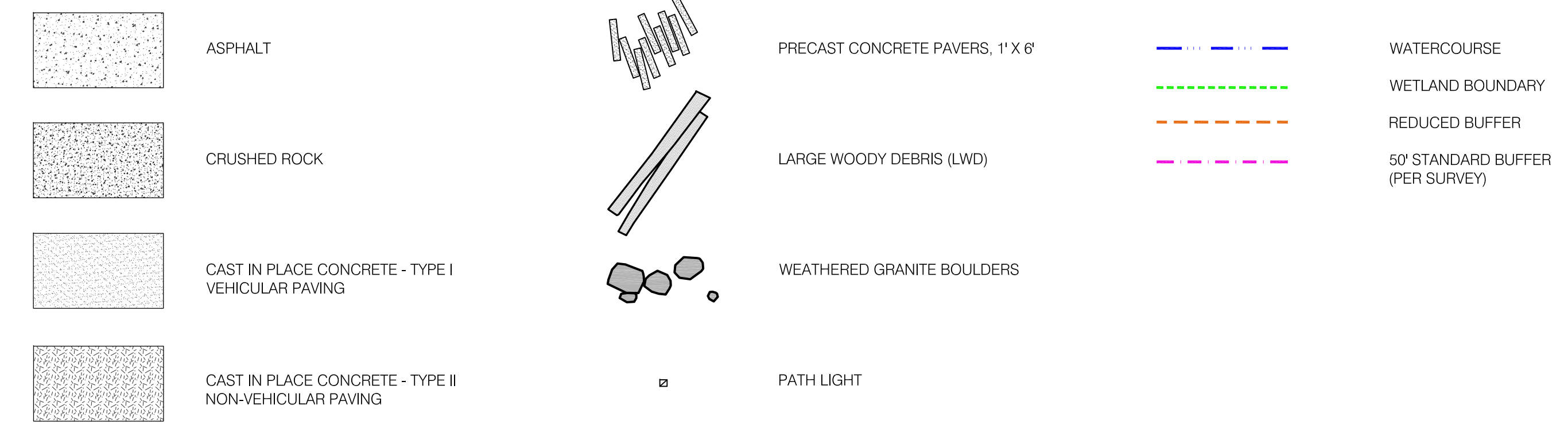
NOTES:
1. 1:1 MITIGATION FOR ENCROACHMENT INTO BUFFER ZONE.
2. LARGE WOODY DEBRIS (LWD) TO BE COLLECTED ON SITE, 12'-24' LENGTHS, 18"-24" DIAMETER, CONSISTING OF BIG LEAF MAPLE, DOUGLAS FIR, WESTERN RED CEDAR, AND WESTERN HEMLOCK.



PLANTING SCHEDULE:

QTY.	BOTANICAL NAME	COMMON NAME	BOTANICAL NAME	COMMON NAME	BOTANICAL NAME	COMMON NAME
TREES:						
9	THUJA PLICATA	WESTERN RED CEDAR				
6	CORNUS NUTTALLII	PACIFIC DOGWOOD				
3	FRANGULA PURSHIANA	CASCARA				
11	ACER CIRCINATUM	VINE MAPLE				
			GROUND COVER: (3350) 1 GALLON AT 24" O.C. EQUAL NUMBERS OXALIS OREGANA POLYSTICHUM MUNITUM ASARUM CALIDATUM ACHLYS TRIPHYLLA CORNUS CANADENSIS TIARELLA TRIFOLIATA			
			PERENNIALS (FIELD LOCATE W/ LANDSCAPE ARCHITECT): (500) 1 GALLON AT 18" O.C. EQUAL NUMBERS VANCOUVERIA HEXANDRA AQUILEGIA FORMOSA DICENTRA FORMOSA ERYTHRONIUM REVOLUTUM LUZULA PARVIFLORA			
			GRASSES (FIELD LOCATE W/ LANDSCAPE ARCHITECT): (1000) PLUGS AT 12" O.C. EQUAL NUMBERS DESCHAMPSIA CESPITOSA FESTUCA ROEMERI			
			SHRUBS: (550) 1 GALLON AT 9" O.C. EQUAL NUMBERS MAHONIA AQUIFOLIUM GAULTHERIA SHALLON VACCINIUM OVATUM SYMPHORICARPOS ALBUS RUBUS PARVIFLORUS RIBES SANGUINEUM ROSA NUTKANANA OEMLERIA CERASIFORMIS CORYLUS CORNUTA		OREGON GRAPE SALAL EVERGREEN HUCKLEBERRY SNOWBERRY THIMBLEBERRY RED FLOWERING CURRANT NOOTKA ROSE INDIAN PLUM BEAKED HAZLENUIT	REDWOOD SORREL WESTERN SWORD FERN WILD GINGER VANILLA LEAF BUNCHBERRY FOAMFLOWER

MATERIALS LEGEND:



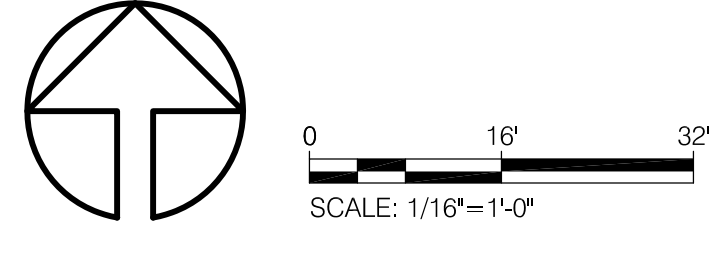
Cheshire Residence
7615 E Mercer Way, Mercer Island, WA



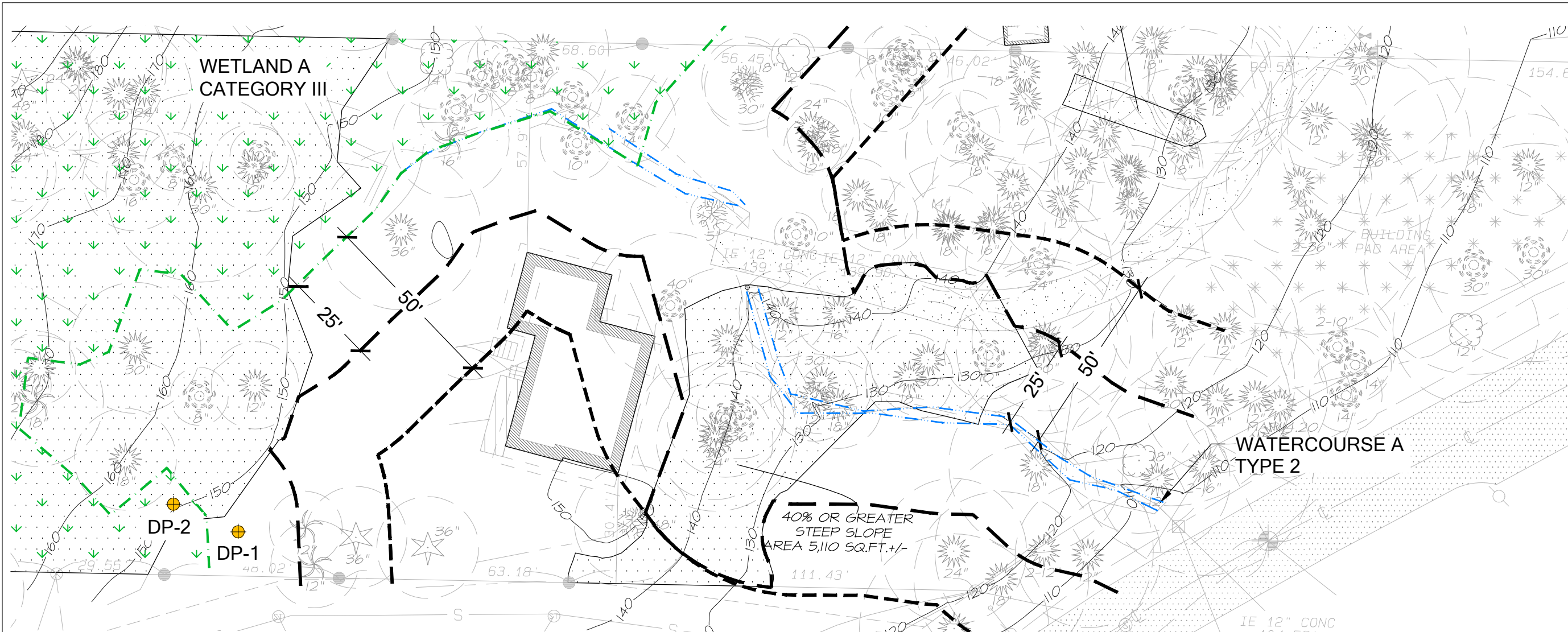
SET TYPE:
CONSTRUCTION DOCUMENTS/PERMIT
SET ISSUE DATE:
06.09.2017
REVISIONS:
Value Engineering 04.21.2017
09.27.2017

DRAWN/CHECKED:
JMJ/JH
SHEET NAME:
MITIGATION PLANTING

SHEET NUMBER:
L3.0



Design File Name: Project\Cheshire Residence\Drawings\3.0 - mitigation plan.dwg
 09/23/2017 11:45 AM by: Jason Henry (jhenry) g:\project\cheshire residence\drawings\3.0 - mitigation plan.dwg



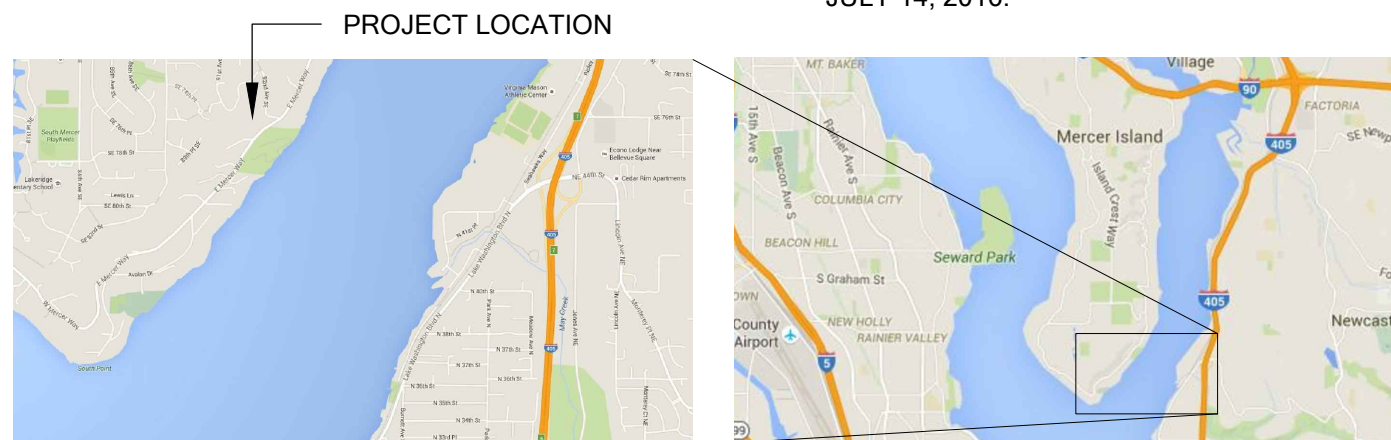
LEGEND

- WETLAND BOUNDARY (DELINEATED)
- STANDARD BUFFER (50')*
- REDUCED BUFFER (25')*
- STREAM OHWM (DELINEATED)
- 40% OR GREATER STEEP SLOPE
- DATA POINT

*ONLY MOST ENCUMBERING BUFFER SHOWN IN DELINEATION FIGURE. INDIVIDUAL BUFFERS ARE:
 STANDARD STREAM BUFFER - 50'
 REDUCED STREAM BUFFER - 25'
 STANDARD WETLAND BUFFER - 50'
 REDUCED WETLAND BUFFER - 25'

NOTES

1. CRITICAL AREAS DELINEATED BY THE WATERSHED COMPANY ON MAY 23, 2016.
2. SURVEY RECEIVED FROM TERRANE ON JULY 14, 2016.



VICINITY MAPS



DELINEATION FIGURE

THE CHESHIRE RESIDENCE
DELINEATION FIGURE
CHESHIRE RESIDENCE
 7615 E. MERCER WAY
 MERCER ISLAND, WA 98040, KING COUNTY

SUBMITTALS & REVISIONS	
NO.	DESCRIPTION
1	DELINEATION FIGURE
2	REVISED DELINEATION FIGURE

SHEET SIZE:
 ORIGINAL PLAN IS 11x17.
 SCALE ACCORDINGLY.

PROJECT MANAGER: RK
 DESIGNED: i
 DRAFTED: LV
 CHECKED: KC, AR
 JOB NUMBER:

160528
 SHEET NUMBER:
W1 OF 1