ESA

5309 Shilshole Avenue, NW
Suite 200
Seattle, WA 98107
206.789.9658 phone
206.789.9684 fax

www.esassoc.com

memorandum

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to Lauren Anderson, Planner; City of Mercer Island

from Tobin Story, ESA Ecologist

subject Hagstrom Review CAO17-004

Environmental Science Associates (ESA) has prepared this memorandum on behalf of the City of Mercer Island (City) to provide environmental review for the development proposal at 7428 SE 71st Street. The project proposes demolition and rebuild of a single-family residence on Parcel 5368000300. Proposed construction on the site would require reduction of standard watercourse buffers through enhancement, and the new residence would be located farther from the Lake Washington shoreline. The purpose of the memo is to verify the accuracy of the findings within the Critical Area Study (hereinafter referred to as the study) submitted with the application for CAO17-004 and to confirm whether the proposed mitigation measures adequately mitigate proposed impacts and achieve the standard of no net loss of ecological function. The site contains two critical areas; one open Type 3 stream (watercourse) which transitions to a piped watercourse on the east side of the subject property, and a second piped watercourse located approximately five feet west of the subject property. According to MICC, Type 3 watercourses require a 35-foot standard buffer, and piped watercourses require a 25-foot standard buffer.

In addition to the watercourses mentioned above, the parcel is located on the Lake Washington Shoreline and is subject to regulations in the Mercer Island SMP.

The focus of this review is to confirm site conditions, and to determine the implications of City environmental regulations on the proposed development. According to the MIMC, a watercourse or stream buffer may be reduced to its minimum allowed width if the proposal will result in a no net loss of watercourse, wetland, or buffer function (MICC 19.07.070B.2 & 19.07.080C.2). Type 3 watercourse buffers may be reduced to a minimum of 25 feet, while piped watercourses may be reduced to a minimum buffer width determined on a case by case basis by the City. All structures in the shoreline zone must be set back at least 25 feet from the OHWM, and maximum impervious surface coverage allowed is 10% between 0 and 25 feet from the OHWM and 30% between 25 and 50 feet from the OHWM (MICC 19.07.110.E.1).

Document Review

ESA reviewed the following City-provided documents relating to the project: CAO17-004 SEPA Checklist (prepared by Brad Sturman, Sturman Architects), Hagstrom Residence: Watercourse Buffer Reduction Critical Area Study (The Watershed Company, 2017) and the Hagstrom Residence Site Plan (Sturman Architects 2017).

ESA also reviewed information available in the public domain, including National Wetland Inventory maps, Washington Department of Fish and Wildlife web-mapping tools (SalmonScape), King County's GIS mapping website (iMap), and City of Mercer Island critical areas maps.

The proposed development would: 1) maintain the existing minimum distance (10 feet) from structure to open portions of Watercourse A (under the pre- and post-development conditions, as allowed by MICC 19.07.030.A.10) while proposing buffer reduction from the standard buffer width throughout much of the buffer, 2) reduce a portion of the Watercourse B buffer from 25 feet to 14 feet on the west side of the property, and 3) remove the existing residence from the 25-foot inner shoreline buffer along Lake Washington.

Review of Site Conditions

ESA ecologist Tobin Story conducted a site visit with City of Mercer Island planner Lauren Anderson to the project site on May 19, 2017. Brad Sturman from Sturman Architects was also present on site. The site visit included a visual observation of the mapped watercourses and current watercourse buffers, as well as visual observation of the Lake Washington shoreline and shoreline buffer.

Watercourses – Based on the site visit, the surveyed locations of Watercourse A and B appear to match site conditions. Watercourse A enters the property on the northeast side of the property as an open, Type 3 stream and transitions to a piped watercourse after approximately 15 feet. This piped watercourse appears to flow under the existing residence and discharge into Lake Washington through the existing bulkhead. Watercourse B is piped for the entire length of the site, though it was observed as discharging into Lake Washington through an existing culvert. Watercourse buffers match those described in the submitted critical areas study. The buffer for Watercourse A is primarily bare dirt and gravel, with minimal vegetation. The Watercourse B buffer consists of landscaping shrubs and several moderate height trees.

Shoreline – Based on the site visit, the condition of the Lake Washington shoreline is accurate as described. The existing residence is located within 15 feet of the shoreline at its closest point, other areas within the 25-foot inner buffer include pavers, a small sandy beach, and areas vegetated with lawn grass and ornamental shrubs.

Review of Proposed Development Documents and Mitigation Plan

ESA reviewed the proposed approach to reduce the standard buffer for Watercourse B, and minimize impacts to the buffer of Watercourse A by maintaining the existing minimum distance between the structure and open channel segment of the stream. Construction of the proposed residence would cause unavoidable impacts to the buffer of Watercourse A, including reduction from the standard buffer width (both for the Type 3 open channel segment and the piped segment) and 357 square feet of new impervious surface. No impacts would occur in the Watercourse B buffer beyond the proposed buffer reduction (25 feet wide to 14 feet wide, 732 square foot reduction). Generally, the applicant proposes to compensate for reduced buffer size and buffer impacts using the following options as provided by the MICC; permanent removal of impervious surfaces and replacement with native vegetation, and removal of noxious weeds, replanting with native vegetation. The buffer enhancement plan includes goals and performance standards, which would be achieved through five years of maintenance and monitoring. After a review of the proposed development and supporting documents, we have the following concerns and recommendations to ensure compliance with City shoreline and critical areas management requirements.

Watercourse A

Concern – The project proposes impacts within the buffer of Watercourse A. According to MICC 19.07.070.B, the decision for determining the minimum buffer reduction allowed on piped watercourses is made by the code official. This decision is made based on a determination that the proposal will result in no net loss of watercourse and buffer functions. The CAS and Mitigation plan document existing non-conforming conditions (including portions of the existing residence) located within the standard 25-foot buffer from the piped corridor of Watercourse A. The study states, "The existing watercourse buffers, particularly the Watercourse A buffer, provide very little protective functions." We agree that the existing piped condition of the on-site watercourse precludes the associated buffer area from providing ecological functions for the feature. The mitigation plan details the approach to remove impervious surface and provide buffer enhancement that may warrant buffer reduction and allow impacts within the existing buffer.

While the proposed removal of impervious surfaces and buffer enhancement may provide limited habitat, hydrologic, and water quality benefits to Lake Washington, we do not believe that these proposed actions will significantly improve functions for the piped watercourse itself. As such, ESA does not believe that the proposed buffer enhancement would provide adequate mitigation for the proposed site development within the standard 25-foot buffer of the piped watercourse, as these features would not specifically enhance the ecological functions of the piped watercourse.

Recommendation 1 – It is recommended that the applicant explore the possibility of daylighting the lower portion of Watercourse A. Daylighting and restoring this lowest watercourse segment could be integrated with the proposed Mitigation Plan and the enhancement of the Lake Washington shoreline area, and could be coordinated with the adjoining property owners consistent with MICC 19.07.070.B.4 (ensuring that the new daylighted watercourse segment would not create new critical areas compliance issues). If this approach is determined feasible and reasonable, we believe that watercourse daylighting and restoration would result in a significant increase in ecological functions and could warrant buffer reduction adjacent to Watercourse B, and/or in portions of the project site where the Watercourse A channel must remain piped. At a minimum, the applicant should demonstrate why daylighting and restoring the stream is not feasible.

Concern - The study states that 1,535 square feet of buffer enhancement will occur for buffer impacts in Watercourse A in the form of expansion of the residence into the watercourse buffer. It does not state, however, what the total square footage of buffer impact is anticipated to be. The study also does not state that the applicant is seeking a reduced buffer for Watercourse A, despite the site plan showing the effects of this reduced buffer area.

Recommendation 2 – It is recommended that an updated study include a table or figure that quantifies the area of each type of impact as well as the area of each type of corresponding mitigation proposed. Comparing the ratio of anticipated impacts to proposed mitigation could provide a quantitative analysis of no net loss. The updated study should clearly quantify the buffer reduction being pursued for Watercourse A.

Concern - The study does not specifically delineate minimum buffers which will be maintained for the piped portion of Watercourse A. Specifically, a staircase is shown which appears to encroach within 3 feet of Watercourse A.

Recommendation 3– It is recommended that the study specifically list and indicate the minimum buffers for the piped portion of Watercourse A. MICC 19.07.070 allows for reduction of buffers around piped watercourses, but stipulates that the reduced area must be adequate to protect the watercourse. ESA's primary recommendation is to consider daylighting Watercourse A (see Recommendation 1). If the applicant provides adequate documentation that portions of Watercourse A cannot be daylighted as part of the proposal, we recommend that the applicant consider opportunities to provide a 5-foot minimum buffer (free from new fill and structures) to the west of Watercourse A in order to preserve ecological buffer functions.. At a minimum, this should include realignment of the stairway on the east side of the proposed structure.

Watercourse B

We agree that buffer reduction is likely necessary for Watercourse B, and that daylighting of this piped channel is likely not feasible because it is located on the adjoining property. Recommendations for daylighting the piped channel of Watercourse A should be explored as a successful mitigation option to provide compensation for buffer reduction proposed throughout the project site.

Buffer Enhancement

Concern - On sheet W3 of the drawing set the legend lists the buffer enhancement area for shoreline setback mitigation at 1,819 SF, but page 10 (section 5.0) of the critical area study lists that enhancement area at 1,908 SF.

On the "second" sheet W4 of the drawing set (assuming it is meant to be sheet W5) there are ten (10) shrubs listed in the planting schedule, but on page 14 of the critical area study (section 6.1) it states that "nine native small tree/shrub species and five native groundcover species are proposed in the mitigation area."

Also on "second" sheet W4 hatched areas for groundcovers are shown beneath proposed shrub plantings. If the quantities listed for groundcovers in the planting schedule are calculated to be planted at 24" O.C. across the entirety of these hatched areas, this would result in too many plants being planted on the site. This could be mitigated if the quantities been adjusted to leave room for the other plants on the plan.

Recommendation 4 – It is recommended that the study correct these inaccuracies for consistency, and clarify that the number and spacing of mitigation plantings is correct for the size of the mitigation area.

General Summary

Aside from the listed concerns and specific recommendations detailed above, the Critical Area Study and Mitigation Plan proposed for the site appear to be appropriate. Of particular note, the applicant proposes removing the existing residence from within the 25-foot shoreline buffer area required by the SMP (MICC 19.07.110). Additionally, the proposal includes a net impervious surface removal of 611 square feet across the site, and an enhancement area of 4,854 square feet of the property. The applicant has proposed utilizing nearly all available space on the lot, aside from the proposed residence and driveway, as buffer enhancement – either within the Lake Washington shoreline buffer area, or within reduced buffer areas associated with the on-site and off-site watercourses. Species selected for the Mitigation Plan are appropriate for the area and for watercourse and lakeshore buffers, and have the potential to provide increased buffer water quality, hydrology, and habitat functions, especially where adjacent. Established performance standards, protocols for the 5-year monitoring period, and maintenance activities are consistent with current best practices and City critical areas requirements.

ESA recommends that the City require that the applicant provide revision to the proposed mitigation approach to justify piped watercourse buffer reduction. Proposed mitigation should be focused on restoring the specific functions of the on-site piped Watercourse A, such as daylighting a section of the stream channel at and immediately upstream of the Lake Washington convergence (or across the entire property from the existing Type 3 Watercourse A segment down to the lake shoreline).

See additional review discussion and detailed recommendations on preceding pages of this memo. If you have any questions, please contact me at 206-576-3790.