

Lee Boyle Residential Development  
**Critical Areas Report**

Prepared for

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**4150 Boulevard Place**  
**Mercer Island, WA 98040**

Prepared by



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## **Introduction**

The landowner at 4150 Boulevard Place, Mercer Island, Washington is proposing to build a single-family house on the property (see Figure 1 – Vicinity Map). A stream is present along the southern border of the property, and the corner of the house will encroach on the stream buffer.

This critical areas report provides details on the impacts to the buffer. It also describes the buffer averaging and buffer enhancements proposed by the landowner to mitigate these impacts, including goals, objectives, performance standards and dates of completion of the mitigation proposal, as well as a monitoring, maintenance, and contingency plan.

The City of Mercer Island requires that a critical areas study be prepared when a project will encroach on critical areas such as wetlands, steep slopes, or fish and wildlife conservation areas.

Mercer Island's city code (19.07.050) requires that this study's Critical Areas Report presents a mitigation and restoration plan, including the following:

- Delineation of critical areas on site, including streams, wetlands, fish and wildlife conservation areas, and any known threatened or endangered species on site.
- Description of impacts to critical areas
- Mitigation planned, and the number of replacement vegetation
- Proposed monitoring plan

These items are included in the body of this report. In addition, the Mercer Island Critical Areas code (19.07.050) requires the following:

- Site survey, construction plans, proposed grading, and erosion control plan (included in Appendix A)
- Stormwater plan (included as Appendix E)
- Locations of existing trees and vegetation (shown on site plan in Appendix A) and proposed removals (no significant tree removals are proposed)

Biologists from Northwest Environmental Consulting, LLC (NVEC) conducted office-based research, as well as a site visit on February 20, 2019 to determine the presence of any critical areas at the project site. Photos of the visit are presented as Appendix B.

## **Project Site**

The project is located in King County, in the City of Mercer Island at 4150 Boulevard Place, Mercer Island, Washington 98040. See Figures 1 and 2.

The site was previously developed and is well maintained with vegetation and large trees. The existing house has been removed; a few retaining walls, paths, and building pads were still present at the time of the visit. The site slopes toward the south at varying degrees from approximately 10% in the upper land to greater than 30% for the southern area. According to the

geotechnical study (Appendix D), the site has glacial outwash with lacustrine deposits, which is consistent with a perennial stream that traverses the lower portion of the site adjacent to the southern property line.

Some nonnative weeds are present on the property within the buffer, including Himalayan blackberry (*Rubus armeniacus*), English ivy (*Hedera helix*), and English holly (*Ilex aquifolium*). Nonnative ornamental plants such as English laurel are also present along the stream on the adjacent property. Weed control has already been performed along the slope and the owners have volunteered as part of a King County Conservation District grant to enhance the steep slope and riparian corridor with native vegetation. See Appendix C for the plans from this grant.

## **Project Description**

A planned 2,500-square-foot residence is proposed to the site. Other planned improvements are a 1,050-square-foot driveway, an 84-square-foot walkway, and 14,600 square feet of landscaping (see Drawing Sheet CA-1.0 in Appendix A). The house is planned with a standard allowable building footprint, with 90 degree corners and angled to keep the house parallel with other developments in the area.

The house has been sited to minimize impacts to critical area buffers, but due to the parcel's size and topography, it is not feasible to entirely avoid the 50-foot stream buffer. The southeast corner of the proposed house and construction limits will impact 478 square feet of buffer.

The landowner is proposing to use buffer averaging that is currently allowed with the City. The site plan attached shows the buffer averaging proposed. The buffer averaging will increase an area of buffer along the top of the southwest corner of the steep slope by 500 feet.

## **Critical Areas On Site**

Northwest Environmental Consulting, Inc. (NVEC) visited the site on February 20, 2019 to confirm the presence of the known stream, and to check if any wetlands or other fish and wildlife conservation areas are present onsite.

### ***Stream***

NVEC confirmed the presence and location of the stream, which traverses the lower portion of the site adjacent to the southern property line. This matches the observations during a previous assessment by the Watershed Company in 2004. The 2004 assessment team categorized the stream as a Type 2 stream, under the City of Mercer Island definition (year-round flow and no fish use). The headwaters of the stream start near Homestead Field and then migrate through the channel to Lake Washington. No evidence of fish use was observed in the stream.

At the time of the February 2019 site visit, NVEC staked the Ordinary High Water Mark (OHWM) at the upstream and downstream portion of the stream along property line. The stream appeared to have experienced some flashy flows, and erosion was occurring along the steep stream banks. The OHWM was placed along areas that had evidence of erosion and traces of a wrack line; this wrack line indicated where a high water mark had occurred during high flows this winter.

The stream is a steep-gradient stream with step-pools and a streambed consisting of gravel and cobble with occasional glacial till layers exposed. See Appendix B for photos of the stream.

## ***Wetlands***

NWEC walked the site to look for wetland conditions. Established vegetation on the site was typical of uplands and included red alder, Douglas fir, and big leaf maple with an understory of sword fern, beaked hazelnut, evergreen huckleberry, salmonberry, and snowberry. No wetland hydrology was observed on site, so no test pits were required to determine if wetland conditions existed on the site. NWEC also checked the National Wetlands Inventory (NWI) mapping database and Washington Department of Fish and Wildlife (WDFW) Priority Habitats and Species (PHS) database. Neither database maps any wetlands on this property or on adjacent properties.

## ***Fish and Wildlife Conservation Areas***

Vegetation and physical features on the site are typical of developed suburban properties in the area. NWEC did not observe any habitats that would indicate the presence of threatened or endangered species on site. The WDFW PHS database also does not list any priority habitats on site, or within 0.5 mile of the property. King County does not list any critical areas on site in their iMap database (see Figure 2).

## ***Steep Slopes***

Slopes are present on the property, ranging from approximately 10% in the upper land to greater than 30% for the southern area (see topographic survey maps included in Appendix A). These are addressed in the geotechnical assessment (Appendix D). None are listed under King County's mapping for potential steep slope hazard areas (see Figure 2).

## **Critical Areas Regulations**

Under the Mercer Island City Code (MICC) 19.07.070, a Type 2 stream receives a 50-foot standard buffer, or a minimum 25-foot buffer with appropriate enhancement and/or buffer averaging

The City allows buffer averaging (19.07.070.3) with the following requirements:

- The proposal will result in a net improvement of critical area function;
- The proposal will include replanting of the averaged buffer using native vegetation;
- The total area contained in the averaged buffers on the development proposal site is not decreased below the total area that would be provided if the maximum width were not averaged;
- The standard buffer width is not reduced to a width that is less than the minimum buffer width at any location; and
- That portion of the buffer that has been reduced in width shall not contain a steep slope.

## **Impacts**

The southeast corner of the proposed house foundation will encroach 478 square feet into the stream buffer. In addition, impact will occur from excavation of the foundations and access for equipment during construction, a 5' 10" area around the foundation will be impacted by construction. A construction fence and silt fence will be installed along the limits of construction

around the foundation work in the stream buffer and near the steep slope. Areas impacted by construction will be restored with vegetation and landscaping features typical along the side of residential houses.

None of these impacts will encroach closer than 25 feet from the stream; 25 feet is the minimum buffer width allowed with enhancement (MICC 19.07.070).

The impacts to the buffer and proposed averaging will all occur above the steep slope, so that no impacts occur to the steep slope.

The new impervious surface requires stormwater detention. The stormwater system will be drained to the public system along the street via a 6-inch pipe system. The stormwater routing will not enter or impact the critical areas buffer.

## **Buffer Mitigation Proposal**

### ***Strategy***

Reasonable efforts made to apply mitigation sequencing to avoid or compensate for impacts to ecological functions provided by the property's critical areas. This sequence has three steps:

1. Avoid
2. Minimize
3. Mitigate impacts

### ***Avoidance and Minimization***

Complete avoidance to the stream buffer is unavoidable to construct the house. The stormwater system, which is required by code, was routed to entirely avoid the critical area buffer. The system will control flows and improve water quality before being discharged into the public water system.

The house footprint has been placed to meet specific code requirements, and minimize its encroachment into the stream buffer and still construct the house that the owners wish to construct on the property. The owner has elected to use buffer averaging as allowed by Mercer Island to compensate for encroachment into the wetland buffer.

### ***Mitigation Approach***

The mitigation approach involves averaging the buffer by widening the stream buffer north of the encroachment point, and enhancing this area with native plantings, which will effectively widen the functional buffer along the stream and protect the top of the steep slope. The proposed, 500 square feet of enhanced area is more than required to offset the proposed 478 square feet of impacts from construction for buffer averaging.

Enhanced areas will be prepared by removing any invasive species found (Himalayan blackberry) and planting with a native understory of native shrubs. Existing vegetation will remain undisturbed. A mix of natives will be used that will provide wildlife value and winter screening (e.g., evergreen huckleberry). Some of the plants will be placed along the top of the bank to help stabilize the bank and provide overhanging vegetation along the stream.

Plants specified in the attached planting plan (see Drawings W-1 and W-2 in Appendix A) will be ordered and installed on the site. The site will be maintained and monitored as needed to ensure proper plant establishment.

In addition, the owners applied for and received a voluntary matching grant from the King County Conservation District (KCD) to remove invasive species and plant native vegetation on the steep slope, which is within the stream critical areas buffer. They are enhancing 4,800 square feet of the riparian forest by removing holly, laurel and ivy and replacing these areas with over 200 plantings of native shrubs and trees. The KCD will be maintaining the project for up to 5 years; the owners will maintain the project for at least 10 years after that, and providing the city with proof of maintenance. Appendix C contains details of the restoration project.

### ***Function and Values Improvements***

Enhancing stream buffers on the site will increase filtering of runoff that occurs from the development, increase habitat values by creating a greater diversity of structure and food sources along the riparian corridor, and provide screening of the stream from lighting and activities in the proposed house and neighboring lots. The additional plants along the top of the steep slope will function to reduce potential erosion along this sensitive environment, and will provide additional food sources and shelter for birds and other wildlife.

The planting efforts and maintenance of the site will increase the value of the buffer area over the existing condition. Invasive species such as Himalayan blackberry will be removed during construction, and these species will be controlled so that they don't become reestablished.

## **Proposed Mitigation**

### ***Planting Plan***

The proposed mitigation will enhance 500 square feet of buffer edge that was used as part of the yard by the past residents. Additional plants will be located along the stream. Table 1 lists the plant species that will be installed. See Drawings W-1 and W-2 for additional details.

**Table 1. Proposed native species to be used in the planting plan**

<b>Common Name</b>	<b>Scientific Name</b>
Black twinberry	<i>Lonicera involucrata</i>
Evergreen huckleberry	<i>Vaccinium ovatum</i>
Indian plum	<i>Oemleria cerasiformis</i>
Red osier dogwood	<i>Cornus sericea</i>
Small Oregon grape	<i>Mahonia nervosa</i>
Snowberry	<i>Symphoricarpos albus</i>
Sword fern	<i>Polystichum munitum</i>
Vine maple	<i>Acer circinatum</i>

## ***Mitigation Goals***

Mitigation goals are as follows:

- Plant 500 square feet with native plants to expand the buffer width west of the encroachment site, for buffer averaging.
- Plant a band of native vegetation along the top of bank in addition to what has been completed as part of the King County Conservation District Grant.
- Control Himalayan blackberry and other invasive plant species in the enhanced area.

## ***Performance Standards***

Buffer plantings shall maintain a 100% survival for the first year and achieve 80% survival in years 2 through 5. For proper functioning, species diversity will be maintained. The planting areas will maintain a minimum of 4 shrub species for the 5-year monitoring period.

Invasive species shall be controlled so that they do not reach more than 10% aerial coverage for the 5-year monitoring period.

## ***Schedule and Maintenance***

Plantings shall be containerized plants or bare root. Watering of the installed plants may be required if drought conditions occur during the summer months. Invasive plants will be removed throughout the year as they occur.

## ***Proposed Monitoring, Reporting and Contingency***

To ensure that the performance standards are met, plantings will be counted in August or September for survival for the first year. The site will be monitored for five years from the time of completion of site construction by a qualified individual(s) who is experienced or trained in wetland vegetation and monitoring techniques.

Valid monitoring data are critical to making meaningful management decisions that help the mitigation site meet its objectives. Monitoring plans are based on mitigation site conditions and plant community development. These factors together with the wetland mitigation objectives are to be incorporated into a site-specific monitoring plan that will be developed at the beginning of each monitoring season. The annual monitoring plan will use standard vegetation sampling methodology to measure site performance standards such as actual counts, line intercept methods or belt transect methods.

The monitoring team will be responsible for taking a representative sample of the site and determining an appropriate sample size.

## ***Monitoring Reports***

Monitoring reports will be completed and submitted to the City by December 31 for each of the monitoring years.

## ***Contingency Actions***

All dead plantings will be replaced so that 100% survival is reached for the first year. A sub-sample can be completed to assure that the 100% survival is reached. In years 2 through 5 all



plantings will maintain an 80% survival rate. Himalayan blackberry, English ivy, and English holly will also be manually removed from the enhancement area if they reach 10% or greater coverage during the five-year period.

## **Conclusion**

The project meets the requirements of the City of Mercer Island code for buffer averaging as summarized below.

- **The proposal results in a net improvement of critical area function.** The proposed enhanced buffer will remove area that was previously used as yard before the removal of the previous house. This area will be planted with native shrubs along the top of the slope that will provide wildlife habitat by providing additional food sources and structure, screening from the driveway area of the house, and help stabilize the top of the steep slope. The buffer averaging area is not on a steep slope.
- **The proposal will include replanting of the averaged buffer using native vegetation.**
- **The total area contained in the averaged buffers onsite will not decrease the total buffer area** (that would be provided by maximum, unaveraged buffer). In fact, the overall buffer area will *increase* by about 20 square feet.
- **The standard buffer width is not reduced to less than the minimum buffer width at any location.**
- **The reduced area of the buffer does not include a steep slope.** All work will occur above the top of the bluff.
- The owners of the property have volunteered to enhance the entire steep slope with matching funds from the King County Conservation District. This will improve riparian habitat conditions by removing invasive plants and enhance buffering of the stream by providing additional screening from the proposed single-family home and increasing food sources and vertical structure in the riparian area.

## **Document Preparers**

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Northwest Environmental Consulting, LLC followed standard acceptable field methods and protocols at the time work was performed. The conclusions and findings in this report are based on field observations and measurements and represent our best professional judgment and to some extent rely on other professional service firms and available site information. Within the limitations of project scope, budget, and seasonal variations, we believe the information provided herein is accurate and true to the best of our knowledge. Northwest Environmental Consulting does not warrant any assumptions or conclusions not expressly made in this report, or based on information or analyses other than what is included herein.

## **References**

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