CITY OF MERCER ISLAND
9611 SE 36th Street • Mercer Island, WA 98040-3732
(206) 275-7605 • FAX (206) 275-7726
www.mercergov.org

CRITICAL AREAS DETERMINATION
NOTICE OF DECISION
March 11, 2019

Project Number:	CAO18-003
Description:	Request to reduce Category IV wetland buffer to 25 feet to accommodate a new Single-Family Residence. The City's GIS map indicates a piped watercourse, however following review, the findings indicate there is not a regulated watercourse present on-site. A regulated Category IV wetland is present on site.
Applicant:	Benny Kim 7415 Lake Ballinger Way Edmonds WA 98026
Owner:	Benny Kim 7415 Lake Ballinger Way Edmonds WA 98026
Site Address:	8114 West Mercer Way, Mercer Island WA 98040; Identified by King County Assessor tax parcel number 335850-0974
Zoning District:	R-15
SEPA Compliance:	A Determination of Non-Significance (DNS) for SEP18-024 will be issued on March 11th, 2019, concurrent with this Notice of Decision.
Exhibits:	1. Development Application for a Critical Area Determination, received on May 2, 2018. 2. Watercourse Assessment prepared by C2MY Engineers received on May 2, 2018. 3. Wetland Delineation prepared by Bradford Shea a Senior Ecologist at Westech Company received on May 2, 2018. 4. Wetland Buffer Reduction Mitigation Plan prepared by Bradford Shea a Senior Ecologist at Westech Company, received on July 2, 2018. 5. Revised Final Wetland Buffer Reduction Mitigation Plan prepared by Bradford Shea a Senior Ecologist at Westech Company received on October 23, 2018. 6. Project Narrative prepared by Benny Kim received on May 2, 2018. 7. City's first review letter with Environmental Science Associate's (ESA) memo, dated July 26, 2018. 8. City's second review letter with ESA's memo, dated November 28, 2018. 9. Public comment letters: a. Christa Friedrich b. Fred Howard c. Lisa Chow and Tuanhai Hong d. Loren Anderson e. Tuanhai Hong 10. Comment response letter from Benny Kim received on October 23, 2018.

11. Geotechnical Engineer Statement of Risk Letter prepared by Jason Bell Senior Engineer at JJA, Inc. received on October 23, 2018.
12. Revised King County Bond Quantity Worksheet received on March 11, 2019.
13. Plan Set received October 23, 2018.
14. SEPA Determination (SEP18-024) issued March 11, 2019.
15. Revised and Final Site Plan received February 4, 2019.
16. Stormwater and Erosion Control Management Plan received February 4, 2019.

I. FINDINGS OF FACT

1. Application Description:
The request is for approval to reduce a Category IV wetland buffer from 35 to 25 feet in order to accommodate a new Single-Family Residence. The subject site is vacant and slopes downward from the north to the south and contains trees and shrubbery.

2. Zoning:
The existing zoning of the subject site is Single Family Residential R-15 (Residential, 15,000 square foot minimum lot area).

3. Adjacent Land Use:
Land uses adjacent to the subject site include of single-family residences to the north, west, south and east.

4. Consistency with Land Use Code/Zoning Requirements:
Mercer Island City Code (MICC) 19.07.080(C)(2) state that "*the code official may allow the standard wetland buffer width to be reduced to not less than the minimum buffer width in accordance with an approved critical area study when he/she determines that a smaller area is adequate to protect the wetland functions, the impacts will be mitigated consistent with MICC 19.07.070(B)(2), and the proposal will result in no net loss of wetland and buffer functions*."

The applicant must provide mitigation as described in MICC 19.07.070(B)(2)(b). The applicant's revised critical area study and mitigation plan (Exhibits 3 and 5) verify that a reduced buffer is adequate to protect the wetland and the proposal will result in no net loss of wetland and buffer functions, based on the analysis below.

5. State Environmental Policy Act (SEPA) Compliance:
After SEPA review, a Determination of Non-Significance (DNS) will be issued concurrent with this decision on March 11, 2019. Please refer to Exhibit 14.

6. Public Noticing and Comments:
There is no public hearing requirement for a Critical Areas Determination (a type III land use review) per MICC 19.15.030 (Table A and B). On June 11, 2018, City staff sent a Public Notice of Application to all property owners within 300 feet of the subject property and placed the Public Notice of Application in the City Weekly Permit Bulletin. A public comment period ran from June 11, 2018 through 5:00 P.M. on July 11, 2018. The City received multiple comment letters during the public comment period (Exhibit 9a-e) regarding the topics below. The applicant responded to the neighbor's general concerns in a response letter (Exhibit 10).

a. Landslide hazard: concerns about development with the steep slope and potential landslide hazard;

***Staff Analysis**:*
The applicant has designed the project to follow the recommendations from the geotechnical report prepared for this project. Please refer to Exhibit 11, Geotechnical Report and Statement of Risk. Page 2 of Exhibit 11 states the following: "the hazard area will be modified per CS2 Engineer's structural design to mitigate the existing steep slope, including but not limited to; maintain a vegetated slope, and a pile supported, stepped concrete foundation. This will provide that the risk to the lot and adjacent property is eliminated or mitigated such that the site is determined to be safe." Further, construction specifics are being reviewed under the building permit (1401-022) for this project.

b. Water on-site: concerns about erosion and run-off and the potential impacts to neighboring sites;

***Staff Analysis**:*
The applicant's wetland consultant prepared an enhancement and re-vegetation plan to stabilize the soils in the construction area, please refer to Exhibit 5, page 9 – 3.1 Mitigation Plan Components. Best Management Practices (BMP) will be used during construction and silt fences will be kept in place until new shrubs and trees are established in the buffer enhancement area- refer to Exhibit 5, Chapters 3 & 4. The silt fence will be placed on the outer western edge of the designated reduced buffer zone and will be installed and approved by the City prior to construction. In addition, the applicant provided a Stormwater and Erosion Control Management Plan (Exhibit 16).

c. Provided documents: proposed plans and potential impacts (off-site) were vague, and a possible wetland was not indicated;

***Staff Analysis**:*
In a response letter (Exhibit 10), the applicant's wetland consultant stated that the small 200 sf possible wetland was studied further and found not to constitute a wetland area – refer to Exhibit 5 Final Mitigation and Monitoring Plan, figure 4 and Appendix A.

7. MICC 19.07.030(A): Allowed alterations

Allowed Alterations. The following alterations to critical areas and buffers are allowed and the applicant is not required to comply with the other regulations of this chapter, subject to an applicant satisfying the specific conditions set forth below to the satisfaction of the code official; and subject further, that the code official may require a geotechnical report for any alteration within a geologic hazard area:

…

6. New Streets, Driveways, Bridges and Rights-of-Way. Construction of new streets and driveways, including pedestrian and bicycle paths, subject to the following:

a.Construction is consistent with best management practices;

b.The facility is designed and located to mitigate impacts to critical areas consistent with best available science;

c.Impacts to critical areas are mitigated to the greatest extent reasonably feasible so there is no net loss in critical area functions; and

d.The code official may require a critical area study or restoration plan for this allowed alteration.

Staff Analysis:
The proposal includes adding a new driveway within the wetland buffer. The new driveway is designed and located to mitigate impacts to the wetland consistent with best available science as demonstrated by the Wetland Delineation Report (Exhibit 3) and the Final Mitigation and Monitoring Plan (Exhibit 5). As requested by ESA and the City, the driveway was narrowed and reconfigured to minimize impacts to the wetland and a row of trees were added as a vegetative buffer along the northern edge of the driveway. Please refer to Exhibit 15 Final Site Plan, which

shows the new driveway location and trees. The Final Site Plan illustrates the correct spacing (10 feet) and location of the trees.

The driveway will be constructed using all reasonable and feasible Best Management Practices (BMP), including a silt fence, straw wattle and other erosion control methods as specified in the Final Maintenance and Monitoring Plan (Exhibit 5). In addition, the impacts to the wetland and buffer will be mitigated to the extent reasonably feasible with a 1,301 square foot mitigation area which will be enhanced with the removal of non-native vegetation and the addition of native vegetation. Please refer to Exhibit 5 and Exhibit 15 for the mitigation and enhancement plan. There are 4 planting areas within the buffer as illustrated on the Final Site Plan (Exhibit 15). The proposed enhancement and plant species can be found on page 13-14 within Exhibit 5. The performance standards include 100% plant survival within the first year after the initial planting and 90% survival for the subsequent years. Please refer to Exhibit 5 sections 3.2 and 3.3 for the Monitoring and Performance Standards. Exhibit 5, page 17 Westech states the following: "the mitigation and monitoring plan has been formulated to provide measures which offset impacts to the wetland and which are expected to result in "No Net Ecological Loss" to the wetland and its buffer zone."

Staff finds the proposal meets the requirements of MICC 19.07.030(A)(6)(a-d). .

8. MICC 19.07.070(A):

Watercourses – Designation and Typing. Watercourses shall be designated as Type 1, Type 2, Type 3 and Restored according to the following criteria:

1. Type 1 Watercourse. Watercourses or reaches of watercourses used by fish, or are downstream of areas used by fish.
2. Type 2 Watercourse. Watercourses or reaches of watercourses with year-round flow, not used by fish.
3. Type 3 Watercourse. Watercourses or reaches of watercourses with intermittent or seasonal flow and not used by fish.
4. Restored Watercourse. Any Type 1, 2 or 3 watercourses created from the opening of previously piped, channelized or culverted watercourses.

Staff Analysis:

The applicant provided a Watercourse Assessment (Exhibit 2) that indicates that the type 2 watercourse indicated on the City's GIS map is not a regulated watercourse and is stormwater run-off. MICC 19.16 defines a watercourse as the following: "a course or route, formed by nature and generally consisting of a channel with a bed, banks, or sides throughout substantially all its length, along which surface waters, with some regularity (annually in the rainy season), naturally and normally flow in draining from higher to lower lands. This definition does not include irrigation and drainage ditches, grass-lined swales, canals, storm water runoff devices, or other courses unless they are used by fish or to convey waters that were naturally occurring prior to construction." The City's environmental consultant, Environmental Science Associates (ESA), has confirmed that the stream does not meet the City's definition of a watercourse per MICC 19.16 and that there is not a regulated watercourse present on-site, refer to Exhibit 7, page 2.

9. MICC 19.07.070(B)(1):

Watercourse Buffer Widths. Standard buffer widths shall be as follows, measured from the ordinary high water mark (OHW), or top of bank if the OHW cannot be determined through simple nontechnical observations.

Watercourse Type	Standard (Base) Buffer Width (feet)	Minimum Buffer Width with Enhancement (feet)

Type 1	75	37
Type 2	50	25
Type 3	35	25
Restored or Piped	25	Determined by the code official

Staff Analysis:
Due to ESA confirming that there is no regulated watercourse on-site (Exhibit 7, page 2), Staff finds that this code section no longer applies.

10. MICC 19.07.080(B):
Wetland Ratings. Wetlands shall be rated as Category I, Category II, Category III or Category IV according to the wetland classification system.

Staff Analysis*:*
The applicant provided a wetland delineation report (Exhibit 3) and revised critical areas study (Exhibit 5) that identifies the wetland as a Category IV. Staff finds this criterion has been met.

11. MICC 19.07.080(C): 1. Standard Wetland Buffer Widths. The following standard buffer widths shall be established from the outer edge of wetland boundaries:

Wetland Type	Standard (Base) Buffer Width (feet)	Minimum Buffer Width with Enhancement (feet)
Category I	100	50
Category II	75	37
Category III	50	25
Category IV	35	25

Staff Analysis:
Both the City's resources (Exhibit 7, page 2) and the applicant's delineation and revised critical areas study (Exhibit 3 and 5) identify the existing wetland as a Category IV. Category IV wetlands are subject to a 35-foot regulated buffer that may be reduced to 25 feet with an approved critical area determination. ESA's first review letter (Exhibit 7, page 2) states that they agree with the applicant's findings that wetland A is a category IV slope wetland. ESA's second review letter (Exhibit 8, page 2) states that they agree with the applicant's findings that the 200 square foot wet area is not a wetland. Staff finds this criterion has been met.

12. MICC 19.07.070(B)(2)(a):
Reduction of Buffer Widths. The code official may allow the standard buffer width to be reduced to not less than the above listed minimum width in accordance with an approved critical area study when he/she determines that a smaller area is adequate to protect the watercourse, the impacts will be mitigated by using combinations of the below mitigation options, and the proposal will result in no net loss of watercourse and buffer functions. However, in no case shall a reduced buffer contain a steep slope.

Staff Analysis:
The applicant is requesting to reduce a portion of Category IV wetland on site to the minimum buffer width of 25 feet. The applicant is proposing to enhance the wetland buffer by removing non-native plant species, amending the soil, and planting native plants (Exhibit 5 and 15). An analysis provided in the Critical Area Study states that these measures will create no net loss of ecological function by the reduce buffer width. In addition, the impacts to the wetland and buffer will be mitigated to the extent reasonably feasible with a 1,301 square foot mitigation area which will be

enhanced with the removal of non-native vegetation and the addition of native vegetation. Please refer to Exhibit 5 and Exhibit 15 for the mitigation and enhancement plan. There are 4 planting areas within the buffer as illustrated on the Final Site Plan (Exhibit 15). The proposed enhancement and plant species can be found on page 13-14 within Exhibit 5. The performance standards include 100% plant survival within the first year after the initial planting and 90% survival for the subsequent years. Please refer to Exhibit 5 sections 3.2 and 3.3 for the Monitoring and Performance Standards. Exhibit 5, page 17 Westech states the following: "the mitigation and monitoring plan has been formulated to provide measures which offset impacts to the wetland and which are expected to result in "No Net Ecological Loss" to the wetland and its buffer zone."

A peer review by ESA concluded that the proposed mitigation would create no net loss of ecological function and agreed with Westech's findings. Please refer to Exhibit 8, the City's second review letter with ESA's review memo attached. The peer review also included recommendations to ensure opportunity for mitigation success; these were incorporated into the revised mitigation plan (Exhibit 5 and 15). These recommendations included the following: reducing the standard buffer only in the area needed to accommodate the proposed house, reducing the house footprint to be outside of the reduced buffer, and narrowing the driveway. The Final Site Plan (Exhibit 15) illustrates the steep slope extent, and in this area (north of the proposed house) the buffer will not be reduced.

Staff finds that MICC 19.07.070(B)(2)(a) has been met.

23. MICC 19.07.040(J)(1):

Maintenance and Monitoring. Landscape maintenance and monitoring may be required for up to five years from the date of project completion if the code official determines such condition is necessary to ensure mitigation success and critical area protection.

Staff Analysis

The applicant proposes annual monitoring of the proposed mitigation for five years. Additionally, the project approval is conditioned with a request for a future financial guarantee with a bond or assignment of funds. The applicant has provided a complete Bond Quantity Worksheet (Exhibit 12) and the bond or assignment of funds will be 150% of the total. Staff finds this criterion has been met.

24. MICC 19.07.040(J)(2):

Maintenance and Monitoring. Where monitoring reveals a significant variance from predicted impacts or a failure of protection measures, the applicant shall be responsible for appropriate corrective action, which may be subject to further monitoring.

Staff Analysis

Staff finds that this requirement is appropriate as a condition of approval.

25. Permit Expiration:

MICC 19.15.150(A) states the following: "except as stated below, or as otherwise conditioned in the approval process, land use review approvals shall expire **three years** from the date of notice of decision if the development proposal authorized by the land use review is not commenced. For the purposes of this section, the development proposal shall be considered established if **construction or substantial progress toward construction of a development proposal** for which a land use review approval has been granted must be undertaken within two years of the date of notice of decision of the land use review."

Staff Analysis

A condition of approval has been added to this decision, setting an expiration date consistent with this code standard. Staff finds this criterion has been met.

II. CONCLUSIONS OF LAW

Based on the above Findings of Facts, the following Conclusions of Law have been made:

1. The applicant has correctly applied for a Critical Areas Determination and SEPA Determination to verify the presence, or lack thereof, of a watercourse, and to reduce required wetland buffers.

2. The subject property does not contain a regulated watercourse.

3. The subject property contains a Category IV wetland, which require buffers pursuant to MICC 19.07.080.

4. The buffers will not be less than the minimum widths specified in MICC 19.07.070(B)(1) and MICC 19.07.080(C)(1).

5. A critical area study consistent with MICC 19.07.050 was submitted (Exhibit 5).

6. The proposed wetland buffer width reduction plus mitigation measures complies with the applicable provisions of MICC 19.07 and will not result in a net loss of ecological function.

7. As shown in Exhibit 5 and 15, no portion of the reduced buffer is on a steep slope.

III. DECISION

Based upon the above Findings of Fact Conclusions of Law and attached Exhibits, the critical areas determination application CAO18-003 to reduce the Category IV wetland buffer from 35 feet to 25 feet as depicted by Exhibit 5 and 15, is hereby **APPROVED** subject to the Conditions of Approval. This decision is final, unless appealed in writing consistent with adopted appeal procedures.

IV. CONDITIONS OF APPROVAL

1. The following conditions shall be binding on the "Applicant," which shall include the owner or owners of the property, heirs, assign and successors.

2. The development of the subject site shall substantially comply with the development proposal as reflected in Exhibits 2, 3, 5, and 15.

3. Per Westech Company's Mitigation Plan, a fence (slip rail or similar) shall be placed along the western side of the Wetland A Buffer Zone, but at least 6 feet from the residential structure. A sign shall be placed indicating there is a wetland and buffer present, which should not be disturbed without proper authorization as required by the Mercer Island City Code.

4. Prior to approval of building permit 1401-022, the applicant shall submit a financial guarantee, wither it be a bond or an assignment of funds. The amount will be 150% of the total stated on the Bond Quantity Worksheet (Exhibit 12).

5. Upon completion of the mitigation work, a letter written by a qualified professional detailing compliance with the approved mitigation plan shall be submitted to the City of Mercer Island Community Planning and Development. The compliance letter shall be accompanied by a set of as-built drawings depicting type and location of mitigation plantings. A maintenance and monitoring memo shall be submitted to the City of Mercer Island Community Planning and Development annually for a period of five years. Plant survival rates are to meet or exceed the performance standards listed in Exhibit 5.

6. This permit approval shall expire **three (3)** years from the date of notice of decision if the activity approved by the permit is not exercised. This activity includes construction or substantial progress toward construction of a development proposal.

7. The applicant shall install and have inspected full temporary erosion and sediment control measures prior to construction.

8. Non-native species within the reduced buffer zone shall be removed by hand (no mechanized equipment). The species to be removed from the site include, but are not limited to, the following: Himalayan blackberry (Rubus armeniacus) and reed canary grass (Phalaris arundinacea).

Approved this 11th day of March 2019.

Lauren Anderson

_____

Lauren Anderson, Planner
Community Planning and Development
City of Mercer Island

Parties of record have the right to appeal the decision on this action when it is issued. If at that time you desire to file an appeal, you must submit the appropriate form, available from the Community Planning and Development, and file it with the City Clerk within fourteen (14) days from the date this decision is signed. Upon receipt of a timely complete appeal application and appeal fee, an appeal hearing will be scheduled. To reverse, modify or remand this decision, the appeal hearing body must find that there has been substantial error, the proceedings were materially affected by irregularities in procedure, the decision was unsupported by material and substantial evidence in view of the entire record, or the decision is in conflict with the city's applicable decision criteria.

Please note that the City will provide notice of this decision to the King County Department of Assessment, as required by State Law (RCW 36.70B.130). Pursuant to RCW 84.41.030(1), affected property owners may request a change in valuation for property tax purposes notwithstanding any program of revaluation by contacting the King County Department of Assessment at (206) 296-7300.

Exhibit 1- Development Application

CITY OF MERCER ISLAND

DEVELOPMENT SERVICES GROUP

9611 SE 36TH STREET | MERCER ISLAND, WA 98040
PHONE: 206.275.7605 | www.mercergov.org

CITY USE ONLY		
PERMIT #	RECEIPT #	FEE
Date Received:		

DEVELOPMENT APPLICATION

Received By:

STREET ADDRESS/LOCATION	ZONE
8114 West Mercer Way Mercer Island WA	R15
COUNTY ASSESSOR PARCEL #'S	**PARCEL SIZE (SQ. FT.)**
3358500974	17,603

PROPERTY OWNER *(required)*	ADDRESS *(required)*	CELL/OFFICE *(required)*
Benny Kim	7415 Lake Ballinger Way Edmonds WA 98026	206-384-3317 E-MAIL *(required)* bennykimdesign@outlook.com
PROJECT CONTACT NAME	ADDRESS	CELL/OFFICE E-MAIL
TENANT NAME	ADDRESS	CELL PHONE E-MAIL

DECLARATION: I HEREBY STATE THAT I AM THE OWNER OF THE SUBJECT PROPERTY OR I HAVE BEEN AUTHORIZED BY THE OWNER(S) OF THE SUBJECT PROPERTY TO REPRESENT THIS APPLICATION, AND THAT THE INFORMATION FURNISHED BY ME IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE.

SIGNATURE _____ DATE 5/1/18

PROPOSED APPLICATION(S) AND CLEAR DESCRIPTION OF PROPOSAL (PLEASE USE ADDITIONAL PAPER IF NEEDED)**:**

The proposed single family is approx 4000 SF in size and 3 story. The project will include construction of an access driveway off an existing driveway.

ATTACH RESPONSE TO DECISION CRITERIA IF APPLICABLE

CHECK TYPE OF LAND USE APPROVAL REQUESTED:

APPEALS	DEVIATIONS	WIRELESS COMMUNICATIONS FACILITIES
☐ Building (+cost of file preparation)	☐ Changes to Antenna requirements	☐ Wireless Communications Facilities- 6409 Exemption
☐ Code Interpretation	☐ Changes to Open Space	
☐ Land use (+cost of verbatim transcript)	☐ Critical Areas Setback	☐ New Wireless Communications Facility
☐ Right-of-Way Use	☐ Wet Season Construction Moratorium	**VARIANCES (Plus Hearing Examiner Fee)**
CRITICAL AREAS	**ENVIRONMENTAL REVIEW (SEPA)**	☐ Type 1**
■ Determination	☐ Checklist: Single Family Residential Use	☐ Type 2***
☐ Reasonable Use Exception	☐ Checklist: Non-Single Family Residential Use	**OTHER LAND USE**
DESIGN REVIEW	☐ Environmental Impact Statement	☐ Accessory Dwelling Unit
☐ Administrative Review	**SHORELINE MANAGEMENT**	☐ Code Interpretation Request
☐ Design Review- **Major**	☐ Exemption	☐ Comprehensive Plan Amendment (CPA)
☐ Design Review – **Minor**	☐ Semi-Private Recreation Tract (modification)	☐ Conditional Use (CUP)
☐ Design Review – **Study Session**	☐ Semi-Private Recreation Tract (new)	☐ Lot Line Revision/ Lot Consolidation
SUBDIVISION SHORT PLAT	☐ Substantial Dev. Permit	☐ Noise Exception
☐ Short Plat	**SUBDIVISION LONG PLAT**	☐ Reclassification of Property (Rezoning)
☐ Short Plat Amendment	☐ Long Plat	☐ ROW Encroachment Agreement (*requires separate ROW Use Permit*
☐ Deviation of Acreage Limitation	☐ Subdivision Alteration to Existing Plat	
☐ Final Short Plat Approval	☐ Final Subdivision Review	☐ Zoning Code Text Amendment

***Includes all variances of any type or purpose in all zones other than single family residential zone: B,C-O,PBZ,MF-2,MF2L,MF-2L, MF-3,TC,P)*

****Includes all variances of any type or purpose in single family residential zone: R-8.4, R-9.6, R-12, R-15)*

C2MY
C2MY Engineers, LLC
Civil Engineering & Land Development Consultant
PO Box 52883, Bellevue, WA 98015~Tel 206.451.7856

December 11, 2017

Mr. Benny Kim AIA
Benny Kim and Lydia Design
7415 Lake Ballinger Way
Edmonds, WA 98026

Re: 8114 W Mercer Way, Mercer Island, WA (Lot 3B) – Field Verification to Verify the Water Source at the Beginning of Drainage Pipe System at East End of Lake View Lane Draining to Lot 3B North and South Property Lines as Shown on the Mercer Island Watercourse Map.

To Whom It May Concern:

City of Mercer Island is requesting additional field verification documentations demonstrating that the pipe system does not convey naturally occurring surface runoff at the upstream of the pipe drainage system. This letter is to supplement the document prepared by C2MY Engineers, LLC dated November 27, 2017 for the verification of Source of Water.

A field visit was conducted on December 5, 2017 at 1 pm. The weather was sunny and 50^{o} F. The beginning of the drainage pipe system is located at the catch basin at Lake View Lane in front of the single-family house number 7939 (Lot 4 of Dacres Short Plat). The catch basin collects pavement runoff from Lake View Lane and drains easterly approximately 108 l.f. through an 8” CMP to a Type 2 catch basin located at the hammer head turn around, a dead-end street. There is a 4” PVC in concrete sleeve connected to the catch basin running in northeast direction to the single-family house number 7942 (Lot 1 of Dacres Short Plat). This 4” PVC pipe collects the rockery wall footing drain at the north side of Lake View Lane/property line of Lot 1. There is no open channel, swale, ditch or any other pipe entering the catch basin. Please refer to photos 1 to 4.

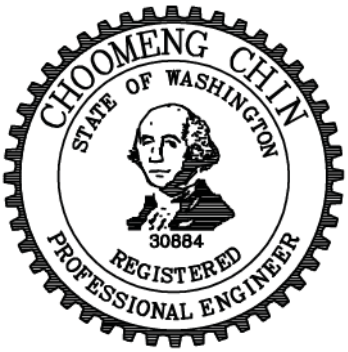
The watercourse route as indicated on Mercer Island Water Course Map does not exist. The route is covered by driveway with concrete retaining wall of single-family house number 7934, west of Lot 1 and yard block retaining wall of Lot 1 Please refer to photos 6 - 8 for upstream view of catch basin.

Based on these field information, it is in our professional opinion that the upstream of the mapped piped water course does not consist of any natural channel with a bed, banks or sides to the upstream of the drainage system.

If you have any comments or questions, please do not hesitate to contact us.

Sincerely,

C2MY Engineers, LLC.



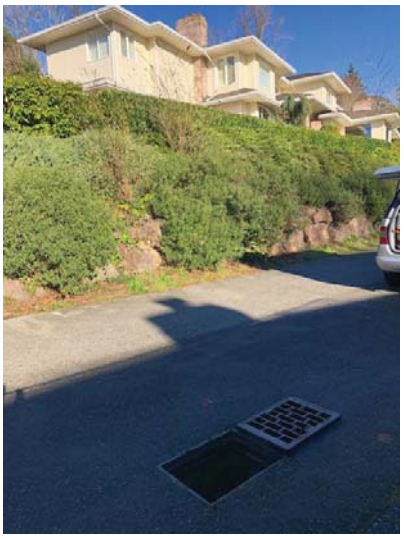
Choomeng Chin, P.E.
Principal

Attachments:
Existing catch basin photos
Upstream CB view photos

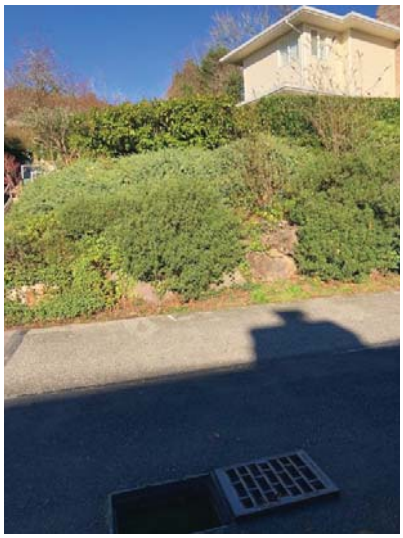
1 - Upstream Existing CB

2 - Existing CB 8” CMP Outlet

3 - Existing CB 4” PVC Inlet Rockery Wall Drain



4 - Existing CB - 4” PVC Inlet Rockery Wall Drain Direction



5 - Existing CB Upstream, Looking Direct North

6 - Existing CB Downstream, Looking East.

7 - View of Upstream per Watercourse Map North Direction (House No. 7934)

8 - View of Upstream per Watercourse Map North Direction (Closeup)

C2MY
C2MY Engineers, LLC
Civil Engineering & Land Development Consultant
PO Box 52883, Bellevue, WA 98015~Tel 206.451.7856

November 27, 2017

Mr. Benny Kim AIA
Benny Kim and Lydia Design
7415 Lake Ballinger Way
Edmonds, WA 98026

Re: 8122 W Mercer Way, Mercer Island, WA (Lot 3B) – Source of Water Verification at the North and South Property Lines as Shown on the Mercer Island Watercourse Map.

To Whom It May Concern:

The Mercer Island Watercourse Map indicates a mapped piped water course located on the west and south property of the subject property. City of Mercer Island is requesting documentations demonstrating that the pipe system does not convey naturally occurring surface or ground water.

The location of the watercourse consists of manmade pipes from 8" to 12" ø CMP for drainage and 6" ø PVC and DI pipes for side sewer services. The manmade pipes were created as part of the drainage system with detention when the site was subdivided per the Dacres Short Plat (SP No. M.I.-85-12-19 (J-3), Road and Utility Plan dated November 1985 and approved by City of Mercer Island dated April 1, 1987, see the Road and Utility Plan attached.

Based on the approved plan, the manmade pipes were installed to serve Lots 1, 2, 3, 4 and roadway drainage as well as Lot 4A above this subject property Lot 3B. The Road and Utility Plan clearly indicated the drainage service stubs to each of the 4 lots and lot 4A with 4" ø PVC lot drains and catch basins for the roadway drainage. The drainage system flows along the west property line and then turns to south property line of Lot 3B within the recorded 10' wide utility easement. It then enters into the 104 l.f., 72" ø detention tank located under the access driveway at the south side of Lot 3A. The detention tank discharges into a 12" ø CMP between Lot 1 and 2, south of Lots 3B and 3A.

Based on the as-built record drainage design and the other information available as discussed, it is in our professional opinion that the water source from the mapped water course does not receive naturally occurring surface or ground water. Furthermore, naturally occurring surface and ground water do not require detention before discharging.

If you have any comments or questions, please do not hesitate to contact us.

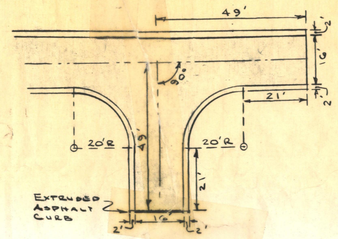
Sincerely,

C2MY Engineers, LLC.

Choomeng Chin, P.E.
Principal

Attachments:
Dacres Short Plat – Road and Utility Plans
Dacres Recorded Plat
Detention System Information.

THE LAKES – DIVISION I



FIRE TRUCK TURN AROUND
SCALE: 1"=20'

MER. ISLAND SHORT PLAT No. M.I. 82-03-07

CONSTRUCT ROADWAY FROM STA. 2+50 TO 3+43± PER THIS PLAN. TRANSITION PAVEMENT FROM 2' OFFSET @ STA. 2+50 TO ℄ OF R/W @ STA. 3+43

CONSTRUCT ROAD, STORM & SANITARY SEWER FACILITIES TO STA 2+50 PER APPROVED PLANS FOR KUSAK S.P. CONSTRUCT WATERMAIN EXTENSION PER THIS PLAN.

LOCATE END OF EXIST'G 8" D.I. WATERMAIN & CONNECT; INSTALL 8" G.V.

STA 2+20± END OF EXIST'G PAVT KUSAK SHORT PLAT

EXIST'G F.H.

EXIST'G CONC. PAVT

CUT EXISTING PAVT IN THIS AREA TO INSTALL NEW WATER MAIN (SEE TRENCH DETAIL ON SHEET 3 OF 4)

INSTALL 1" COPPER TYPE K SERVICE LINE, CURB STOP & LOCKING BOX FOR RELIEVING ENTRAPPED AIR DURING INITIAL FILLING (LOCATE @ PIPE HIGH POINT)

PROPOSED ROAD

PROPOSED EASEMENT FOR INGRESS/EGRESS

1" COPPER TYPE K WATER SERVICE 12 L.F.

C.B. No. 6, TYPE 2 STA 4+17± OFFT C.B. No. 7 TYPE 1 W/VANED GRATE*

C.B. No. 8, TYPE 1 W/VANED GRATE* 108 L.F. 8"ΦCMP

BEGINNING OF WATER SOURCE

210 L.F. SILT FENCE

224 C.B. No. 5, TYPE 1 OPEN GRATE DURING CONST. - FIT W/ SOLID LID UPON COMPLETION

180 L.F. SILT FENCE

C.B. No. 4 TYPE 1 SOLID LID

65 L.F. 8"ΦCMP

C.B. No. 3, TYPE 1 SOLID LID

40 L.F. 8"ϕ CMP

C.B. No. 2, TYPE 1 SOLID LID

10' UTILITY ESMNT

49 L.F. 8"ϕ CMP

C.B. No. 1, TYPE 1 SOLID LID

30 L.F. SILT FENCE

74 L.F. 8"ϕ CMP

68 L.F. 6"ϕ D.I. CL. 52 SIDE SEWER

REMOVE PLUG & CONNECT TO EXIST'G 6"ϕ PVC SIDE SEWER

CONNECT TO EXISTING C.B.

UTILITY EASEMENT

① 15,700 SQ.FT.±

② 20,700 SQ.FT.±

③ 17,400 SQ.FT.±

④ 13,100 SQ.FT.±

INSTALL P.R.V PER SHEET 4 OF 4 CITY TO LOCATE

40 L.F. 6"D.I.CL.52 SIDE SEWER

40 L.F. 8"ϕ PVC LOT DRAIN

1" COPPER TYPE K WATER SERVICE 12 L.F.

22½° BEND M.J. CONC. BLOCK

27 L.F. 8"DI WATER CL. 52

15 L.F. 8"ϕ LOCKING RESTRAINED SOLENOID

PROPOSED EASEMENT FOR PUBLIC & PRIVATE UNDERGROUND UTILITIES

5½" MVO F.H. ASSY MJ&H 129 T.R. MUELLER CENTURIAN 1-8"x8"x6" T, MJ XMJ XVEL

1-6" GV w/VALVE BOX

¾" SHACKLE RODS FROM VALVE TO HUD PER CITY STDS. CONC. BLOCKING

75 L.F. 8"CMP

20 L.F. 8"ϕ SIDE SEWER

70 L.F. 6"ϕ PVC SIDE SEWER

10 L.F. 4"ϕ PVC SEWER STUB

10 L.F. 4"ϕ PVC LOT DRAIN

6"CO No. 3 10 L.F. 4"ϕ PVC LOT DRAIN

6"CO No. 4 IE 238.33

78 L.F. 8"CMP

6"x6" TEE

CB No. 1A, TYPE 1 SOLID LID

88 L.F. 6"ϕ D.I. CL. 52 SIDE SEWER

70 L.F. 6"ϕ PVC SIDE SEWER

94 L.F. 6"ϕ D.I. CL. 52 SIDE SEWER

49 L.F. 8"ϕ CMP

DRAINAGE DITCH

MERCER ISLAND SHORT PLAT No. MI-82-04-09 RECORDED UNDER REC. No. 8310249004

3B 3 3A

10' UTILITY EASEMENT

137 L.F. 8"ϕ CMP

DRAINAGE DITCH

UTILITY EASEMENT

ROAD & UTILITY TRACT

Connect to Exist'g 8" D.I. Water

DISCHARGE FROM 1

DISCHARGE FROM 2

DISCHARGE FROM 3A

DISCHARGE FROM 4B

DISCHARGE FROM 4A

DISCHARGE FROM 4C

4B 19,600 SQ.FT.± GROSS - 100 SQ.FT± R/D ESMT. 19,500 SQ.FT.± NET

FOR CONTINUATION SEE SHT 4 OF 5

GATE VALVE (BY OTHERS) (SEE S.P. M.I 84-03-11) CB No. 2 TYPE 1

8" D.I. CL 52 SIDE SEWER

4A 27,000 SQ.FT.± GROSS - 1,500 SQ.FT.± R/D ESMT. 25,500 SQ.FT.± NET

20' FT. EASEMENT FOR PUBLIC & PRIVATE UTILITIES & PEDESTRIAN ESMT.

4C 23,500 SQ.FT.± GROSS - 1,700 SQ.FT.± R/D ESMT. 21,800 SQ.FT.± NET

FOR INGRESS/EGRESS & UTIL.

NO BUILD ZONE BELOW EL. 264 UNLESS APPROVED BY THE CITY ENGINEER AND CITY BLDG. OFFICIAL

PROPD. 30-FOOT ACCESS ESMT

APPROX. LOC. OF PROPOSED STORM SEWER LINE AND ℄ OF PROPOSED 10' STORM SEWER EASEMENT

LAKERIDGE

CITY OF MERCER ISLAND Department of Engineering 3505 - 88th Ave. S.E. MERCER ISLAND, WA. 98040

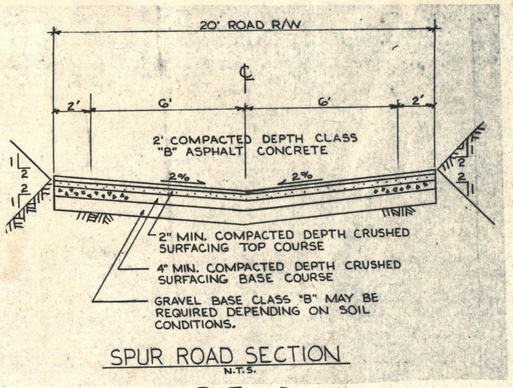
CITY OF MERCER ISLAND
☐ Approved
☒ No exception taken
☐ No exception taken with corrections shown
☐ Revise & Resubmit
DAVID N. TORGESON APR 1 1987
Signed Date

RECEIVED APR 1 1987 CITY OF MERCER ISLAND ENGINEERING DEPARTMENT

VICINITY MAP

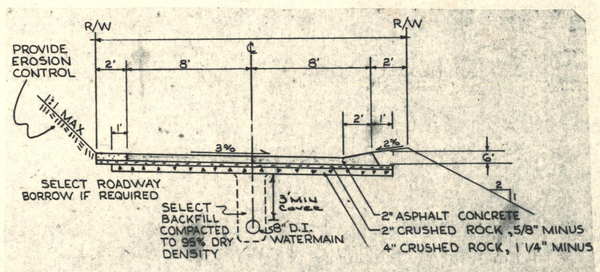
LEGEND

A	ALDER
DOG	DOGWOOD
M	MAPLE
M.C.	MAPLE CLUMP
WILL	WILLOW



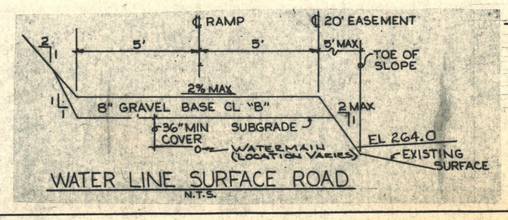
SPUR ROAD SECTION
N.T.S.

SEE ZIPTONE ROADWAY ON PLAN



TYPICAL ROADWAY SECTION OF MAIN ROAD
SCALE 1"=4'

SEE SHADED ROADWAY ON PLAN



WATER LINE SURFACE ROAD
N.T.S.

NOTE:
THE CONTRACTOR SHALL COORDINATE WITH THE SURVEYOR AND ENGINEER BEFORE CONSTRUCTION OF THE DETENTION STRUCTURE.

PRIOR TO FINAL ACCEPTANCE OF THE IMPROVEMENTS IN THE DACRES SHORT PLAT THE FOLLOWING CONSTRUCTION SHALL BE COMPLETED:
1. THE ROADWAY AND WATER MAIN IN THE KUSAK SHORT PLAT SHALL BE EXTENDED TO THE DACRES SHORT PLAT.
2. THE WATER MAIN THROUGH SHORT PLAT M.I. 84-03-11 SHALL BE COMPLETED AND CONNECTED TO THE LAKERIDGE WATER SYSTEM.
3. THE STORM DRAINAGE SYSTEM, INCLUDING THE DETENTION SYSTEM, AND THE SANITARY SEWER LINES IN SHORT PLAT M.I. 82-04-09 SHALL BE INSTALLED AND THE SANITARY SEWER CONNECTED TO THE SEWER MAIN IN WEST MERCER WAY.

THE ABOVE WORK SHALL BE COMPLETED BY THE DEVELOPERS OF DACRES SHORT PLAT THROUGH AGREEMENTS WITH THE DEVELOPERS OF THE ADJACENT SHORT PLATS OR BY THE DEVELOPERS OF THE ADJACENT SHORT PLATS AT THE TIME OF THE DACRES SHORT PLAT CONSTRUCTION.

*VANED GRATES SIMILAR TO OLYMPIC SM60V.

REVISED FEB. 9, 1987 ADDED STORM DRAIN AND SIDE SEWER LINE CONNECTION. A.J.
REVISED MAR 9, 1986 STORM CONN S.P 81-04-09 D.E.
REVISED JAN 15, 1986 PER CITY REVIEW D.E.

DACRES SHORT PLAT
ROAD & UTILITY PLAN

DATE: NOV. 1985 | SCALE: 1"=20'

OWNER: JOAN DACRES, 318 1st Ave. So. Suite 510, Seattle, WA 98104

ENGR: DEL ERICKSON, 15016 N.E. 40th, Bellevue, WA, TEL: 747-5825

3-26-87

SHEET 1 OF 4

DACRES/LADDI S.P.'s

Engineering Dept File Copy

REVISED FEB. 9, '87 GRAVEL ROAD, STORM DRAIN AND PART SANITARY SEWER PROFILES. A.J.
REVISED MAR. 9, '87 WATERLINE D.E.
REVISED NOV. 15, '85 SANITARY & STORM PLAN & PROFILES D.E.
△ REVISED - DEC. 20 '84 PER CITY COMMENTS

SHEET 4 OF 5

AHMED M. JADDI — STATE OF WASHINGTON — REGISTERED PROFESSIONAL ENGINEER

MERCER ASSOCIATES SHORT PLAT NO. MI-84-03-11

WATER & SANITARY SEWER PLAN & PROFILE

MILLEGAN AND JADDI, INC. CONSULTING ENGINEERS
1200 SOUTH DEARBORN STREET SEATTLE, WASHINGTON 98144

DRAWN	CHECKED	PROJECT	DATE
JR	DLD	80-63	10/15/84

CONSTRUCTION NOTES:

1.) LOCATE WATER MAIN ON "UPHILL SIDE" OF GRAVEL ROAD, AND CLEAR OF ROCKERY THRUST ZONE (1:1 SLOPE FROM ROCKERY BASE).

2.) CONSTRUCT SANITARY SEWER, A MINIMUM OF 10 FEET, HORIZONTALLY, FROM WATER MAIN.

3.) INCASE SANITARY SEWER LINE IN CONCRETE 10LF EACH SIDE OF WATER MAIN CROSSING (FIELD LOCATE).

DACRE'S PROPERTY

4B MIN. FIN. FLR EL 270

CB NO. 2 TYPE 1 STA. 3+57 (4' LT)

CB NO. 3 TYPE 1 STA. 2+92

1" COPPER SERVICE

20' UTILITY AND PEDESTRIAN EASEMENT

4A MIN. FIN. FLR EL 280

AIR/VAC ASSEMBLY PER CITY STANDARDS LOCATED @ HIGH POINT OF WATER LINE

CO NO. 2 STA. 3+

STORM DISCHARGE FROM 4B

STORM DISCHARGE FROM 4A

8" PUT BY OTHERS

C.Q.I.E. 275.0

6" PVC - 63 LF ±

8" C.I.P.

8" D.I.P.

45° EL ± W/THRUST BLOCK

11¼° ELL W/THRUST BLOCK

F.H. PER CITY STD

CB NO. 5 TYPE 1 STA. 1+70

MH #2 STA. 1+60 (5' LT)

CB NO. 4 TYPE 2 STA 2+22 (10' LT)

8"X8"X8" LOCATED AT HIGH POINT IN LINE

EL TOP OF VALVE COVER = 263.3
EL. TOP OF KEY = 261.8
CONNECT WATER TO EXIST MAIN
UNDERGROUND POWER
GRD. = 262.9

WATER VALVE EL. TOP OF VALVE = 253.8

RELAY EXIST. WATER MAIN AS REQUIRED TO MAINTAIN 36" COVER

EXISTING 10' UTILITY EASEMENT TO BE GRANTED TO DACRE'S PROPERTY FOR SANITARY SEWER AND STORM DRAINAGE

1" COPPER SERVICE

6" PVC 18 LF

I.E. 258.5

STORM DISCHARGE FROM 4C

4C MIN. FIN EL. 265

PAVED HAMMERHEAD

CB No. 6, Type 2 RIM 270 ± IN. 260.57

8" Ø D.I.P. WATER MAIN EXTENSION - 260 LF ± W/36" MIN. COVER. CL 52 RESTRAINED JOINT PIPE AS MANUFACTURED BY PACIFIC STATES.

CONNECT TO EXIST. STA 0+02.4 LT ± DEPTH 6.0' ±

TRACT C

PRIVATE

WATER VALVE (CLOSE PRIOR TO BGN CONST.)

EXIST. M.H.

C.B. & PIPE

FIELD LOCATE AIR/VAC ASSEMBLY AT HIGH POINT 1" APCO

GRAVEL ACCESS ROAD FINISHED SURFACE

WARP IN FIELD FOR SMOOTH TRANSITION TO GRAVEL ACCESS ROAD

PVI STA 2+30 EL. 274.60

3' MIN. COVER (TYP.)

C.B. No. 5, Type 1 RIM 267.73 I.E. 263.70

MH #2 RIM 266.84 I.E. 6" 253.10 I.E. 8" 253.00

℄ EAST ±

EXTEND WATER MAIN TO WEST ℄

RELAY EXIST. WATER MAIN & VALVES AS REQUIRED

EXIST. GATE VALVES

MH #1 RIM 252.9 ± I.E. 247.5

EXIST. GROUND

FINISHED SURFACE

WATER MAIN EXTENSION

60 LF 8" PVC @ 19.17% ±

EXIST. 8" WATER MAIN APPROXIMATE LOCATION

RELAYED WATER MAIN

98 LF - 8" Ø PVC S = 17.8% ±

I.E. 230.0 ± (FIELD ADJUST) CONNECT TO EXISTING ST-B

EAST GATE VALVE

EXIST. TEL CABLE

EXIST. POWER DUCT

NO BUILD ZONE BELOW EL. 264 UNLESS APPROVED BY THE CITY ENGINEER AND CITY BUILDING OFFICIAL

MH #1 STA 1+00 - 8' LT

MERCER ISLAND SHORT PLAT NO. MI 82-04-09

3B

3A

SCALE: 1" = 20'

PROFILE
SCALES: H = 1" = 20'
V = 1" = 5'

PVI STA 3+60 EL. 265.00

℄ WEST

See Dacres S.P. For Water Main Extension To West

STA 3+57 (6' LT) CB. NO. 2 TYPE 1 RIM 263.30 IE 257.67

Install 8" G.V. w/ Valve Box

8" DIP SIDE SEWER

L=50 M0=1.37

+1.53%

+10.44%

PVI STA. 2+90 EL 268.93

60 LF 8" C.I.P. @ 2.0%

160 LF 8" C.I.P. @ 2.0%

STA. 2+32 CB NO. 3 TYPE 1 RIM 263.00 IE 258.97

L=30' M0=0.72

L=30' M0=0.07

8" Ø DIP WATER MAIN EXTENSION

60 LF 8" C.I.P. @ 2%

CB NO. 4 TYPE 2 (48"ø) RIM 274.00 IE E 262.50 IE S 260.27 IE W 260.17

GRAVEL PAVED ACCESS ROAD

AC PAVED ROAD

4+00 3+00 2+00 1+00 0+00

280 270 260 250 240 230

2

Scale: 1"=20'

UTILITY EASEMENT

HAMMERHEAD TURN AROUND

INLET # 1
STA. 0+37, ℄

SAN. M.H. # 2
STA. 2+08, 6.0 LT.

CB #1, TYPE 1
STA. 1+58.50 ℄

179 LF - 8" ϕ D.I.P.

Exist. Conc Drive

6" Ext. A.C. Curb

EL 169.08

EL 165.41

12" ϕ CMP

N29°30'45"E

Graded Drive (typ.)

8" ϕ D.I.P. WATER MAIN EXTENSION.
290 L.F. w/ 30" MIN. COVER.
CL. 52 RESTRAINED JOINT
PIPE AS MANUF. BY PACIFIC STATES.

ROAD

C.B. # 2
2+12.
0+00

MATCH LINE STA 2+40
SEE SHT 4

3B

TE 186.15

TE 186.75

33 LF - 6" ϕ PVC

STORM DISCHARGE FROM 3A

3A

DETENTION SYSTEM #2 FOR LOTS 3A & 3B
STA. 2+32 ℄ ORIFICE
W/ SOLID LOCKING LID

Future Inlet w/ Lot Development

10' UTILITY EASEMENT

IE 188.00

20' PRIVATE ROAD AND UTILITY TRACT

20' TEMPORARY CONST. CLEARING

RETAIN EXPOSED SURFACES, SEE GENERAL NOTE 7.

125 LF SUBSURFACE DRAIN @ S=1%
SEE DETAIL SHT. 3 OF 4
(THIS CONTRACT)

R/W LINE

SL. 2:1

SL. 2:1

6"

FIN. FLR.

180 190 200 210 220 230

30 LF.
12" ϕ CONC
S=0.035%
(SEE TRENCH DETAIL SHT. 3)
12" ϕ CMP STUB TO PICK UP SWALE DRAINAGE
I.E. 137.0± (MATCH SWALE FLOW LINE)
REMOVE EXIST'G C.B. TYPE 1 & 12" CMP N & SOUTH TO C.B. NO. 1
O.B. NO. 2 TYPE 2, 48" ϕ
TOP 140.0±
I.E. 12" (N) 136.6
I.E. 12" (SSE) 132.56
SOLID LID
2 CB NO. 4 TYPE 1
TOP 160.0±
I.E. 156.75
84 L.F 12" ϕ CMP S=0.047%
RESTORE DITCH LINE TO DRAIN TO SOUTH EAST
Scale: 1"=20'
90 LF 12" CMP S=22.50%
93 LF 12" CMP @ 5.23%
SAN MH #3
STA. 1+14 (4.5' LT.)
APPROX. LOCATION
CONC. ANCHORS @ 20' INTERVAL FROM CB. SEE DETAIL ON SHT 5 OF 5.
STA 1+12.5 (3' RT.)
C.B. NO. 5 TYPE 2, 54" ϕ
(SEE OIL SEPARATOR C.B. DETAILS)
TOP 172.70
I.E. 4" IN 167.71
I.E. 12" IN 167.04
I.E. 12" OUT 161.61
I.E. 36" OUT 161.71
SAN. M.H. #1
STA. 0+30± 6.0 LT.
SAN. M.H. #2
STA. 2+08 6.0 LT.
T.B.M.
I.E. 135.5
I.E. 135.2
8" ϕ PVC SLP
INV. 135.9
C.B. NO. 9 TYPE 1
TOP 138.0±
I.E. 135.9
178 L.F. 8" ϕ PVC
N 29°30'45" E
3" ϕ D.I.P. WATER MAIN EXTENSION. 207 L.F. w/ 30" MIN. COVER. CL. 52 RESTRAINED JOINT
ACCESS ROAD
Exist. Curb Drive
6" Ext. AC Curb
10' UTILITY EASEMENT
ROCKERY
8" WE
12" ϕ CMP
W/ DEBRIS BARRIER (SEE DETAIL SHT)
C.B. NO. 7 TYPE 1
6" PVC CLO. W/ C.O.
CONST BERM ACROSS SWALE TOP 174.0± 2:1 SLOPES
25 L.F. 6" PVC
24 L.F. 12" ϕ CMP
30 L.F. 4" ϕ PVC LOT DRAIN STUB
20 L.F. PVC SEWER STUB
20 L.F. 6" PVC SEWER STUB
15 L.F. 4" ϕ PVC LOT DRAIN STUB
108 L.F. 8" PVC
DETENTION PIPE 104 L.F. 72" ϕ CMP W/ 2-36" ϕ CMP END STUBS (SEE DETAIL)
Access Rider (SEE DETAIL SHT)
INSTALL 2 1" TYPE K COPPER SERVICE LINES 30 L.F. EACH
END ROW STA 2+44
CB NO. 8 TYPE 1 W/ VANED GRATE
8 ϕ CMP
C.B. NO. 6 TYPE 2, 54" ϕ STA 2+16
20' PRIVATE R UTILITY
INSTALL 5 1/4" MVO
DISCHARGE FROM 3A

Site Map

Location: 8114 West Mercer Way
Date of Photo: Oct 16, 2012

IGS
Information & Geographic Services

Legend

- Watercourse
  - 1-Potential Fish Use
  - 2-Perennial
  - 3-Seasonal
- Parcels
- Docks
- Address
- Major Roads
- Street Centerline
- Lake Washington
- Parks
- March 2017 (Preliminary)
  - Red: Band_1
  - Green: Band_2
  - Blue: Band_3

1: 1,090

181.7 0 90.85 181.7 Feet

Map Printed: October 5, 2017

Disclaimer: These maps were developed by the City of Mercer Island and are intended to be a general purpose digital reference tool. These maps are not an accepted legal instrument for describing, establishing, recording or maintaining descriptions for property concerns or boundaries. The City makes no representation or warranty with respect to the accuracy or currency of these data sets, especially in regard to labeling of surveyed dimensions, or agreement with official sources such as records of survey, or mapped locations of features.

Notes

Exhibit 3- Wetland Delineation

WESTECH COMPANY

Environmental Consulting ~ Site Permitting

WETLAND DELINEATION REPORT
8114 WEST MERCER WAY RESIDENTIAL PROJECT
MERCER ISLAND, WASHINGTON

April 2018

G. Bradford Shea, Ph.D.
Trevor Shea
Paul Ruben

Submitted to:

CITY OF MERCER ISLAND
DEPARTMENT OF COMMUNITY DEVELOPMENT
9611 Southeast 36th Street
Mercer Island, Washington 98040-3732

Submitted by:

WESTECH COMPANY
P.O. Box 2876
Port Angeles, Washington 98362

WETLAND DELINEATION REPORT

8114 WEST MERCER WAY RESIDENTIAL PROJECT

MERCER ISLAND, WASHINGTON

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9611 Southeast 36th Street
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Submitted by:

WESTECH COMPANY
P.O. Box 2876
Port Angeles, Washington 98362

CONTENTS

1.0 INTRODUCTION

The proposed Residential Project at 8114 West Mercer Way (Project) is located in the City of Mercer Island, Washington (Figures 1-4). The purpose of the Project is to construct a single-family residence in an area of similar residences. The residence will be approximately 4,000 square feet in size (3-story). The Project will include construction of an access driveway off an existing driveway used by two existing residences which are adjacent to the proposed Project Site.

The Project will also include extension of utilities including electric, sewer and water onto the Property. Existing storm-water drainage facilities and structures are located on the Site along the western, southern and eastern boundaries (Figure 4). The Project may modify or enhance these structures as per requirements of the City of Mercer Island and the Mercer Island City Code (MICC).

The Project area was searched using maps (Google Earth 2017/2018) and other maps supplied by the Project Architect (Mr. Benny Kim, AIA). A visual reconnaissance was conducted in the field to determine if any wetlands existed on the Site. The only regulated wetland found extends along the east side of the Parcel. That wetland was delineated and forms the basis of this Report.

A small area (less than 200 square feet) was also found on the west side of the Site which had a dominance of upland vegetation but was somewhat wet and had wetland soil characteristics in a very small area along a short swale (Figure 5). This area is much smaller than the 2,500 square foot regulatory threshold and is exempted by the MICC (MICC Section 19.07.030)

The Project Area lies within the City Limits of Mercer Island, Washington and that area is characterized by residential uses, mostly large single family homes on and above a steep hillside. The Site lies about 200 feet north of West Mercer Way and is accessed by an existing driveway which accesses several existing residences. The Site itself is presently largely undeveloped, and vegetated with shrubs and scattered trees, along with some open areas dominated by herbaceous species.

The City of Mercer Island required Benny Kim Design to provide a Wetland Delineation Report. Westech contracted with Mr. Kim to delineate the on-site wetland and provide associated technical support. Other environmental review work regarding the Site has been performed for the City of Mercer Island by Environmental Science Associates (ESA) of Seattle, Washington.

The Project Area was found to contain a Slope Wetland. Chapter 2.0 of this report indicates the methodology used for delineating wetlands. Chapter 3.0 of this report contains results of the delineation. Chapter 4.0 summarizes the results and contains Conclusions and Recommendations. Chapter 5.0 lists references utilized in preparation of this report.

Figure 1. 8114 West Mercer Way Location Map

Westech Company 2017
Source: Google Earth 2017

Figure 2. 8114 West Mercer Way Vicinity Map

Westech Company 2018

Source: Google Earth 2018

Figure 3. Parcel Map

Westech Company 2018

Source: King County 2018

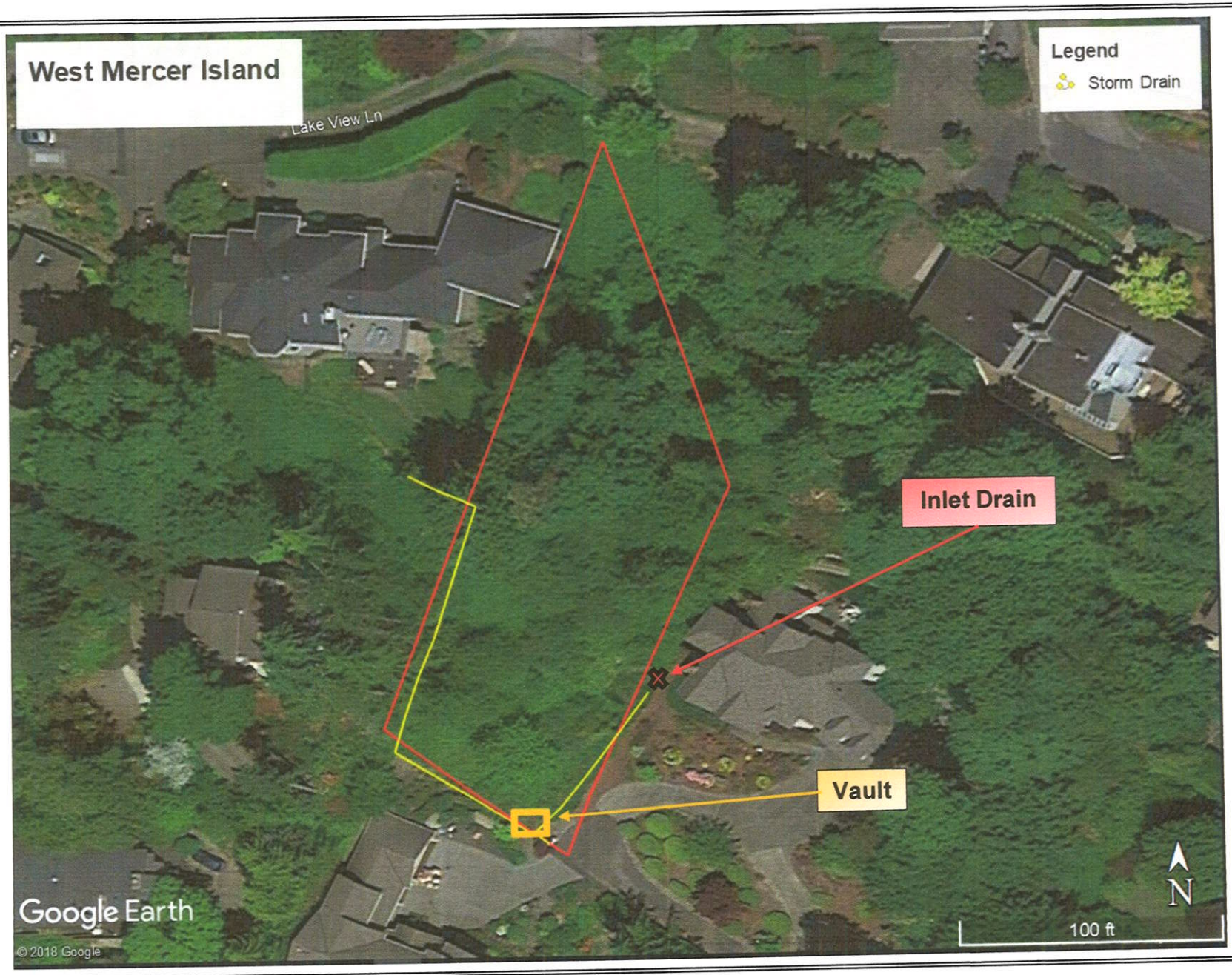

Figure 4. 8114 West Mercer Way Site Map Showing Storm-Drain System

Westech Company 2018
Source: Google Earth 2018

Site photographs are included in Appendix A of the Wetland Delineation Report. Appendix B includes data sheets of four wetland and upland quadrats which were sampled for vegetation, soils and hydrology according to the Routine Field Method (USACE 2010). Appendix C contains the Washington Department of Ecology Rating System Forms, including specified maps. Appendix D contains other survey and design maps provided by Mr. Benny Kim, Architect and by C2MY Engineers, LLC.

Google Earth GPS Mapping and U.S. Geological Survey maps were utilized as base maps for wetland mapping (Figures 4 and 5). Field investigation of the wetland was conducted by Dr. G. Bradford Shea and Mr. Paul Ruben during the period October through December 2017. Field checks were carried out by Dr. Shea during January and March 2018.

2.0 METHODS

Wetlands were delineated in the field based on field methods recommended in the Washington State Wetlands Identification and Delineation Manual (WDOE 1997). Wetland rating was accomplished according to the Guidelines of the Mercer Island City Code, (MICC 2018), and the Washington State Wetlands Rating System (Western Washington) (WDOE 2014).

Methods used for delineation were those recommended by the U.S. Army Corps of Engineers (Corps) for Routine On-Site Field Method for Delineation of Wetlands as specified in the Corp's Wetlands Delineation Manual (USACE 1987/1989) and the Regional Supplement for Western Mountains, Valleys and Coast (USACE 2010). Guidelines and Regulations of the Mercer Island City Code (MICC) were applied as required.

Wetland plants were primarily identified in the field, with subsequent collection and keying when necessary. Plants were identified using the following sources:

Hansen's Northwest Plants Database 2018
USDA NRCS Plants Database 2018
Pojar and Mackinnon 2004
Cooke 1997
Lyons 1997
Guard 1995
Taylor 1995
Hitchcock and Cronquist 1973

Keying of plants using magnifying lenses and dissecting microscope was used as necessary. Determination of wetland indicator status utilized regional keys published by U.S. Fish and Wildlife Service and updated by the United States Department of Agriculture (USFWS 1988, USDA 2018).

Herbaceous plants were found to be somewhat dormant due to winter conditions within the wetlands. The wetland areas were dominated by red alder (*Alnus rubra*) in the scattered tree layer, with a concentration of salmonberry (*Rubus spectabilis*) and Himalayan blackberry (*Rubus armeniacus*) in the shrub layer, and multiple plant species in the herbaceous layer including creeping buttercup (*Ranunculus repens*), common rush (*Juncus effuses*), sedges (*Carex species*) and common horsetail (*Equisitum arvense*). Field investigations were conducted during winter conditions (December 2017 through March 2018).

Soils were determined through field examination. Soils were dug or augured to depths of up to 18 inches using a wetland shovel and standard augur. Soil consistency was determined by feeling for grain size and texture.

Soil moisture was determined in the field at the time of establishing test pits. In the event of saturated conditions in the hole, depth to standing water was noted. Soil color was determined through comparison of field samples with standard Munsell Color Charts (Munsell 2009). Soil was also examined for presence of redoximorphic features (mottles), gley and other indicators of anaerobic soil oxidation.

Hydrologic conditions were determined through examination of topographic relief and drainage patterns. Soil moistness was determined by hand as indicated above and in the event of standing water; depth to standing water was noted.

Initial field surveys were carried out by Dr. Shea during October 2017 and by Mr. Ruben during December 2017. These surveys included identification of plants, wetland habitats, soils and hydrology. Wetlands were flagged during December 2017 and flagging was confirmed by Dr. Shea during January and March 2018. Wetland boundaries around the slope wetland discovered on the Site were flagged. Wetlands were found to lie on the eastern side of the parcel, adjacent to the eastern property boundary.

Wetlands were determined based on the Routine On-Site Field Method used by Washington Department of Ecology and the U.S. Army Corps of Engineers (USACE 2010). Wetlands were determined by a combination of vegetation, soil and hydrology indicators. Specific transect and quadrat points were sampled along apparent wetland edges. Various points were sampled for vegetation, soil and hydrology in order to determine wetland boundaries.

Appendix A contains site photographs and Appendix B contains data forms for four sample points taken at two pairs of locations (one wetland and one upland point for each pair). These were taken from typical areas of the delineated wetland. Appendix C contains the Rating Forms and attached maps for the Wetland Rating.

Wetlands were staked in the field by 24 and 48 inch wooden stakes, or flagged on trees or shrubs as appropriate. Wetland boundaries were indicated by use of "Wetland Delineation Boundary" flagging tape tied to the wooden stakes or trees. All boundaries were staked and/or flagged every 25-30 feet. Buffer zones near the proposed project area were mapped using GPS measurements on aerial photos. Wetland flags were taken at 25-30 foot intervals, resulting in approximately 25 boundary points along the wetland boundary and were documented using Garmin GPS meters (Oregon and Montana series).

3.0 WETLAND DELINEATION RESULTS

3.1 Existing Conditions

The Project Area for this Wetland Delineation is situated along West Mercer Way (Figure 5) in Mercer Island, Washington. The Project Site is a steep hillside parcel extending from approximately 175 feet above mean sea level (msl) at the southern Property boundary to 250 feet msl at the northwest corner. Stormwater runoff flows generally north to south down the hillslope, but is largely intercepted by existing storm-drains on the eastern, southern and western property boundaries.

The Project Area is residential in nature. Large single family homes lie to the west, south and east on the hillside. Other large homes lie to the north at the top of the hillside. West Mercer Way lies about 200 feet to the south of the Property.

Maps of the parcel show Storm-drains on three sides along the parcel boundaries (see Appendix D). Westech's field investigation found a Category IV shrub-scrub slope wetland (Wetland A) that extends along the eastern border of the Project Site (see Figure 5).

Vegetation

The Project Area is mostly shrub vegetation with scattered trees and some open areas dominated by herbaceous vegetation. The slope rises sharply to the north and to a bench on the center of the property where upland vegetation dominates. The wetland area borders a swale which empties into two stormwater-drainage structures, one at the midpoint of the eastern property boundary (which accepts stormwater from the residence to the east) and the other which is at the southeast property corner.

The dominant trees on the Site are red alder (*Alnus rubra*), and bigleaf maple (*Acer macrophyllum*) with a few scattered conifers including Douglas fir (*Pseudotsuga menziesii*), western red cedar (*Thuja plicata*) and spruce (*Picea sitchensis*). In the shrub layer, blackberry (*Rubus spp.*), salmonberry (*Rubus spectabilis*) and bracken fern (*Pteridium aquilinum*) are the dominant plants within the upland area.

Wetland plants are dominated by reed canary grass (*Phalaris arundinacea*), sedges (*Carex lasiocarpa, Carex spp.*), common rush (*Juncus effuses*), bulrush (*Scirpus americanus*), and horsetail (*Equisetum arvense*). A list of upland and wetland plants found at the Site is shown in Table 1.

Vegetation in the wetland area meets the Corps criterion for hydrophytic vegetation. Some adjacent upland areas contain facultative plants (such as non-native Himalayan blackberry), which are associated with both uplands and wetlands. Therefore, hydrology and soil conditions are, in these areas, the most important factors for delineating the wetland.

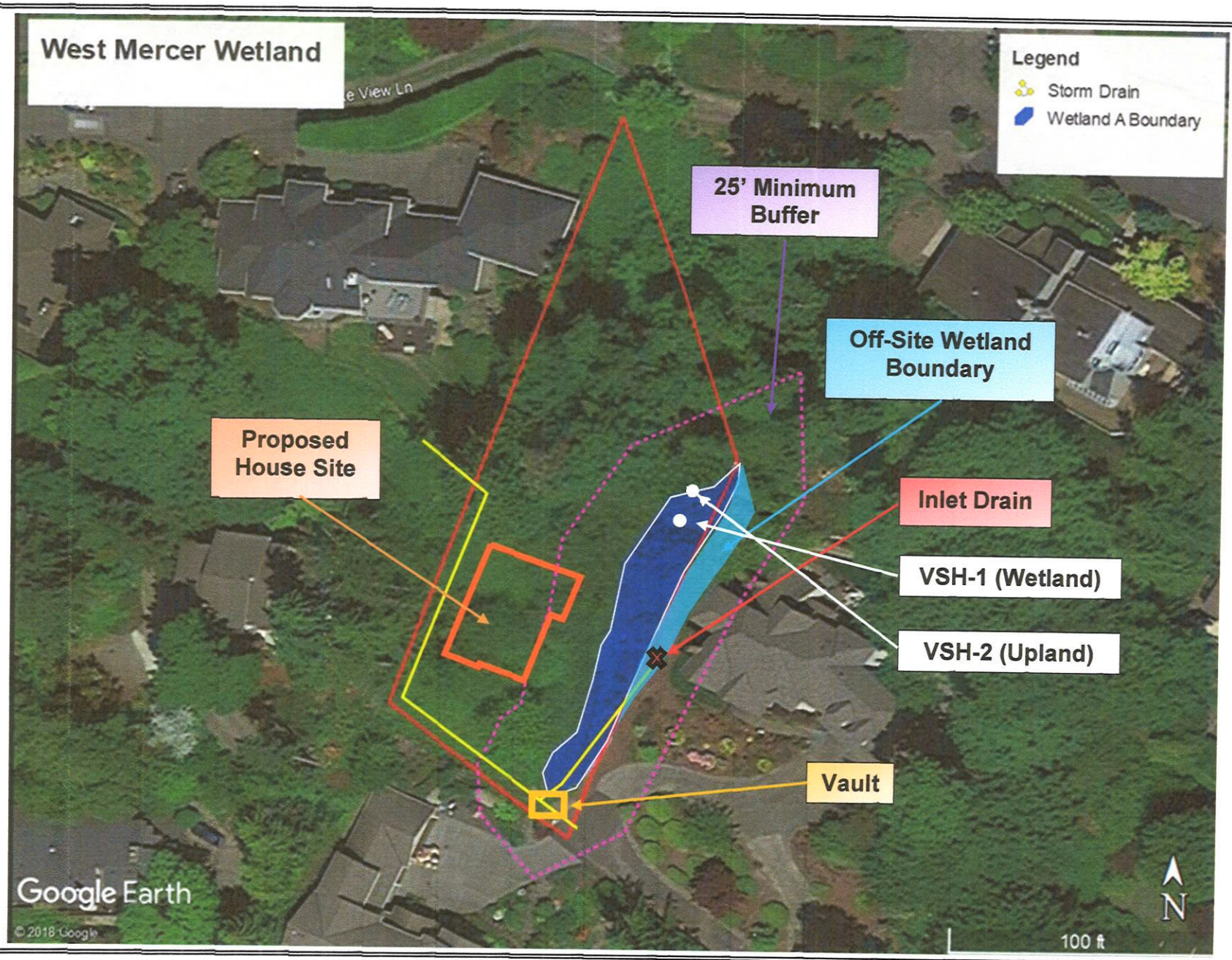

Figure 5. 8114 West Mercer Way Site Map Showing On-Site Wetland and Proposed Residence

Westech Company 2018

Source: Google Earth 2018

TABLE 1. LIST OF PLANT SPECIES: ON-SITE WETLAND

Common Name	Scientific Name	Indicator *	% Cover
Wetland			
Red alder	*Alnus rubra*	FAC	30
Western red cedar	*Thuja plicata*	FAC	10
Salmonberry	*Rubus spectabilis*	FAC	15
Himalayan blackberry	*Rubus armeniacus*	FAC	20
Stink currant	*Ribes bracteosum*	FAC	5
Nootka rose	*Rosa nutkana*	FAC	5
Beaked hazelnut	*Corylus comuta*	FACU	5
Twinberry honeysuckle	*Lonicera involucrata*	FAC	5
Bulrush	*Scirpus americanus*	OBL	15
Reed canary grass	*Phalaris arundinaceae*	FACW	15
Common horsetail	*Equisitum arvense*	FAC	10
Creeping buttercup	*Ranunculus repens*	FAC	10
Softrush	*Juncus effuses*	FACW	5
Stinging nettle	*Urtica dioica*	FAC	5
Slender wetland sedge	*Carex lasiocarpa*	OBL	5
Upland			
Red alder	*Alnus rubra*	FAC	30
Douglas fir	*Pseudotsuga menziesii*	FACU	10
Western red cedar	*Thuja plicata*	FAC	10
Pacific madrone	*Arbutus menziesii*	FACU	5
Beaked hazelnut	*Corylus comuta*	FACU	10
Himalayan blackberry	*Rubus armeniacus*	FAC	10
Swordfern	*Polystichum munitum*	FACU	25
Bracken fern	*Pteridium aquilinum*	FACU	10
Big-leaf maple	*Acer macrophyllum*	FACU	10
Thimbleberry	*Rubus parviflorus*	FACU	5
Rhododendron	*Rhododendron macrophyllum*	FACU	10

*Indicators: UPL = Upland plant, FACU= Facultative Upland Plant (more upland than wetland), FAC = Facultative (borderline wetland plant), FACW = Facultative Wetland Plant (prefers wetland conditions), OBL = Obligate (only found in wetlands).

The wetlands on the Site can be categorized as shrub-scrub slope wetlands, containing both shrub-scrub and emergent wetland layers. The wetlands are located adjacent to the eastern property boundary (Figure 5). The wetland appears fed from precipitation and runoff from the hillslope to the north and surrounding areas. This includes the stormdrain discharge from the adjacent residence to the east (8118 W. Mercer Way).

Soils

The Natural Resource Conservation Service (NRCS) maps three soils within the Project Area (NRCS 2018). These are soils of the Kitsap, Arents and Everett/Alderwood soil series (Figure 6). Soils on the Site itself are entirely mapped as Kitsap silt loam, 15-30 percent slopes by the NRCS (NRCS 2018). The Arents and Everett/Alderwood soils are located to the northwest and northeast of the Project Site respectively, near the ridge of the hillslope. They occur on slopes of 6-15 percent. The soil characteristics of the three soil types are as follows:

Kitsap Silt Loam:

The soil mapped on the Site is Kitsap silt loam, 15 to 30 percent slopes (KpD). This Kitsap soil series consists of deep (more than 80 inches), moderately well drained soils on hills or terraces. These soils formed in lacustrine deposits, often with a component of volcanic ash. Slopes common to this soil class range from 15 to 30 percent and elevation ranges between 0 to 590 feet above sea level.

These soils are silt loams, overlying stratified silt to silty clay loams at depths of 40-60 inches. This soil type has a moderately low to moderately high capacity to transmit water (0.06 to 0.20 in/hr.) in its most restrictive layer, with no frequency of ponding or flooding. This soil has a high available water storage capacity (about 11.4 inches) and is estimated to have a depth of 18 to 36 inches to the water table. These soils are not hydric, but may have minor inclusions of hydric soils including Bellingham silty clay loam, Tukwila or Seattle soils (NRCS 2018).

Arents, Alderwood material 6 – 15 percent slopes:

These soils formed from basal till within a landform known as "Till plains". They are moderately well drained soils with a depth of 20-40 inches to underlying glacial till which forms a restrictive layer. The till layer has a very low to moderately low ability to transmit water (0.0 – 0.6 inches/hour). Depth to water table is 16 – 36 inches. There is no frequency of ponding or flooding in this soil type. Availability of water storage in the profile is very low (2.3 inches).

Figure 6. Soil Map

Westech Company 2018
Source: NRCS 2018

Everett-Alderwood gravelly sandy loam 6 – 15 percent slopes:

This soil type formed in glacial outwash with a component of volcanic ash in the upper part. It consists of gravelly ashy sandy loam overlaying very gravelly sandy loam and very gravelly coarse sand to depths of 60 inches. Depth to the restrictive layer is over 80 inches in this deep soil type. The soils are somewhat excessively well drained. Capacity for the most limiting layer to transmit water is high at 1.98-5.95 inches per hour. There is no frequency of ponding or flooding. Available water storage capacity in the profile is low at 5.0 inches.

Field studies found that the upland soils conformed roughly to the NRCS characterization of silty loams consistent with the Kitsap silt loam mapping. Wetland soils appeared to correspond to Bellingham silty clay loams or Seattle and Tukwila series soils, with some areas of saturated muck.

Wetland soils in their upper layers generally consisted of silty clay, sometimes beneath a surface layer of two inches brown saturated muck, underlain by silty clay loam to about 18 inches. Test pits were taken, one in the wetland and one in the upland area. The soil test pit in the wetland area showed soils with a value/chroma ranging from 2/2 (10YR) to 3/2 (10YR), with a variety of types and size of redox colors and features. These soils meet the Corps criterion for hydric soils.

Soils in the upland test pit had value/chroma ranging from 3/2 (10YR) to 4/2 (10YR) from 0-18 inches. The upland soils were a silty loam, however, no redoximorphic features were found in these soils. These soils do not meet the Corps hydric soils criterion. Detailed soil information can be found in Table 2 and Appendix B (Data Forms).

Hydrology

The slope wetland on the Site receives water from precipitation and runoff from stormwater (other stormwater water generally enters storm drains). Signs of wetland hydrology were observed at multiple points of the on-Site wetland. This consisted of soil saturation in the root zone above 12-18 inches and in some cases saturation of soils to form a mucky clay. These conditions meet the Corps criterion for wetland hydrology. Soil pits in the upland areas did not show significant signs of wetland hydrology.

TABLE 2. SITE SOILS

Location/Depth	Type	Value/Chroma
VSH-1 (Wetland) 0-15"	Clay-Muck	10YR 2/2
VSH-2 (Upland) 0-15"	Gravelly sand	10YR 3/2

3.2 Description of Wetlands

The on-Site wetlands are located along the eastern property boundary of the Site (Figure 5). The Site wetland vegetation is characterized by shrub-scrub vegetation with scattered trees dominated by red alder and western red cedar. Upland tree species including big-leaf maple and Douglas fir are located on the hillside above the wetland area.

Wetland areas were in low-lying areas near the eastern boundary of the Site, extending off-site on to an adjacent property in some areas. The wetlands were slope wetlands consisting of shrub-scrub vegetation with scattered trees, and some areas of open emergent wetland vegetation. This includes a small swale which traverses a portion of the wetland. Plants in the wetland and their wetland indicators are shown in Table 1.

3.3 Land Uses and Habitat Values

The Project Area is residential. The Project Site including upland and wetland areas is open space and undeveloped. The Project Site lies about 200 feet north of West Mercer Way, which is the western portion of the main perimeter arterial for Mercer Island.

The wetland provides habitat for small mammals and bird species and likely some amphibian species. A number of bird species were observed on the Site, even in winter conditions.

In addition to habitat considerations, the Wetland provides some important water quality functions due to its proximity to Lake Washington. Wetlands generally provide filtration for both sediments and many chemical pollutants.

Wetlands also tend to slow water flow and to provide areas where water may pond in shallow depressions. However, downstream flooding at properties located lower on the hillslope are already protected by an existing stormwater drainage system on the property and adjacent parcels, which intercepts the majority of the stormwater on the Site. Stormwater is further discussed in Section 4.1 and 4.2.

3.4 Wetland Types and Buffers

Wetland Rating was performed using the Washington Department of Ecology 2014 Rating System for Wetlands in Western Washington (WDOE 2014). The rating was based on field conditions within and adjacent to the wetlands as well as analysis of Ratings Maps as specified in the WDOE Ratings Manual (WDOE 2014). The Rating Form and accompanying maps are contained in Appendix C.

The wetland (Wetland A) has been rated as a Category IV wetland with an overall score of 14. This consisted of a Water Quality score of 6, a Hydrologic score of 4 and a Habitat score of 4. The Rating Sheet is shown in Appendix C.

A standard buffer of 35 feet is required for a Category IV Wetland by the MICC. A minimum 25-foot buffer for Category IV wetlands with enhancements allowed by the City Wetlands Code for new residences. The Code also provides for alteration of wetlands, provided adequate mitigation is approved by the City. This may include on-site or off-site wetland enhancement.

3.5 City of Mercer Island Wetland Mapping

The City of Mercer Island has mapped watercourses on the Site which appear to correspond to existing storm-drains (See Appendix D). However, there are no wetlands mapped (MICC 2017).

4.0 CONCLUSIONS AND RECOMMENDATIONS

4.1 Conclusions

One regulatory slope wetland area exists within the Project Site. This area is located along the eastern portion of the property at 8114 West Mercer Way and is shown in Figure 5.

The wetland is dominated by shrub vegetation and has emergent layers as well. The wetland was classified as a Category IV slope wetland, requiring 25-foot minimum buffers in accordance to requirements of the Mercer Island City Code (see Figure 5).

The wetland boundaries have been staked in the field (Figure 5). The boundaries have been located with GPS coordinates, using Garmin GPS meters and surveys by the applicant's surveyor (Kim 2018, personal communication).

The size of the wetland on the property has likely been increased by additional drainage from the northern and eastern properties adjacent to the Site. ESA has reviewed the property and concluded that the eastern stormdrain is not a watercourse since it results from drainage runoff from the residence to the east. As per Westech's earlier letter report submitted to the City of Mercer Island, the western stormdrain appears to result from runoff from the residence to the west (corrugated metal pipe as per as-built drawings) (Westech 2017, ESA 2017). The small western area which has upland overstory vegetation may be a borderline wetland falls under the 2,500 square foot exemption from regulation by the City of Mercer Island (MICC 19.07.080).

4.2 Recommendations

Westech recommends that a Buffer Mitigation and Enhancement/Restoration Plan (as per the requirements of the MICC (19.07.080) be prepared for the proposed Project in order to reduce the standard buffer to the minimum buffer of 25 feet. Any additional buffer mitigation or wetland alterations proposed will be included in that Plan.

Any construction activities on the Site should be conducted outside the permitted buffer zone. A construction fence (silt fence or equivalent erosion control measure) should be placed between the construction area and the buffer zone prior to any grading for the project.

Placement of the silt fences should be based on locations of critical areas (wetlands and the associated buffer zones) as delineated and described in this report and as staked by Westech Company in the field. Grading activities should not take place after November 1 without all possible erosion control measures in place.

Other standard drainage and erosion control measures should be undertaken in accordance with City regulations (MICC 2018). Such measures would include placement of straw bales or similar control devices at the downhill edge of construction area and spreading straw or jute netting (or similar measures) over exposed soil areas.

5.0 REFERENCES

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APPENDICIES

APPENDIX A
SITE PHOTOGRAPHS

1) Upland area in center of Property.

2) Storm drain at southeast corner of Property.

3) Storm drain on eastern Property boundary, intercepting stormwater from residence to the east.

4) On-site wetland along eastern boundary of the Property.

5) Wetland area showing sedges, bulrush, reed canary grass and soft rust.

6) Upland area on western boundary of Property showing open mixed conifers.

7) Hillside in center of Site showing residences at top of hillslope.

8) eastern side of Property and house to the east.

APPENDIX B
WETLAND DATA FORMS

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

Project/Site: 8114 West Mercer Way City/County: Mercer Island/King County Sampling Date: 2/13/18

Applicant/Owner: Mr. Benny Kim State: WA Sampling Point: VSH-1 (Wetland)

Investigator(s): Paul Ruben, Dr. G Bradford Shea Section, Township, Range: S36 T24N R4E

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave Slope (%): 2%

Subregion (LRR): NW Forest Lat: 47Deg 31' 49.57"N Long: 122Deg 13' 57.80"W Datum: NAD83

Soil Map Unit Name: Kitsap NWI classification: Shrub Wetland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation X, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No X

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:

Vegetation was significantly disturbed from removal and presence of invasive species. Seepage slopes were found along hillslope with low volume of flowing water, saturation, and high water table.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 10M)	Absolute % Cover	Dominant Species?	Indicator Status
1. Big leaf maple	35%	Yes	FACU
2. Red alder	30%	Yes	
3.			
4.			
	65%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 10M)			
1. Himalayan blackberry	35%	No	FAC
2.			
3.			
4.			
5.			
	35%	= Total Cover	
Herb Stratum (Plot size: 1M)			
1. Common horsetail	15%	Yes	FACW
2. Himalayan blackberry	10%	Yes	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	25%	= Total Cover	
Woody Vine Stratum (Plot size: 1M)			
1. English ivy	5%	Yes	FACU
2.			
	5%	= Total Cover	

% Bare Ground in Herb Stratum 30%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 80% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

Vegetation was significantly disturbed. Vegetative community was influenced from invasive species dominance, artificial manipulation, and wintering. Himalayan blackberry and English ivy were found throughout wetland and upland. Clumps of beaked hazelnut (FACU) and English holly (FACU) were scattered along wetland line adjacent to seepages.

SOIL

Sampling Point: VSH-1 (Wetland)

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-18"	10YR 2/2	100%					Gravelly loam	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- X Histosol (A1)
- ___ Histic Epipedon (A2)
- X Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- X 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: None

Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks:

2 cm of Muck present. Loamy Mucky Mineral (F1) was an indicator.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes X No ___ Depth (inches): 6"

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 0-18"

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

High water table (A2) and saturation (A3) present.

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

Project/Site: 8114 West Mercer Way City/County: Mercer Island/King County Sampling Date: 2/13/18

Applicant/Owner: Mr. Benny Kim State: WA Sampling Point: VSH-2 (Upland)

Investigator(s): Paul Ruben, Brad Shea Section, Township, Range: S36 T24N R4E

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave Slope (%): 2%

Subregion (LRR): NW Forest Lat: 47Deg 31' 49.70" Long: 122Deg 13' 57.93"W Datum: NAD83

Soil Map Unit Name: Kitsap NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation X, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ____ No X

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:

Vegetation was significantly disturbed from removal and presence of invasive species. Seepage slopes were found along hillslope with low volume of flowing water, saturation, and high water table.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 10M)	Absolute % Cover	Dominant Species?	Indicator Status
1. Big leaf maple	55%	Yes	FACU
2. Red alder	15%	Yes	FAC
3. Pacific madrone	10%	No	FACU
4.			
	80%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 10M)			
1. Himalayan blackberry	40%	Yes	FAC
2.			
3.			
4.			
5.			
	35%	= Total Cover	
Herb Stratum (Plot size: 1M)			
1. Himalayan blackberry	10%	Yes	FAC
2. Swordfern	15%	Yes	FACU
3. Brackenfern	10%	Yes	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	25%	= Total Cover	
Woody Vine Stratum (Plot size: 1M)			
1. English ivy	15%	Yes	FACU
2.			
	5%	= Total Cover	

% Bare Ground in Herb Stratum 30%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	3	x 3 =	9
FACU species	5	x 4 =	20
UPL species		x 5 =	
Column Totals:	8 (A)		29 (B)

Prevalence Index = B/A = 3.63

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:

Vegetation was significantly disturbed. Vegetative community was influenced from invasive species dominance, artificial manipulation, and wintering. Himalayan blackberry and English ivy were found throughout wetland and upland. Clumps of beaked hazelnut (FACU) and English holly (FACU) were scattered along wetland line adjacent to seepages.

8114 West Mercer Way

Sampling Point: VSH-2 (Upland)

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-8"	10YR 5/2	100%					Sandy loam	
8-12"	10YR 5/4	100%					Gravely Sand	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: Concentrated gravel

Depth (inches): 12"

Hydric Soil Present? Yes ____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): ____

Water Table Present? Yes ____ No X Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): ____

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

APPENDIX C
WETLAND RATING FORM AND MAPS

Wetland name or number A

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland A - 8114 West Mercer Way Date of site visit: Jan. 6, 2018

Rated by Dr. G. Bradford Shea Trained by Ecology? X Yes ___No Date of training 2015/17

HGM Class used for rating Slope Wetland has multiple HGM classes? ___Y _X_N

NOTE: Form is not complete without the figures requested *(figures can be combined).*

Source of base aerial photo/map Google Earth

OVERALL WETLAND CATEGORY IV (based on functions X or special characteristics___)

1. Category of wetland based on FUNCTIONS

_____**Category I** – Total score = 23 - 27

_____**Category II** – Total score = 20 - 22

_____**Category III** – Total score = 16 - 19

_____**Category IV** – Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
		Circle the appropriate ratings		
Site Potential	H (M) L	H M (L)	H M (L)	
Landscape Potential	H (M) L	H (M) L	H (M) L	
Value	H (M) L	H M (L)	H M (L)	TOTAL
Score Based on Ratings	6	4	4	14

Score for each function based on three ratings *(order of ratings is not important)*

9 = H,H,H
8 = H,H,M
7 = H,H,L
7 = H,M,M
6 = H,M,L
6 = M,M,M
5 = H,L,L
5 = M,M,L
4 = M,L,L
3 = L,L,L

2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	CATEGORY
Estuarine	I II
Wetland of High Conservation Value	I
Bog	I
Mature Forest	I
Old Growth Forest	I
Coastal Lagoon	I II
Interdunal	I II III IV
None of the above	

Wetland name or number A

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	
Hydroperiods	D 1.4, H 1.2	
Location of outlet *(can be added to map of hydroperiods)*	D 1.1, D 4.1	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	
Map of the contributing basin	D 4.3, D 5.3	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Ponded depressions	R 1.1	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	R 2.4	
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	
Width of unit vs. width of stream *(can be added to another figure)*	R 4.1	
Map of the contributing basin	R 2.2, R 2.3, R 5.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	

Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	L 1.1, L 4.1, H 1.1, H 1.4	
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	L 2.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	L 3.1, L 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	L 3.3	

Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	C-1
Hydroperiods	H 1.2	C-2
Plant cover of **dense** trees, shrubs, and herbaceous plants	S 1.3	N/A
Plant cover of **dense, rigid** trees, shrubs, and herbaceous plants *(can be added to figure above)*	S 4.1	C-3
Boundary of 150 ft buffer (can be added to another figure)	S 2.1, S 5.1	C-3
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	C-4
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	C-5
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	C-6

Wetland name or number A

HGM Classification of Wetlands in Western Washington

For questions 1-7, the criteria described must apply to the entire unit being rated.

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides except during floods?

   NO – go to 2 **YES** – the wetland class is **Tidal Fringe** – go to 1.1

   1.1 Is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?

   NO – Saltwater Tidal Fringe (Estuarine) **YES – Freshwater Tidal Fringe**
   *If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is Saltwater Tidal Fringe it is an **Estuarine** wetland and is not scored. This method **cannot** be used to score functions for estuarine wetlands.*

2. The entire wetland unit is flat and precipitation is the only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.

   NO – go to 3 **YES** – The wetland class is **Flats**
   *If your wetland can be classified as a Flats wetland, use the form for **Depressional** wetlands.*

3. Does the entire wetland unit **meet all** of the following criteria?
   ___The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface at any time of the year) at least 20 ac (8 ha) in size;
   ___At least 30% of the open water area is deeper than 6.6 ft (2 m).

   NO – go to 4 **YES** – The wetland class is **Lake Fringe** (Lacustrine Fringe)

4. Does the entire wetland unit **meet all** of the following criteria?
   X The wetland is on a slope (*slope can be very gradual*),
   X The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks,
   X The water leaves the wetland **without being impounded.**

   NO – go to 5 **YES** – The wetland class is **Slope**

   NOTE: Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 ft deep).

5. Does the entire wetland unit **meet all** of the following criteria?
   ___The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river,
   ___The overbank flooding occurs at least once every 2 years.

Wetland name or number A

NO – go to 6 **YES** – The wetland class is **Riverine**

NOTE: The Riverine unit can contain depressions that are filled with water when the river is not flooding

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time during the year? *This means that any outlet, if present, is higher than the interior of the wetland.*

NO – go to 7 **YES** – The wetland class is **Depressional**

7. Is the entire wetland unit located in a very flat area with no obvious depression and no overbank flooding? The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

NO – go to 8 **YES** – The wetland class is **Depressional**

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a Depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within the wetland unit being scored.

NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the HGM class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM classes within the wetland unit being rated	HGM class to use in rating
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake Fringe	Lake Fringe
Depressional + Riverine along stream within boundary of depression	Depressional
Depressional + Lake Fringe	Depressional
Riverine + Lake Fringe	Riverine
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE

If you are still unable to determine which of the above criteria apply to your wetland, or if you have ***more than 2 HGM classes*** *within a wetland boundary, classify the wetland as Depressional for the rating.*

Wetland name or number A

SLOPE WETLANDS

Water Quality Functions - Indicators that the site functions to improve water quality

S 1.0. Does the site have the potential to improve water quality?	
S 1.1. Characteristics of the average slope of the wetland: *(a 1% slope has a 1 ft vertical drop in elevation for every 100 ft of horizontal distance)* Slope is 1% or less — points = 3 Slope is > 1%-2% — points = 2 Slope is > 2%-5% — points = 1 Slope is greater than 5% — points = 0	0
S 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic *(use NRCS definitions)*: Yes = 3 No = 0	3
S 1.3. Characteristics of the plants in the wetland that trap sediments and pollutants: Choose the points appropriate for the description that best fits the plants in the wetland. *Dense means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 in.* Dense, uncut, herbaceous plants > 90% of the wetland area — points = 6 Dense, uncut, herbaceous plants > ½ of area — points = 3 Dense, woody, plants > ½ of area — points = 2 Dense, uncut, herbaceous plants > ¼ of area — points = 1 Does not meet any of the criteria above for plants — points = 0	3
Total for S 1 — Add the points in the boxes above	6

Rating of Site Potential If score is: ___ **12 = H** X **6-11 = M** ___ **0-5 = L** *Record the rating on the first page*

S 2.0. Does the landscape have the potential to support the water quality function of the site?	
S 2.1. Is > 10% of the area within 150 ft on the uphill side of the wetland in land uses that generate pollutants? Yes = 1 No = 0	1
S 2.2. Are there other sources of pollutants coming into the wetland that are not listed in question S 2.1? Other sources _____ Yes = 1 No = 0	0
Total for S 2 — Add the points in the boxes above	1

Rating of Landscape Potential If score is: X **1-2 = M** ___ **0 = L** *Record the rating on the first page*

S 3.0. Is the water quality improvement provided by the site valuable to society?	
S 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list? Not in this area Yes = 1 No = 0	0
S 3.2. Is the wetland in a basin or sub-basin where water quality is an issue? *At least one aquatic resource in the basin is on the 303(d) list.* Yes = 1 No = 0	1
S 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality? *Answer YES if there is a TMDL for the basin in which unit is found.* Yes = 2 No = 0	0
Total for S 3 — Add the points in the boxes above	1

Rating of Value If score is: ___ **2-4 = H** X **1 = M** ___ **0 = L** *Record the rating on the first page*

Wetland name or number A

SLOPE WETLANDS

Hydrologic Functions - Indicators that the site functions to reduce flooding and stream erosion

S 4.0. Does the site have the potential to reduce flooding and stream erosion?	
S 4.1. Characteristics of plants that reduce the velocity of surface flows during storms: Choose the points appropriate for the description that best fits conditions in the wetland. *Stems of plants should be thick enough (usually > 1/8 in), or dense enough, to remain erect during surface flows.* Dense, uncut, **rigid** plants cover > 90% of the area of the wetland — points = 1 All other conditions — points = 0	0

Rating of Site Potential If score is: ___ **1 = M** X **0 = L** *Record the rating on the first page*

S 5.0. Does the landscape have the potential to support the hydrologic functions of the site?	
S 5.1. Is more than 25% of the area within 150 ft upslope of wetland in land uses or cover that generate excess surface runoff? Most intercepted by storm-drains — Yes = 1 No = 0	1

Rating of Landscape Potential If score is: X **1 = M** ___ **0 = L** *Record the rating on the first page*

S 6.0. Are the hydrologic functions provided by the site valuable to society?	
S 6.1. Distance to the nearest areas downstream that have flooding problems: The sub-basin immediately down-gradient of site has flooding problems that result in damage to human or natural resources (e.g., houses or salmon redds) — points = 2 Surface flooding problems are in a sub-basin farther down-gradient — points = 1 No flooding problems anywhere downstream — points = 0	0
S 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan? Yes = 2 No = 0	0
Total for S 6 — Add the points in the boxes above	0

Rating of Value If score is: ___ **2-4 = H** ___ **1 = M** X **0 = L** *Record the rating on the first page*

NOTES and FIELD OBSERVATIONS:

Wetland name or number A

These questions apply to wetlands of all HGM classes.

HABITAT FUNCTIONS - Indicators that site functions to provide important habitat

H 1.0. Does the site have the potential to provide habitat?

H 1.1. Structure of plant community: *Indicators are Cowardin classes and strata within the Forested class.* Check the Cowardin plant classes in the wetland. *Up to 10 patches may be combined for each class to meet the threshold of ¼ ac or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked.*

____Aquatic bed	4 structures or more: points = 4
__X__Emergent	3 structures: points = 2
__X__Scrub-shrub (areas where shrubs have > 30% cover)	2 structures: points = 1
____Forested (areas where trees have > 30% cover)	1 structure: points = 0

If the unit has a Forested class, check if:

____The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the Forested polygon

1

H 1.2. Hydroperiods

Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ ac to count (*see text for descriptions of hydroperiods*).

____Permanently flooded or inundated	4 or more types present: points = 3
____Seasonally flooded or inundated	3 types present: points = 2
__X__Occasionally flooded or inundated	2 types present: points = 1
__X__Saturated only	1 type present: points = 0
____Permanently flowing stream or river in, or adjacent to, the wetland	
____Seasonally flowing stream in, or adjacent to, the wetland	
____**Lake Fringe wetland**	**2 points**
____**Freshwater tidal wetland**	**2 points**

1

H 1.3. Richness of plant species

Count the number of plant species in the wetland that cover at least 10 ft^2.

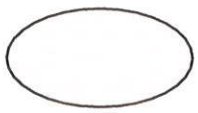
Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle***

If you counted: > 19 species	points = 2
5 - 19 species	points = 1
< 5 species	points = 0

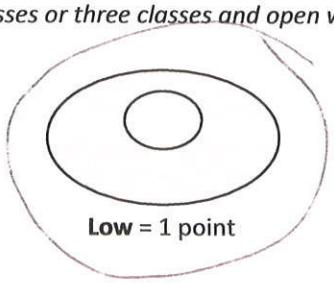
1

H 1.4. Interspersion of habitats

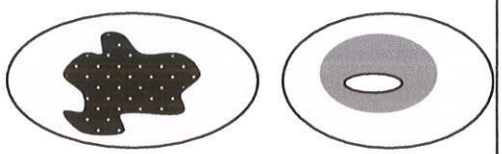
Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always high.*



None = 0 points

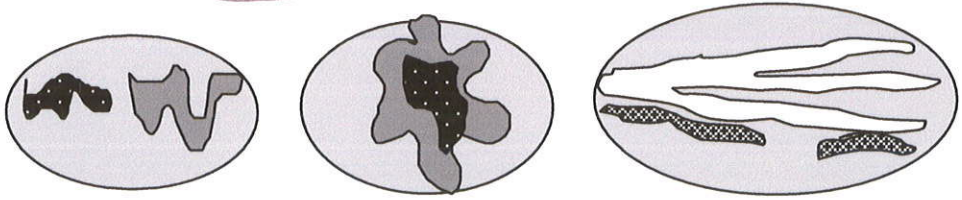


Low = 1 point



Moderate = 2 points

All three diagrams in this row are **HIGH** = 3points



1

Wetland name or number A

H 1.5. Special habitat features: Check the habitat features that are present in the wetland. *The number of checks is the number of points.* ____Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long). ____Standing snags (dbh > 4 in) within the wetland ____Undercut banks are present for at least 6.6 ft (2 m) **and/or** overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) ____Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet weathered where wood is exposed)* ____At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)* ____Invasive plants cover less than 25% of the wetland area in every stratum of plants (*see H 1.1 for list of strata*)	0
Total for H 1 Add the points in the boxes above	4

Rating of Site Potential If score is: ___ **15-18 = H** ___ **7-14 = M** X **0-6 = L** *Record the rating on the first page*

H 2.0. Does the landscape have the potential to support the habitat functions of the site?	
H 2.1. Accessible habitat (include *only habitat that directly abuts wetland unit*). *Calculate:* 5 % undisturbed habitat 10 + [(% moderate and low intensity land uses)/2] 5 = 10 % If total accessible habitat is: > 1/3 (33.3%) of 1 km Polygon points = 3 20-33% of 1 km Polygon points = 2 10-19% of 1 km Polygon points = 1 < 10% of 1 km Polygon points = 0	1
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* 10 % undisturbed habitat 20 + [(% moderate and low intensity land uses)/2] 10 = 20 % Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10-50% and in 1-3 patches points = 2 Undisturbed habitat 10-50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0	1
H 2.3. Land use intensity in 1 km Polygon: If > 50% of 1 km Polygon is high intensity land use points = (- 2) ≤ 50% of 1 km Polygon is high intensity points = 0	0
Total for H 2 Add the points in the boxes above	2

Rating of Landscape Potential If score is: ___ **4-6 = H** X **1-3 = M** ___ **< 1 = L** *Record the rating on the first page*

H 3.0. Is the habitat provided by the site valuable to society?	
H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? *Choose only the highest score that applies to the wetland being rated.* Site meets ANY of the following criteria: points = 2 — It has 3 or more priority habitats within 100 m (see next page) — It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists) — It is mapped as a location for an individual WDFW priority species — It is a Wetland of High Conservation Value as determined by the Department of Natural Resources — It has been categorized as an important habitat site in a local or regional comprehensive plan, in a Shoreline Master Plan, or in a watershed plan Site has 1 or 2 priority habitats (listed on next page) within 100 m points = 1 Site does not meet any of the criteria above points = 0	0

Rating of Value If score is: ___ **2 = H** ___ **1 = M** X **0 = L** *Record the rating on the first page*

Wetland name or number A

WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. http://wdfw.wa.gov/publications/00165/wdfw00165.pdf or access the list from here: http://wdfw.wa.gov/conservation/phs/list/)

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland unit: ***NOTE:*** *This question is independent of the land use between the wetland unit and the priority habitat.*

— **Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).

— **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*).

— **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.

— **Old-growth/Mature forests:** Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in (81 cm) dbh or > 200 years of age. Mature forests – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.

— **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).

— **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

— **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161 – see web link above*).

— **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.

— **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report – see web link on previous page).*

— **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.

— **Cliffs:** Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.

— **Talus:** Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.

— **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 20 in (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list because they are addressed elsewhere.

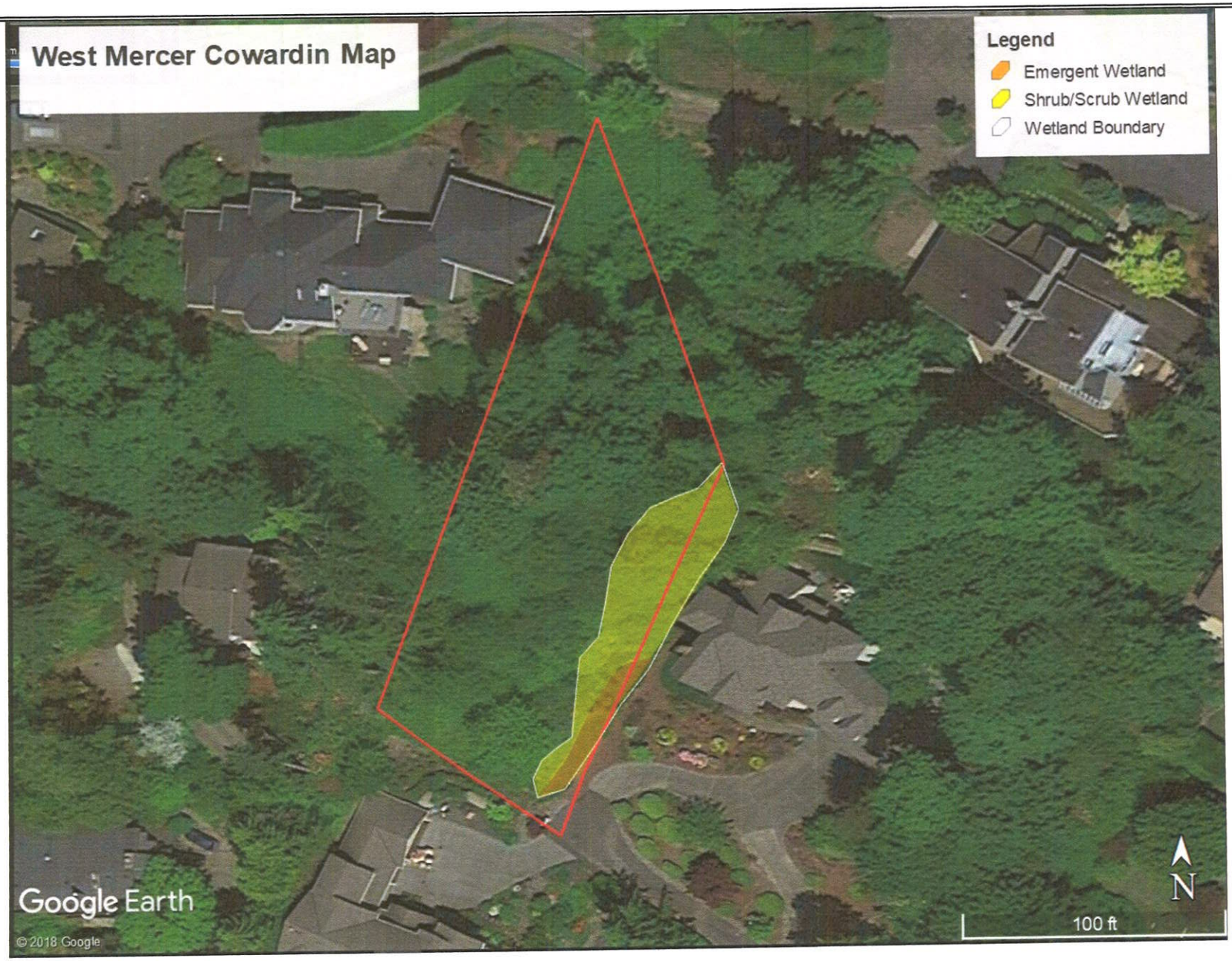


Figure C-1: West Mercer Map of Cowardin Plant Classes

Westech Company 2018
Source: Google Earth 2018

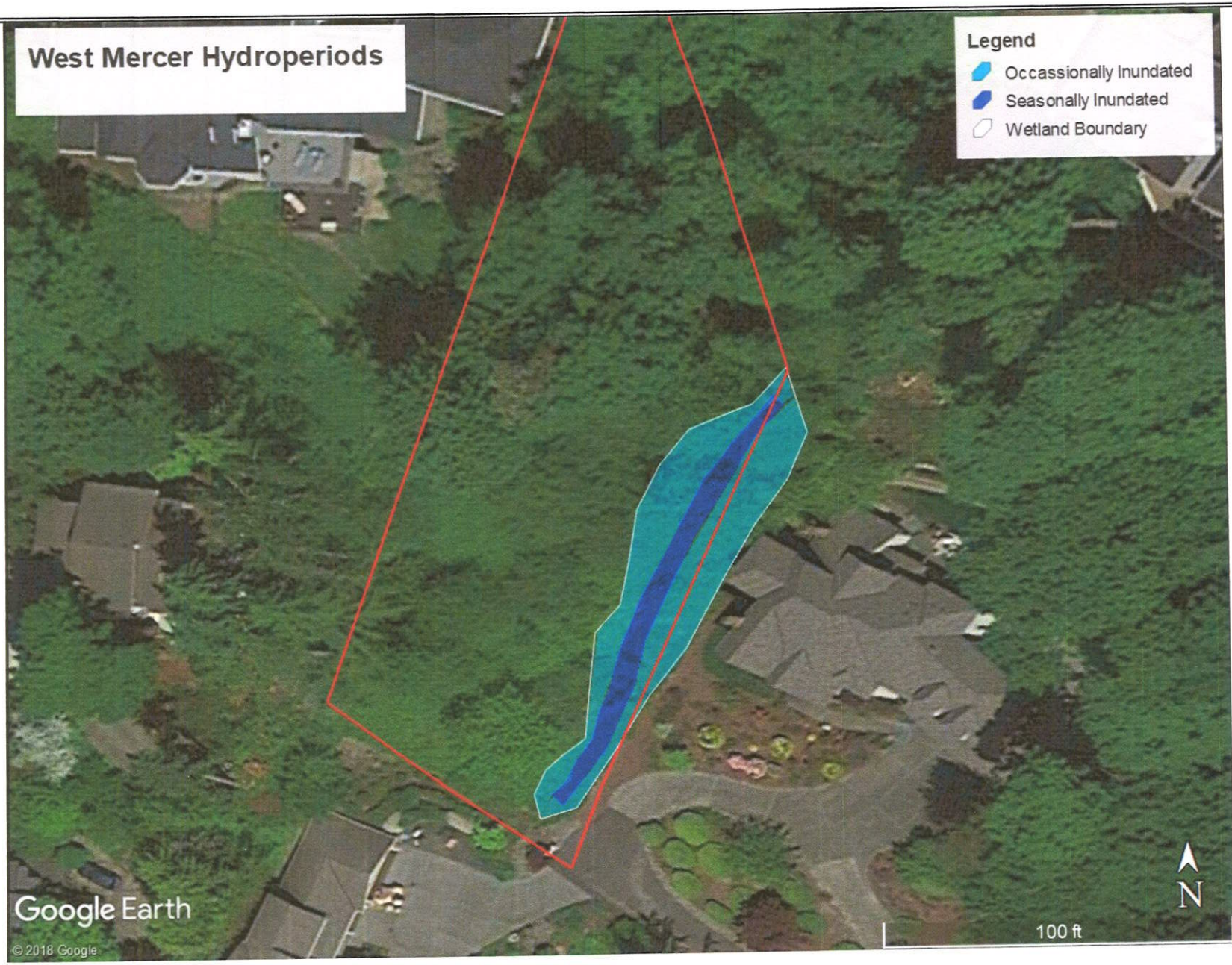


Figure C-2: West Mercer Map of Hydroperiods

Westech Company 2018
Source: Google Earth 2018

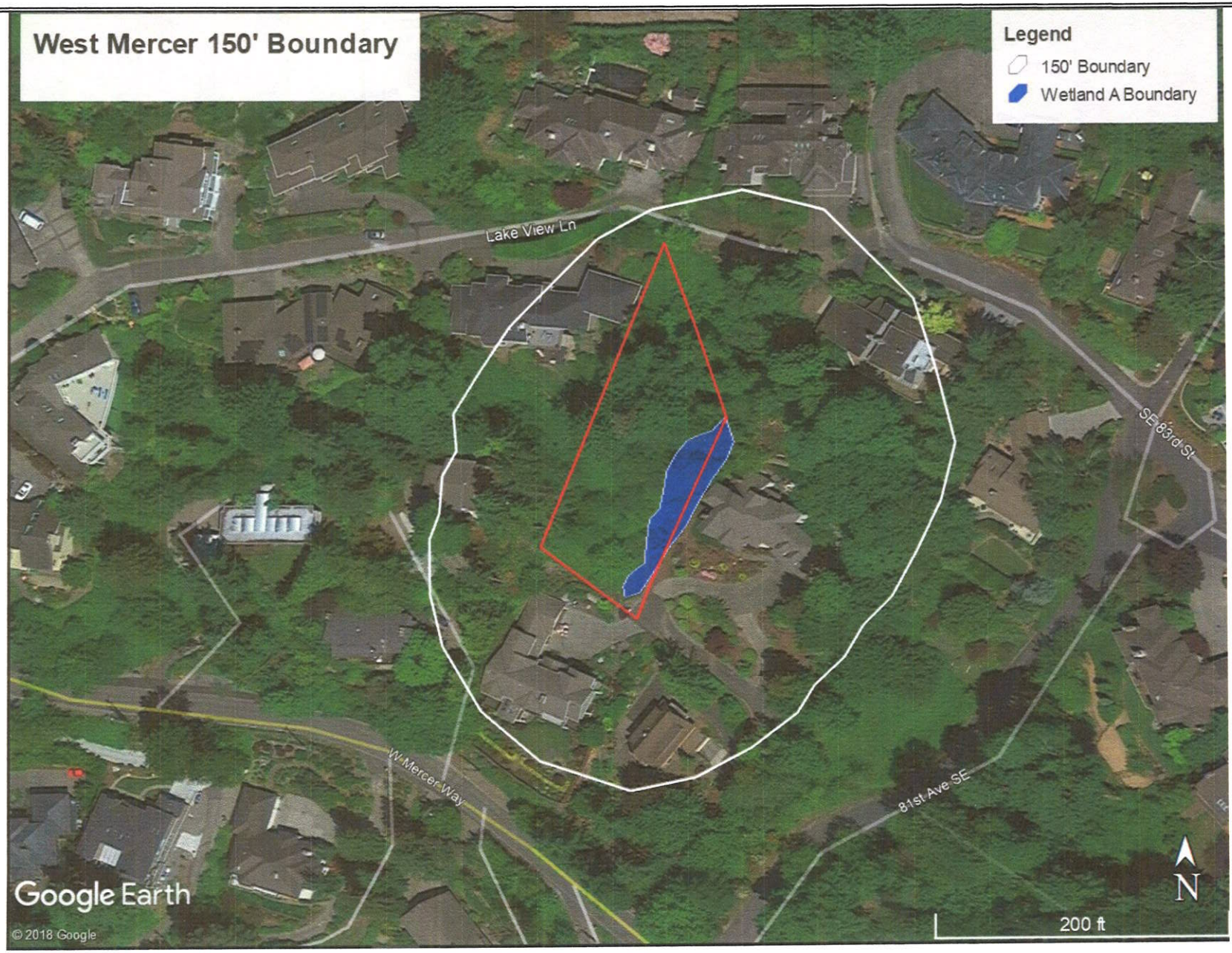


Figure C-3: West Mercer 150 Foot Boundary (White)

Westech Company 2018
Source: Google Earth 2018

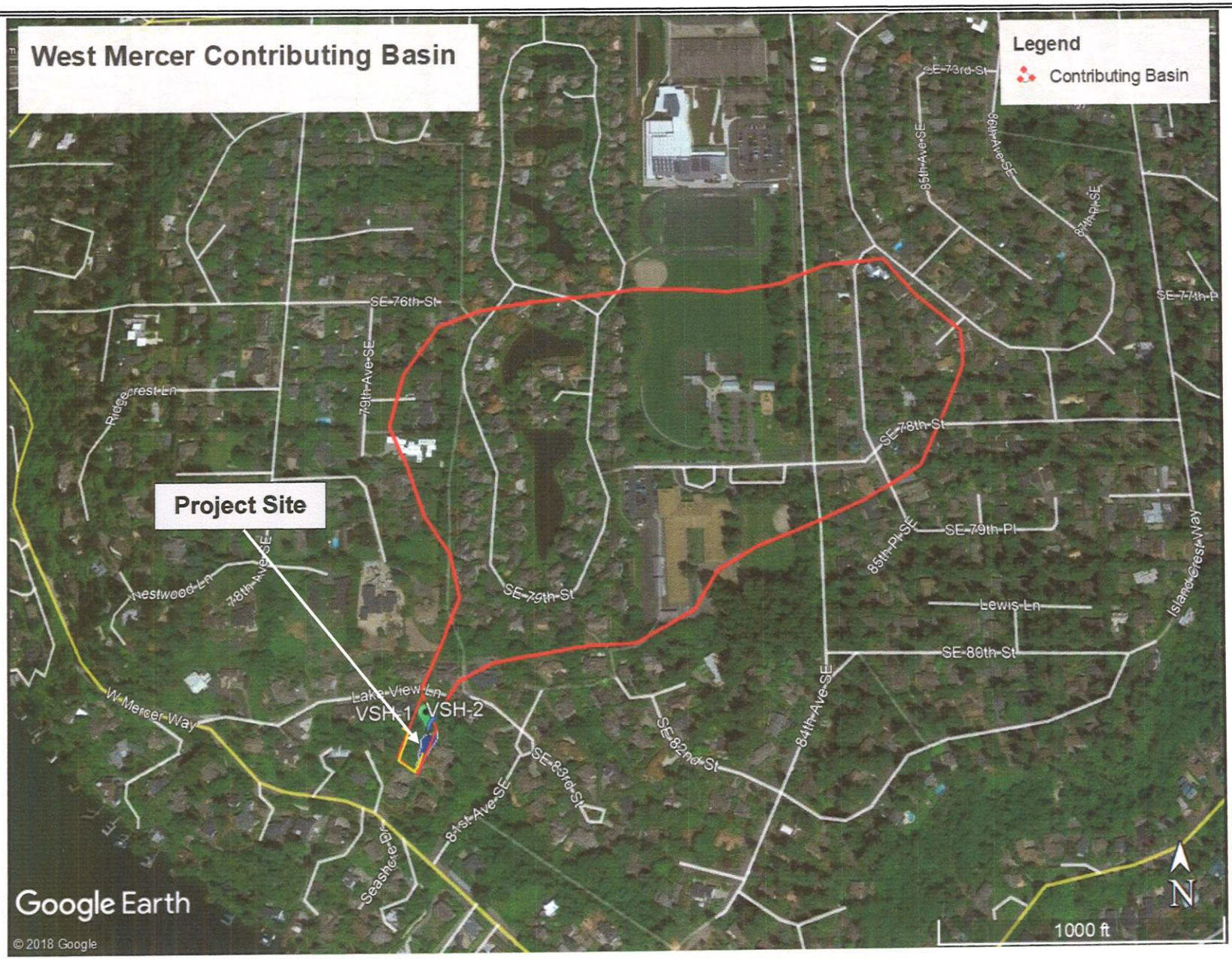


Figure C-4: West Mercer Contributing Basin (Red)

Westech Company 2018
Source: Google Earth 2018

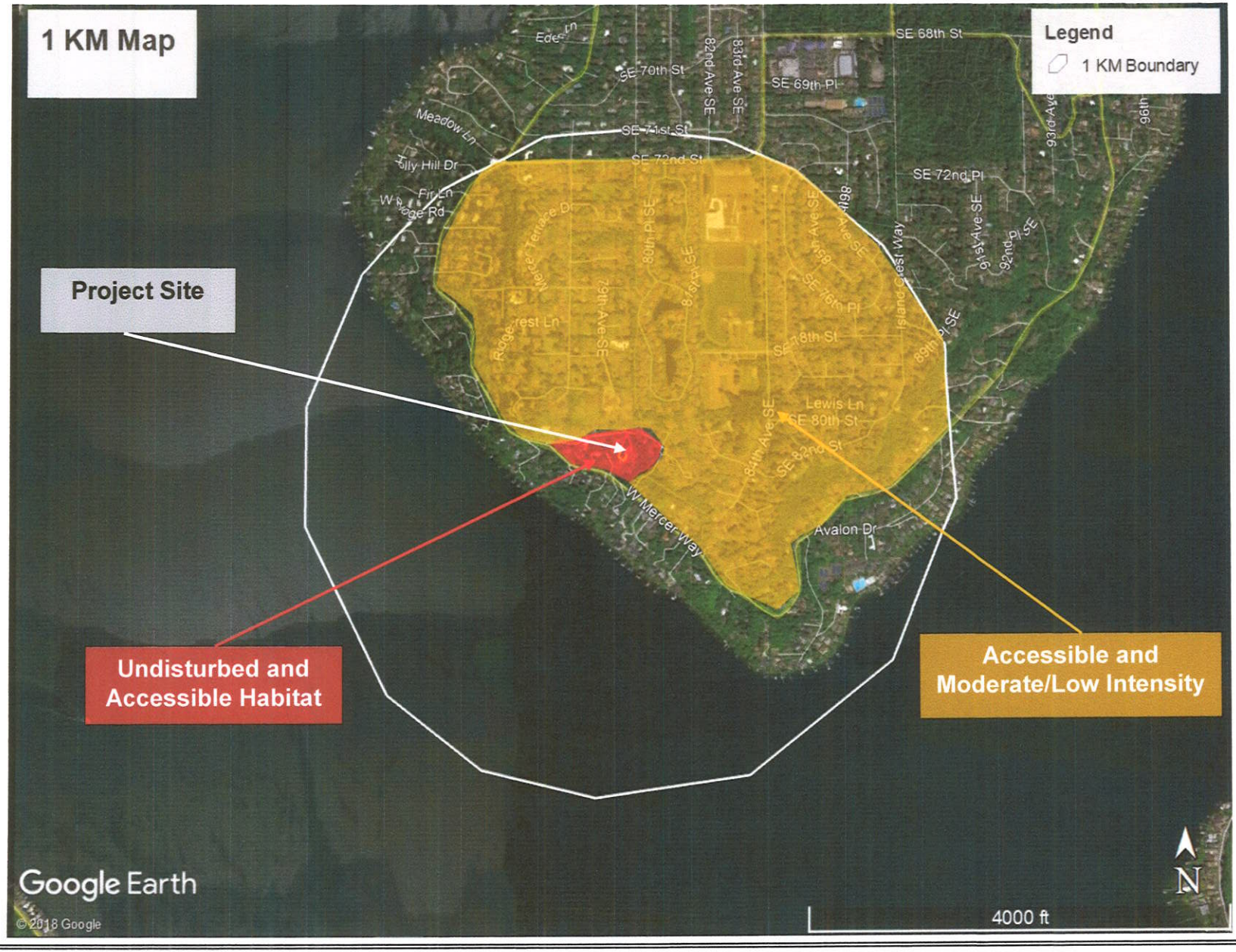


Figure C-5: West Mercer Wetland Delineation 1 KM Map

Westech Company 2018

Source: Clallam County Online Mapping 2018

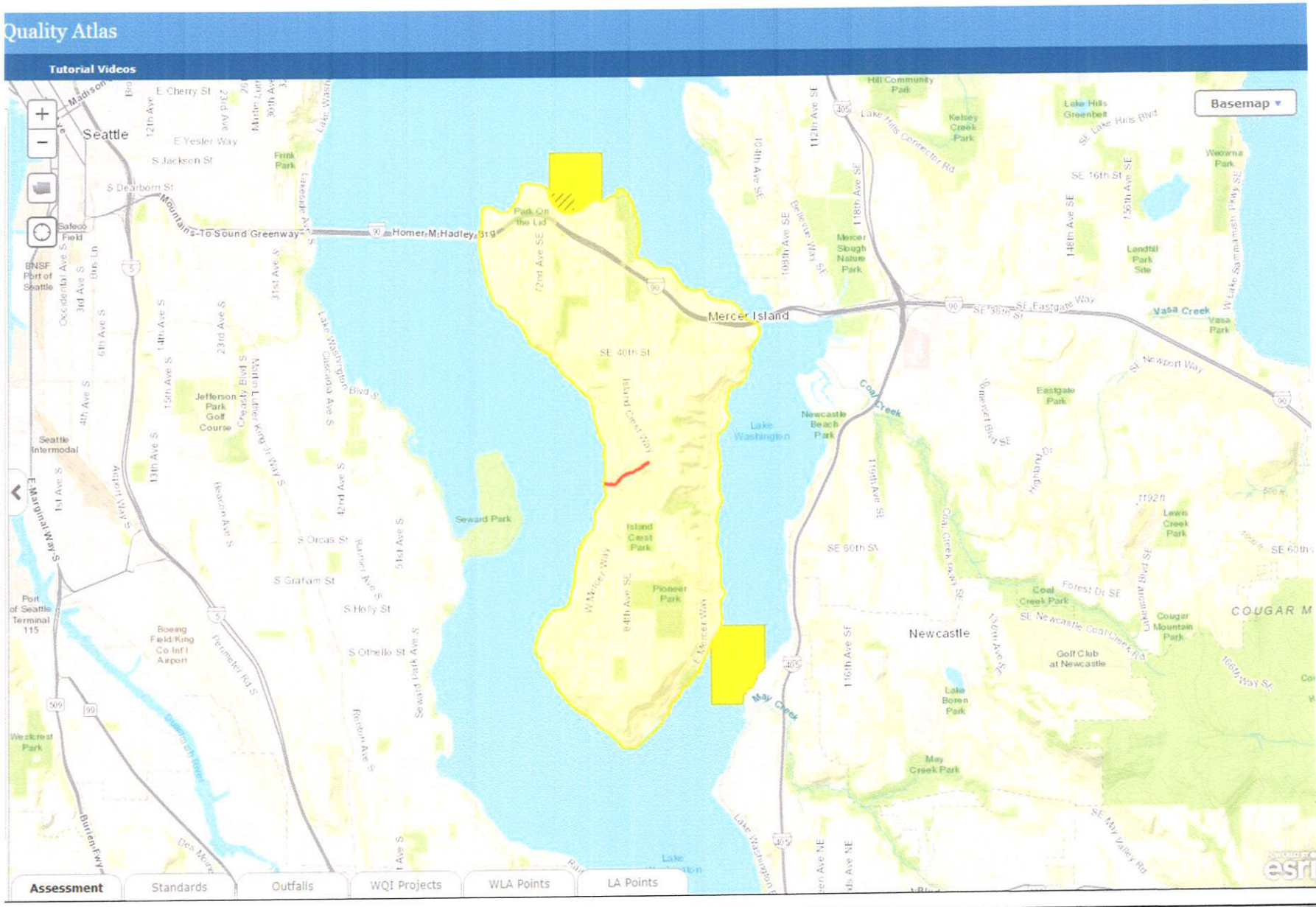


Figure C-6: Print Screen of 303d Water Assessment

Westech Company 2018

Source: Washington DOE 2018

APPENDIX D
SUPPORTING MATERIAL

Exhibit 4- Wetland Mitigation Plan

WESTECH COMPANY

Environmental Consulting ~ Site Permitting

WETLAND MITIGATION AND MONITORING PLAN
8114 WEST MERCER WAY RESIDENTIAL PROJECT
MERCER ISLAND, WASHINGTON

June 2018

G. Bradford Shea, Ph.D.
Trevor Shea

Submitted to:

CITY OF MERCER ISLAND
DEPARTMENT OF COMMUNITY DEVELOPMENT
9611 Southeast 36th Street
Mercer Island, Washington 98040-3732

Submitted by:

WESTECH COMPANY
P.O. Box 2876
Port Angeles, Washington 98362

WETLAND MITIGATION AND MONITORING PLAN

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CONTENTS

1.0 INTRODUCTION

1.1 PROPOSED PROJECT

The Project is to build a 4,000 square foot single family residence on an existing residentially zoned parcel located at 8114 West Mercer Way on Mercer Island, Washington (Figures 1-3). The residence is planned to be 3-story in order to minimize the footprint of the home and maximize use of the hillside and views.

The parcel is currently undeveloped, but is surrounded by other comparable homes on all sides. It is accessed by an existing access driveway which serves two other adjacent homes. The home is being designed by Architect Benny Kim of Benny Kim Design.

1.2 CRITICAL AREAS

Due to the potential for the presence of Critical Areas on the Site (wetlands, streams, etc.), Westech Company (Westech) was retained by Mr. Kim to assist with assessing the presence of wetlands or other critical areas. Westech found that the Site contained one wetland (Designated Wetland A) along the eastern Site boundary, which is approximately 3,720 square feet in size. The eastern portion of this wetland is off-site in some areas as shown in Figure 4.

Westech found that the Site did not contain any "watercourse" on the western or southern ends of the parcel. Wetland A does contain a seasonal runoff channel within the wetland which flows through the wetland from north to south.

The Wetland Boundaries were flagged by Westech in the field, and coordinates were determined by using a Garmin Montana Series GPS meter. Surveying was then conducted and mapped by the Architect to ensure additional accuracy (see Figure 4).

1.3 CRITICAL AREA BUFFERS

Wetland A was rated in accordance with the Washington Department of Ecology Wetland Rating System for Western Washington (DOE 2014). The Wetland was found to be a Category IV Wetland. The Standard Buffer Zone for this Category of wetland is 35 feet in accordance with the Mercer Island City Code (MICC).

The Applicant has requested that the buffer zone for the west side of Wetland A be reduced to 25 feet as provided by the MICC, with one small area near the residence to about 15-20 feet. In addition, the access driveway to the property will lie within the reduced buffer zone. The driveway will be located south of the wetland, near a storm-drain inlet located on the southeast corner of the property.

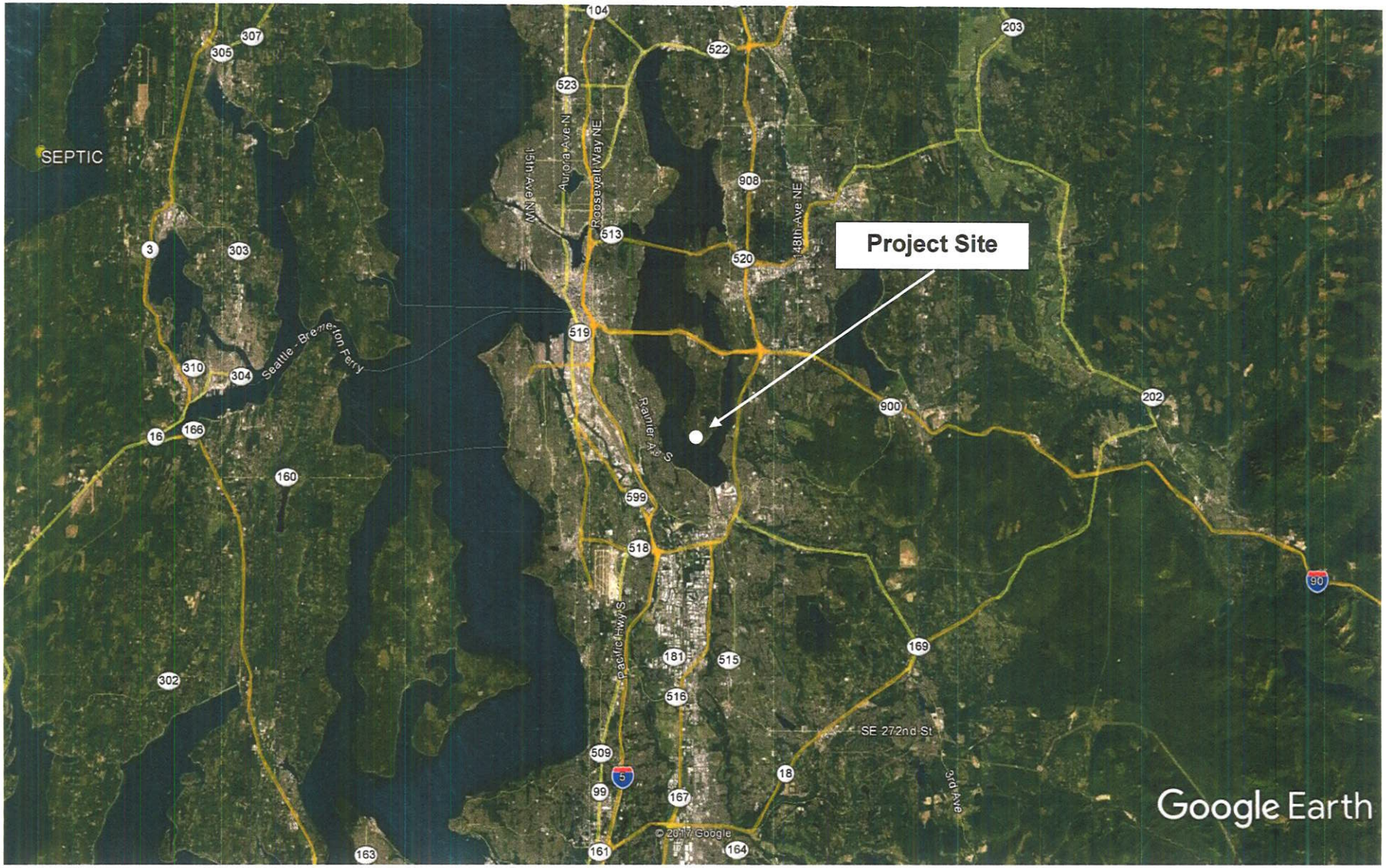

Figure 1. 8114 West Mercer Way Location Map

Westech Company 2018

Source: Google Earth 2018

Figure 2. 8114 West Mercer Way Vicinity Map

Westech Company 2018

Source: Google Earth 2018

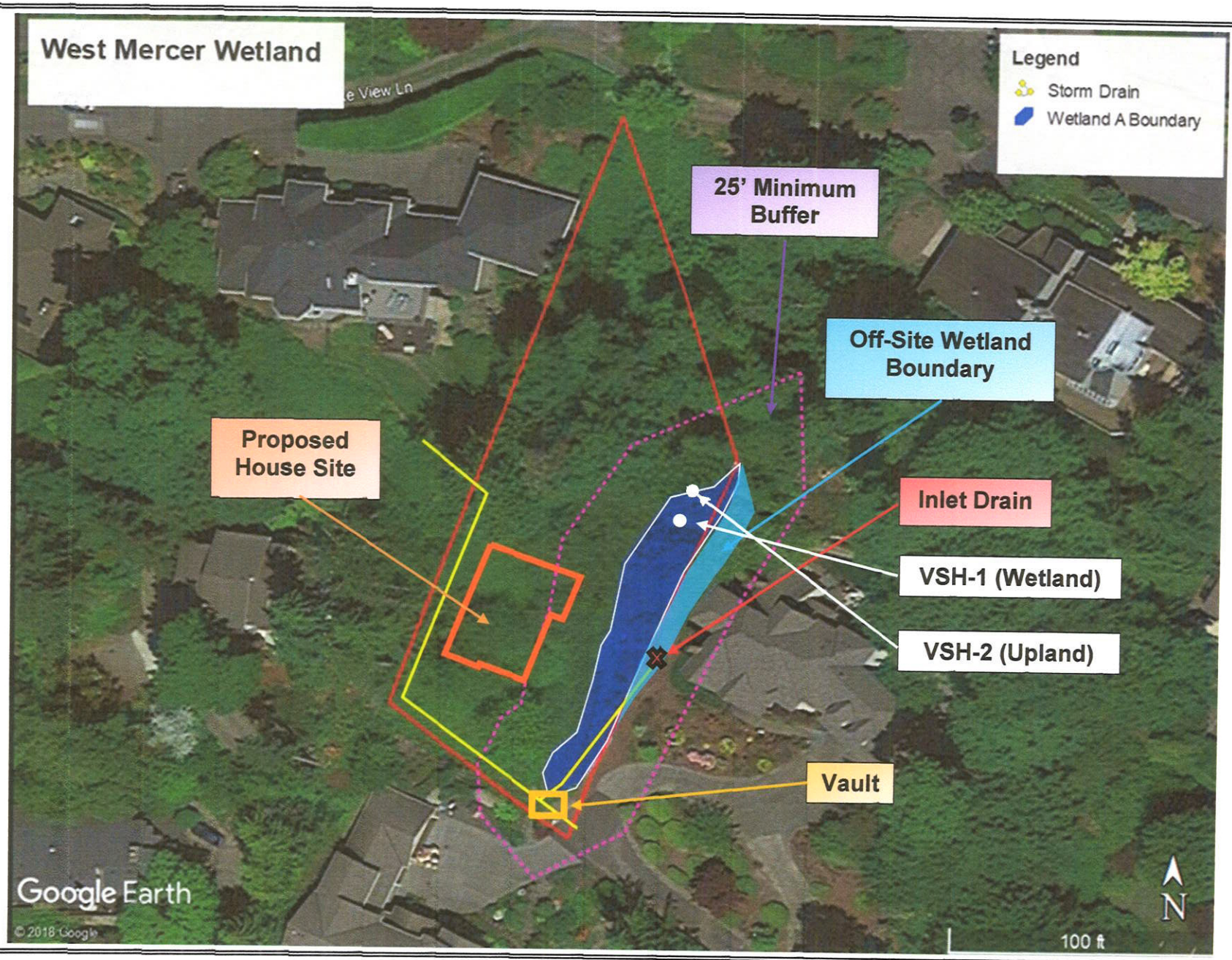

Figure 5. 8114 West Mercer Way Site Map Showing On-Site Wetland and Proposed Residence

Westech Company 2018

Source: Google Earth 2018

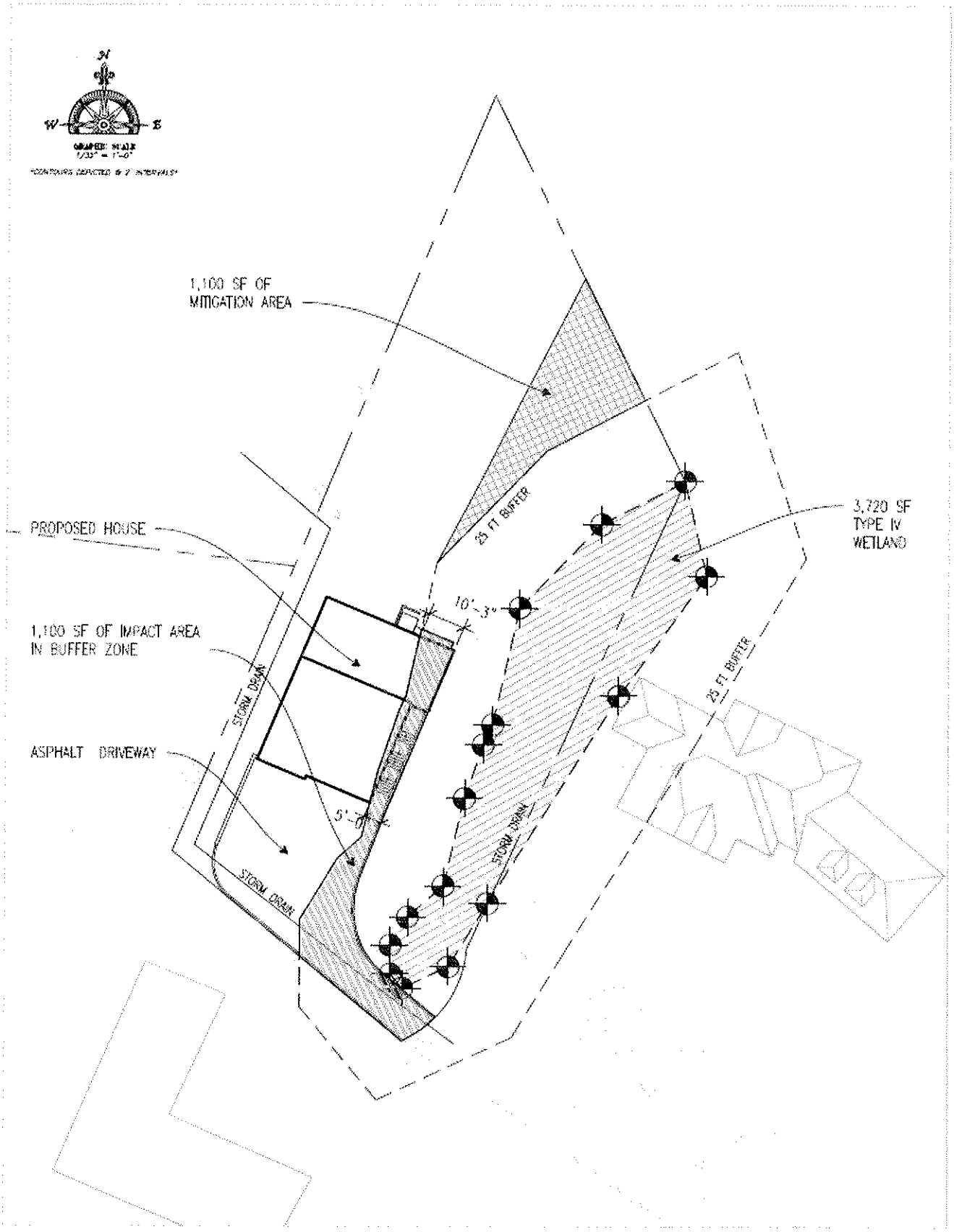

Figure 4. Site Plan Showing Proposed Buffer Reduction and Addition Areas

Westech Company 2018
Source: Benny Kim Design 2018

1.4 PROJECT TIMELINE AND HISTORY

Westech Company prepared a Wetland Delineation Report for the Property. That report was competed and submitted to the City of Mercer Island during April 2018. A previous engineering report on the stormwater system at the property and the absence of any "watercourse" on the western and southern property boundaries was previously submitted to the City during 2017 (C2MY Engineers 2017).

The City's consultant, ESA, reviewed the property conditions and the preliminary Wetland investigations conducted by Westech Company during the fall of 2017. ESA has also reviewed the Wetland Delineation Report (Westech 2018a).

The City of Mercer Island has requested that a Mitigation and Monitoring Plan be prepared by the Applicant. This report describes that Mitigation and Monitoring Plan. The Plan is intended to offset any direct or indirect environmental impacts from the Project and protect the wetland. The goal of this Mitigation and Monitoring Plan is to achieve "No Net Ecological Loss" for the wetland and the Project Site.

2.0 METHODS AND APPROACH

2.1 FIELD METHODOLOGY

The Wetland Delineation Report was prepared using methodology of the U.S. Army Corps of Engineers (USACE 1987/89, 2010) in its Wetland Manual and the Regional Supplement for Western Mountains, Valleys and Coast. The Routine Field Method for Wetlands under 5 acres in size was used as was applicable for the property at 8114 West Mercer Way.

Wetlands were staked in the field using four-foot wooden stakes or tying "Wetland Delineation" flagging on shrubs or trees. Test pits were dug and data forms prepared to document vegetation, soils and hydrological characteristics of the wetland and upland areas, as shown in the Wetland Delineation Report for the property (Westech 2018a).

GPS readings were taken to map the wetland (Wetland A). Surveying was also performed by the Applicant to more accurately represent the wetland location. The wetlands were then mapped (see Figure 4).

The Wetland was then rated in accordance with the Washington Department of Ecology (DOE) Wetland Rating System for Western Washington (DOE 2014). Geographic Positioning System (GPS) locations were taken of the Wetland A Boundary using a Garmin Montana 680t GPS Meter and mapped using Google Earth Pro Software.

2.2 REPORTS AND DOCUMENTATION

This Mitigation and Monitoring Plan is based on previous reports by C2Y Engineers submitted to the City of Mercer Island in December 2017 (C2MY Engineers 2017). It is primarily based on the Wetland Delineation Report; 8114 West Mercer Way Residential Project, Mercer Island, Washington prepared by Westech Company in April 2018 (Westech 2018a).

2.3 APPROACH

The wetland found on the Site, Wetland A, was found to be a Category IV Wetland, with significant incursions of non-native weedy species. Our approach to restoring and enhancing the buffer zone is based on creating an additional protected area to offset the area of buffer reduction at a 1:1 ratio as required by the Mercer Island City Code. This area will be approximately 1,100 square feet in size and is shown in Figure 4.

Additional restoration and enhancement will be described in Chapter 3.0 below. The approach for these improvements include protection during construction from siltation or sedimentation through Best Management Practices (BMPs) including sufficient erosion control methods. Following construction, access to the wetland will be limited by construction of a split rail type fence or equivalent.

A Planting Plan using native plants will be implemented to improve buffer conditions. In addition, non-native vegetation will be removed.

The Mitigation and Monitoring Plan will be implemented. A detailed Monitoring Plan will be developed to track the survival of the new native plants added to the buffer zone as specified in the Planting Plan. This will include documentation of "As-Built" conditions following planting, as well as periodic Site checks and submission of reports (Annual or more frequent if necessary) documenting plant survival. Performance standards will be established and standardized photo-stations will be specified for uniform documentation.

The Monitoring Plan will also include a Contingency Plan in the event that plant survival falls below the specified Performance Standards. Annual reports will specify whether the Project continues to meet the Performance standards and whether there is any necessity to implement the Contingency Plan.

3.0 MITIGATION AND MONITORING PLAN

3.1 MITIGATION PLAN COMPONENTS

The Mitigation Plan for the Project includes Mitigation of Project effects and protection of the existing wetland area during and following construction of the residence and driveway. This includes the following elements:

1) **Mitigation Area:** Designate an area to offset any direct impacts to the buffer zone. An area approximately 1,100 square feet in size will be designated north of the wetland as shown in Figure 4. This will offset the reduced buffer area with an increased buffer to the north at a 1:1 ratio as required by the MICC.

2) **Silt Fence and Erosion Control:** Place a silt fence along the outer (western) edge of the designated reduced buffer zone (see Figure 4) as approved by the City of Mercer Island. This silt fence will be installed and approved by the City prior to beginning construction.

3) **Planting Plan:** Develop and Implement a Planting Plan for native plant species to restore and enhance the reduced buffer zone area and to enhance the added buffer area as appropriate and necessary. The buffer zone will be divided into planting areas and native vegetation will be installed as specified. The Planting Plan is outlined in this report in Chapter 4.0.

4) **Non-Native Species Vegetation Control:** Develop and implement a plan for removal of non-native species within the reduced buffer zone. Develop specifications and performance standards for the occurrence of non-native vegetation within these areas. Removal of non-native species should be accomplished by hand methods and not mechanized equipment. The species to be removed from the Site include, but are not limited to Himalayan blackberry (*Rubus armeniacus*) and reed canary grass (*Phalaris arundinacea*).

5) **Fencing and Signage:** Install a fence (split rail or similar) to divide the home-site from the Wetland Buffer Zone. This fence will lie along the western side of the Wetland A Buffer Zone, but at least six feet from the residential structure. The fence will extend north to 20 feet beyond the upper corner of the home (roughly to the point where the increased buffer area begins.

The fence shall be posted at 100 foot intervals with signage consistent with the Mercer Island Code. The signs shall specify that the Wetland and its Buffer are a natural area, which should not be disturbed without proper authorization, as required by the City of Mercer Island Code.

3.2 MONITORING PLAN COMPONENTS

A Monitoring Plan shall also be developed, which shall track the survival of the installed plants following home construction. The Monitoring Plan will also include provisions for documentation and reporting including an "As-Built" documentation of completion of the Plantings.

There will also be provisions for annual reporting of plant survival in relationship to established Performance Standards. In the event that survival does not meet the Performance Standards during any annual period, the Monitoring Plan will call for analysis of the reasons for that lack of performance and preparation of a Contingency Plan, designed to meet those standards.

Annual Reporting will be conducted for a period of five (5) years, following the approval of the As-Built Report by the City of Mercer Island. The City shall review each Annual Report for compliance with the Performance Standards and the overall success of the Mitigation and Monitoring Plans achieving "No Net Ecological Loss".

The Monitoring Plan components shall be as follows (numbered sequentially following the Mitigation Plan components above):

6) **As-Built Documentation:** Plants will be installed as directed by a qualified botanist or environmental scientist. Once installed, the planting will be documented both by nursery receipts and by a final count documenting "As-Built" conditions of the plantings by the botanist or environmental scientist. An "As-Built" Report shall be submitted to the City of Mercer Island documenting these conditions. That report will include photographic documentation taken from at least one Photo-Station for each planting area.

7) **Annual Reporting:** Annual reports will be made for a period of five (5) years, which cover the survival of plants in relation to performance standards. Plants which are stressed or dying will be noted and, as feasible, potential reasons for these conditions will be determined. New plantings may be necessary to meet performance standards. In the event that a significant lack of survival area occurs in any planting area, it may be necessary to prepare a Contingency Plan (see below).

8) **Contingency Plan:** If planting survival falls below the Performance Standards, it may be necessary to prepare a Contingency Plan. If survival areas are near or slightly below the Performance Standards, it may be adequate in some cases, simply to replant with the same species to meet the performance standard. However, if there appears to be a lack of success by particular species, or because of physical or environmental conditions, a Contingency Plan will be necessary.

These components of the Mitigation and Monitoring Plan will be implemented by the Project Proponent. Erosion control and Best Management Practices (BMPs) will be used during construction. The plantings and "As-Built" reporting should be carried out within six months following construction either in the spring (March-April) or in the fall (September-October) timeframes, whichever is relevant. The details of the recommended Planting Plan are shown in Chapter 4.0.

3.3 PERFORMANCE STANDARDS

Performance Standards for the proposed Project have been developed based on survival of the native species planted and on the percentage of non-native species in the buffer zone. The following are the recommended performance standards:

1) During the first year following planting, 100% of the plants should survive and be in relatively good growing condition. If excessive leaf loss, root damage or other signs of morbidity or mortality are present, the plants should be checked so as to forestall significant decreases in survival. Some transplant shock is expected in the new plants, however, sufficient watering during summer months and sufficient protection of roots through use of mulch can minimize plant losses.

2) During the second and subsequent years following planting, survival of native vegetation should be over 90% of the number planted. Each planting area should be periodically inspected to ensure no excessive morbidity or mortality that would trigger the need for a Contingency Plan.

3) Non-native vegetation should be below 15% cover during the first year in each planting area. Plants in excess of this threshold should be removed by hand methods (not mechanized machinery). This particularly includes Himalayan Blackberry and Reed Canary Grass in this particular wetland buffer zone.

4) Non-native vegetation should be below 10% cover during the second and subsequent years. Both non-native plants (blackberry and reed canary grass) propagate by sub-surface roots and rhizomes and it may be necessary to employ somewhat aggressive methods to remove these. If non-native vegetation removal results in any significant bare areas, these should be temporarily covered with a native grass seed mixture to stabilize slopes and prevent erosion.

These performance standards should be checked during the "As-Built" documentation phase and again during each annual reporting period.

4.0 PLANTING PLAN

4.1 ON-SITE WETLAND

The Property at 8114 West Mercer Way contains one wetland (Wetland A). The Standard Buffer for this Wetland is 35 feet, which is proposed to be reduced to 25 feet on its western boundary and then off-set by an expanded buffer to the north, in an 1,100 square foot Mitigation Area. Plantings for the restoration and enhancement of the Buffer Zone are shown in Table 1. Typical plants currently found on the Site have been documented in the Wetland Delineation Report (Westech 2018a).

4.2 BUFFER PLANTING, RESTORATION AND ENHANCEMENT AREAS

The buffer zone and the buffer expansion area (Mitigation Area) are shown in Figure 5. Three planting areas are shown in this Figure (Planting Areas A, B and C). These are identified as follows:

A) Planting Area A is comprised of the area adjacent to the proposed residence and driveway. It varies somewhat in width from 20 feet near the planned residence to 25 feet north of the home. It is roughly 90 feet north to south, and is approximately 2,000 square feet in size. Table1 shows recommended plantings in that area. New plants should be intermixed with existing vegetation, with the minimum of disturbance feasible to site soils. Plants should be installed in relatively open areas, between existing shrubs or trees.

B) Planting Area B lies northeast and uphill of the proposed residence. This planting area is 25 feet wide and roughly 80 feet in length (2,000 square feet). This area is somewhat more heavily vegetated than Planting Area A, and therefore, somewhat fewer plants are specified, with a heavier reliance on tree species (see Table 1).

C) Planting Area C is the Buffer Restoration and Enhancement Area (Mitigation Area) which is the expansion area intended to off-set the buffer reductions. This area is a triangle, 1,100 square feet in size. It lies north of and uphill of the proposed home-site. It is proposed to be planted with a mixture of trees and shrubs to restore this portion of the expanded buffer and enhance the existing vegetation, promoting a more complete native ecological system. It is recommended that shrubs be utilized in the lower (southern) end of Planting Area C, near the residence.

TABLE 1. LIST OF NATIVE PLANTS FOR BUFFER MITIGATION AND ENHANCEMENT

Location	Species	Number	Scientific Name	Size
A	Red alder	20	*Alnus rubra*	3 gallon
	Western red cedar	10	*Thuja plicata*	3 gallon
	Tall Oregon grape	20	*Mahonia aquifolium*	1 gallon
	Vine maple	20	*Acer circinatum*	3 gallon
	White pine	10	*Pinus contorta*	5 gallon
	Pacific rhododendron	15	*R. macrophyllum*	3 gallon
	Sword fern	10	*Polystichum munitum*	1 gallon
	Nootka rose	15	*Rosa nutkana*	1 gallon
	Kinnikinnick	20	*Actostaphylos uva-ursi*	1 gallon
B	Western red cedar	15	*Thuja plicata*	3 gallon
	Red alder	15	*Alnus rubra*	3 gallon
	Black cottonwood*	8	*Populus balsamifera*	3 gallon
	Tall Oregon grape	12	*Mahonia aquifolium*	1 gallon
	Salal	15	*Gaultheria shallon*	1 gallon
	Sword fern	10	*Polystichum munitum*	1 gallon
C	Red alder	15	*Alnus rubra*	3 gallon
	Western red cedar	10	*Thuja plicata*	3 gallon
	Tall Oregon grape	20	*Mahonia aquilfolium*	1 gallon
	Salal*	20	*Gaultheria shallon*	1 gallon
	Vine maple	10	*Acer circinatum*	3 gallon

Areas of Exposed Soils use Native Grass Seed Mixture as needed

*Plant near edge of wetland

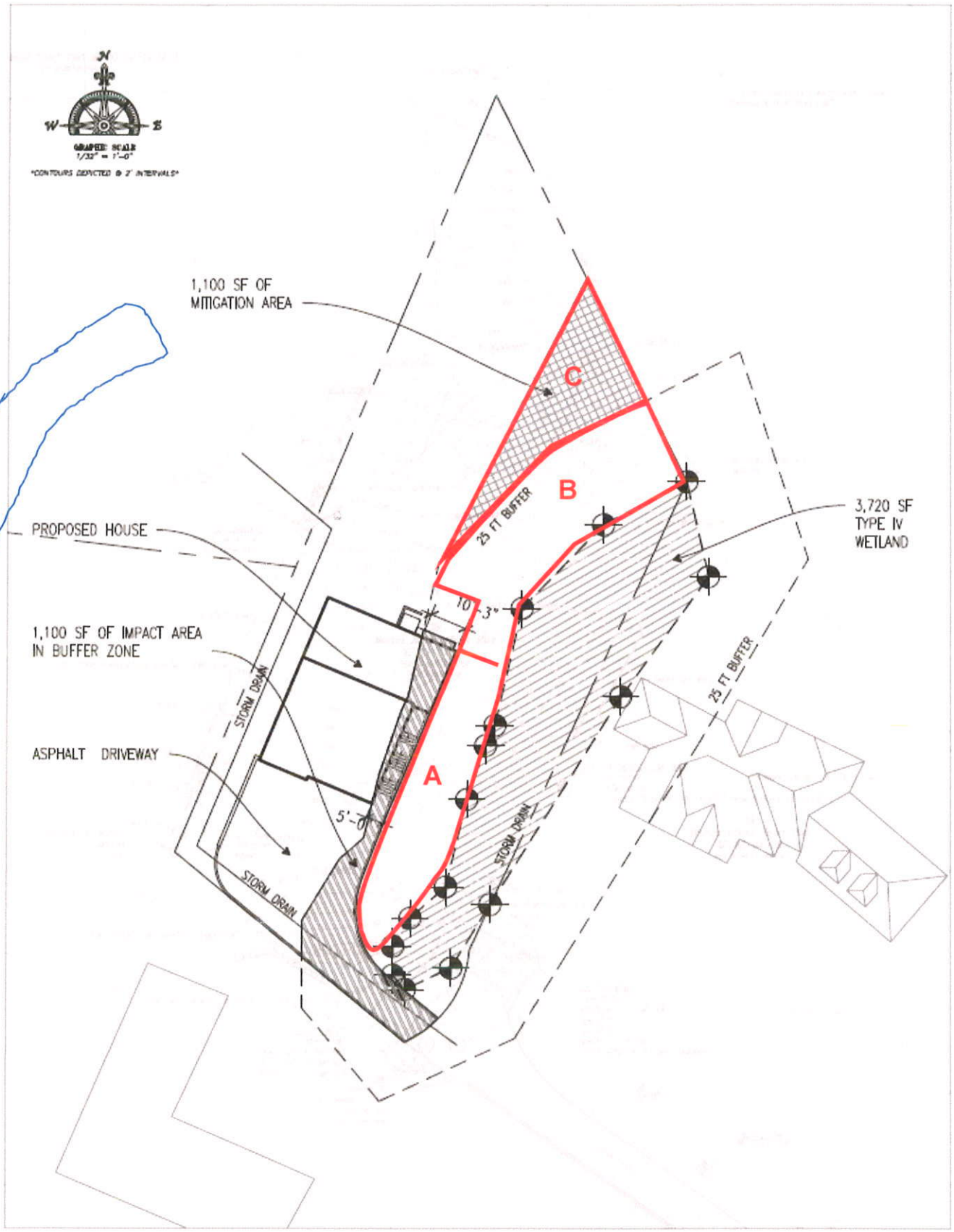

Figure 5. Planting Areas to Provide Buffer Restoration and Enhancement

Westech Company 2018
Source: Benny Kim Design 2018

It is recommended that shrubs be planted on approximately 6-foot centers. Small tree species should be planted on 8-foot centers (for example rhododendron, ocean spray). Larger trees should be planted on 10-foot centers. All plantings should include use of topsoil as necessary to supply organic soil conditions and 3-4 inches of mulch should be added to the surface following planting.

Plants should be installed in holes which are dug at least 6-8 inches beyond the root balls. In the case of bare-root plants, at least 12 inches in excess of the root extent should be used. Top soil should be mixed as necessary with native soils, to ensure adequate aeration and soil texture. If on-site soils have sufficient organic material and aeration, topsoil addition may not be necessary.

Upon installation, the soil around each plant should be covered by a bark mulch to depths of 3-4 inches. This will help reduce drying during summer months and reduce susceptibility of the plants to cold weather including freeze damage during the winter season. Plants should be installed during the rainy season, so as to become established prior to being subjected to stress during the dry summer months. The optimal times for planting are March-April, following the last frost, or September-October, in time for the first rains (usually the period following September 15 is best).

In addition to the three buffer planting areas, the area surrounding the home-site should be re-vegetated with a grass seed mixture following the completion of construction. This can be done during any season, provided temperatures are above 50 degrees during the day, to allow grass-seed germination.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 CONCLUSIONS

Wetland A has been mapped on the Site at 8114 West Mercer Way and found to be a Category IV Wetland. The City of Mercer Island requires a standard buffer of 35 feet for such wetlands with a minimum buffer of 25 feet. The narrow width of the lot requires a slight reduction of those minimum buffers for a portion of the western wetland boundary near the residence and a reduction of the buffer for the access driveway to provide use of the property similar to that of the adjacent and surrounding homes.

This Mitigation and Monitoring Plan has been formulated to provide measures which offset impacts to the wetland and which are expected to result in "No Net Ecological Loss" to the wetland and its buffer zone. This has been achieve through developing the Mitigation and Monitoring Plan, coupled with a Planting Plan as outlined in Chapter 3.0 and 4.0 of this report. Implementation of this plan including follow-up monitoring is expected to result in protection of the wetland and restoration and enhancement of the buffer zone, through planting native plants in the buffer zone, erosion control and use of Best Management Practices during and following construction.

5.2 RECOMMENDATIONS

Westech Company recommends that this plan be implemented as approved by the City of Mercer Island for the Site at 8114 West Mercer Way. Such implementation should be part of approval of the issuance of permits for construction of the proposed residence as per Benny Kim Design.

6.0 REFERENCES

City of Mercer Island. 2018. Critical Areas Code, Title 19, Sections 16.010-19.07.080. Wetlands Code. Mercer Island, Washington.

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Kim, B. 2018. Personal Communications and unpublished maps of 8114 West Mercer Way, Mercer Island, Washington. Benny Kim Design. Edmonds, Washington.

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WESTECH COMPANY
Environmental Consulting ~ Site Permitting

FINAL WETLAND MITIGATION AND MONITORING PLAN 8114 WEST MERCER WAY RESIDENTIAL PROJECT MERCER ISLAND, WASHINGTON

September 2018

G. Bradford Shea, Ph.D.
Trevor Shea

Submitted to:

CITY OF MERCER ISLAND
DEPARTMENT OF COMMUNITY DEVELOPMENT
9611 Southeast 36th Street
Mercer Island, Washington 98040-3732

Submitted by:

WESTECH COMPANY
P.O. Box 2876
Port Angeles, Washington 98362

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CONTENTS

1.0 INTRODUCTION

1.1 PROPOSED PROJECT

The Project is to build a 4,000 square foot single family residence on an existing residentially zoned parcel located at 8114 West Mercer Way on Mercer Island, Washington (Figures 1-3). The residence is planned to be 3-story in order to minimize the footprint of the home and maximize use of the hillside and views.

The parcel is currently undeveloped, but is surrounded by other comparable homes on all sides. It is accessed by an existing access driveway which serves two other adjacent homes. The home is being designed by Architect Benny Kim of Benny Kim Design.

1.2 CRITICAL AREAS

Due to the potential for the presence of Critical Areas on the Site (wetlands, streams, etc.), Westech Company (Westech) was retained by Mr. Kim to assist with assessing the presence of wetlands or other critical areas.

Westech found that the Site contained one wetland (Designated Wetland A) along the eastern Site boundary, which is approximately 3,720 square feet in size. The eastern portion of this wetland is off-site in some areas as shown in Figure 4.

A small wet area was also found during the winter months (December 2017) on the west side of the property, extending off-site to the west. This area was found to not have characteristics of a wetland, including dominant upland vegetation, non-hydric soil characteristics and an absence of hydrological indicators. The small area that was investigated is also shown in Figure 4 (along with test quadrat VSH-3) and a data sheet using the Routine On-Site Field Method is included as Appendix A.

Westech found that the Site did not contain any "watercourse" on the western or southern ends of the parcel. Wetland A does contain a seasonal runoff channel within the wetland which flows through the wetland from north to south.

The Wetland Boundaries were flagged by Westech in the field, and coordinates were determined by using a Garmin Montana Series GPS meter. Surveying was then conducted and mapped by the Architect to ensure additional accuracy (see Figure 4).

Figure 1. 8114 West Mercer Way Location Map

Westech Company 2018

Source: Google Earth 2018

Figure 2. 8114 West Mercer Way Vicinity Map

Westech Company 2018

Source: Google Earth 2018

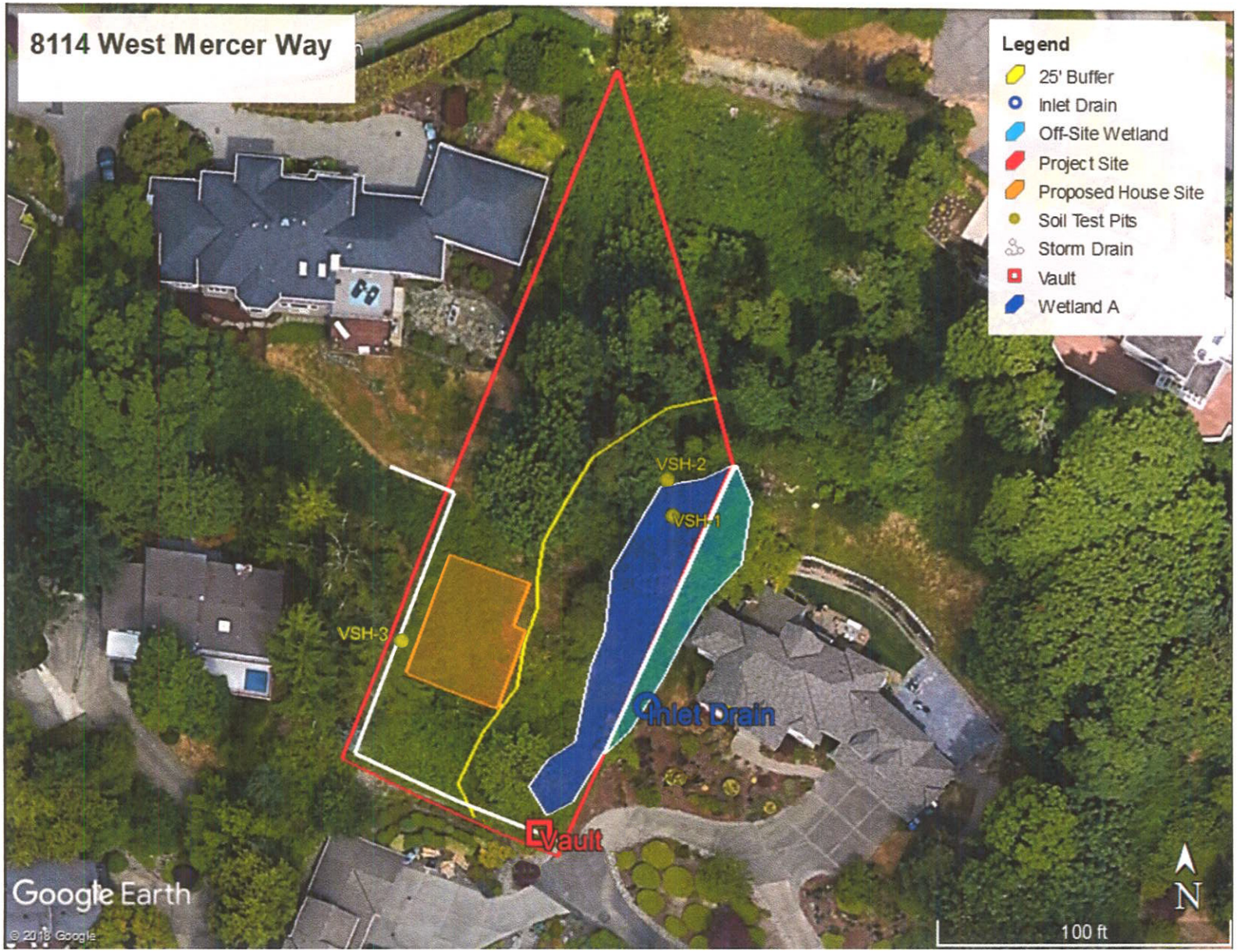

Figure 3. 8114 West Mercer Way Site Map Showing On-Site Wetland and Proposed Residence

Westech Company 2018

Source: Google Earth 2018

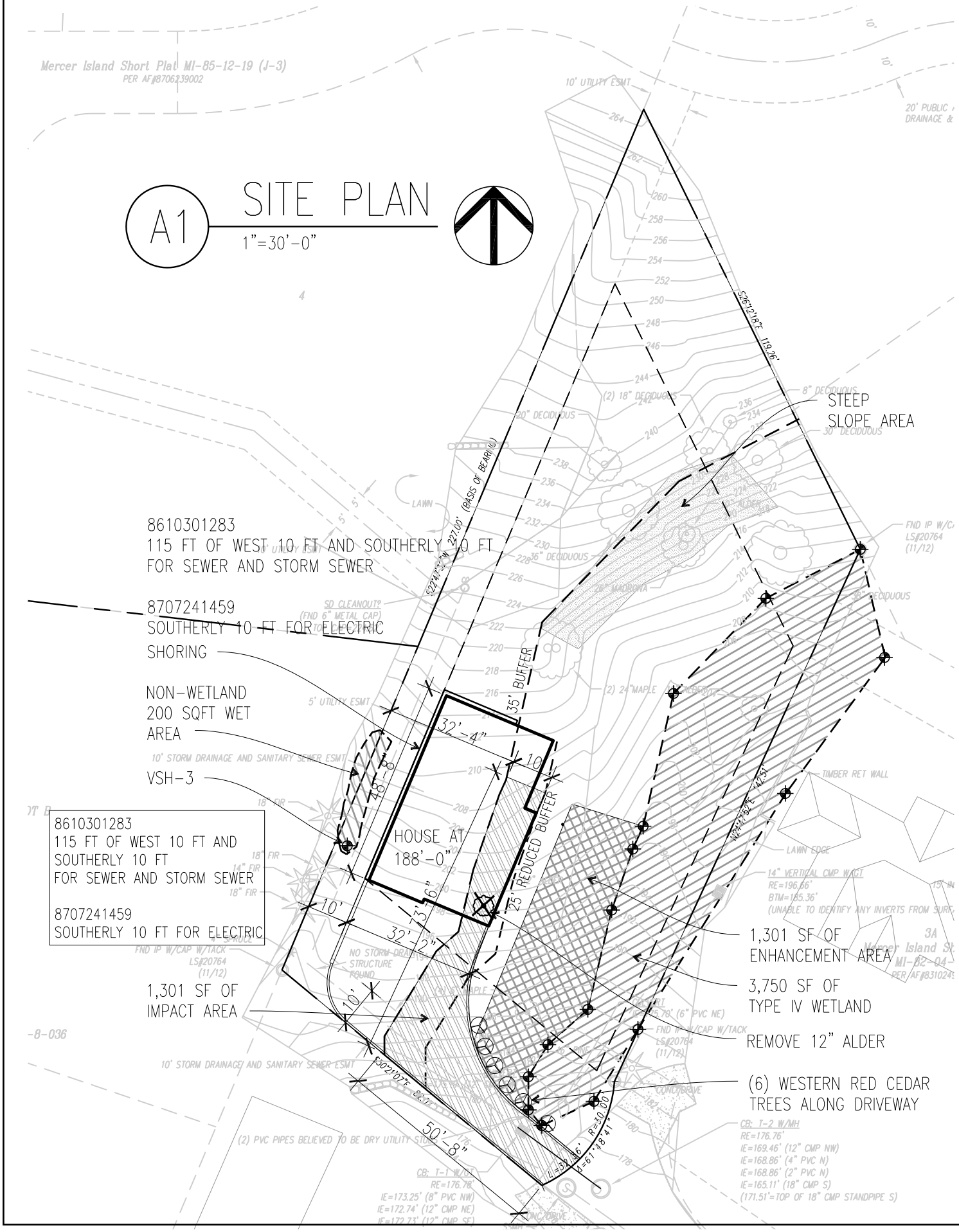

Figure 4. Site Plan Showing Proposed Buffer Reduction and 1,301 SF Enhancement Area

Westech Company 2018

1.3 CRITICAL AREA BUFFERS

Wetland A was rated in accordance with the Washington Department of Ecology Wetland Rating System for Western Washington (DOE 2014). The Wetland was found to be a Category IV Wetland. The Standard Buffer Zone for this Category of wetland is 35 feet in accordance with the Mercer Island City Code (MICC).

The Applicant has requested that the buffer zone for the west side of Wetland A be reduced to 25 feet as provided by the MICC. The design of the residence has been revised so that 25 feet is the minimum buffer for the residence. However, due to space constraints, the access driveway to the property will lie within the reduced buffer zone. The driveway will be located south of the wetland, near a storm-drain inlet located on the southeast corner of the property.

The small western area (200 square feet) was determined NOT to be a regulated wetland as documented on the data sheet in Appendix A. This area is therefore not regulated and does not require any buffer.

1.4 PROJECT TIMELINE AND HISTORY

Westech Company prepared a Wetland Delineation Report for the Property. That report was competed and submitted to the City of Mercer Island during April 2018. A previous engineering report on the stormwater system at the property and the absence of any "watercourse" on the western and southern property boundaries was previously submitted to the City during 2017 (C2MY Engineers 2017).

The City's consultant, ESA, reviewed the property conditions and the preliminary Wetland investigations conducted by Westech Company during the fall of 2017. ESA has also reviewed the Wetland Delineation Report (Westech 2018a). Additional comments were received from the City dated July 30, 2018. These comments are addressed in this revised report.

The City of Mercer Island has requested that a Mitigation and Monitoring Plan be prepared by the Applicant. This report describes that Mitigation and Monitoring Plan. The Plan is intended to offset any direct or indirect environmental impacts from the Project and protect the wetland. The goal of this Mitigation and Monitoring Plan is to achieve "No Net Ecological Loss" for the wetland and the Project Site.

2.0 METHODS AND APPROACH

2.1 FIELD METHODOLOGY

The Wetland Delineation Report was prepared using methodology of the U.S. Army Corps of Engineers (USACE 1987/89, 2010) in its Wetland Manual and the Regional Supplement for Western Mountains, Valleys and Coast. The Routine Field Method for Wetlands under 5 acres in size was used as was applicable for the property at 8114 West Mercer Way.

Wetlands were staked in the field using four-foot wooden stakes or tying "Wetland Delineation" flagging on shrubs or trees. Test pits were dug and data forms prepared to document vegetation, soils and hydrological characteristics of the wetland and upland areas, as shown in the Wetland Delineation Report for the property (Westech 2018a).

GPS readings were taken to map the wetland (Wetland A). Surveying was also performed by the Applicant to more accurately represent the wetland location. The wetlands were then mapped (see Figure 4).

The Wetland was then rated in accordance with the Washington Department of Ecology (DOE) Wetland Rating System for Western Washington (DOE 2014). Geographic Positioning System (GPS) locations were taken of the Wetland A Boundary using a Garmin Montana 680t GPS Meter and mapped using Google Earth Pro Software.

2.2 REPORTS AND DOCUMENTATION

This Mitigation and Monitoring Plan is based on previous reports by C2Y Engineers submitted to the City of Mercer Island in December 2017 (C2MY Engineers 2017). It is primarily based on the Wetland Delineation Report; 8114 West Mercer Way Residential Project, Mercer Island, Washington prepared by Westech Company in April 2018 (Westech 2018a).

2.3 APPROACH

The wetland found on the Site, Wetland A, was found to be a Category IV Wetland, with significant incursions of non-native weedy species. Our approach to restoring and enhancing the buffer zone is based on creating an additional protected area to offset the area of buffer reduction at a 1:1 ratio as required by the Mercer Island City Code. This area will be approximately 1,301 square feet in size and is shown in Figure 4.

Additional restoration and enhancement will be described in Chapter 3.0 below. The approach for these improvements include protection during construction from siltation or sedimentation through Best Management Practices (BMPs) including sufficient erosion control methods. These BMPs, in combination with the proposed plantings will be sufficient to eliminate or minimize impacts to the Site and off-site impacts. Following construction, access to the wetland will be limited by construction of a split rail type fence or equivalent.

A Planting Plan using native plants will be implemented to improve buffer conditions. In addition, non-native vegetation will be removed.

The Mitigation and Monitoring Plan will be implemented. A detailed Monitoring Plan will be developed to track the survival of the new native plants added to the buffer zone as specified in the Planting Plan. This will include documentation of "As-Built" conditions following planting, as well as periodic Site checks and submission of reports (Annual or more frequent if necessary) documenting plant survival. Performance standards will be established and standardized photo-stations will be specified for uniform documentation.

The Monitoring Plan will also include a Contingency Plan in the event that plant survival falls below the specified Performance Standards. Annual reports will specify whether the Project continues to meet the Performance standards and whether there is any necessity to implement the Contingency Plan.

3.0 MITIGATION AND MONITORING PLAN

3.1 MITIGATION PLAN COMPONENTS

The Mitigation Plan for the Project includes Mitigation of Project effects and protection of the existing wetland area during and following construction of the residence and driveway. This includes the following elements:

1) **Mitigation Area:** Designate an area to offset any direct impacts to the buffer zone. An area approximately 1,301 square feet in size will be designated west of the wetland as shown in Figure 4. This will offset the reduced buffer area with an increased buffer to the north at a 1:1 ratio as required by the MICC.

2) **Silt Fence and Erosion Control:** Place a silt fence along the outer (western) edge of the designated reduced buffer zone (see Figure 4) as approved by the City of Mercer Island. This silt fence will be installed and approved by the City prior to beginning construction.

3) **Planting Plan:** Develop and Implement a Planting Plan for native plant species to restore and enhance the reduced buffer zone area and to enhance the added buffer area as appropriate and necessary. The buffer zone will be divided into planting areas and native vegetation will be installed as specified. The Planting Plan is outlined in this report in Chapter 4.0.

4) **Non-Native Species Vegetation Control:** Develop and implement a plan for removal of non-native species within the reduced buffer zone. Develop specifications and performance standards for the occurrence of non-native vegetation within these areas. Removal of non-native species should be accomplished by hand methods and not mechanized equipment. The species to be removed from the Site include, but are not limited to Himalayan blackberry (*Rubus armeniacus*) and reed canary grass (*Phalaris arundinacea*).

5) **Fencing and Signage:** Install a fence (split rail or similar) to divide the home-site from the Wetland Buffer Zone. This fence will lie along the western side of the Wetland A Buffer Zone, but at least six feet from the residential structure. The fence will extend north to 20 feet beyond the upper corner of the home (roughly to the point where the increased buffer area begins.

The fence shall be posted at 100 foot intervals with signage consistent with the Mercer Island Code. The signs shall specify that the Wetland and its Buffer are a natural area, which should not be disturbed without proper authorization, as required by the City of Mercer Island Code.

6) **Tree Removal and Replacement:** The house Site is located near five off-site trees to the west, however, these will not interfere with home construction. Only one existing tree (red alder) more than six inches in diameter will be removed for house and driveway construction. Other brushy vegetation including native shrubs will be removed to accomplish construction of the house and driveway. This removal of one alder tree and native shrubs will be off-set by the Planting Plan shown in Chapter 4.0 in order to achieve "No Net Ecological Loss" for the Project.

3.2 MONITORING PLAN COMPONENTS

A Monitoring Plan shall also be developed, which shall track the survival of the installed plants following home construction. The Monitoring Plan will also include provisions for documentation and reporting including an "As-Built" documentation of completion of the Plantings.

There will also be provisions for annual reporting of plant survival in relationship to established Performance Standards. In the event that survival does not meet the Performance Standards during any annual period, the Monitoring Plan will call for analysis of the reasons for that lack of performance and preparation of a Contingency Plan, designed to meet those standards.

Annual Reporting will be conducted for a period of five (5) years, following the approval of the As-Built Report by the City of Mercer Island. The City shall review each Annual Report for compliance with the Performance Standards and the overall success of the Mitigation and Monitoring Plans achieving "No Net Ecological Loss".

The Monitoring Plan components shall be as follows (numbered sequentially following the Mitigation Plan components above):

6) **As-Built Documentation:** Plants will be installed as directed by a qualified botanist or environmental scientist. Once installed, the planting will be documented both by nursery receipts and by a final count documenting "As-Built" conditions of the plantings by the botanist or environmental scientist. An "As-Built" Report shall be submitted to the City of Mercer Island documenting these conditions. That report will include photographic documentation taken from at least one Photo-Station for each planting area.

7) **Annual Reporting:** Annual reports will be made for a period of five (5) years, which cover the survival of plants in relation to performance standards. Plants which are stressed or dying will be noted and, as feasible, potential reasons for these conditions will be determined. New plantings may be necessary to meet performance standards. In the event that a significant lack of survival area occurs in any planting area, it may be necessary to prepare a Contingency Plan (see below).

8) **Contingency Plan:** If planting survival falls below the Performance Standards, it may be necessary to prepare a Contingency Plan. If survival areas are near or slightly below the Performance Standards, it may be adequate in some cases, simply to replant with the same species to meet the performance standard. However, if there appears to be a lack of success by particular species, or because of physical or environmental conditions, a Contingency Plan will be necessary.

These components of the Mitigation and Monitoring Plan will be implemented by the Project Proponent. Erosion control and Best Management Practices (BMPs) will be used during construction. The plantings and "As-Built" reporting should be carried out within six months following construction either in the spring (March-April) or in the fall (September-October) timeframes, whichever is relevant. The details of the recommended Planting Plan are shown in Chapter 4.0.

3.3 PERFORMANCE STANDARDS

Performance Standards for the proposed Project have been developed based on survival of the native species planted and on the percentage of non-native species in the buffer zone. The following are the recommended performance standards:

1) During the first year following planting, 100% of the plants should survive and be in relatively good growing condition. If excessive leaf loss, root damage or other signs of morbidity or mortality are present, the plants should be checked so as to forestall significant decreases in survival. Some transplant shock is expected in the new plants, however, sufficient watering during summer months and sufficient protection of roots through use of mulch can minimize plant losses.

2) During the second and subsequent years following planting, survival of native vegetation should be over 90% of the number planted. Each planting area should be periodically inspected to ensure no excessive morbidity or mortality that would trigger the need for a Contingency Plan.

3) Non-native vegetation should be below 15% cover during the first year in each planting area. Plants in excess of this threshold should be removed by hand methods (not mechanized machinery). This particularly includes Himalayan Blackberry and Reed Canary Grass in this particular wetland buffer zone.

4) Non-native vegetation should be below 10% cover during the second and subsequent years. Both non-native plants (blackberry and reed canary grass) propagate by sub-surface roots and rhizomes and it may be necessary to employ somewhat aggressive methods to remove these. If non-native vegetation removal results in any significant bare areas, these should be temporarily covered with a native grass seed mixture to stabilize slopes and prevent erosion.

These performance standards should be checked during the "As-Built" documentation phase and again during each annual reporting period.

4.0 PLANTING PLAN

4.1 ON-SITE WETLAND

The Property at 8114 West Mercer Way contains one wetland (Wetland A). The Standard Buffer for this Wetland is 35 feet, which is proposed to be reduced to 25 feet on its western boundary and then off-set by an expanded buffer to the northeast, in a 1,301 square foot Mitigation Enhancement Area. Plantings for the restoration and enhancement of the Buffer Zone are shown in Table 1. Typical plants currently found on the Site have been documented in the Wetland Delineation Report (Westech 2018a).

4.2 BUFFER PLANTING, RESTORATION AND ENHANCEMENT AREAS

The buffer zone and the buffer expansion area (Mitigation Area) are shown in Figure 5. Three planting areas are shown in this Figure (Planting Areas A, B and C). An additional area was added at the request of the City on the north side of the driveway (Planting Area D) to offset driveway intrusion into the Mitigation Area. These planting areas are identified as follows:

A) Planting Area A is comprised of the area adjacent to the proposed residence. and driveway. It is 20 feet wide and 8 feet north to south, adjacent to the west side of the wetland. It is roughly 160 square feet in size. Table1 shows recommended plantings in that area, which focus mainly on shrubs. New plants should be intermixed with existing vegetation, with the minimum of disturbance feasible to site soils. Plants should be installed in relatively open areas, between existing shrubs or trees.

B) Planting Area B lies east of the proposed garage (with residence above). This planting area is 20-25 feet wide and roughly 30 feet north to south (650 square feet). This area is somewhat more heavily vegetated than Planting Area A, and therefore, a somewhat lower density of plants are specified, with a heavier reliance on tree species on the east side (see Table 1).

C) Planting Area C is a Buffer Restoration and Enhancement Area (Mitigation Area) which is the expansion area intended to off-set the buffer reductions for the garage entry portion of the driveway. This area is 25-30 feet in width and 20-25 feet north to south or roughly 600 square feet in size. It is proposed to be planted with a mixture of trees and shrubs to restore this portion of the enhanced buffer adding to the existing vegetation, promoting a more complete native ecological system. It is recommended that several trees be utilized in the lower (southern) end of Planting Area C,

TABLE 1. LIST OF NATIVE PLANTS FOR BUFFER MITIGATION AND ENHANCEMENT

Location	Species	Number	Scientific Name	Size
A	Red alder	2	*Alnus rubra*	3 gallon
	Western red cedar*	1	*Thuja plicata*	3 gallon
	Tall Oregon grape	4	*Mahonia aquifolium*	1 gallon
	Vine maple	4	*Acer circinatum*	3 gallon
	White pine	2	*Pinus contorta*	5 gallon
	Pacific rhododendron	2	*R. macrophyllum*	3 gallon
	Sword fern	2	*Polystichum munitum*	1 gallon
	Nootka rose	2	*Rosa nutkana*	1 gallon
	Kinnikinnick	3	*Actostaphylos uva-ursi*	1 gallon
B	Western red cedar	5	*Thuja plicata*	3 gallon
	Red alder	5	*Alnus rubra*	3 gallon
	Black cottonwood*	4	*Populus balsamifera*	3 gallon
	Tall Oregon grape	8	*Mahonia aquifolium*	1 gallon
	Salal	5	*Gaultheria shallon*	1 gallon
	Sword fern	6	*Polystichum munitum*	1 gallon
C	Red alder	5	*Alnus rubra*	3 gallon
	Western red cedar*	6	*Thuja plicata*	3 gallon
	Tall Oregon grape	8	*Mahonia aquilfolium*	1 gallon
	Salal	8	*Gaultheria shallon*	1 gallon
	Vine maple	4	*Acer circinatum*	3 gallon
D	Western Red Cedar	6	*Thuja plicata*	3 gallon
	Salal	4	*Gaultheria shallon*	3 gallon
	Tall Oregon grape	4	*Mahonia aquilfolium*	1 gallon

Areas of Exposed Soils use Native Grass Seed Mixture as needed

*Plant near edge of wetland

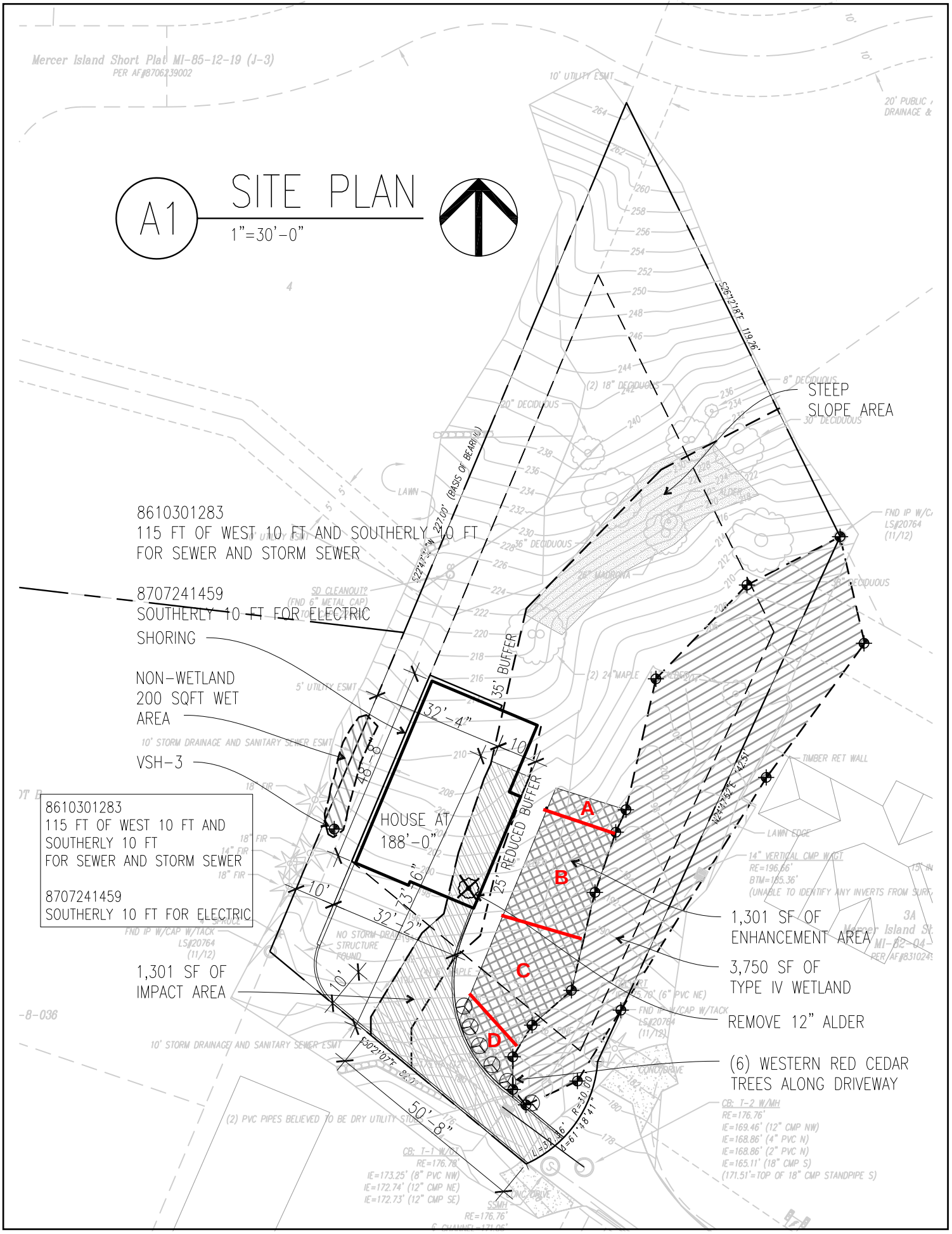

Figure 5. Planting Areas to Provide Buffer Restoration and Enhancement

Westech Company 2018

D) The entrance portion of the driveway will intrude into the existing reduced buffer zone on the southeast corner of the property. This impact will be offset by planting a line of coniferous trees along the north edge of the driveway. This planting plan recommends that six (6) western red cedar trees be planted along the driveway to offset impacts and achieve "No net ecological loss" for driveway construction and use. These trees should be placed on approximately 10 foot centers and should measure 3-4 feet in size upon planting. Best Management Practices and appropriate erosion control should be implemented when constructing the driveway to protect both the wetlands and properties downhill from the Project,

It is recommended that shrubs be planted on approximately 6-foot centers. Small tree species should be planted on 8-foot centers (for example rhododendron, ocean spray). Larger trees should be planted on 10-foot centers. All plantings should include use of topsoil as necessary to supply organic soil conditions and 3-4 inches of mulch should be added to the surface following planting.

Plants should be installed in holes which are dug at least 6-8 inches beyond the root balls. In the case of bare-root plants, at least 12 inches in excess of the root extent should be used. Top soil should be mixed as necessary with native soils, to ensure adequate aeration and soil texture. If on-site soils have sufficient organic material and aeration, topsoil addition may not be necessary.

Upon installation, the soil around each plant should be covered by a bark mulch to depths of 3-4 inches. This will help reduce drying during summer months and reduce susceptibility of the plants to cold weather including freeze damage during the winter season. Plants should be installed during the rainy season, so as to become established prior to being subjected to stress during the dry summer months. The optimal times for planting are March-April, following the last frost, or September-October, in time for the first rains (usually the period following September 15 is best).

In addition to the buffer planting areas, the area surrounding the home-site should be re-vegetated with a grass seed mixture following the completion of construction. This can be done during any season, provided temperatures are above 50 degrees during the day, to allow grass-seed germination.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 CONCLUSIONS

Wetland A has been mapped on the Site at 8114 West Mercer Way and found to be a Category IV Wetland. The City of Mercer Island requires a standard buffer of 35 feet for such wetlands with a minimum buffer of 25 feet. The lot is narrow; however, the house design has been modified to avoid intrusion on the minimum reduced buffers (25 feet). A reduction of the buffer for the access driveway will be necessary to provide access and use of the property similar to that of the adjacent and surrounding homes. An additional planting area, consisting of a line of coniferous trees has been added to offset this buffer intrusion and achieve "No Net Ecological Loss".

This Mitigation and Monitoring Plan has been formulated to provide measures which offset impacts to the wetland and which are expected to result in "No Net Ecological Loss" to the wetland and its buffer zone. This has been achieve through developing the Mitigation and Monitoring Plan, coupled with a Planting Plan as outlined in Chapter 3.0 and 4.0 of this report. Implementation of this plan including follow-up monitoring is expected to result in protection of the wetland and restoration and enhancement of the buffer zone, through planting native plants in the buffer zone, erosion control and use of Best Management Practices during and following construction.

These BMPs will include use of a silt fence along the southern, eastern and western edges of the construction area (where water could flow off of the construction area into the wetland or neighboring properties). In addition, straw wattles and other necessary erosion control methods should be used as necessary. Construction should be limited to the dry season (April 1 – October 15) due to the steep slope. A licensed Civil Engineer should specify adequate erosion control measures as necessary.

5.2 RECOMMENDATIONS

Westech Company recommends that this plan be implemented as approved by the City of Mercer Island for the Site at 8114 West Mercer Way. A licensed Civil Engineer should specify necessary measures to control erosion on the Site. Implementation of this Mitigation/Monitoring Plan and any necessary erosion control measures by a Civil Engineer should be part of approval of the issuance of permits for construction of the proposed residence as per Benny Kim Design.

6.0 REFERENCES

City of Mercer Island. 2018. Critical Areas Code, Title 19, Sections 16.010-19.07.080. Wetlands Code. Mercer Island, Washington.

C2MY Engineers, LLC. 2017. Letter Report on 8114 West Mercer Way, Mercer Island, WA (Lot 3B) dated December 11, 2017. Submitted to Mr. Benny Kim, Benny Kim and Lydia Design. Bellevue, Washington.

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APPENDICIES

APPENDIX A

DATA FORM

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

Project/Site: 8114 West Mercer Way City/County: Mercer Island Sampling Date: 9/18/18

Applicant/Owner: Benny Kim, Architect State: WA Sampling Point: VSH-3

Investigator(s): Dr. G. Bradford Shea Section, Township, Range: T24N,R4E

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 20-30%

Subregion (LRR): N.W. Forest Lat: Long: Datum:

Soil Map Unit Name: Kitsap Silt Loam NWI classification: None-

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ____ No X	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____ No X	
Wetland Hydrology Present?	Yes ____ No X	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 100m²)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Pseudotsuga menziesii*	35	Yes	FACU
2. *Alnus rubra*	10	No	FAC
3.			
4.			
	45 = Total Cover		
Sapling/Shrub Stratum (Plot size: 10m²)			
1. *Sambucus racemosa*	25	Yes	FACU
2.			
3.			
4.			
5.			
	25 = Total Cover		
Herb Stratum (Plot size: 10m²)			
1. *Equisetum arvense*	15	Yes	FAC
2. *Urtica dioica*	5	No	FAC
3. *Rubus ursinus*	5	No	FACU
4. *Convolvulus arvensis*	5	No	FACU
5. *Epilobium angustifolium*	5	No	FACU
6.			
7.			
8.			
9.			
10.			
11.			
	35 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 20

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species 30	x 3 =	90
FACU species 45	x 4 =	300
UPL species	x 5 =	
Column Totals: 105 (A)		390 (B)

Prevalence Index = B/A = 3.7

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18"	4/1 (10YR)	100	None				Silt loam	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: Hardpan

Depth (inches): 18"

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

May 2, 2018

Plan Check No: 1401-022
Project: Lee Residence
Project Address: 8114 West Mercer Way
Subject: Project Narrative

The proposed residential project at 8114 West Mercer Way is located in the City of Mercer Island, WA. The purpose of the Project is to construct a single family residence in an area of similar residences. The residence will be approximately 4,000 square feet in size and 3 story high. The project will include construction of an access driveway off an existing driveway used by two existing residences which are adjacent to the proposed Project site.

The Project will also include extension of utilities including electric, sewer and water onto the Property. Existing storm-water drainage facilities and structures are located on the Site along the western, southern and eastern boundaries. The project may modify or enhance these structures as per requirements of the City of Mercer Island and the Mercer Island City Code.

The Project Area lies within the City Limits of Mercer Island and that area is characterized by residential uses, mostly large single family homes on and above a steep hillside.

Please let me know with any questions.
Thank you,
Benny Kim
1-206-384-3317

Benny Kim and Lydia Design
7415 LAKE BALLINGER WAY EDMONDS, WASHINGTON 98026
T 206 384 3317 E bennykimdesign@outlook.com

CITY OF MERCER ISLAND
9611 SE 36th Street • Mercer Island, WA 98040-3732
(206) 275-7605 • FAX (206) 275-7726
www.mercergov.org

July 30, 2018

Benny Kim
74145 Lake Ballinger Way
Edmonds, WA 98026
Via email

Re: Review Letter for CAO18-003 - Critical areas Determination
Regarding: possible piped watercourse and the type IV wetland located at 8114 West Mercer Way Mercer Island, WA 98040; Parcel ID: 33585-00974

Dear Benny Kim,

The City has completed the first round of review for CAO18-003 Critical Areas Determination. Following review of the application, City staff has determined that additional information is necessary to ensure compliance with the Mercer Island City Code (MICC) and to continue processing of the application. Required information and corrections are detailed below.

Land Use Review Comments:

1. Options to proceed. Based upon the following comments, at a high level it appears that there are a few options to proceeding. Please choose to proceed with one of the following options:
    a. Propose to alter (fill) a portion of the type IV wetland and mitigate this fill with wetland and wetland buffer restoration and enhancement, and/or replace the filled wetland area with a wetland area of equal or greater function [MICC 19.07.080(D)].
    b. Modify the house design to be outside the reduced or averaged wetland buffer. Provide wetland and wetland buffer restoration and enhancement for the remaining areas.
    c. Apply for a Reasonable Use Exception.
    d. Pursue another option the City has not considered.

    The City's impression is that it would be simpler procedurally to proceed with option (b). With option (b), the house and stairs would not be allowed to encroach into the minimum allowed 25-foot buffer. The mitigation for all options requires a net improvement of wetland function and replanting the remaining wetland and buffer using native vegetation. Please refer to MICC 19.07.070(3).
2. ESA Review. Below is a summary of the City's peer review consultant's review comments. For the full memo please refer to Attachment A.
    a. Delineate, locate and indicate on the site plan the 200sf wet area.

b. Reconfigure the driveway or plant trees and/or shrubs along the edge of the driveway to protect the wetland to the extent possible.
c. Minimize impacts to the wetland and buffer by designing the house and driveway to be outside of the reduced wetland buffer.

3. Public comment. The City received multiple public comments, please refer to Attachment B. Please consider and prepare a response to the categories of comments:
    a. Landslide hazard: concerns about development with the steep slope and potential landslide hazard.
    b. Water on-site: concerns about erosion and run-off and the potential impacts to neighboring sites.
    c. Provided Documents: proposed plans and potential impacts (off-site) were vague, and a possible wetland was not indicated.

    Please respond to the concerns above in your resubmittal, this can be in letter format.

4. Site Plan. Please revise the site plan to include the following items:
    a. Indicate the original (35 foot) and reduced (25 foot) Type IV wetland buffer.
    b. Indicate the location and classification of the 200 sf wetland and associated buffer.
    c. Please remove the reduced buffer off-site, as this application is for 8114 West Mercer Way only.
    d. Please only show the reduced buffer for the house and driveway. No development is proposed in the upland area and consequently there is no need for a buffer reduction.
    e. Indicate the extent of the steep slope on-site, as the wetland buffer cannot be reduced in a steep slope. This can be illustrated with hatching on the site plan, based on the underlying topographic survey. MICC 19.16 defines steep slope as the following: *"any slope of 40 percent or greater calculated by measuring the vertical rise over any 30-foot horizontal run. Steep slopes do not include artificially created cut slopes or rockeries."*
    f. Indicate the easements on-site and provide the recording numbers.
    g. Clearly label the property line and dimensions.

5. Critical Areas Study.
    a. In the Critical Areas Study please clearly state how the new driveway complies with MICC 19.07.030(6):
    b. Construction is consistent with best management practices;
    c. The facility is designed and located to mitigate impacts to critical areas consistent with best available science;
        i. The current driveway location is within the reduced buffer area – is there a reason why the driveway area was not reduced to avoid impacting the reduced buffer area?
    d. Impacts to critical areas are mitigated to the greatest extent reasonably feasible so there is no net loss in critical area functions.
    e. Please provide a mitigation and restoration plan with the following:
        i. Location of existing trees and vegetation and proposed removal of same;
        ii. Mitigation proposed including location, type, and number of replacement trees and vegetation (planting plan);

iii. Delineation of critical areas; Please locate the 200 square foot wet area that was mentioned in the introduction of the wetland delineation report and please indicate the location on the site plan.
iv. In the case of a wildlife habitat conservation area, identification of any known endangered or threatened species on the site;
v. Proposed grading;
vi. Description of impacts to the functions of critical areas; and
vii. Proposed maintenance and monitoring plan (required for 5 years after the installation date)

f. Please provide a site survey, coversheet, and a site construction plan.

6. Please provide a King County Bond Quantity Worksheet (BQW). A financial surety will be required prior to construction permit issuance, whether it be a bond or assignment of funds, of 150% of the total provided on the BQW. Please refer to Attachment C.

7. Please state how the proposal is SEPA exempt. If SEPA is required, please apply for a SEPA Determination. From looking at the plans the proposed driveway is abutting the wetland. To construct the driveway the wetland will be encroached upon. In addition, the house construction may have an impact on the wetland.

8. If you decide to proceed with altering the Type IV wetland, please clearly state how the proposal complies with MICC 19.07.080(D):
    a. Category III and IV wetlands of less than one acre in size may be altered if the applicant can demonstrate that **the wetland** will be **restored, enhanced, and/or replaced** with a wetland area of equivalent or greater function. In cases where the applicant demonstrates that a suitable on-site solution does not exist to enhance, restore, replace or maintain a wetland in its existing condition, the city may permit the applicant to provide off-site replacement by a wetland with equal or better functions. The off-site location must be in the same drainage sub-basin as the original wetland.

9. Please state why the driveway, stairs, and northeast portion of the house was placed within the reduced buffer.

    Refer to Attachment D for a visual of the area in question.

    Can the above items be located outside of the reduced buffer to reduce impacts? There will be temporary construction impacts from excavation and installation of the house, stairs, and driveway that will encroach further into the reduced buffer. A 4-5-foot setback from the buffer should be provided to mitigate construction impacts and for long-term maintenance. Long-term maintenance includes maintenance of the house long-term such as painting and accessing the backyard.

10. Please refer to this link for examples of past Critical Areas Determinations (CAD): https://mieplan.mercergov.org/public/CAD Examples/.

Civil Engineering Review Comments:

11. Provide a Stormwater and Erosion Control Management Plan consistent with recommendations from the Executive Summary (submitted on June 4, 2018) and Wetland Mitigation and Monitoring Plan (submitted on July 2, 2018). If you have questions, please contact Ruji Ding, she can be reached at 206-275-7703 or at ruji.ding@mercergov.org. The stormwater control management plan may be combined with the mitigation and restoration plan.

Please note: Review of permit number CAO18-003 can't resume until the above specified information is received and building permit 1401-022 cannot be issued until the required land use applications have been issued.

Please do not hesitate to contact me at 206-275-7704 or via email at lauren.anderson@mercergov.org if you have any questions. If you would like to meet in-person to discuss the above items, please let me know so we can schedule a meeting. Evan Maxim (Interim Director) can be present in the meeting.

Sincerely,

Lauren Anderson, Assistant Planner
City of Mercer Island's Development Services Group
Enclosed:

Attachment A: ESA First Review Memo for CAO18-003

Attachment B: Public Comments

Attachment C: King County Bond Quantity Worksheet

Attachment D: Area within reduced buffer

ESA

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

www.esassoc.com

Attachment A- ESA Memo

memorandum

date	July 26, 2018
to	Lauren Anderson, Assistant Planner
from	Jessica Redman, Ecologist
subject	Lee Residence (CAO18-003) Critical Areas Review

Environmental Science Associates (ESA) has prepared this memorandum on behalf of the City of Mercer Island (City). The purpose of this memo is to verify the accuracy of the findings within the critical areas study submitted with the application for CAO18-003 and to confirm whether the proposed project complies with Mercer Island City Code (MICC) Chapter 19.07 – *Environment*. The site is located at 8114 West Mercer Way (Parcel 3358500974). The applicant proposes to construct an approximately 4,000 square foot single family residence on the currently undeveloped parcel. ESA has previously reviewed the presence of watercourses on this parcel. Findings were submitted to the City in the *Lee Residence (1401-022) – Critical Area Determination to Verify a Watercourse* technical memo (dated November 15, 2017). In this earlier review, ESA recommended that the applicant investigate the source of hydrology at the western property boundary and a wetland delineation be performed onsite. Documents reviewed by ESA for the current submittal include the following:

- *Wetland Delineation Report – 8114 West Mercer Way Residential Project, Mercer Island, Washington* (Westech Company, April 2018);
- *Wetland Mitigation and Monitoring Plan – 8114 West Mercer Way Residential Project, Mercer Island, Washington* (Westech Company, June 2018);
- *8114 W Mercer Way, Mercer Island, WA (Lot 3B) – Source of Water Verification at the North and South Property Lines as Shown on the Mercer Island Watercourse Map Technical Memo* (C2MY Engineers, November 27, 2017); and
- *8114 W Mercer Way, Mercer Island, WA (Lot 3B) – Field Verification to Verify the Water Source at the Beginning of Drainage Pipe System at East End of Lake View Lane Draining to Lot 3B North and South Property Lines as Shown on the Mercer Island Watercourse Map Technical Memo* (C2MY Engineers, December 11, 2017)

Reports and Plan Summary

One wetland (Wetland A) was delineated on site. Wetland A is a slope wetland occurring along the southeastern edge of the parcel, and continues offsite to the east. The wetland was categorized as a Category IV wetland which is allotted a 35-foot buffer per MICC 19.07.080.C. According to the Wetland Delineation Report a possible wetland area was observed on the west side of the site but was not delineated due to its small size (less than 200 square feet); Category IV wetlands less than 2,500 square feet are exempt from City regulations per MICC 19.07.030.13.

The project proposes to reduce the standard 35-foot wetland buffer to 25 feet. However, the proposed residence would still encroach into the reduced buffer, with the remaining buffer measuring 15 to 20 feet in some area. In addition, the proposed driveway to the residence would also be located within the reduced buffer, immediately adjacent to the southern end of Wetland A. The applicant proposes a total impact of 1,100 square feet within the reduced buffer. To mitigate for buffer impacts, the applicant proposes to designate an 1,100 square foot area as additional buffer as shown in the mitigation plan.

Additionally, C2MY Engineers investigated the sources of hydrology to the site and concluded that the area upstream of the mapped, piped water course does not receive naturally occurring surface water or groundwater and would not be regulated under the City's critical areas ordinance (MICC 19.16 – definition of a watercourse).

Review of Site Conditions

ESA scientist Jessica Redman conducted a field visit on June 18, 2017, meeting on-site with Lauren Anderson (City of Mercer Island) and Benny Kim (architect).

Watercourse – During the June site visit, as well as a previous site visit in November 2017 for the watercourse review, no watercourses were observed on site. While there is a stormwater vault/catch basin at the downslope location of the wetland, no defined channel with bed or bank was observed leading to this vault.

Wetlands – We generally agree with the wetland documentation provided by Westech including the location of the wetland delineation flags and the characterization of existing vegetation and hydrology. We also agree that Wetland A is correctly rated as a Category IV slope wetland.

Conclusion and Recommendations

Watercourse – ESA did not observe a watercourse and believes the applicant has submitted sufficient documentation (C2MY Engineers, 2017) showing that the source of hydrology to the pipes onsite is stormwater collected in a catch basin on a road upslope. No channels with a bed, banks, or sides were observed upstream of the catch basin and therefore no watercourses (as defined by MICC 19.16.010) occur onsite.

Wetlands –

- According to the Wetland Delineation Report (Page 1, Paragraph 4), "a small area (less than 200 square feet) was also found on the west side of the Site which had a dominance of upland vegetation but was somewhat wet and had wetland soil characteristics in a very small area along a short swale." This area was not delineated or included in the critical area analysis because it is much smaller than the 2,500

square foot regulatory threshold. According to MICC 19.07.030.13, "alterations to Category III and IV wetlands of low value under 2,500 square feet" are allowed and the applicant is not required to comply with the other regulations of MICC 19.07. However, according to MICC 19.07.050 the delineation of critical areas must be included in the critical areas report. We recommend that additional information be provided that would determine whether or not this area meets wetland criteria according to the federal methods. If determined to be wetland, this area should be documented in the critical areas report and categorized to ensure that it meets the size limits and wetland category requirements of exemption under MICC 19.07.030.13.

- The Wetland Delineation Report does not follow the requirements of MICC 19.07.050.C. The Report is missing the following items:
    - The location of trees and vegetation onsite and the proposed removal of vegetation;
    - A detailed mitigation plan including a detailed planting plan;
    - A grading plan, and
    - A description of impacts to wetland functions.

  We recommend the Report be revised to include all necessary documents required by MICC 19.07.050.C.

- According to MICC 19.07.030.6, new driveways are an allowed use within wetland buffers if mitigation occurs to the greatest extent practicable to ensure a no net loss in ecological functions. We agree that the proposed buffer mitigation is sufficient to offset the allowed buffer impacts caused by the driveway. However, the proposed driveway is currently located immediately adjacent to the southern end of Wetland A. Daily use of pollution generating surfaces, such as driveways, in close proximity to a wetland could result in a loss of the wetland's water quality and habitat functions. We recommend the driveway be reconfigured to minimize impacts to the wetland. If not practical to reconfigure the driveway, we recommend that trees and/or shrubs be planted along the northern edge of the driveway to protect the wetland to the extent possible.

- The applicant is proposing to reduce the buffer from 35 feet to the minimum allowed buffer of 25 feet. However, the proposed residence will encroach into the reduced buffer so that in some areas the remaining buffer will measure 15 to 20 feet wide. According to MICC 19.07.080, the buffer may be reduced to not less than the minimum buffer width if it is determined that a smaller buffer would still protect wetland functions. Because new residential structures are not considered to be an allowed use per 19.07.030, the proposed house may not encroach into the reduced buffer. We recommend that the house be designed or reconfigured to avoid the impacts to the reduced buffer.

- If the footprint of the house cannot practically avoid impacts to the reduced buffer, the City has offered the applicant a "paper fill" option whereby wetland mitigation may be used to offset buffer impacts According to MICC 19.07.080.D, "Category III and IV wetlands of less than one acre in size may be altered if the applicant can demonstrate that the wetland will be restored, enhanced and/or replaced with a wetland area of equivalent or greater function." If the impacts to the reduced buffer are mitigated as impacts to the wetland itself, we recommend additional wetland enhancement occur to ensure a no net

loss of function. In addition to the proposed buffer addition and buffer enhancement, we recommend wetland enhancement in the southern portion of the wetland where reed canarygrass is dominant. The hand removal of invasive vegetation (i.e. Himalayan blackberry and reed canarygrass) and the subsequent installation of native plants within this area would offset the impacts to the reduced buffer as well as reduce the impacts of the proposed driveway. We recommend the Wetland Mitigation and Monitoring Plan be revised to include wetland enhancement in the southern portion of Wetland A.

- If the applicant chooses not to avoid the buffer or cannot provide the mitigation suggested above, the applicant may apply for a reasonable use exception per MICC 19.07.030.B.

Attachment B - Public Comments

From: Christa Friedrich
To: Lauren Anderson
Subject: File No. CAO18-003, Property located at 8114 West Mercer Way
Date: Wednesday, July 11, 2018 3:37:23 PM

Dear Ms. Anderson:

Re: File No.: CAO18-003

My name is Christa Friedrich and I am the owner of the house at 8126 West Mercer Way. My property is located southeast of the subject property. The application is for a reduction in the wetland buffer from 35 feet to 25 feet to construct a driveway and single family residence. I am one of the current three parties sharing the driveway starting at West Mercer Way to the houses at 8118, 8122 and 8126. The property owner at 8114 will be the fourth party sharing this driveway.

I would like to be considered a party of interest and would appreciate being kept advised of any developments . I am especially concerned about water drainage. Is this reduction of the wetland buffer really necessary? Wouldn't it be more appropriate and have less of an environmental impact to work around the wetland area? It appears there is plenty of room to do so.

I look forward to hearing from you.

Christa Friedrich
8126 West Mercer Way
Mercer Island, WA 98040
christafr@comcast.net
Phone: 206-232-4357

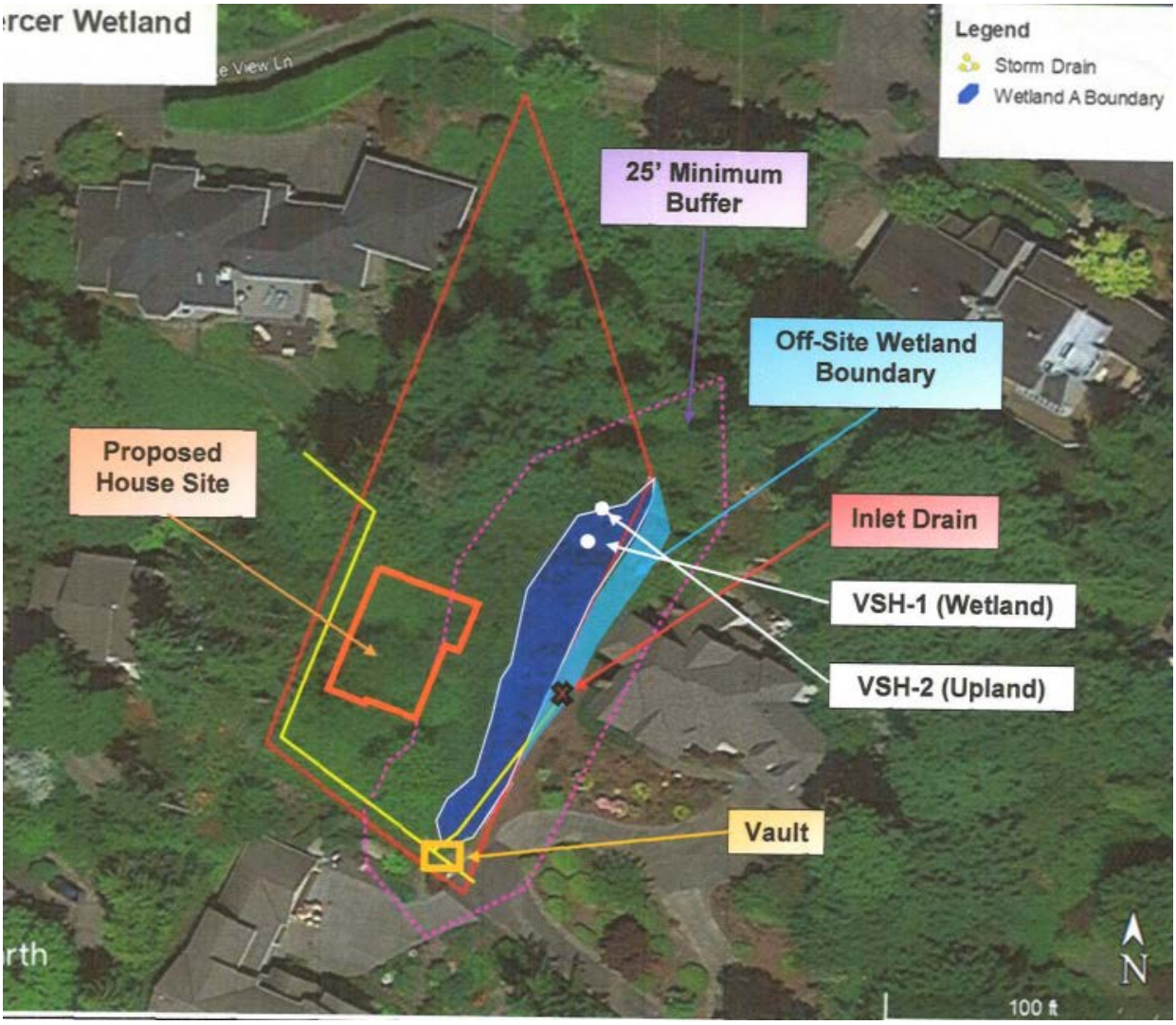
From: Fred Howard
To: Lauren Anderson
Subject: CAO13-03 Comment and Conerns
Date: Wednesday, July 11, 2018 2:11:38 PM
Attachments: image001.png

Lauren, I wanted to reach out regarding the proposal CAO13-03. I am the owner of 8122 W. Mercer Way, the property directly below the proposed changes to the minimum buffer. I have some significant concerns regarding the proposal and the vague nature of both the proposal and the impact. If they are proposing a reduction of the minimum buffer in some areas, where is the impact analysis to overall erosion and potential damage down-hill to our property? Also, what is the proposed plan to compensate for the reduction of the wetlands in the proposal?

In addition, we consulted with another consultant who informed us that the outline below is missing another wetland on the property. I would like to request an additional survey to ensure that all wetland impacts and potential damage to both the environment and to our property are understood, taken into account and mitigation plans developed.

I would appreciate you looking into this and replying so that I understand how this initiative may move forward and potential impact to both the environment and to our property.

Thank you,
Fred Howard
8122 W. Mercer Way
Mercer Island, WA 98040
310-266-3347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Off-Site Wetland Boundary
Proposed House Site
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VSH-2 (Upland)
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From: Lisa Chow
To: Lauren Anderson
Cc: Tuanhai Hoang
Subject: Fwd: CAO13-03 Comment and Concerns pt 2
Date: Wednesday, July 11, 2018 4:54:51 PM

Hi Lauren,

I would like to add to my husband's email some additional feedback after talking to a Wetland Consultant.

Should the small wetland mentioned in the report on the west side of the property be shown on the maps and evaluated to identify its size, rating and low function as required by the Mercer Island Municipal Code (MIMC) 19.07.030.A (13)? With this information the City can document and share with interested parties adjacent to the parcel to evaluate.

The applicant seems to be proposing to reduce or average the buffer below the minimum buffer which does not meet the MIMC 19.07. Page 1 indicates the residence is proposed to be within 15 to 20 feet of the wetland and that the driveway is proposed to be within the 25 foot wetland buffer. The site plan (Figure 4) actually shows that the residence will be within 14 feet 9 inches of the wetland. MIMC 19.07.080.C does not allow the wetland to be reduced or averaged below the minimum buffer of 25 feet. Applicant should be required to meet the code and provide a minimum 25 foot buffer from the residence.

MIMC 19.07.030.A (6) does allow for driveways within a wetland buffer. However, the driveway is directly abutting the wetland (which will indirectly impact the wetland) and there is not discussion of if there is an alternative with less impact to the wetland or wetland buffer. In addition a wetland impact analysis that discusses the projects direct and indirect wetland impacts is not included in the mitigation plan. The driveway runoff, clearing of vegetation up to the edge of the wetland and construction of the residence abutting the reduced wetland buffer will all have direct and indirect impacts to the wetland system. The applicant should be required to identify the types of vegetation and conditions of the impact areas, proposed

restoration areas and provide a full wetland and buffer impact analysis.

Construction of the residence directly adjacent to the wetland buffer will ultimately impact the buffer during construction and a building setback for construction purposes should be provided to allow construction of the residence without further impact to the buffer.

The wetland boundary indicated in the wetland report shows wetland offsite. Since the applicant did not have our permission to access our property or dig holes on our property we are requesting that the offsite wetland not be shown on project maps as a known wetland area. Offsite evaluation should have occurred and the offsite area should be shown as approximate boundary. There is a existing gravel path within the area between the wetland and my residence so we believe that the wetland edge does not extend as far as shown onto our property.

We are looking forward to getting a response that would provide any additional information that may be added to the City record including the City correspondence with the applicant or other agencies.

Thank you,

Lisa Chow and Tuanhai Hoang
8118 West Mercer Way
Mercer Island, WA 98040
206-236-8118

On Jul 11, 2018, at 2:18 PM, Tuanhai Hoang <Tuanhai@qualitel.com> wrote:

Thanks

Best Regards,

Tuanhai

Sent from smartphone so please excuse typos.

-------- Original message --------

From: Lauren Anderson <Lauren.Anderson@mercergov.org>
Date: 7/11/18 1:12 PM (GMT-08:00)
To: Tuanhai Hoang <Tuanhai@qualitel.com>
Cc: Lisa Chow <lisa.chow@qualitel.com>
Subject: RE: CAO13-03 Comment and Conerns

Hello Tuanhai Hoang,

Thank you for your comments, you are now a Party of Record and will receive notice of the decision. The City has shared your comments with the other reviewers and the applicant.

Sincerely,

Lauren Anderson // Assistant Planner
City of Mercer Island Development Services Group
9611 SE 36th Street, Mercer Island, WA 98040
206.275.7704
lauren.anderson@mercergov.org

Out of the office: July 20 and August 1-8.

To fill out a Public Records Request go to
https://mercerisland.nextrequest.com/

For more information of the status of permits go to www.mybuildingpermit.com
For information about a geographic area go to http://pubmaps.mercergov.org
To view application forms and other zoning information checkout
http://www.mercergov.org/Page.asp?NavID=361

From: Tuanhai Hoang <Tuanhai@qualitel.com>
Sent: Wednesday, July 11, 2018 1:04 PM
To: Lauren Anderson <Lauren.Anderson@mercergov.org>
Cc: Lisa Chow <lisa.chow@qualitel.com>
Subject: CAO13-03 Comment and Conerns
Importance: High

Hi Lauren, I am the owner at 8118 West Mercer Way. I am East of this property. I have major concerns regarding reducing the buffer from 35feet to 25 feet.

1. I would like a 2nd survey as I think some of the details are inaccurate. For example it is showing that we have wetland right next to our house when it is not the case. Also, talking to another consultant, there seems to be another small wetland on the property.

2. The plans are vague and would like a more detailed plans as shrinking the buffer from 35 ft to 25 and 15 in some areas are not good for the environment. With their current proposal they will degrade the function and value of the wetlands which will have an environmental impact.

3. I would like to see an averaging plan. The overall sf buffer of the buffer should not change with the ordinance asking for 35ft.
If in some areas they reduce it to 25 or 15 ft they should compensate in areas for an additional 15-20 ft on top of the 35ft.

4. I am also concern about erosion impact onto my property removing the vegetation. My property is already impacted currently and I am afraid it will be worse.

I appreciate your attention. Please acknowledge receipt of this email.

Thank you

Tuanhai Hoang
8118 West Mercer Way
Mercer Island Wa 98040
206-236-8118

From:	Loren-Ann Anderson
To:	Lauren Anderson; paul.skidmore@mercergov.prg
Cc:	Peter Mohai
Subject:	8114 W Mercer Way File No. CAO18-003
Date:	Wednesday, July 4, 2018 12:07:03 PM

Hi Lauren

I am following up our conversation on July 2, 2018 with this email.

I am against modification of the wetland buffer on 8114 W Mercer Way, and furthermore against ANY type of development of that property , for the following reasons:

1. Property is on a Critical Slope with a history of instability.
2. Property contains springs and water flow from the bank, and has standing pools of water in the winter.
3. Development of the property could affect neighboring properties, and may result in landslides, etc., specifically to the homes above the subject property.
4. There should be no cutting of trees or removal of vegetation, which has stabilized the hillside.

I would like copies of impact studies, geotechnical studies, engineering and architectural plans.

I would like to be designated a "party of record"

If the development of the property results in hillside instability and subsequent damage to homes or property, I will hold the City of Mercer Isld. and the property owner liable for damages.

Loren E. Anderson
8132 W Mercer Way
206 275 3663

From:	Tuanhai Hoang
To:	Lauren Anderson
Cc:	Lisa Chow
Subject:	CAO13-03 Comment and Conerns
Date:	Wednesday, July 11, 2018 1:03:55 PM
Importance:	High

Hi Lauren, I am the owner at 8118 West Mercer Way. I am East of this property. I have major concerns regarding reducing the buffer from 35feet to 25 feet.

1. I would like a 2nd survey as I think some of the details are inaccurate. For example it is showing that we have wetland right next to our house when it is not the case. Also, talking to another consultant, there seems to be another small wetland on the property.

2. The plans are vague and would like a more detailed plans as shrinking the buffer from 35 ft to 25 and 15 in some areas are not good for the environment. With their current proposal they will degrade the function and value of the wetlands which will have an environmental impact.

3. I would like to see an averaging plan. The overall sf buffer of the buffer should not change with the ordinance asking for 35ft.
If in some areas they reduce it to 25 or 15 ft they should compensate in areas for an additional 15-20 ft on top of the 35ft.

4. I am also concern about erosion impact onto my property removing the vegetation. My property is already impacted currently and I am afraid it will be worse.

I appreciate your attention. Please acknowledge receipt of this email.

Thank you

Tuanhai Hoang
8118 West Mercer Way
Mercer Island Wa 98040
206-236-8118

Sent from smartphone so please excuse typos.

King County

Department of Permitting
Environmental Review
35030 SE Douglas Str, Suite 210
Snoqualmie, WA 98065-9266
206-296-6600 TTY Relay: 711

Critical Areas Mitigation
Bond Quantity Worksheet

C24 09/09/2015
ls-wks-sensareaBQ.xls
ls-wks-sensareaBQ.pdf

Project Name: **Date:** **Prepared by:**

Project Number: **Project Description:**

Location: **Applicant:** **Phone:**

PLANT MATERIALS (includes labor cost for plant installation)

Type	Unit Price	Unit	Quantity	Description	Cost
PLANTS: Potted, 4" diameter, medium	$5.00	Each			$ -
PLANTS: Container, 1 gallon, medium soil	$11.50	Each			$ -
PLANTS: Container, 2 gallon, medium soil	$20.00	Each			$ -
PLANTS: Container, 5 gallon, medium soil	$36.00	Each			$ -
PLANTS: Seeding, by hand	$0.50	SY			$ -
PLANTS: Slips (willow, red-osier)	$2.00	Each			$ -
PLANTS: Stakes (willow)	$2.00	Each			$ -
PLANTS: Stakes (willow)	$2.00	Each			$ -
PLANTS: Flats/plugs	$2.00	Each			$ -
				TOTAL	**$ -**

INSTALLATION COSTS (LABOR, EQUIPMENT, & OVERHEAD)

Type	Unit Price	Unit			Cost
Compost, vegetable, delivered and spread	$37.88	CY			$ -
Decompacting till/hardpan, medium, to 6" depth	$1.57	CY			$ -
Decompacting till/hardpan, medium, to 12" depth	$1.57	CY			$ -
Hydroseeding	$0.51	SY			$ -
Labor, general (landscaping other than plant installation)	$40.00	HR			$ -
Labor, general (construction)	$40.00	HR			$ -
Labor: Consultant, supervising	$55.00	HR			$ -
Labor: Consultant, on-site re-design	$95.00	HR			$ -
Rental of decompacting machinery & operator	$70.00	HR			$ -
Sand, coarse builder's, delivered and spread	$42.00	CY			$ -
Staking material (set per tree)	$7.00	Each			$ -
Surveying, line & grade	$250.00	HR			$ -
Surveying, topographical	$250.00	HR			$ -
Watering, 1" of water, 50' soaker hose	$3.62	MSF			$ -
Irrigation - temporary	$3,000.00	Acre			$ -
Irrigation - buried	$4,500.00	Acre			$ -
Tilling topsoil, disk harrow, 20hp tractor, 4"-6" deep	$1.02	SY			$ -
				TOTAL	**$ -**

HABITAT STRUCTURES*

ITEMS	Unit Cost	Unit			Cost
Fascines (willow)	$ 2.00	Each			$ -
Logs, (cedar), w/ root wads, 16"-24" diam., 30' long	$1,000.00	Each			$ -
Logs (cedar) w/o root wads, 16"-24" diam., 30'	$400.00	Each			$ -
Logs, w/o root wads, 16"-24" diam., 30' long	$245.00	Each			$ -
Logs w/ root wads, 16"-24" diam., 30' long	$460.00	Each			$ -
Rocks, one-man	$60.00	Each			$ -
Rocks, two-man	$120.00	Each			$ -
Root wads	$163.00	Each			$ -
Spawning gravel, type A	$22.00	CY			$ -
Weir - log	$1,500.00	Each			$ -
Weir - adjustable	$2,000.00	Each			$ -
Woody debris, large	$163.00	Each			$ -
Snags - anchored	$400.00	Each			$ -
Snags - on site	$50.00	Each			$ -
Snags - imported	$800.00	Each			$ -
* All costs include delivery and installation				*TOTAL*	**$ -**

EROSION CONTROL

ITEMS	Unit Cost	Unit			Cost
Backfill and Compaction-embankment	$ 4.89	CY			$ -
Crushed surfacing, 1 1/4" minus	$30.00	CY			$ -
Ditching	$7.03	CY			$ -
Excavation, bulk	$4.00	CY			$ -
Fence, silt	$1.60	LF			$ -
Jute Mesh	$1.26	SY			$ -
Mulch, by hand, straw, 2" deep	$1.27	SY			$ -
Mulch, by hand, wood chips, 2" deep	$3.25	SY			$ -
Mulch, by machine, straw, 1" deep	$0.32	SY			$ -
Piping, temporary, CPP, 6"	$9.30	LF			$ -
Piping, temporary, CPP, 8"	$14.00	LF			$ -
Piping, temporary, CPP, 12"	$18.00	LF			$ -
Plastic covering, 6mm thick, sandbagged	$2.00	SY			$ -
Rip Rap, machine placed, slopes	$33.98	CY			$ -
Rock Constr. Entrance 100'x15'x1'	$3,000.00	Each			$ -
Rock Constr. Entrance 50'x15'x1'	$1,500.00	Each			$ -
Sediment pond riser assembly	$1,695.11	Each			$ -
Sediment trap, 5' high berm	$15.57	LF			$ -
Sediment trap, 5' high berm w/spillway incl. riprap	$59.60	LF			$ -
Sodding, 1" deep, level ground	$5.24	SY			$ -
Sodding, 1" deep, sloped ground	$6.48	SY			$ -
Straw bales, place and remove	$600.00	TON			$ -
Hauling and disposal	$20.00	CY			$ -
Topsoil, delivered and spread	$35.73	CY			$ -
				TOTAL	**$ -**

GENERAL ITEMS

ITEMS	Unit Cost	Unit			Cost
Fencing, chain link, 6' high	$18.89	LF			$ -
Fencing, chain link, corner posts	$111.17	Each			$ -
Fencing, chain link, gate	$277.63	Each			$ -
Fencing, split rail, 3' high (2-rail)	$10.54	LF			$ -
Fencing, temporary (NGPE)	$1.20	LF			$ -
Signs, sensitive area boundary (inc. backing, post, install)	$28.50	Each			$ -
				TOTAL	**$ -**

OTHER

				(Construction Cost Subtotal)	**$ -**

ITEMS	Percentage of Construction	Unit			Cost
Mobilization	10%	1			$ -
Contingency	30%	1			$ -
				TOTAL	**$ -**

MAINTENANCE AND MONITORING

NOTE: Projects with multiple permit requirements may be required to have longer monitoring and maintenance terms. This will be evaluated on a case-by-case basis for development applications. Monitoring and maintance ranges may be assessed anywhere from 5 to 10 years.

Maintenance, annual (by owner or consultant)					
Less than 1,000 sq.ft. and buffer mitigation only	$ 1.08	SF		(3 X SF total for 3 annual events; Includes monitoring)	$ -
Less than 1,000 sq.ft. with wetland or aquatic area mitigation	$ 1.35	SF		(3 X SF total for 3 annual events; Includes monitoring)	$ -
Larger than 1,000 sq. ft. but less than 5,000 sq.ft. of buffer mitigation	$ 180.00	EACH		(4hr @$45/hr)	$ -
Larger than 1,000 sq. ft. but less than 5,000 sq.ft. of wetland or aquatic area mitigation	$ 270.00	EACH		(6hr @$45/hr)	$ -
Larger than 5,000 sq.ft. but < 1 acre -buffer mitigation only	$ 360.00	EACH		(8 hrs @ 45/hr)	$ -
Larger than 5,000 sq.ft. but < 1 acre with wetland or aquatic area mitigation	$ 450.00	EACH		(10 hrs @ $45/hr)	$ -
Larger than 1 acre but < 5 acres - buffer and / or wetland or aquatic area mitigation	$ 1,600.00	DAY		(WEC crew)	$ -
Larger than 5 acres - buffer and / or wetland or aquatic area mitigation	$ 2,000.00	DAY		(1.25 X WEC crew)	$ -
Monitoring, annual (by owner or consultant)					
Larger than 1,000 sq.ft. but less than 5,000 wetland or buffer mitigation	$ 720.00	EACH		(8 hrs @ 90/hr)	$ -
Larger than 5,000 sq.ft. but < 1 acre with wetland or aquatic area impacts	$ 900.00	EACH		(10 hrs @ $90/hr)	$ -
Larger than 1 acre but < 5 acres - buffer and / or wetland or aquatic area impacts	$ 1,440.00	DAY		(16 hrs @ $90/hr)	$ -
Larger than5 acres - buffer and / or wetland or aquatic area impacts	$ 2,160.00	DAY		(24 hrs @ $90/hr)	$ -
				TOTAL	**$ -**

Total	**$0.00**

Attachment D - Area in Question

CITY OF MERCER ISLAND
9611 SE 36th Street • Mercer Island, WA 98040-3732
(206) 275-7605 • FAX (206) 275-7726
www.mercergov.org

November 28, 2018

Benny Kim
74145 Lake Ballinger Way
Edmonds, WA 98026
Via email

Re: Second Review Letter for CAO18-003 - Critical areas Determination
Regarding: possible piped watercourse and the type IV wetland located at 8114 West Mercer Way Mercer Island, WA 98040; Parcel ID: 33585-00974

Dear Benny Kim,

The City has completed the second round of review for CAO18-003 Critical Areas Determination. Following review of the application, City staff has determined that additional information is necessary to ensure compliance with the Mercer Island City Code (MICC) and to continue processing of the application. Required information and corrections are detailed below.

Land Use Review Comments:

1. Please state how the proposal is SEPA exempt. If SEPA is required, please apply for a SEPA Determination. From looking at the proposal, due to there being a wetland present on-site, the proposal seems to trigger a SEPA determination per WAC 197-11-800(1)(a)(i) as the site is partly covered by water.

Please note: Review of permit number CAO18-003 can't resume until the above specified information is received and building permit 1401-022 cannot be issued until the required land use applications have been issued (CAO18-003 and the future SEPA application). In addition, a financial surety will be required prior to construction permit issuance, whether it be a bond or assignment of funds, of 150% of the total provided on the BQW. This will be a condition of approval for CAO18-003. ESA reviewed the recent resubmittal and agreed with Westech's findings and found that their recommendations were adequately addressed (Attachment A).

Please do not hesitate to contact me at 206-275-7704 or via email at lauren.anderson@mercergov.org if you have any questions.

Sincerely,

Lauren Anderson, Assistant Planner
City of Mercer Island's Community Planning & Development
Enclosed: Attachment A: ESA Second Review Memo for CAO18-003

ESA

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

www.esassoc.com

Attachment A

memorandum

date	November 27, 2018
to	Lauren Anderson, Assistant Planner
from	Jessica Redman, Ecologist
subject	Lee Residence (CAO18-003) Critical Areas Review – Revised Submittal Documents

Environmental Science Associates (ESA) has prepared this memorandum on behalf of the City of Mercer Island (City). The purpose of this memo is to verify the accuracy of the findings within the critical areas study submitted with the application for CAO18-003 and to confirm whether the proposed project complies with Mercer Island City Code (MICC) Chapter 19.07 – *Environment*. ESA reviewed the *Final Wetland Mitigation and Monitoring Plan* (dated September 2018 and prepared by Westech Company) for the property located at 8114 West Mercer Way. The applicant proposes to construct an approximately 4,000 square foot single family residence on the currently undeveloped parcel. According to the *Final Wetland Mitigation and Monitoring Plan* (hereinafter referred to as the Final Plan) one wetland (Wetland A) was delineated on site. The wetland was categorized as a Category IV wetland which is allotted a 35-foot buffer per MICC 19.07.080.C. The project proposes to reduce the standard 35-foot wetland buffer to 25 feet.

ESA has reviewed critical areas on this parcel before and site visits were conducted on November 3, 2017 and June 18, 2018. Findings were submitted to the City in two technical memorandums titled *Lee Residence (1401-022) – Critical Area Determination to Verify a Watercourse* (dated November 15, 2017) and *Lee Residence (CAO18-003) Critical Areas Review* (dated July 26, 2018). In these memorandums, ESA agreed with the delineated boundary and categorization of Wetland A. We also agree that no watercourses occur on the site. However, in the July 26, 2018 memorandum, ESA provided several recommendations that would ensure that the project complies with MICC Chapter 19.07. These recommendations included the following:

- We recommended the driveway be reconfigured to minimize impacts to the wetland. If not practical to reconfigure the driveway, we recommend that trees and/or shrubs be planted along the northern edge of the driveway to protect the wetland to the extent possible.

- We recommended that the house be designed or reconfigured to avoid the impacts to the reduced buffer.

- If the footprint of the house cannot practically avoid impacts to the reduced buffer, the City has offered the applicant a “paper fill” option whereby wetland mitigation may be used to offset buffer impacts

- In addition to the proposed buffer addition and buffer enhancement, we recommended wetland enhancement in the southern portion of the wetland where reed canarygrass is dominant.

- We recommended that the applicant should submit a critical areas report that meets the requirements of MICC 19.07.050.C.

- We recommended that additional information be provided on the "small wet area" on the west side of the parcel to document that this area does not meet wetland criteria according to the federal methods.

In response to ESA's recommendations in the July 26, 2018 memorandum, the applicant provided the Final Report that addressed all recommendations and is consistent with the requirements of MICC 19.07.050.C. To this end, driveway dimensions were reduced and the house was reconfigured and is now located outside of the reduced buffer. The Final Report includes a detailed mitigation and monitoring plan that enhances Wetland A to compensate for its reduced buffer, resulting in no net loss of ecological functions. The Final Report also includes documentation that the "small wet area" located on the west side of the property is dominated by upland vegetation and therefore, is not wetland. ESA has concluded that our comments and recommendations presented in our July 26, 2018 memorandum have been accurately and sufficiently addressed in the Final Report and the proposed project complies with MICC Chapter 19.07.

Exhibit 9 - Public Comments

From: Christa Friedrich
To: Lauren Anderson
Subject: File No. CAO18-003, Property located at 8114 West Mercer Way
Date: Wednesday, July 11, 2018 3:37:23 PM

Dear Ms. Anderson:

Re: File No.: CAO18-003

My name is Christa Friedrich and I am the owner of the house at 8126 West Mercer Way. My property is located southeast of the subject property. The application is for a reduction in the wetland buffer from 35 feet to 25 feet to construct a driveway and single family residence. I am one of the current three parties sharing the driveway starting at West Mercer Way to the houses at 8118, 8122 and 8126. The property owner at 8114 will be the fourth party sharing this driveway.

I would like to be considered a party of interest and would appreciate being kept advised of any developments . I am especially concerned about water drainage. Is this reduction of the wetland buffer really necessary? Wouldn't it be more appropriate and have less of an environmental impact to work around the wetland area? It appears there is plenty of room to do so.

I look forward to hearing from you.

Christa Friedrich
8126 West Mercer Way
Mercer Island, WA 98040
christafr@comcast.net
Phone: 206-232-4357

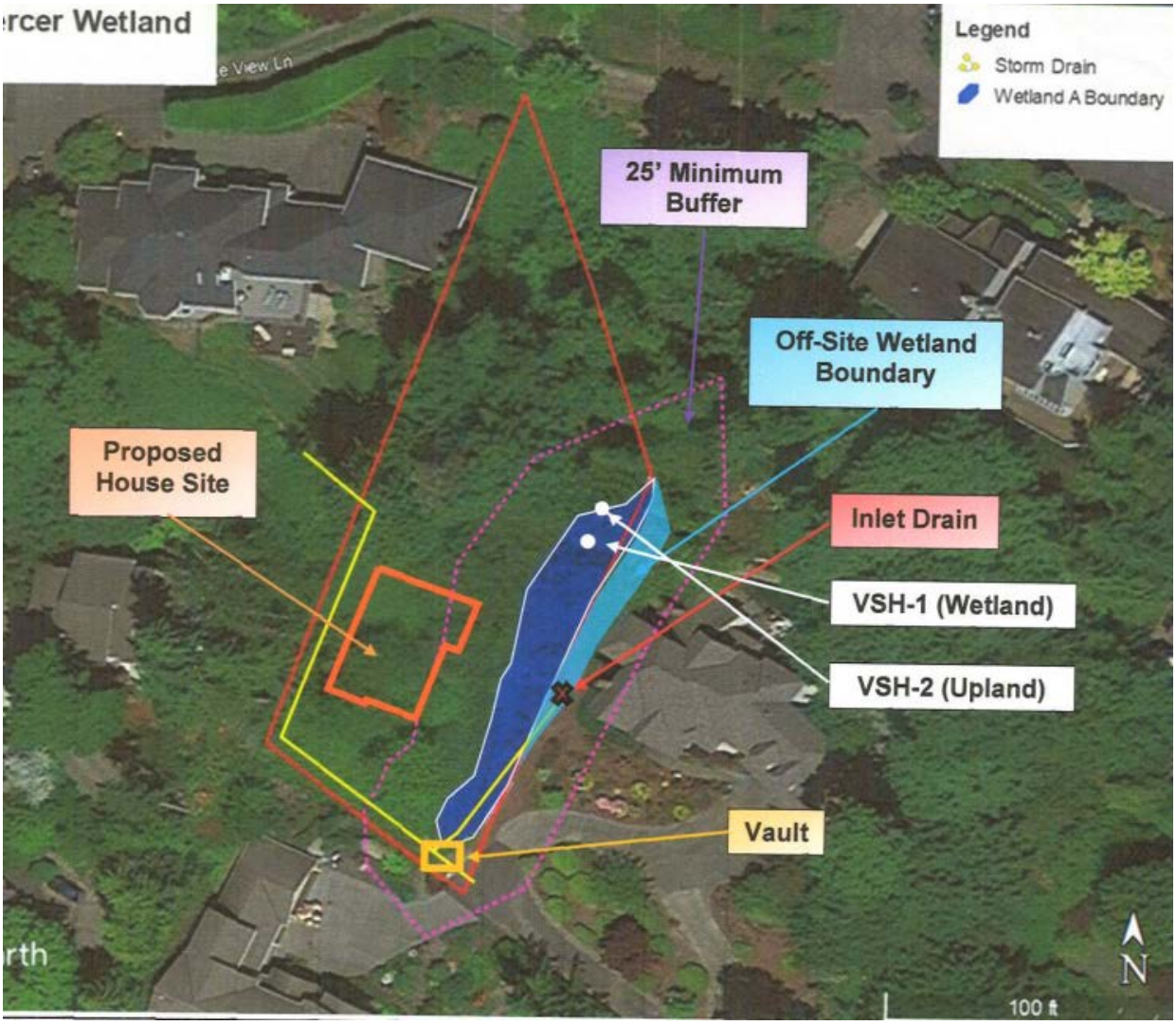
From: Fred Howard
To: Lauren Anderson
Subject: CAO13-03 Comment and Conerns
Date: Wednesday, July 11, 2018 2:11:38 PM
Attachments: image001.png

Lauren, I wanted to reach out regarding the proposal CAO13-03. I am the owner of 8122 W. Mercer Way, the property directly below the proposed changes to the minimum buffer. I have some significant concerns regarding the proposal and the vague nature of both the proposal and the impact. If they are proposing a reduction of the minimum buffer in some areas, where is the impact analysis to overall erosion and potential damage down-hill to our property? Also, what is the proposed plan to compensate for the reduction of the wetlands in the proposal?

In addition, we consulted with another consultant who informed us that the outline below is missing another wetland on the property. I would like to request an additional survey to ensure that all wetland impacts and potential damage to both the environment and to our property are understood, taken into account and mitigation plans developed.

I would appreciate you looking into this and replying so that I understand how this initiative may move forward and potential impact to both the environment and to our property.

Thank you,
Fred Howard
8122 W. Mercer Way
Mercer Island, WA 98040
310-266-3347


rcer Wetland
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Legend
Storm Drain
Wetland A Boundary
25' Minimum Buffer
Off-Site Wetland Boundary
Proposed House Site
Inlet Drain
VSH-1 (Wetland)
VSH-2 (Upland)
Vault
rth
N
100 ft

From: Lisa Chow
To: Lauren Anderson
Cc: Tuanhai Hoang
Subject: Fwd: CAO13-03 Comment and Concerns pt 2
Date: Wednesday, July 11, 2018 4:54:51 PM

Hi Lauren,

I would like to add to my husband's email some additional feedback after talking to a Wetland Consultant.

Should the small wetland mentioned in the report on the west side of the property be shown on the maps and evaluated to identify its size, rating and low function as required by the Mercer Island Municipal Code (MIMC) 19.07.030.A (13)? With this information the City can document and share with interested parties adjacent to the parcel to evaluate.

The applicant seems to be proposing to reduce or average the buffer below the minimum buffer which does not meet the MIMC 19.07. Page 1 indicates the residence is proposed to be within 15 to 20 feet of the wetland and that the driveway is proposed to be within the 25 foot wetland buffer. The site plan (Figure 4) actually shows that the residence will be within 14 feet 9 inches of the wetland. MIMC 19.07.080.C does not allow the wetland to be reduced or averaged below the minimum buffer of 25 feet. Applicant should be required to meet the code and provide a minimum 25 foot buffer from the residence.

MIMC 19.07.030.A (6) does allow for driveways within a wetland buffer. However, the driveway is directly abutting the wetland (which will indirectly impact the wetland) and there is not discussion of if there is an alternative with less impact to the wetland or wetland buffer. In addition a wetland impact analysis that discusses the projects direct and indirect wetland impacts is not included in the mitigation plan. The driveway runoff, clearing of vegetation up to the edge of the wetland and construction of the residence abutting the reduced wetland buffer will all have direct and indirect impacts to the wetland system. The applicant should be required to identify the types of vegetation and conditions of the impact areas, proposed

restoration areas and provide a full wetland and buffer impact analysis.

Construction of the residence directly adjacent to the wetland buffer will ultimately impact the buffer during construction and a building setback for construction purposes should be provided to allow construction of the residence without further impact to the buffer.

The wetland boundary indicated in the wetland report shows wetland offsite. Since the applicant did not have our permission to access our property or dig holes on our property we are requesting that the offsite wetland not be shown on project maps as a known wetland area. Offsite evaluation should have occurred and the offsite area should be shown as approximate boundary. There is a existing gravel path within the area between the wetland and my residence so we believe that the wetland edge does not extend as far as shown onto our property.

We are looking forward to getting a response that would provide any additional information that may be added to the City record including the City correspondence with the applicant or other agencies.

Thank you,

Lisa Chow and Tuanhai Hoang
8118 West Mercer Way
Mercer Island, WA 98040
206-236-8118

On Jul 11, 2018, at 2:18 PM, Tuanhai Hoang <Tuanhai@qualitel.com> wrote:

Thanks

Best Regards,

Tuanhai

Sent from smartphone so please excuse typos.

-------- Original message --------

From: Lauren Anderson <Lauren.Anderson@mercergov.org>
Date: 7/11/18 1:12 PM (GMT-08:00)
To: Tuanhai Hoang <Tuanhai@qualitel.com>
Cc: Lisa Chow <lisa.chow@qualitel.com>
Subject: RE: CAO13-03 Comment and Conerns

Hello Tuanhai Hoang,

Thank you for your comments, you are now a Party of Record and will receive notice of the decision. The City has shared your comments with the other reviewers and the applicant.

Sincerely,

Lauren Anderson // Assistant Planner
City of Mercer Island Development Services Group
9611 SE 36th Street, Mercer Island, WA 98040
206.275.7704
lauren.anderson@mercergov.org

Out of the office: July 20 and August 1-8.

To fill out a Public Records Request go to
https://mercerisland.nextrequest.com/

For more information of the status of permits go to www.mybuildingpermit.com
For information about a geographic area go to http://pubmaps.mercergov.org
To view application forms and other zoning information checkout
http://www.mercergov.org/Page.asp?NavID=361

From: Tuanhai Hoang <Tuanhai@qualitel.com>
Sent: Wednesday, July 11, 2018 1:04 PM
To: Lauren Anderson <Lauren.Anderson@mercergov.org>
Cc: Lisa Chow <lisa.chow@qualitel.com>
Subject: CAO13-03 Comment and Conerns
Importance: High

Hi Lauren, I am the owner at 8118 West Mercer Way. I am East of this property. I have major concerns regarding reducing the buffer from 35feet to 25 feet.

1. I would like a 2nd survey as I think some of the details are inaccurate. For example it is showing that we have wetland right next to our house when it is not the case. Also, talking to another consultant, there seems to be another small wetland on the property.

2. The plans are vague and would like a more detailed plans as shrinking the buffer from 35 ft to 25 and 15 in some areas are not good for the environment. With their current proposal they will degrade the function and value of the wetlands which will have an environmental impact.

3. I would like to see an averaging plan. The overall sf buffer of the buffer should not change with the ordinance asking for 35ft.
If in some areas they reduce it to 25 or 15 ft they should compensate in areas for an additional 15-20 ft on top of the 35ft.

4. I am also concern about erosion impact onto my property removing the vegetation. My property is already impacted currently and I am afraid it will be worse.

I appreciate your attention. Please acknowledge receipt of this email.

Thank you

Tuanhai Hoang
8118 West Mercer Way
Mercer Island Wa 98040
206-236-8118

From:	Loren-Ann Anderson
To:	Lauren Anderson; paul.skidmore@mercergov.prg
Cc:	Peter Mohai
Subject:	8114 W Mercer Way File No. CAO18-003
Date:	Wednesday, July 4, 2018 12:07:03 PM

Hi Lauren

I am following up our conversation on July 2, 2018 with this email.

I am against modification of the wetland buffer on 8114 W Mercer Way, and furthermore against ANY type of development of that property , for the following reasons:

1. Property is on a Critical Slope with a history of instability.
2. Property contains springs and water flow from the bank, and has standing pools of water in the winter.
3. Development of the property could affect neighboring properties, and may result in landslides, etc., specifically to the homes above the subject property.
4. There should be no cutting of trees or removal of vegetation, which has stabilized the hillside.

I would like copies of impact studies, geotechnical studies, engineering and architectural plans.

I would like to be designated a "party of record"

If the development of the property results in hillside instability and subsequent damage to homes or property, I will hold the City of Mercer Isld. and the property owner liable for damages.

Loren E. Anderson
8132 W Mercer Way
206 275 3663

From:	Tuanhai Hoang
To:	Lauren Anderson
Cc:	Lisa Chow
Subject:	CAO13-03 Comment and Conerns
Date:	Wednesday, July 11, 2018 1:03:55 PM
Importance:	High

Hi Lauren, I am the owner at 8118 West Mercer Way. I am East of this property. I have major concerns regarding reducing the buffer from 35feet to 25 feet.

1. I would like a 2nd survey as I think some of the details are inaccurate. For example it is showing that we have wetland right next to our house when it is not the case. Also, talking to another consultant, there seems to be another small wetland on the property.

2. The plans are vague and would like a more detailed plans as shrinking the buffer from 35 ft to 25 and 15 in some areas are not good for the environment. With their current proposal they will degrade the function and value of the wetlands which will have an environmental impact.

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If in some areas they reduce it to 25 or 15 ft they should compensate in areas for an additional 15-20 ft on top of the 35ft.

4. I am also concern about erosion impact onto my property removing the vegetation. My property is already impacted currently and I am afraid it will be worse.

I appreciate your attention. Please acknowledge receipt of this email.

Thank you

Tuanhai Hoang
8118 West Mercer Way
Mercer Island Wa 98040
206-236-8118

Sent from smartphone so please excuse typos.

WESTECH COMPANY
Environmental Consulting ~ Site Permitting

September 28, 2018

Ms. Lauren Anderson
City of Mercer Island
9611 SE 36th Street
Mercer Island, WA 98040-3732

Dear Ms. Anderson:

In accordance with your comments, ESAs comments and Public Comments on the permit application for a single family residence at 8114 West Mercer Way, Westech Company revised our Mitigation Plan and Monitoring Plan Report (dated September 2018) which has been submitted to you by Mr. Benny Kim. As you have also requested, this letter discusses the various comments on a point-by-point basis. I hope that this is helpful information.

Land Use Review Comments

1. Options to Proceed

In response to this comment, the applicant (Mr. Benny Kim) has chosen item (b), and redesigned the residence to lie outside of the minimum 25 foot buffer (see Site Plan in Figure 4, of the Mitigation & Monitoring Plan hereafter M&M Plan). The new design and mitigation will result in a net improvement of wetland function with the new Enhancement Area as shown in that Figure (4). This will comply with MICC 19.07.070(3).

2. ESA Review

a) The plan (Figure 4 in the M&M Plan) shows the 200 square foot wet area, which was checked and found not to satisfy the requirements of a wetland. A data sheet was appended to the report to demonstrate that finding (Appendix A).

b) The driveway was narrowed and reconfigured as requested by ESA and a row of trees is required along the north edge of the driveway as requested (see Figure 4 in the M&M Plan)

c) The house has been redesigned to lie outside the minimum buffer. The driveway dimensions have been reduced to lie outside of that minimum to the extent feasible and trees have been required to off-set any residual impact and protect the wetland as requested by ESA.

3. Public Comment

a.) Concerns relating to Landslide hazard and development on steep slope. These concerns have been addressed by a licensed Civil Engineer (C2MY Engineering) in previous reports. In addition an erosion control plan has been produced by C2MY Engineering – attached as a separate exhibit).

b) Water on-site: Concerns about erosion and run-off and the potential impacts to neighboring sites. Again, C2MY Engineering has prepared an erosion control plan to mitigate impacts during construction. Re-vegetation plans (with native plants) have been developed to stabilize the soils in the construction area. BMPs will be used during construction. Silt fences will be kept in place until new shrubs and trees are established in the Buffer Enhancement Area (see Figure 4 in the M&M Plan).

c) The very small (200 square foot) possible wetland was studied further and found NOT to constitute a wetland area (See M&M Plan, Figure 4 and Appendix A). Off-site impacts will be mitigated with use of silt fences, erosion control practices during construction and use of Best Management Practices (BMPs) as discussed in Chapters 3.0 and 4.0 of the M&M Plan. Erosion control measures will remain in place until new plants become established.

4. Site Plan

a) The new Site Plan has been revised to show the 25 foot(minimum) and 35 foot (standard) buffers adjacent to the house site.

b) The 200 square foot "wet area" was studied further and found NOT to constitute a wetland (see Figure 4, Chapter 5.0 and Appendix A of the M&M Plan).

c). The off-site buffer has been removed from the Plan.

d) The reduced buffer has been shown for the house and the driveway as requested.

e) This information regarding steep slopes has been added to the Site Plan.

f) This information regarding easements will be submitted under separate cover.

g) This information regarding the property line and dimensions has been added to the Site Plan.

5. Critical Areas Study

a) The new driveway has been reduced in dimension and extent. It also will be constructed using all reasonable and feasible BMPs (as per MICC 19.07.030(6)a). These will include a silt fence, straw wattles and other erosion control methods as specified in the M&M Plan and in C2YM Engineering's Erosion Control Plan (under separate attachment). The residence has been re-designed to minimize impacts to critical areas using best available science as demonstrated by the Wetland Delineation Report and the Mitigation and Monitoring Plan as per MICC 19.07.030(6)b (Westech Company 2018a,b).

As per the M&M Plan Report, impacts to critical areas have been mitigated to the greatest extent feasible so there is No Net Ecological Loss of critical area functions as per MICC 19.07.030(6)c. The Critical Areas Study (Wetland Delineation Report) and Restoration Plan (Mitigation and Monitoring Plan) have been prepared and submitted to the City of Mercer Island as per MICC 19.07.030(6)d. This information therefore complies with all requirements of MICC 19.07.030(6) a-d.

b) Construction of the Project will be consistent with Best Management Practices (BMPs). See C2MY Engineering Erosion Control Plan (separate attachment).

c. The residence has been re-designed and located to avoid critical areas. The lot was configured to have a driveway access at the southeast corner adjacent to the other driveways of the two adjacent residences. The driveway has been reduced to the extent possible and a row of trees and a planting area containing shrubs have been shown in the M&M Plan on the north side of the driveway. The residence was re-designed to lie outside of the 25 foot minimum buffer.

d. As stated above, there will be no-net loss of ecological function for critical areas if all Mitigation & Monitoring measures are implemented and all BMPs are utilized.

e. A Mitigaiton and Restoration Plan (referred to as a Mitigation and Monitoring Plan has been submitted and will be implemented with the Project (Westech Company 2018b). It shows the location of existing trees and removal of one alder tree (see M&M Plan). Mitigation and replacement trees and shrubs are listed in Chapter 4.0 of the M&M Plan (Planting Plan).

As included analysis in the M&M Plan Report, the 200 square foot area was determined NOT to be a wetland (see Figure 4 and Appendix A of the M&M Plan). There are no known wildlife habitat conservation areas or any T&E species on the Site. Proposed grading is shown in plans submitted separately by C2MY Engineering. Impacts to the functions of Critical Areas as shown in the M&M Plan, as is proposed maintenance and monitoring plan (see Chapters 3.0 and 4.0 M&M Plan).

f. Site survey, cover sheets and site construction plans have been submitted under separate cover by Mr. Benny Kim, Architect and C2YM Engineering.

6. This King County Bond Worksheet is provided under separate cover.

7. The proposal is for a single family residence in an area of previously developed single family residences. This falls below the de minimus threshold for SEPA. House and driveway construction have been re-designed to be minimal and the house is outside of the 25 foot minimum buffer zone.

8. The wetland is a Category IV wetland less than one acre in size. No alteration is expected, except potentially where the reduced size driveway will enter the property.

The M&M Plan details restoration and enhancement of the wetland and its buffer with native vegetation, including tree screening with new native trees along the north side of the driveway and an additional area of new native shrubs immediately to the north of that location. It appears that the driveway will be placed adjacent to but not within the wetland and the house has been redesigned to remain outside of the minimum 25 foot buffer zone. The M&M Plan details enhancement and restoration measures for the buffer zone.

9. As stated above, the house has been redesigned and the stairs and home will not intrude into the 25 foot minimum buffer zone. A construction fence and silt fence will divide the construction area from the minimum buffer zone. It is expected that 2-3 feet additional will be available as a set-back as requested, however, the home-site is very tight in configuration. The driveway has been reduced to a minimum size as requested.

10. Thank you for this information. Westech Company has submitted a Wetland Delineation Report and a Final Wetland Mitigaiton and Monitoring Plan (Westech 2018 a,b). These two documents have identified Critical Areas on the Site and have developed recommended Mitigation Measures (including a Planting Plan for native species) and a Monitoring Plan to ensure survival of native shrubs and trees planted in the restoration/enhancement area.

These mitigation measures and the Monitoring Plan, in combination with site architectural and engineering design, and an engineered Erosion Control Plan (C2YM Engineering) are anticipated to achieve "No Net Ecological Loss" during construction and occupancy of the new residence. This will maintain and restore any effects on the wetland and will enhance the buffer in comparison with current conditions, once the plants have become established at the Site.

Civil Engineering Review Comments:

These comments are addressed by C2MY Engineering under separate cover.

We believe that this letter provides new and complete information regarding environmental impacts, mitigation and monitoring plans for the proposed Project, We have found that "No Net Ecological Loss" will occur if these plans are implemented. Similarly, engineering plans have been submitted by the applicant and C2MY Engineering which should protect the wetland areas and nearby residences from construction impacts, including erosion (see C2MY Erosion Control Plans attached under separate cover).

Thank you for your review of this additional information. Please let us know if you have any remaining or additional questions.

Sincerely,

G. Bradford Shea, Ph.D., REPA, ABI
Senior Ecologist/Senior Environmental Scientist

GBS/mas
Cc: Mr. Benny Kim, Architect

CITY OF MERCER ISLAND

DEVELOPMENT SERVICES GROUP
9611 SE 36TH STREET | MERCER ISLAND, WA 98040
PHONE: 206.275.7605 | www.mercergov.org
Inspection Requests: Online: www.MyBuildingPermits.com VM: 206.275.7730

Geologic Hazard Areas

Requirements for a Statement of Risk by the Geotechnical Engineer.

Per Section 19.07.060.D.2 of the Mercer Island City Code, development within geologic hazard areas require that a Geotechnical Engineer licensed within the State of Washington provide a statement of risk with supporting documentation indicating that one of the following conditions can be met:

a. The geologic hazard area will be modified, or the development has been designed so that the risk to the lot and adjacent property is eliminated or mitigated such that the site is determined to be safe; or

b. An evaluation of site specific subsurface conditions demonstrates that the proposed development is not located in a geologic hazard area; or

c. Development practices are proposed for the alteration that would render the development as safe as if it were not located in a geologic hazard area; or

d. The alteration is so minor as not to pose a threat to the public health, safety and welfare.

LEE JOUNGIM
C/O BENNY KIM
7415 Ballinger Way
Edmonds, WA 98026

Attn: Benny Kim, Lee Joungim
Re: Risk Statement
8114 West Mercer Way Mercer Island Parcel#: 3358500974

Per section 19.07.060.D.2 of the Mercer Island City Code, development within geologic hazard areas requires a risk statement.

a) The hazard area will be modified per CS2 Engineer's structural design to mitigate the existing steep slope, including but not limited to; maintain a vegetated slope, and a pile supported, stepped concrete foundation. This will provide that the risk to the lot and adjacent property is eliminated or mitigated such that the site is determined to be safe.
b) Review of the city of Mercer Island Erosion Hazard map defines an erosion hazard as: >15% slope; and soils having "severe" rill and inter-rill erosion hazard according to USDA Soil Conservation Service (SCS). The slopes are >15% the erosion hazard is labeled "severe" per the SCS. The placement of the pile supported foundation is intended to mitigate the steep slope hazard.
c) The addition of the pile foundation is necessary and sufficient for a stable foundation as if it were not located in a geologic hazard area. The pile foundation poses no threat to the public health, safety and welfare.
d) No other site work is necessary or recommended for site stabilization.

We have reviewed the drawings (from CS2 Engineers dated 7/26/2017 rev 7) and calculations (from DES dated July 21, 2017) provided. Drawing and calculations conforman to the design and recommendations to the geotechnical report.

If you have any questions concerning this report, the procedures used, or if we can be of any further assistance please call us at **(206) 786-8645**.

Respectfully,
JJA, INC
Jason E.C. Bell, P.E.
Senior Engineer

JJA File#: 16018 | Date: 2017.10.30

Lee Joungim,
8114 West Mercer Way Mercer Island

LEE JOUNGIM
C/O BENNY KIM
7415 Ballinger Way
Edmonds, WA 98026

Attn: Benny Kim, Lee Joungim
Re: Geotechnical Recommendations
8114 West Mercer Way Mercer Island Parcel#: 3358500974

The West side is close to an easement. The average slope of the property was measured to be 35% downhill to the North. A 1H:1V slope for foundation excavation is as steep as should be implemented without shoring for excavations greater than 4 feet. Contractor should be cautious when excavating adjacent to the utility easement. We have reviewed the drawings from CS2 Engineers and verified geotechnical input values. Design values for lateral earth pressures were provided in the geotechnical letter dated 7-6-2016. They are provided again in this letter. Due to the revised house location, shoring is required

The foundation is scheduled to have 4 inch diameter pin piles at 42" on center typically (detail 4/S-6). This arrangement of piles is typical of pile supported foundations and will function per the design. If piles are to be spaced less than 3d apart, then the group effect reduction in capacity is prudent. Given a 4 inch diameter pile, the minimum spacing would be (3x4"=) 12 inch on center. If the piles are spaced at 12 inch on center or greater, the group effect does not need to be implemented (Bengt H. Fellenius 2004 "Unified design of piled foundations").

Lateral Earth Pressures:

Lateral earth pressures are dependent upon the backfill materials and their configuration and moisture content. Three inch minus sand and gravel mixtures that are free draining are recommended for backfilling walls greater than four feet tall. Design values for the native soil were obtained by using unit weight of 125 pcf, and phi angle of 34 degrees.

Earth Pressure Coefficients		**Earth Pressure**		
Active, K_a:	0.291	Active:	35	lbs./ft^3
At Rest, K_o:	0.450	At Rest:	56	lbs./ft^3
Passive, K_p:	3.440	Passive:	442	lbs./ft^3
		Coefficient of Friction:	0.4	

If you have any questions concerning this report, the procedures used, or if we can be of any further assistance please call us at **(206) 786-8645**.

Respectfully,
JJA, INC
Jason E.C. Bell, P.E.
Senior Engineer

JASON E. C. BELL
STATE OF WASHINGTON
37343
REGISTERED
PROFESSIONAL ENGINEER

GEOTECHNICAL ENGINEERING STUDY

PROPOSED LEE RESIDENCE
8114 WEST MERCER WAY
MERCER ISLAND, WASHINGTON

Prepared for

Mr. Benny Kim
An and Kim, LLC
7415 Lake Ballinger Way
Edmonds, WA 98026

by

Pioneer Engineering, Inc.
P. O. Box 33628
Seattle, WA 98133

December 2, 2013

December 2, 2013

Mr. Benny Kim
An and Kim, LLC
7415 Lake Ballinger Way
Edmonds, WA 98026

Subject: Geotechnical Engineering Study
Proposed Lee Residence
8114 West Mercer Way
Mercer Island, Washington

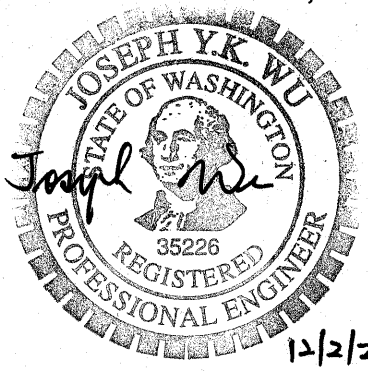
Dear Mr. Kim:

At your request, we have updated our 10/4/2013 geotechnical engineering study for the proposed development of Lee Residence and associated utilities at the above address in Mercer Island, Washington. This report presents our subsurface findings and recommendations for the development.

Pin pile foundations are suitable to provide support for the residence by penetrating through upper fractured Lawton Clay into non-fractured hard Lawton Clay deposits. A drainage system will be installed to prevent buildup of hydrostatic pressure behind the basement wall.

We appreciate the opportunity of providing services to you on this project. If you have any questions regarding this report or need further consultation, please feel free to call.

Respectfully submitted,
PIONEER ENGINEERING, INC.



Joseph Wu, P.E.
Consulting Geotechnical Engineer

P. O. Box 33628, Seattle, WA 98133
Phone: (206) 427-9118 · Fax: (206) 306-2982

Table of Contents

LIST OF FIGURES

PROJECT DESCRIPTION

The proposed site development will consist of constructing a single-family residence and associated utilities at 8114 West Mercer Way in Mercer Island, Washington. The general location of the site is shown on Figure 1.

Based on a topographic survey site plan and preliminary architectural elevation and floor plans furnished by An and Kim, LLC, the residence will be a three-story, wood-framed structure above a basement and garage. Slabs of the basement and garage will likely be poured on grade. A maximum cut of about 21 feet at the basement's northwest corner is required to reach basement slab subgrade.

SCOPE OF WORK

The purpose of this geotechnical engineering study is to characterize the subsurface soil and water conditions by two test hole explorations, and use such information obtained to provide recommendations for the development. To achieve the purpose, the scope of our services specifically comprises the following items:

1. Explore subsurface soil and water conditions with two test holes to a maximum depth of 21.5 feet. The underlying soils encountered are visually classified;
2. Collect soil samples at selected depths and seal them in sampling bags for further examination;
3. Conduct a site reconnaissance to observe and document existing surface features;
4. Review surficial soil conditions at the site, according to a published geologic map;
5. Prepare a written report to address our findings and recommendations for drainage systems, site preparation and grading, engineered fill and compaction, foundation support, cut and fill slopes, and pavements.

SITE CONDITIONS

Surface Conditions

The site is an irregularly-shaped vacant urban lot surrounded by private properties, accessible from West Mercer Way by a private driveway shared by the residences at 8118, 8122 and 8126. It covers an area of 0.40 acre, measured about 32 feet along the driveway.

Topographically, the site is situated slightly above the toe of a broad regional slope descending southwesterly to Lake Washington. Within the site, the ground surface descends steeply southerly to a group of mature deciduous trees in the mid-northern portion of the site. Following a similar gradient, the ground continues to decline to a paved apron of the driveway. The open space is covered mostly with berry, fern and grass, except that a pine tree stands near the north end of the apron, and four fir and one spruce trees line near the site's west corner.

Geologic Mapping

A geologic map, *Geologic Map of Mercer Island, Washington,* prepared by Kathy G. Troost and Aaron P. Wisher in October, 2006 was referenced for the geologic and soil conditions at the site. According to this map, the surficial soil unit is mapped as deposits of Vashon Advance Outwash (Q_{va}) at the site, in a close proximity to underlying Lawton Clay (Q_{vlc}).

Vashon Advance Outwash was deposited mostly from the meltwater front flowing from the advancing glacier. The composition of this soil unit consists generally of gravel and sand with trace to no silt. Due to the process of glaciation, its soil profile typically has coarse particles in the upper portion, and finer in the lower. In general, it is in a dense condition and of high permeability, and suitable to serve as foundation bearing soils. When a structure is bearing on such soils, the majority of foundation settlement occurs during construction.

Lawton Clay was a glacial and non-glacial deposit generally underlying Vashon Advance Outwash deposits. They consist mostly of massive, thick or thin beds and lamination of gray to dark-gray clay, silt and fine to very-fine sand. The fine-grained sediment mostly was deposited in water bodies such as lakes or streams prior to the advance of the ice front of glaciation. The sediments were mostly deposited during the transitional period near the end of pre-Fraser interglacial (Olympia Interglaciation) time and into early Fraser glacial time. In general, Lawton Clay deposits are very stiff to hard in their natural, undisturbed state.

Colluvium generally refers to loose, unconsolidated sediments deposited at the base of hillslopes by the natural process of rainwash, overland sheetflow or other forms of unconcentrated flow. It is often composed of a variable range of sediments ranging from silt to rock (fragment) inclusions.

Subsurface Exploration

Subsurface conditions were explored with two test holes (TH-1 and TH-2) to a maximum depth of 21.5 feet on September 27, 2013, using a portable drilling rig owned and operated by CN Drilling, Inc. Locations of test holes are determined by tape measurements with reference to the existing surface features shown on the survey plan, and they should be considered as only accurate to the measuring method used. Approximate locations of the test holes are shown on Figure 2.

Standard Penetration Tests (SPTs) are conducted in the test holes using a standard split-spoon sampler of a 2-inch outside diameter, driven with a 140-pound hammer that was raised and released at a 30-inch free fall distance, in accordance with ASTM D1586. The sampler is driven 18 inches by the hammer and the total number of blows for the last 12 inches is recorded as the "N" value in test hole logs. The number of blows required to advance the sampler for the given distance is an indication of density of granular soils or consistency of cohesive soils.

Subsurface exploration was continuously monitored by an engineer from our firm who documented subsurface soil and water conditions encountered, maintained a log of each hole, obtained representative soil samples, and observed pertinent site features. The final test hole logs represent our interpretations of subsurface conditions explored. The stratification lines in the logs indicate approximate boundaries between soil types. Actual transitions may be more gradual in the natural geologic setting. The soil samples obtained from the test holes are visually classified in general accordance with Unified Soil Classification System (USCS) as shown on Figure 3.

Subsurface Soils

In general, soil conditions explored in both test holes were consistent with regional geologic settings. In TH-1, a layer of Vashon Advance Outwash deposits consisting mostly of well-graded sandy gravel and light gray silty medium sand was first encountered, underlain by light gray to gray Lawton Clay deposits. A thin layer of colluvium was observed to overlie Lawton Clay deposits in TH-2. The upper portion of Lawton Clay appeared fractured with less shear strength. More detailed information of soil conditions is presented in Figures 4 and 5.

Groundwater Conditions

Groundwater was not encountered in both test holes. Groundwater levels generally fluctuate with seasons, depending on the amount of precipitation and surface runoff, denseness of groundcover, purposes of land use, and other factors.

DISSCUSSIONS AND RECOMMENDATIONS

Based on the soil and groundwater conditions encountered in our subsurface exploration, it is our opinion that, from a geotechnical engineering viewpoint, the site is suitable for the proposed development provided that recommendations in this report are closely followed.

Deep foundation systems are required to penetrate through upper fractured Lawton Clay into non-fractured hard Lawton Clay deposits. Among these foundation systems suitable for site conditions are drilled pier foundations, augered cast-in-place pile foundations and pipe (pin) pile foundations. Pin pile foundations are the best option in consideration of budget management and constructability for local residential developments. Recommendations for this system are addressed in FOUNDATION SUPPORT.

The site is underlain predominantly by Lawton Clay deposits containing a high amount of fines (soil particles passing through the U.S. No. 200 sieve by weight based on the fraction of the soil sample batch passing through the U.S. No. 4 sieve by weight) which make it difficult to compact such soils to meet the criteria in wetter months. Grading activities must be started and completed after a substantial period of fair weather in the dry season, in order to reduce the adverse impacts upon engineered fill from precipitation.

SITE PREPARATION AND GRADING

Site preparation includes clearing and grubbing of groundcover, implementations of temporary erosion and sediment control (TESC) measures, and readiness of subgrade.

Prior to starting construction activities, a filter fence should be installed along the lower boundary of the site, in conjunction with a highly visible grid fence to delineate the construction (or clearing) limits. The entrance, parking, and loading areas should be paved with a minimum 12-inch-thick layer of quarry spalls (generally 2 to 4 inches in size), underlain by non-woven geotextile to prevent on-site sediments from being tracked onto the street. The filter fence and

spall pad serve as TESC measures during construction. They should remain in place until full replacements with permanent ESC measures.

Clearing of ground includes stripping and grubbing of all surface vegetation within the clearing limits. Occasional overexcavation may be required when local weak soil pockets encountered. Overexcavation should be backfilled with engineered fill and compacted to a stable condition, following the recommendations in ENGINEERED FILL AND COMPACTION. On-site topsoil is unsuitable for use in any area to withstand loads. This topsoil should be disposed of at approved locations or used solely for landscaping purposes.

If grading operations are to be extended into the wet season, the following strategies and methods of ESC should be implemented:

- The bare and disturbed ground outside the construction limits should be protected with a layer of straw mulch (a minimum thickness of 2 inches; about 2 bales per 1,000 square feet of land) during any period of precipitation, in order to minimize soil erosion by storm runoff. Straw should be air-dried and free of any undesirable weed or coarse material.
- Cut/fill slopes and stockpiles of soils should be covered with durable plastic sheeting weighed down by securely-anchored sand bags if they are to remain unworked for more than 12 hours; other disturbed areas should be covered with straw mulch as addressed above if they are to remain unworked for more than 2 days.
- TESC measures in place should have regular inspection weekly and more frequent inspection immediately before, during and after significant precipitation events.

ENGINEERED FILL AND COMPACTION

Engineered fill is the material placed under footings, on-grade slabs and pavements where it withstands loads. Engineered fill should be free of organic, construction debris and other deleterious substances. It should consist of clean soils with individual particles not greater than 4 inches in size

On-site Lawton Clay deposits generally contain a high content of fines and are difficult to compact to meet the criteria when used in wet weather. Free-draining granular materials such as 2-inch-minus crushed rock with no more than 5 percent of fines or on-site clean Vashon Advance Outwash deposits may be used in structural areas.

Engineered fill should be placed per loose lift not more than 10 inches in thickness, and compacted to meet the required percentage of maximum dry density determined by ASTM D1557 (Modified Proctor Method) as summarized in the following table:

Applicable Area	Maximum Dry Soil Density
Under Grade Beams	95%
Under Driveway and on-Grade Slab	95% for upper 2 feet, 90% below
Structural Wall Backfill	95% for upper 3 feet, 90% below
Utility Trench Backfill	95% for upper 4 feet, 90% below

Controlled Density Fill (CDF) may be used as an alternative for engineered fill. CDF (a flowable, self compacting, rigid setting and low density material) is generally used in over-excavation in the footing or utility trenches. Wherever applicable, there is neither the compaction effort required to densify this fill, nor density tests needed to ensure compliance with the criteria. Its flowability enables this material to displace standing water in a footing (or utility) trench and access difficult spots. CDF has a typical minimum slump of 10 inches and a 30-day compressive strength of 200 pounds per square inch (psi) or less. Low compressive strength allows CDF for easy excavation in case of any design alteration during construction.

CUT AND FILL SLOPES

Under no circumstances should cut banks be greater than the limits specified by the safety regulations of local, state, and federal government, if worker have to perform the construction work in the foundation and utility trenches.

Any unsupported temporary cut greater than 4 feet in height should be sloped no steeper than 1H:1V in topsoil, colluvium and Vashon Advance Outwash deposits; 3/4H:1V in very stiff or hard Lawton Clay deposits. The bottom 4 feet may be cut vertically into hard Lawton Clay. These recommended inclinations of excavation are based on the assumption that no groundwater will be encountered during excavation. If groundwater is encountered during excavation, work should be halted immediately and our on-site representative informed to re-evaluate slope stability. Permanent cut or fill slopes should have an inclination no steeper than 2H: 1V.

FOUNDATION SUPPORT

Pin Pile Foundations

Pin pile foundations generally consist of concrete grade beams and steel pin piles (ASTM A53, Grade B) that penetrate through upper weak fractured Lawton Clay into non-fractured hard Lawton Clay deposits. Two-inch, three-inch and four-inch pin piles are used individually or in combination for residential development projects. Their specifications, design capacities and "refusal" criteria are tabulated below:

Size	Outside Diameter (O.D.)	Schedule	Design Capacity
2-inch	2.375"	80	4 kips
3-inch	3.5"	40	12 kips
4-inch	4.5"	40	20 kips

Size	"Refusal" Criteria
2-inch	Less than one inch of penetration in 60 seconds for a minimum continuous driving duration of one minute, under percussion of a 90-pound pneumatic jackhammer.
3-inch	Less than one inch of penetration in 12 seconds for a minimum continuous driving duration of one minute, under percussion of a 650-pound TB-225 hydraulic hammer.
4-inch	Less than one inch of penetration in 16 seconds for a minimum continuous driving duration of one minute, under percussion of an 850-pound TB-325 hydraulic hammer.

Battered piles must be incorporated into the foundation system to provide lateral resistance. A minimum distance of 18 inches should be maintained between the adjacent exterior finish grade and the grade beam bottom to avoid structural distress by the frost effect. Pin piles should be driven to meet the "refusal" criteria in order to render design capacities. Piles are usually driven in an alternate order so that temporary loss of soil strength during pile-driving would not affect subsequent installation.

Design Parameters

Basement walls restrained to displace and rotate at the top should be designed for a lateral soil pressure in an "at-rest" condition; retaining walls free to displace and rotate at the top should be designed using an active soil pressure. A lateral soil pressure of 55 pounds per cubic foot (pcf) of Equivalent Fluid Density (EFD) should be used for designing basement walls and 35 pcf of EFD for retaining walls, assuming the backfill is well-drained and level.

The friction force between the foundation and the subgrade, and the passive soil pressure acting on the under-grade portion of the foundation provide resistance to lateral loads. For better development of lateral resistance, the foundation must be poured directly against undisturbed, very stiff or hard Lawton Clay deposits or against engineered fill of adequate compaction. We recommend that a passive soil pressure, 430 pcf of EFD, and a coefficient of

friction equal to 0.40 be used for calculating passive soil resistance. The top one foot of the passive soil pressure can be neglected due to ground disturbance by construction activities. The above passive soil pressure is based on the assumption that the backfill is level and adequately compacted. The above passive soil pressure and coefficient of friction are ultimate and unfactored. Proper factors of safety should be included in design.

Seismic Design Considerations

Design of a single-family or a two-family residential building (townhouse) should be in compliance with the standards and specifications stated in 2012 International Building Code (2012 IBC), as amended by City of Mercer Island. Based on the 2012 IBC, the site is located in a zone of Seismic Design Category D with a classified Site Class D.

Based on the location of the site (Latitude: 47.53042, Longitude: -122.23285 from King County iMap), the values of 0.2-second and 1-second spectral response accelerations are computed for seismic design parameters from an interactive tool at the USGS website. These design values and corresponding site coefficients are listed below:

Regional Earthquake Ground Motion for the 0.2-Second Spectral Response Acceleration, Site Class D S_S = *1.467 g*

Regional Earthquake Ground Motion for the 1-Second Spectral Response Acceleration, Site Class D $S_1 = 0.558$ g

Regional Earthquake Ground Motion for the 0.2-Second Spectral Response Design Parameter, Site Class D $S_{DS} = 0.978$ g

Regional Earthquake Ground Motion for the 1-Second Spectral Response Design Parameter, Site Class D $S_{D1} = 0.558$ g

Site Coefficient F_a as a Function of Site Class and Mapped Spectral Response Acceleration at a 0.2-second Period (S_s) $F_a = 1.00$

Site Coefficient F_v as a Function of Site Class and Mapped Spectral Response Acceleration at a 1-Second Period (S_1) $F_v = 1.50$

PRECAST BLOCK WALL

Gravity and geogrid-reinforced block walls are common types of precast concrete block walls available in market. With versatile facing features, constructability and cost-effectiveness, compared to the concrete wall within a wall height of about 20 feet, the block walls have gained popularity in the construction industry. Gravity block (Ultrablock or Redi-Rock) walls are recommended for the application at this site.

The keyway trench should be excavated to firm, undisturbed subgrade soils, immediately followed by installation of a leveling pad. This pad should consist of 6-inch-thick clean crushed rock (5/8-inch in size) with no more than 2 percent of fines placed over subgrade and compacted to a non-yielding condition. A column of drain fill should be placed at least 12 inches wide behind the wall up to the capping topsoil or finish grade. Drain fill conforms to the specifications for the rock in the leveling pad.

The base course should be set on the leveling pad. In general, each course of blocks is placed at a 1H:10V to 1H:8V face inclination with a specific minimum toe embedment and frontslope below:

Min. Toe Embedment	Frontslope	Min. Toe Embedment	Frontslope
6”	Level	18”	1H:2V
12”	1H:1V	24”	1H:3V

A minimum 6-inch-diameter, rigid, perforated PVC pipe should be installed along the heel of the keyway trench, and wrapped with a layer of non-woven geotextile. This drain pipe is placed at a positive drainage slope to generate gravity flow and tightlined to discharge. Block walls should be designed following the manufacturer’s design guidelines.

ON-GRADE SLAB AND PAVEMENT

In general, the driveway pavement and on-grade slab should be supported on firm subgrade prepared as addressed in SITE PREPARATION AND GRADING and ENGINEERED FILL AND COMPACTION of this report. For the unheated areas such as a garage or a storage room, the on-grade slab should be placed over a durable vapor retarder (6-mil plastic membrane) underlain by a layer of capillary break to keep moisture from migrating upward. The capillary break should be composed of a minimum 4-inch-thick layer of free-draining 5/8-inch crushed rock containing no more than 2 percent of fines. For the heated areas, an additional layer of Styrofoam may be placed between the slab and the vapor retarder to enhance insulation.

We recommend that a flexible pavement section be composed of 3 inches of Asphalt Concrete (AC) over 6 inches of Crushed Rock Base (CRB), or 3 inches of AC over 4 inches of Asphalt Treated Base (ATB). A rigid pavement section consisting of 5 inches of concrete over 5 inches of adequately compacted 2-inch-minus CRB may be used as an alternative.

DRAINAGE SYSTEMS

Surface Drainage

The finish ground should be graded such that surface water is directed away from the building. Standing water should not be present within the building limits or in areas of foundations, on-grade slabs or pavements. Storm runoff on the impervious surfaces collected by downspouts and/or captured by catch basins should be tightlined to discharge to a stormwater drainage system. Roof downspout drainlines should not be connected to the basement wall drainage system. Sufficient cleanouts should be installed at strategic locations to allow for regular maintenance of stormwater drainage systems.

Basement Wall Drainage

A drainage system should be installed to prevent buildup of hydrostatic pressure behind the basement wall. This system consists of a 4-inch-diameter minimum, rigid, perforated PVC pipe with its invert placed slightly below the bottom of perimeter grade beams, and bedded on at least 3-inch-thick washed rock (5/8-inch in size) and covered with a minimum of 6 inches of same drain rock containing no more than 2 percent of fines. Such rock should be wrapped with a layer of durable non-woven geotextile. The drain pipe should have a sufficient gradient to generate flow by gravity. A drain mat such as Mirafi G100N should be placed to the full depth of the wall and hydraulically connected to the pipe. A typical basement wall drainage system is illustrated on Figure 6.

Damp-Proofing

A damp-proof coating composed of a bituminous coating, or 3 pounds per square yard of acrylic modified cement, or 1/8-inch coating of surface-bonding mortar in compliance with ASTM C887, or any materials permitted for waterproofing by the section 1805.3.2 of 2012 IBC, can be applied to the under-grade portion of concrete walls.

LIMITATIONS

This report has been prepared for the specific application to this project for the exclusive use of Mr. Benny Kim and his authorized personnel. The conclusions and interpretations in this report, however, should not be construed as a warranty of the subsurface conditions.

Our geotechnical recommendations are based on the soil conditions encountered in the test holes, engineering analyses, and our experience and engineering judgment. The recommendations are professional opinions derived in a manner consistent with the level of care and skill ordinarily exercised by other members of the profession currently practicing under similar conditions in local areas. No warranty, expressed or implied, is made.

Soil and groundwater conditions stated in this report may vary from those actually encountered during construction. If variations appear then, we should be retained to re-evaluate the recommendations of this report, and to verify or modify them in writing prior to proceeding with subsequent work.

ADDITIONAL SERVICES

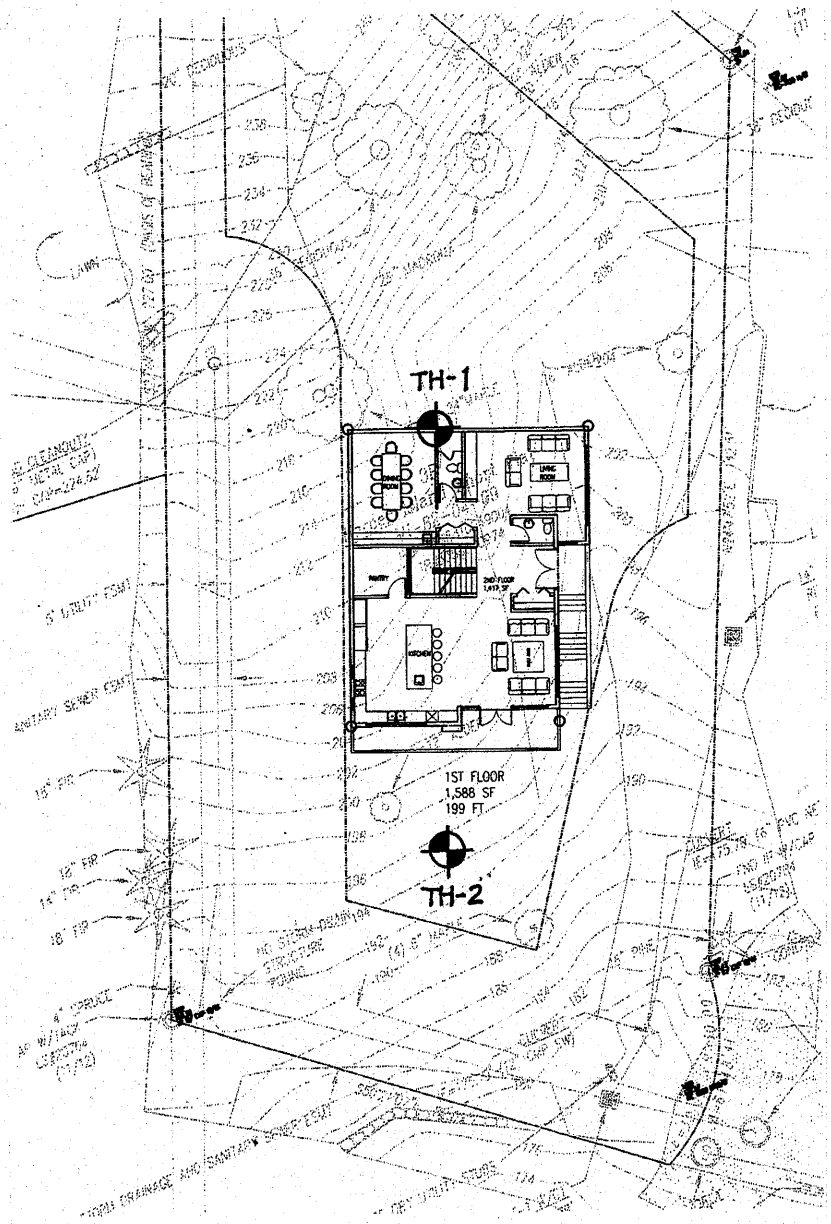
We recommend that Pioneer Engineering, Inc. (PEI) be retained to perform a general review of the final design and specifications of the proposed development, and to verify that our geotechnical recommendations have been properly interpreted and implemented in the design plans and construction documents. We also recommend PEI be retained to provide monitoring services for geotechnical aspects of the construction work of this project. This is to observe compliance with the design concepts, specifications or recommendations and to allow for design changes in the event subsurface conditions differ from those anticipated prior to start of construction.

PIONEER ENGINEERING, INC.

Geotechnical Engineering · Earth Science · Water Resources

VICINITY MAP
PROPOSED SINGLE-FAMILY RESIDENCE
8114 WEST MERCER WAY
MERCER ISLAND, WASHINGTON

PROJ. NO. G13A21	DATE 10/3/13	FIGURE 1



SCALE: 1" = 30'

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SITE AND EXPLORATION PLAN
PROPOSED SINGLE-FAMILY RESIDENCE
8114 WEST MERCER WAY
MERCER ISLAND, WASHINGTON

PROJ. NO. G13A21	DATE 10/3/13	FIGURE 2

UNIFIED SOIL CLASSIFICATION SYSTEM

MAIN DIVISIONS			GROUP SYMBOL	GROUP NAME
COARSE-GRAINED SOILS MORE THAN 50% RETAINED ON THE NO. 200 SIEVE	**GRAVEL** MORE THAN 50% OF COARSE FRACTION RETAINED ON THE NO. 4 SIEVE	CLEAN GRAVEL	**GW**	WELL-GRADED GRAVEL, FINE TO COARSE GRAVEL
			GP	POORLY-GRADED GRAVEL
		GRAVEL WITH FINES	**GM**	SILTY GRAVEL
			GC	CLAYEY GRAVEL
	SAND MORE THAN 50% OF COARSE FRACTION PASSING PASSING NO. 4 SIEVE	CLEAN SAND	**SW**	WELL-GRADED SAND, FINE TO COARSE SAND
			SP	POORLY-GRADED SAND
		SAND WITH FINES	**SM**	SILTY SAND
			SC	CLAYEY SAND
FINE-GRAINED SOILS MORE THAN 50% PASSING THE NO. 200 SIEVE	**SILT AND CLAY** LIQUID LIMIT LESS THAN 50%	INORGANIC	**ML**	SILT, SANDY SILT
			CL	LEAN CLAY
		ORGANIC	**OL**	ORGANIC SILT, ORGANIC CLAY
	SILT AND CLAY LIQUID LIMIT 50% OR MORE	INORGANIC	**MH**	SILT OF HIGH PLASTICITY, ELASTIC SILT
			CH	CLAY OF HIGH PLASTICITY, FAT CLAY
		ORGANIC	**OH**	ORGANIC SILT, ORGANIC CLAY
HIGHLY ORGANIC SOILS			**PT**	PEAT

NOTE:

1. FIELD CLASSIFICATION BASED ON VISUAL EXAMINATION OF SOIL IN GENERAL ACCORDANCE WITH ASTM D2488.
2. SOIL CLASSIFICATION USING LABORATORY TESTS IS BASED ON ASTM D2487.
3. DESCRIPTIONS OF SOIL DENSITY OR CONSISTENCY ARE BASED ON INTERPRETATION OF BLOW-COUNT DATA, VISUAL APPEARANCE OF SOILS, AND/OR TEST DATA.

SOIL MOISTURE INDICATORS:

DRY - ABSENCE OF MOISTURE, DUSTY, DRY TO THE TOUCH.

SLIGHTLY MOIST - TRACE MOISTURE, NOT DUSTY.

MOIST - DAMP, BUT NO VISUAL WATER.

VERY MOIST - VERY DAMP, MOISTURE FELT TO THE TOUCH.

WET - VISUAL FREE WATER OR SATURATED, USUALLY SOIL IS OBTAINED FROM BELOW WATER TABLE.

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USCS CHART
PROPOSED SNGLE-FAMILY RESIDENCE
8114 WEST MERCER WAY
MERCER ISLAND, WASHINGTON

PROJ. NO. G13A21 | DATE 10/3/13 | FIGURE 3

TEST HOLE NO. TH-1

Logged By: JW Date: 9/27/13 Ground Elev. 212.0 ±

Depth ft.	USCS	Soil Description	Sample Type	Sample No.	(N) Blows/ ft.	Other Test
	SM	Brown, silty, fine SAND, some coarse gravel, trace organics, loose, slightly moist. (8" Topsoil)	SS	1	1,2,2	45% Sample Recovery
	GW	Well-graded sandy GRAVEL, loose to medium-dense, slightly moist. (Vashon Advance Outwash)				
5	SM/SP	Light gray, silty, medium SAND, some fine gravel, medium-dense, moist. (Vashon Advance Outwash)	SS	2	11,16,8	50% Sample Recovery
10	ML	Gray, SILT, slightly fractured, slightly moist, very stiff. (Lawton Clay)	SS	3	8,6,13	100% Sample Recovery
15	ML	Gray, SILT, slightly fractured, dry, very stiff. (Lawton Clay)	SS	4	7,10,11	100% Sample Recovery
20	ML	Gray, SILT, dry, hard. (Lawton Clay)	SS	5	9,15,18	100% Sample Recovery
		Test hole terminated @ 21.5 ft, no groundwater encountered during drilling.				

LEGEND: SS - 2" O.D. Split-Spoon Sample
ST - 3" O.D. Shelby-Tube Sample
B - Bulk Sample

GROUNDWATER: ∇ Water Level

Seal

Observation Well Tip

Soil Sampling

PIONEER ENGINEERING, INC.

Geotechnical Engineering · Earth Science · Water Resources

TEST HOLE LOG
PROPOSED SINGLE-FAMILY RESIDENCE
8114 WEST MERCER WAY
MERCER ISLAND, WASHINGTON

PROJ. NO. G13A21 | DATE 10/3/13 | FIGURE 4

TEST HOLE NO. TH-2

Logged By: JW Date: 9/27/13 Ground Elev. 195.0 ±

Depth ft.	USCS	Soil Description	Sample Type	Sample No.	(N) Blows/ ft.	Other Test
	SM	Brown, silty, fine SAND, with gray silt inclusion, trace fine gravel, loose, very moist. (Colluvium)	SS	1	2,2,4	45% Sample Recovery
5	ML	Light gray, sandy SILT, some fine gravel, some orange staining, fractured, stiff, moist. (Lawton Clay)	SS	2	2,4,6	100% Sample Recovery
		- Gravel encountered @ 8'.				
10	ML	Gray, SILT, fractured, slightly moist, stiff. (Lawton Clay)	SS	3	2,4,5	100% Sample Recovery
		- Hard drilling from 12.5'.				
15	ML	Gray, SILT, dry, very stiff. (Lawton Clay)	SS	4	9,9,12	100% Sample Recovery
		Test hole terminated @ 16.5 ft, no groundwater encountered during drilling.				
20						

LEGEND: SS - 2" O.D. Split-Spoon Sample
ST - 3" O.D. Shelby-Tube Sample
B - Bulk Sample

GROUNDWATER: ∇ Water Level

Seal

Observation Well Tip

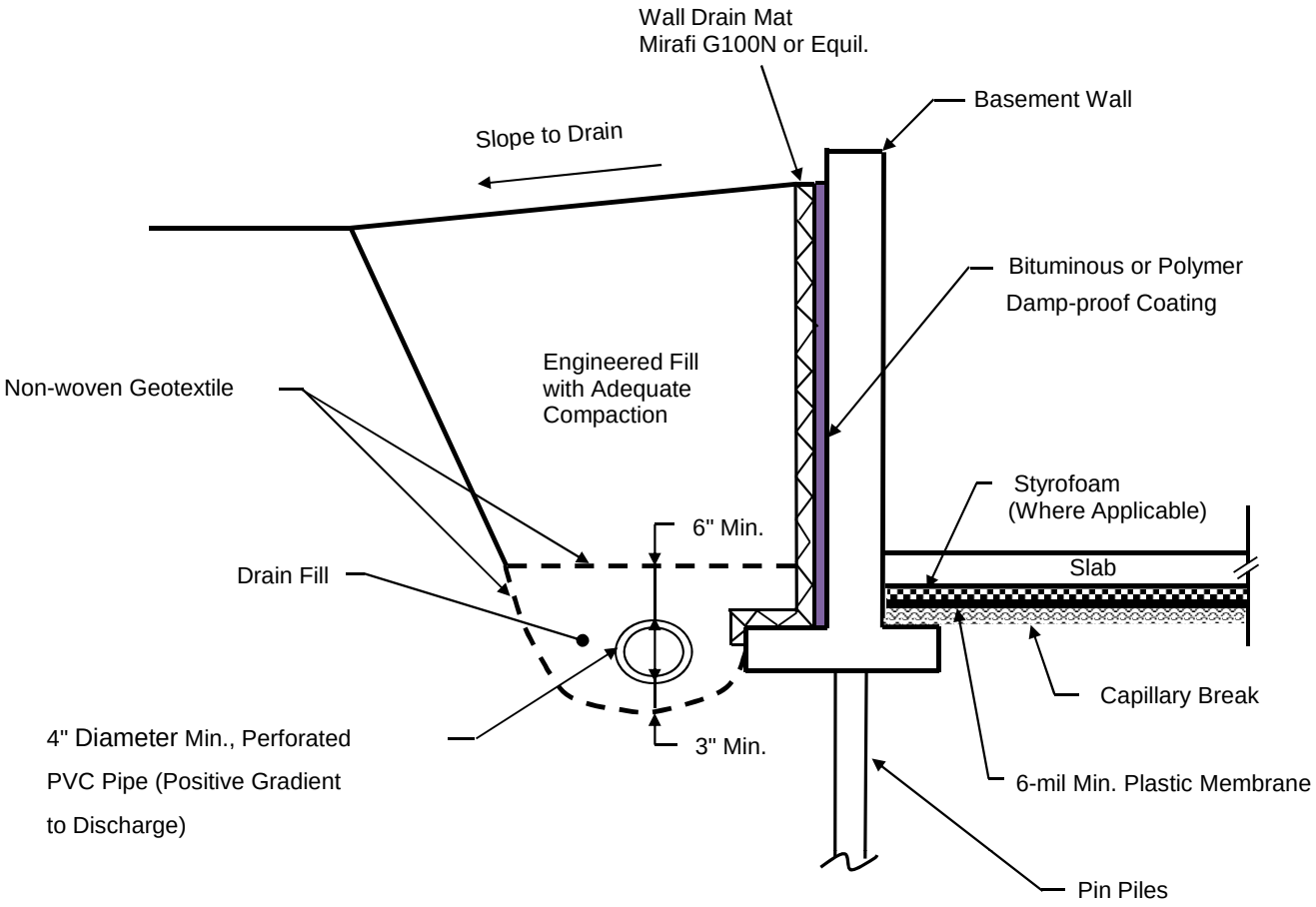
Soil Sampling

PIONEER ENGINEERING, INC.

Geotechnical Engineering · Earth Science · Water Resources

TEST HOLE LOG
PROPOSED SINGLE-FAMILY RESIDENCE
8114 WEST MERCER WAY
MERCER ISLAND, WASHINGTON

PROJ. NO. G13A21 | DATE 10/3/13 | FIGURE 5



Not to Scale

Notes:

1. Engineered fill should consist of clean soils with individual particles no larger than 4 inches in size, and contain no organic and other deleterious substances.
2. Engineered fill should be placed no more than 10 inches thick per loose lift, and compacted to attain the maximum dry density determined by ASTM D1557 (Modified Proctor Method).
3. The top 3 feet of engineered fill should be compacted to at least 95 percent of maximum dry density, and 90 and 90 percent for the remaining.
4. The drain pipe should be a rigid, perforated PVC pipe.
5. A 6-mil plastic membrane should be placed over the capillary break as a vapor retarder.
6. Drain fill and Capillary break should consist of clean 5/8-inch crushed rock containing no more than 2 percent of fines.
7. The damp-proof coating should consist of a bituminous coating, or 3 pounds per square yard of acrylic modified cement, or 1/8 inch coat of surface-bonding mortar in compliance with ASTM C887.

PIONEER ENGINEERING, INC.

Geotechnical Engineering · Earth Science · Water Resources

BASEMENT WALL DRAINAGE SYSTEM
PROPOSED SINGLE-FAMILY RESIDENCE
8114 WEST MERCER WAY
MERCER ISLAND, WASHINGTON

PROJ. NO. G13A21	DATE 10/3/13	FIGURE 6

Exhibit 12- Revised King County Bond Quantity Worksheet (KCBQW)

Department of Permitting
Environmental Review
35030 SE Douglas Str, Suite 210
Snoqualmie, WA 98065-9266
206-296-6600 TTY Relay: 711

Critical Areas Mitigation
Bond Quantity Worksheet

C24 09/09/2015
ls-wks-sensareaBQ.xls
ls-wks-sensareaBQ.pdf

Project Name: 8118 W Mercer Way **Date: 3/11/2019** **Prepared by: Brad Shea & Choomeng Chin**

Project Number: CAO18-003 **Project Description: A new single family house**

Location: 8118 W Mercer Way **Applicant: Benny Kim** **Phone: 206-384-3317**

PLANT MATERIALS (includes labor cost for plant installation)

Type	Unit Price	Unit	Quantity	Description	Cost
PLANTS: Potted, 4" diameter, medium	$5.00	Each	4.00		$ 20.00
PLANTS: Container, 1 gallon, medium soil	$11.50	Each	50.00		$ 575.00
PLANTS: Container, 2 gallon, medium soil	$20.00	Each	48.00		$ 960.00
PLANTS: Container, 5 gallon, medium soil	$36.00	Each	2.00		$ 72.00
PLANTS: Seeding, by hand	$0.50	SY			$ -
PLANTS: Slips (willow, red-osier)	$2.00	Each			$ -
PLANTS: Stakes (willow)	$2.00	Each			$ -
PLANTS: Stakes (willow)	$2.00	Each			$ -
PLANTS: Flats/plugs	$2.00	Each			$ -
				TOTAL	**$ 1,627.00**

INSTALLATION COSTS (LABOR, EQUIPMENT, & OVERHEAD)

Type	Unit Price	Unit			Cost
Compost, vegetable, delivered and spread	$37.88	CY			$ -
Decompacting till/hardpan, medium, to 6" depth	$1.57	CY	250.00		$ 392.50
Decompacting till/hardpan, medium, to 12" depth	$1.57	CY			$ -
Hydroseeding	$0.51	SY			$ -
Labor, general (landscaping other than plant installation)	$40.00	HR	8.00		$ 320.00
Labor, general (construction)	$20.00	HR	16.00		$ 320.00
Labor: Consultant, supervising	$55.00	HR			$ -
Labor: Consultant, on-site re-design	$95.00	HR			$ -
Rental of decompacting machinery & operator	$70.00	HR			$ -
Sand, coarse builder's, delivered and spread	$42.00	CY			$ -
Staking material (set per tree)	$7.00	Each	6.00		$ 42.00
Surveying, line & grade	$250.00	HR	1.00		$ 250.00
Surveying, topographical	$250.00	HR			$ -
Watering, 1" of water, 50' soaker hose	$3.62	MSF	5.00		$ 18.10
Irrigation - temporary	$3,000.00	Acre			$ -
Irrigation - buried	$4,500.00	Acre			$ -
Tilling topsoil, disk harrow, 20hp tractor, 4"-6" deep	$1.02	SY			$ -
				TOTAL	**$ 1,342.60**

HABITAT STRUCTURES*

ITEMS	Unit Cost	Unit			Cost
Fascines (willow)	$ 2.00	Each			$ -
Logs, (cedar), w/ root wads, 16"-24" diam., 30' long	$1,000.00	Each			$ -
Logs (cedar) w/o root wads, 16"-24" diam., 30'	$400.00	Each			$ -
Logs, w/o root wads, 16"-24" diam., 30' long	$245.00	Each			$ -
Logs w/ root wads, 16"-24" diam., 30' long	$460.00	Each			$ -
Rocks, one-man	$60.00	Each			$ -
Rocks, two-man	$120.00	Each			$ -
Root wads	$163.00	Each			$ -
Spawning gravel, type A	$22.00	CY			$ -
Weir - log	$1,500.00	Each			$ -
Weir - adjustable	$2,000.00	Each			$ -
Woody debris, large	$163.00	Each			$ -
Snags - anchored	$400.00	Each			$ -
Snags - on site	$50.00	Each			$ -
Snags - imported	$800.00	Each			$ -
* All costs include delivery and installation				*TOTAL*	**$ -**

EROSION CONTROL

ITEMS	Unit Cost	Unit			Cost
Backfill and Compaction-embankment	$ 4.89	CY			$ -
Crushed surfacing, 1 1/4" minus	$30.00	CY			$ -
Ditching	$7.03	CY			$ -
Excavation, bulk	$4.00	CY			$ -
Fence, silt	$1.60	LF	310.00	1.00	$ 496.00
Jute Mesh	$1.26	SY			$ -
Mulch, by hand, straw, 2" deep	$1.27	SY	470.00	1.00	$ 596.90
Mulch, by hand, wood chips, 2" deep	$3.25	SY			$ -
Mulch, by machine, straw, 1" deep	$0.32	SY			$ -
Piping, temporary, CPP, 6"	$9.30	LF			$ -
Piping, temporary, CPP, 8"	$14.00	LF			$ -
Piping, temporary, CPP, 12"	$18.00	LF			$ -
Plastic covering, 6mm thick, sandbagged	$2.00	SY			$ -
Rip Rap, machine placed, slopes	$33.98	CY			$ -
Rock Constr. Entrance 100'x15'x1'	$3,000.00	Each			$ -
Rock Constr. Entrance 50'x15'x1'	$1,500.00	Each	1.00		$ 1,500.00
Sediment pond riser assembly	$1,695.11	Each			$ -
Sediment trap, 5' high berm	$15.57	LF			$ -
Sediment trap, 5' high berm w/spillway incl. riprap	$59.60	LF			$ -
Sodding, 1" deep, level ground	$5.24	SY			$ -
Sodding, 1" deep, sloped ground	$6.48	SY			$ -
Straw bales, place and remove	$600.00	TON			$ -
Hauling and disposal	$20.00	CY			$ -
Topsoil, delivered and spread	$35.73	CY			$ -
				TOTAL	**$ 2,592.90**

GENERAL ITEMS

ITEMS	Unit Cost	Unit			Cost
Fencing, chain link, 6' high	$18.89	LF	0.00		$ -
Fencing, chain link, corner posts	$111.17	Each			$ -
Fencing, chain link, gate	$277.63	Each			$ -
Fencing, split rail, 3' high (2-rail)	$10.54	LF	70.00		$ 737.80
Fencing, temporary (NGPE)	$1.20	LF			$ -
Signs, sensitive area boundary (inc. backing, post, install)	$28.50	Each	3.00		$ 85.50
				TOTAL	**$ 823.30**

OTHER

(Construction Cost Subtotal) **$ 6,385.80**

ITEMS	Percentage of Construction	Unit			Cost
Mobilization	10%	1			$ 638.58
Contingency	30%	1			$ 1,915.74
				TOTAL	**$ 2,554.32**

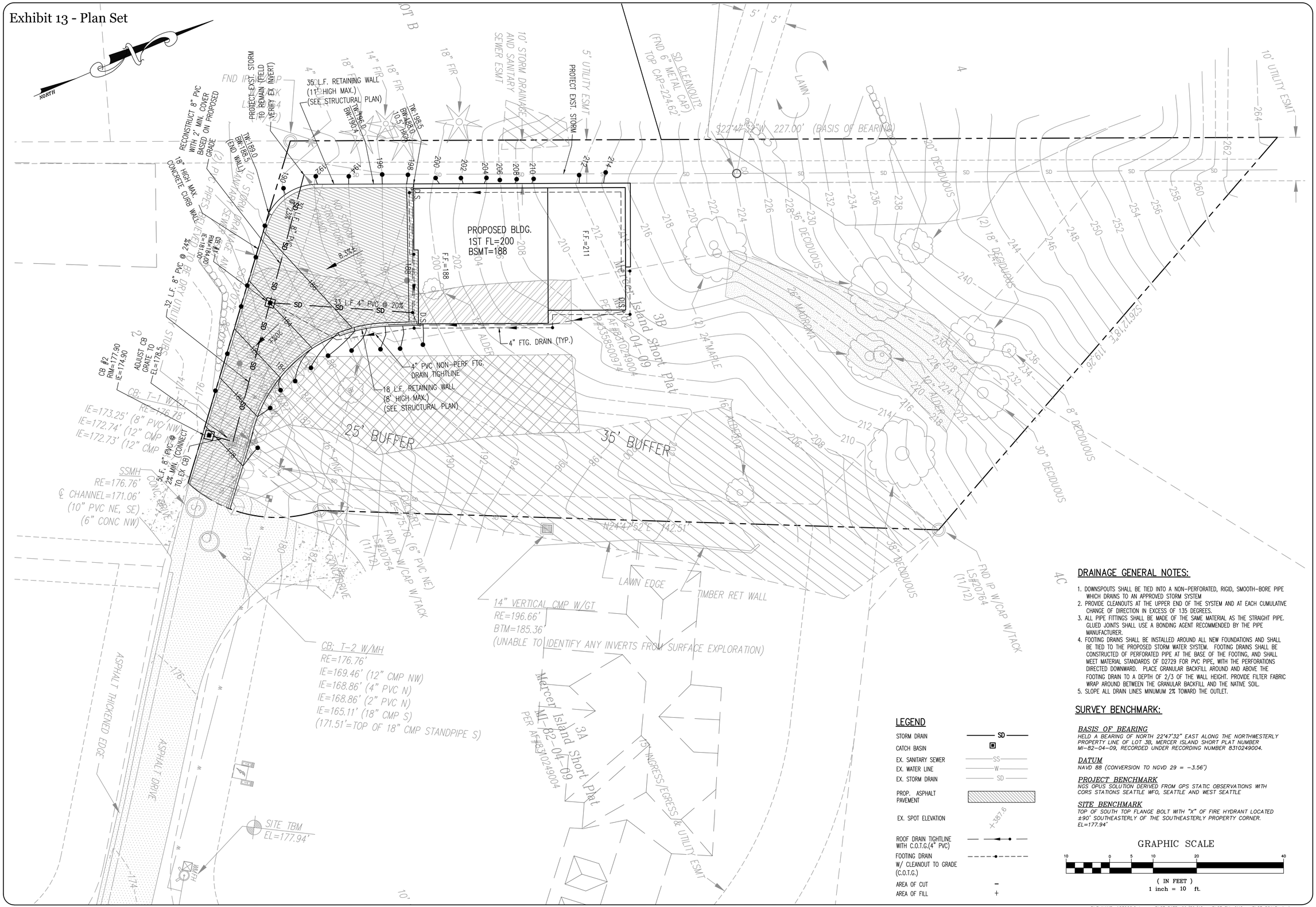
MAINTENANCE AND MONITORING

NOTE: Projects with multiple permit requirements may be required to have longer monitoring and maintenance terms. This will be evaluated on a case-by-case basis for development applications. Monitoring and maintance ranges may be assessed anywhere from 5 to 10 years.

Maintenance, annual (by owner or consultant)					
Less than 1,000 sq.ft. and buffer mitigation only	$ 1.08	SF		(3 X SF total for 3 annual events; Includes monitoring)	$ -
Less than 1,000 sq.ft. with wetland or aquatic area mitigation	$ 1.35	SF		(3 X SF total for 3 annual events; Includes monitoring)	$ -
Larger than 1,000 sq. ft. but less than 5,000 sq.ft. of buffer mitigation	$ 180.00	EACH	1.00	(4hr @$45/hr)	$ 180.00
Larger than 1,000 sq. ft. but less than 5,000 sq.ft. of wetland or aquatic area mitigation	$ 270.00	EACH		(6hr @$45/hr)	$ -
Larger than 5,000 sq.ft. but < 1 acre -buffer mitigation only	$ 360.00	EACH		(8 hrs @ 45/hr)	$ -
Larger than 5,000 sq.ft. but < 1 acre with wetland or aquatic area mitigation	$ 450.00	EACH		(10 hrs @ $45/hr)	$ -
Larger than 1 acre but < 5 acres - buffer and / or wetland or aquatic area mitigation	$ 1,600.00	DAY		(WEC crew)	$ -
Larger than 5 acres - buffer and / or wetland or aquatic area mitigation	$ 2,000.00	DAY		(1.25 X WEC crew)	$ -
Monitoring, annual (by owner or consultant)					
Larger than 1,000 sq.ft. but less than 5,000 wetland or buffer mitigation	$ 720.00	EACH	1.00	(8 hrs @ 90/hr)	$ 720.00
Larger than 5,000 sq.ft. but < 1 acre with wetland or aquatic area impacts	$ 900.00	EACH		(10 hrs @ $90/hr)	$ -
Larger than 1 acre but < 5 acres - buffer and / or wetland or aquatic area impacts	$ 1,440.00	DAY		(16 hrs @ $90/hr)	$ -
Larger than5 acres - buffer and / or wetland or aquatic area impacts	$ 2,160.00	DAY		(24 hrs @ $90/hr)	$ -
				TOTAL	**$ 900.00**

Total **$9,840.12**

Exhibit 13 - Plan Set



DRAINAGE GENERAL NOTES:

1. DOWNSPOUTS SHALL BE TIED INTO A NON-PERFORATED, RIGID, SMOOTH-BORE PIPE WHICH DRAINS TO AN APPROVED STORM SYSTEM
2. PROVIDE CLEANOUTS AT THE UPPER END OF THE SYSTEM AND AT EACH CUMULATIVE CHANGE OF DIRECTION IN EXCESS OF 135 DEGREES.
3. ALL PIPE FITTINGS SHALL BE MADE OF THE SAME MATERIAL AS THE STRAIGHT PIPE. GLUED JOINTS SHALL USE A BONDING AGENT RECOMMENDED BY THE PIPE MANUFACTURER.
4. FOOTING DRAINS SHALL BE INSTALLED AROUND ALL NEW FOUNDATIONS AND SHALL BE TIED TO THE PROPOSED STORM WATER SYSTEM. FOOTING DRAINS SHALL BE CONSTRUCTED OF PERFORATED PIPE AT THE BASE OF THE FOOTING, AND SHALL MEET MATERIAL STANDARDS OF D2729 FOR PVC PIPE, WITH THE PERFORATIONS DIRECTED DOWNWARD. PLACE GRANULAR BACKFILL AROUND AND ABOVE THE FOOTING DRAIN TO A DEPTH OF 2/3 OF THE WALL HEIGHT. PROVIDE FILTER FABRIC WRAP AROUND BETWEEN THE GRANULAR BACKFILL AND THE NATIVE SOIL.
5. SLOPE ALL DRAIN LINES MINUMUM 2% TOWARD THE OUTLET.

LEGEND

STORM DRAIN	SD
CATCH BASIN	
EX. SANITARY SEWER	SS
EX. WATER LINE	W
EX. STORM DRAIN	SD
PROP. ASPHALT PAVEMENT	
EX. SPOT ELEVATION	+387.6
ROOF DRAIN TIGHTLINE WITH C.O.T.G.(4" PVC)	
FOOTING DRAIN W/ CLEANOUT TO GRADE (C.O.T.G.)	
AREA OF CUT	-
AREA OF FILL	+

SURVEY BENCHMARK:

BASIS OF BEARING
HELD A BEARING OF NORTH 22°47'32" EAST ALONG THE NORTHWESTERLY PROPERTY LINE OF LOT 3B, MERCER ISLAND SHORT PLAT NUMBER MI-82-04-09, RECORDED UNDER RECORDING NUMBER 8310249004.

DATUM
NAVD 88 (CONVERSION TO NGVD 29 = -3.56')

PROJECT BENCHMARK
NGS OPUS SOLUTION DERIVED FROM GPS STATIC OBSERVATIONS WITH CORS STATIONS SEATTLE WFO, SEATTLE AND WEST SEATTLE

SITE BENCHMARK
TOP OF SOUTH TOP FLANGE BOLT WITH "X" OF FIRE HYDRANT LOCATED ±90' SOUTHEASTERLY OF THE SOUTHEASTERLY PROPERTY CORNER. EL=177.94'

GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.

ISSUED DATE:

CRITICAL AREA DETERMINATION
SEP 25, 2018

CHOMENG CHIN
STATE OF WASHINGTON
21084
REGISTERED PROFESSIONAL ENGINEER
C2MY
C2MY ENGINEERS, LLC
PO BOX 52883
BELLEVUE, WA 98015
(206) 922-9376
cmchin.c2my@gmail.com

AN AND KIM
7415 Lake Bollinger Way Edmonds, WA 98026
Ph: (206) 384-3317
Email: bennykim55@yahoo.com

LEE RESIDENCE
8114 WEST MERCER WAY
MERCER ISLAND WA 98040

PAVING AND GRADING PLAN

FILE 21230

C2.0

NORTH

FND IP W/CAP W/TACK LS#20764 (11/12)

4" SPRUCE

18" FIR

14" FIR

18" FIR

18" FIR

10' STORM DRAINAGE AND SANITARY SEWER ESMT

5' UTILITY ESMT

SD CLEANOUT? (FND 6" METAL CAP) TOP CAP=224.62'

5'

5'

LAWN

10' UTILITY ESMT

S22°47'52"W 227.00' (BASIS OF BEARING)

20" DECIDUOUS

36" DECIDUOUS

(2) 18" DECIDUOUS

28" MADRONA

(2) 24" MAPLE

10' STORM DRAINAGE AND SANITARY SEWER ESMT

(2) PVC PIPES BELIEVED TO BE DRY UTILITY STUBS

NO STORM DRAIN FOUND

PROPOSED BLDG.
1ST FL=200
BSMT=188

(4) 6" MAPLE

10" ALDER

Mercer Island Short Plat
MI-82-04-09
PER AF#8310249004
TP#3560097A

3B

2

4

S26°12'18"E 119.26'

60" ALDER

16" ALDER

16" PINE

8" DECIDUOUS

30" DECIDUOUS

38" DECIDUOUS

4C

CB; T-1 W/GT
RE=176.78'
IE=173.25' (8" PVC NW)
IE=172.74' (12" CMP NE)
IE=172.73' (12" CMP SE)

SSMH
RE=176.76'
℄ CHANNEL=171.06'
(10" PVC NE, SE)
(6" CONC NW)

CONC DRIVE

PROTECT CULVERT INLET

CULVERT
IE=171.78' (6" PVC NE)

FND IP W/CAP W/TACK LS#20764 (11/12)

N24°47'52"E 142.51'

LAWN EDGE

TIMBER RET WALL

14" VERTICAL CMP W/GT
RE=196.66'
BTM=185.36'
(UNABLE TO IDENTIFY ANY INVERTS FROM SURFACE EXPLORATION)

CB; T-2 W/MH
RE=176.76'
IE=169.46' (12" CMP NW)
IE=168.86' (4" PVC N)
IE=168.86' (2" PVC N)
IE=165.11' (18" CMP S)
(171.51'=TOP OF 18" CMP STANDPIPE S)

ASPHALT THICKENED EDGE

ASPHALT DRIVE

SITE TBM
EL=177.94'

MH

3A

Mercer Island Short Plat
MI-82-04-09
PER AF#8310249004

15' INGRESS/EGRESS & UTILITY ESMT

LEGEND:

- CB INSERTS (STREAM GUARD, EMCON ENVIRODRAIN OR EQUIVALENT.
- TEMPORARY CONSTRUCTION ENTRANCE/EXIT
- —x——x— SILT FENCE/CLEARING LIMITS
- – – – – – – – CLEARING LIMITS

GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.

FILE NAME: 18300C1.0 PLOT DATE: 09/30/18 PLOT BY: CMC PLOT SCALE: 1=1

ISSUED DATE:

CRITICAL AREA DETERMINATION
SEP 25, 2018

CHOI MENG CHIN
STATE OF WASHINGTON
20384
REGISTERED PROFESSIONAL ENGINEER
C2MY
C2MY ENGINEERS, LLC
PO BOX 52883
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LEE RESIDENCE
8114 WEST MERCER WAY
MERCER ISLAND WA 98040

T.E.S.C. PLAN

FILE 21230

C1.0

Exhibit 14 - SEP18-024 DNS

DETERMINATION OF NON-SIGNIFICANCE (DNS)

Application Nos.:	**SEP18-024 (CAO18-003)**
Description of proposal:	**Review under the State Environmental Policy Act (SEPA) to construct a new 4,000sf house and driveway on a vacant lot with a Category IV wetland.**
Proponent:	**Benny Kim Design**
Owner:	**Benny Kim**
Location of proposal:	**8114 West Mercer Way, Mercer Island WA 98040; Identified by King County Assessor tax parcel number 335850-0974**
Lead agency:	**City of Mercer Island**
Project Documents:	**Please follow this file path to access the associated documents for this project:** https://mieplan.mercergov.org/public/SEP18-024/

The lead agency for this proposal has determined that it does not have a probable significant adverse impact on the environment. An environmental impact statement (EIS) is not required under RCW 43.21C.030(2)(c). This decision was made after review of a completed environmental checklist. This information is available to the public on request.

_____ There is no comment period for this DNS.

✓ This DNS is issued after using the optional DNS process in WAC 197-11-355. There is no further comment period on the DNS.

_____

This DNS is issued under WAC 197-11-340(2); the lead agency will not act on this proposal for 14 days from the date below. Comments must be submitted by _____.

_____

Responsible Official: Lauren Anderson, Assistant Planner
City of Mercer Island
9611 SE 36th Street
Mercer Island, WA 98040
Phone: (206) 275-7704
Email: lauren.anderson@mercergov.org

Date: **March 11, 2019** Signature:

Lauren Anderson

APPEAL INFORMATION

This decision to issue a Determination of Non-significance (DNS) rather than to require an EIS may be appealed pursuant to Section 19.07 of the Mercer Island Unified Land Development Code, Environmental procedures.

✓ Any party of record may appeal this determination to the City Clerk at 9611 SE 36th Street Mercer Island, WA 98040 no later than **5:00 PM on Monday March 25, 2019** by filing a timely and complete appeal application and paying the appeal fee. You should be prepared to make specific factual objections. Contact the City Clerk to read or ask about the procedures for SEPA appeals. To reverse, modify or remand this decision, the appeal hearing body must find that there has been substantial error, the proceedings were materially affected by irregularities in procedure, the decision was unsupported by material and substantial evidence in view of the entire record, or the decision is in conflict with the city's applicable decision criteria.

_____ There is no agency appeal.

Exhibit 15- Final Site Plan

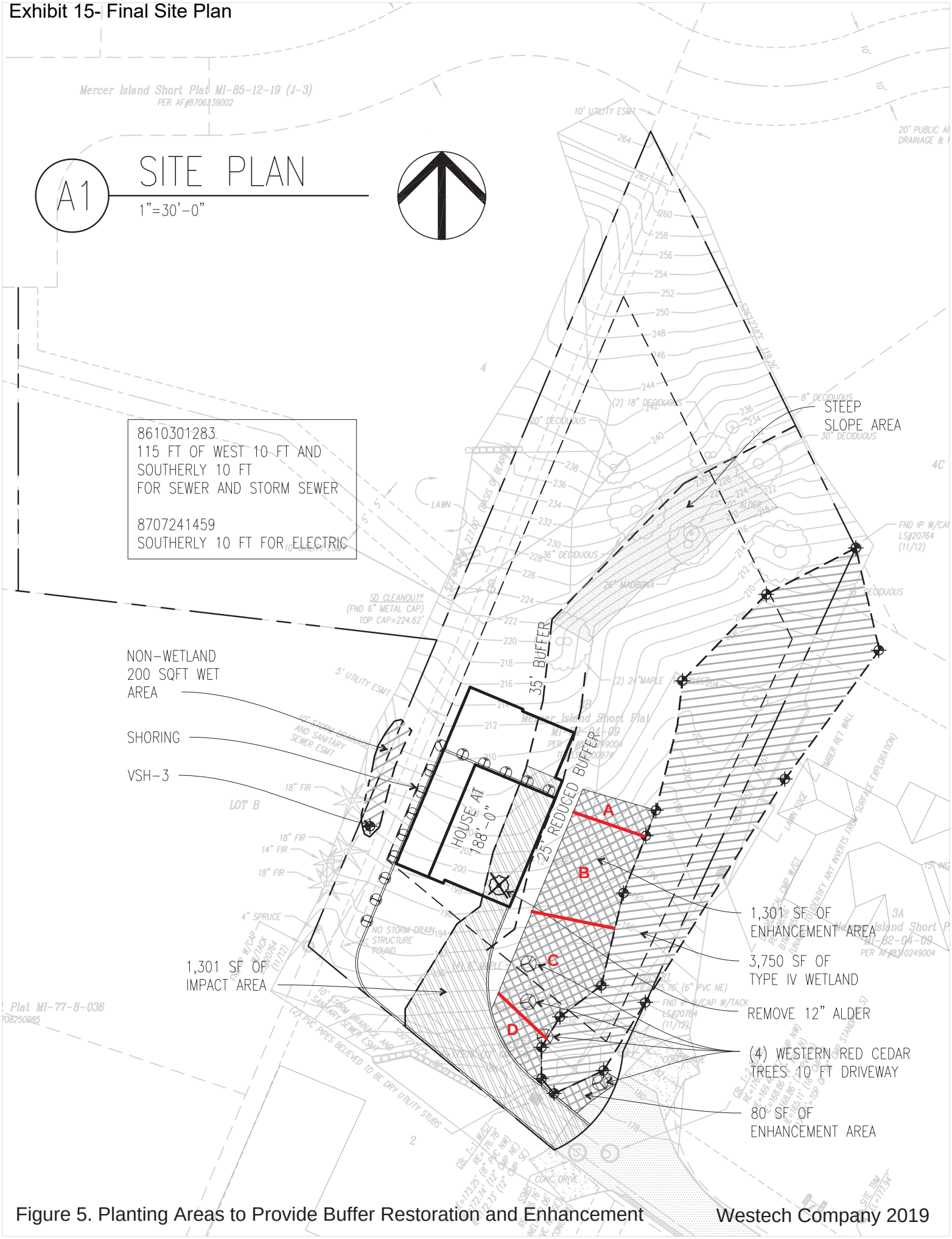

Figure 5. Planting Areas to Provide Buffer Restoration and Enhancement Westech Company 2019

Exhibit 16- Storm water and Erosion Control Plan

GENERAL NOTES:

(1) ALL DESIGN AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH PERMIT CONDITIONS, CITY OF MERCER ISLAND MUNICIPAL CODE AND STANDARDS, WASHINGTON STATE DOT (WSDOT) STANDARD SPECIFICATIONS AND THE CONDITIONS OF PRELIMINARY APPROVAL.
(2) A COPY OF THESE APPROVED PLANS MUST BE ON THE JOB SITE WHENEVER CONSTRUCTION IS IN PROGRESS.
(3) GRADING ACTIVITIES (SITE ALTERATION) ARE LIMITED TO THE HOURS OF 7 A.M. TO 6 P.M. MONDAY THROUGH FRIDAY, UNLESS OTHERWISE APPROVED WITH A WRITTEN DECISION BY THE REVIEWING AGENCY.
(4) IT SHALL BE THE APPLICANT'S/CONTRACTOR'S RESPONSIBILITY TO OBTAIN ALL CONSTRUCTION EASEMENTS NECESSARY BEFORE INITIATING OFF-SITE WORK. EASEMENTS REQUIRE REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.
(5) DEWATERING SYSTEM (UNDERDRAIN) CONSTRUCTION SHALL BE WITHIN A RIGHT-OF-WAY OR APPROPRIATE DRAINAGE EASEMENT, BUT NOT UNDERNEATH THE ROADWAY SECTION. ALL UNDERDRAIN SYSTEMS MUST BE CONSTRUCTED IN ACCORDANCE WITH WSDOT STANDARD SPECIFICATIONS.
(6) ALL UTILITY TRENCHES AND ROADWAY SUBGRADE SHALL BE BACKFILLED AND COMPACTED TO 95 PERCENT DENSITY, STANDARD PROCTOR.
(7) THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ADEQUATE SAFEGUARDS, SAFETY DEVICES, PROTECTIVE EQUIPMENT, FLAGGERS, AND ANY OTHER NEEDED ACTIONS TO PROTECT THE LIFE, HEALTH, AND SAFETY OF THE PUBLIC, AND TO PROTECT PROPERTY IN CONNECTION WITH THE PERFORMANCE OF WORK COVERED BY THE CONTRACTOR. ANY WORK WITHIN THE TRAVELED RIGHT-OF-WAY THAT MAY INTERRUPT NORMAL TRAFFIC FLOW SHALL REQUIRE AT LEAST ONE FLAGGER FOR EACH LANE OF TRAFFIC AFFECTED. MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) SHALL APPLY.

STORM DRAINAGE NOTES:

(1) ALL PIPE AND APPURTENANCES SHALL BE LAID ON A PROPERLY PREPARED FOUNDATION IN ACCORDANCE WITH WSDOT SPECIFICATIONS. THIS SHALL INCLUDE LEVELING AND COMPACTING THE TRENCH BOTTOM, THE TOP OF THE FOUNDATION MATERIAL, AND ANY REQUIRED PIPE BEDDING, TO A UNIFORM GRADE SO THAT THE ENTIRE PIPE IS SUPPORTED BY A UNIFORMLY DENSE UNYIELDING BASE.
(2) STEEL PIPE SHALL BE ALUMINIZED, OR GALVANIZED WITH ASPHALT TREATMENT #1 OR BETTER INSIDE AND OUTSIDE.
(3) ALL DRIVEWAY CULVERTS LOCATED WITHIN the RIGHT-OF-WAY SHALL BE OF SUFFICIENT LENGTH TO PROVIDE A MINIMUM 3:1 SLOPE FROM THE EDGE OF THE DRIVEWAY TO THE BOTTOM OF THE DITCH. CULVERTS SHALL HAVE BEVELED END SECTIONS TO MATCH THE SIDE SLOPE KCRS.
(4) ROCK FOR EROSION PROTECTION OF ROADWAY DITCHES, WHERE REQUIRED, MUST BE OF SOUND QUARRY ROCK, PLACED TO A DEPTH OF 1 FOOT, AND MUST MEET THE FOLLOWING SPECIFICATIONS: 4"-8"/40%-70% PASSING; 2"- 4" ROCK/30%-40% PASSING; AND -2" ROCK/10%-20% PASSING. INSTALLATION SHALL BE IN ACCORDANCE WITH KCRS.
(5) ALL DISTURBED PERVIOUS AREAS (COMPACTED, GRADED, LANDSCAPED, ETC.) OF THE DEVELOPMENT SITE MUST DEMONSTRATE ONE OF THE FOLLOWING: THE EXISTING DUFF LAYER SHALL BE STAGED AND REDISTRIBUTED TO MAINTAIN THE MOISTURE CAPACITY OF THE SOIL, OR; AMENDED SOIL SHALL BE ADDED TO MAINTAIN THE MOISTURE CAPACITY.
(6) SEASONAL CLEARING IS LIMITED BETWEEN OCTOBER 1 AND MARCH 30 INCLUSIVE, UNLESS OTHERWISE APPROVED WITH A WRITTEN DECISION BY THE REVIEWING AGENCY.
(11) IMPROVEMENTS AND/OR BUILDINGS SHALL NOT BE INSTALLED UNTIL DRAINAGE FACILITIES ARE 'IN OPERATION'.

SANITARY SEWER SERVICE NOTES:

SIDE SEWER CONSTRUCTION REQUIREMENTS:

1. FOUR-INCH (4") PIPE MUST BE LAID AT A MINIMUM 2% GRADE. SIX-INCH (6") PIPE MUST BE LAID AT A MINIMUM 1.2% GRADE.
2. SIDE SEWERS MUST NOT BE CLOSER THAN 30" TO ANY FOUNDATION WALL OR OUTER LINE OF ANY FOOTINGS, PILINGS, OR BUILDING SUPPORTS. A CLEAN-OUT MUST BE INSTALLED AT THE CONNECTION, AND MUST BE 36" FROM THE FOUNDATION.
3. MINIMUM COVER MUST BE 42" IN THE PUBLIC RIGHT-OF-WAY, 30" IN PRIVATE ROADWAYS AND UNDER DITCHES, AND 18" ON PRIVATE PROPERTY.
4. SIDE SEWERS TO A SINGLE HOUSE MUST BE AT LEAST 4". ALL SIDE SEWERS SERVING TWO SINGLE FAMILY HOUSES, MULTIPLE DWELLINGS, COMMERCIAL ESTABLISHMENTS, SCHOOLS, OR ANY BUILDING OTHER THAN SINGLE FAMILY MUST BE AT LEAST 6".
5. SIDE SEWERS INSTALLED UNDER FUTURE WALLS OR ROCKERIES SHALL BE SLEEVED WITH D.I.P. WITH ENDS GROUTED IN.
6. SEWER MAINS MAY BE CORED OR A "T" INSTALLED IN THE MAIN LINE WHERE NO SEWER STUB EXISTS.
7. SIDE SEWERS WHEN USING OPEN CUT CONSTRUCTION METHODS MUST BE BEDDED WITH IMPORTED MATERIAL TO 4" BELOW AND 6" ABOVE THE INSTALLED PIPE. THE BROAD, "BELL" ENDS OF PIPE MUST BE LAID UPHILL.
8. IMPORTED BACKFILL MATERIAL WILL BE REQUIRED IN ALL PAVED AREAS AND MUST BE COMPACTED TO 95% OF MAXIMUM DENSITY IN 1 FT. LIFTS. IN PUBLIC RIGHT OF WAY, ONLY SELECT MATERIAL (⅝" MINUS C.R.) WILL BE ALLOWED FOR BEDDING AND BACKFILL.
9. PARALLEL SEWER AND WATER SERVICE LINES MUST BE AT LEAST 4 FEET APART WHEN LAID HORIZONTALLY, AND AT LEAST 2 FEET APART WHEN LAID VERTICALLY, WITH THE SEWER THE DEEPER OF THE TWO LINES. IF THE LINES MUST CROSS, THEY MUST CROSS AT 90 DEGREES TO ONE ANOTHER AND HAVE AT LEAST 2 FEET OF VERTICAL CLEARANCE.
10. ALL CHANGES IN DIRECTION MUST BE MADE WITH 1/8 BENDS (45 DEGREES), 1/16 BENDS (22 ½ DEGREES), OR "Y" BRANCHES WITH THE STRAIGHT-THROUGH OPENING PLUGGED FOR CLEAN-OUT. NO MORE THAN TWO BENDS ARE PERMITTED BETWEEN CLEAN-OUTS, WHICH MUST BE PLACED AT LEAST EVERY 100 FEET. CLEAN-OUTS MUST EXTEND TO WITHIN 12" OF THE FINISHED GRADE AND CAPPED WITH A WATER-TIGHT PLUG. CLEAN-OUTS IN PAVED AREAS, PATIOS, OR SIDEWALKS MUST HAVE CAST IRON FRAMES AND COVERS WITH LOCKING LIDS SET TO FINISHED PAVED GRADE.
11. HOUSES THAT CONNECT DIRECTLY TO THE LAKE SEWER LINE REQUIRE A BACKFLOW CHECK VALVE. (SUBMIT COPY OF MANUFACTURER'S SPECIFICATIONS FOR APPROVAL PRIOR TO INSTALLATION.)
12. GRINDER PUMP SYSTEMS ARE APPROVED ON A CASE BY CASE BASIS. PLANS AND CALCULATIONS SHALL BE SUBMITTED FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.
13. HOUSES MAY NOT BE BUILT BELOW THE SEWER HYDRAULIC GRADIENT WITHOUT AN APPROVED GRINDER PUMP DESIGN. AUDIBLE AND VISUAL ALARMS ARE REQUIRED FOR PUMP FAILURE AND HIGH WATER LEVEL IN THE WET WELL. WET WELL SHALL BE LOCATED OUTSIDE THE BUILDING.

ALLOWABLE MATERIALS:

1. ALL MATERIALS, EQUIPMENT AND CONSTRUCTION TECHNIQUES MUST MEET WITH THE APPROVAL AND PASS ALL REQUIREMENTS OF THE CITY ENGINEER. THE MATERIALS LISTED BELOW CONFORM TO THESE STANDARDS.
2. ASTM 3034 SDR 35 PVC PIPE, FUSED SOLID WALL HDPE, SCHEDULE 40 ABS, DIP OR CIP (UP TO 8 FT. DEPTH). OVER 8 FT. DEPTH AND SLOPES MORE THAN 20%, DIP, CIP, OR FUSED SOLID WALL HDPE ARE REQUIRED.
3. BEDDING MATERIAL FOR OPEN CUT CONSTRUCTION MUST BE PEA GRAVEL, SAND, CONTROL DENSITY FILL (CDF), OR ⅝" MINUS C.R.
4. SELECT BACKFILL MATERIAL SHALL BE ⅝" MINUS C.R. OR CONTROL DENSITY FILL (CDF).
5. IMPORTED BACKFILL MATERIAL SHALL BE BANK RUN GRAVEL OR PIT RUN GRAVEL FROM AN APPROVED SUPPLIER MEETING APWA/WSDOT GRADATION SPECIFICATIONS. NOT ALLOWED IN RIGHT-OF-WAY.
6. RUBBER GASKETS MUST BE USED WHEN APPROPRIATE.
7. RIGID COUPLINGS MUST BE USED FOR CONNECTIONS TO EXISTING STUBS IN RIGHT-OF-WAY.
8. A STAINLESS STEEL STRAP AND SADDLE (ROMAC) MUST BE USED FOR CORING.

WATER SERVICE NOTES:

WATER METER INSTALLATION NOTES:

1. CALL FOR UTILITY LOCATES, MARK AREAS OF EXCAVATION WITH WHITE MARKING PAINT.
2. OBTAIN RIGHT-OF-WAY USE PERMIT IF APPLICABLE.
3. CITY OF MERCER ISLAND MAINTENANCE DEPARTMENT MUST STAKE METER LOCATION, PLEASE CALL (206) 275-7800 FOR LOCATION OF NEW METER INSTALLATION.
* PROJECTS THAT REQUIRE BACKFLOW PROTECTION MUST HAVE PRIOR APPROVAL FOR LOCATION OF BACKFLOW PREVENTION ASSEMBLY. LOCATION CAN BE VERIFIED AT PRE-CONSTRUCTION MEETING.
4. CALL THE INSPECTION LINE 24-HOURS IN ADVANCE TO SCHEDULE A PRE-CONSTRUCTION MEETING WITH THE CITY INSPECTOR. (206) 275-7730. THE PURPOSE OF THE MEETING IS TO:
* VERIFY THE LOCATION OF THE NEW METER AFTER UTILITY LOCATES HAVE BEEN MARKED. ANY CHANGE TO THE METER LOCATION REQUIRES APPROVAL BY THE MAINTENANCE DEPARTMENT.
* VERIFY THAT THE CUSTOMER IS READY FOR THE INSTALLATION.
* VERIFY THAT ALL MATERIALS ARE ON SITE AND READY FOR THE INSTALLATION (SEE PRECONSTRUCTION WORKSHEET)
* SCHEDULE THE WATER TAP AND INSPECTIONS.
5. WATER MAIN TAPS ARE SCHEDULED TO BE PERFORMED ONLY ON THE FOLLOWING DAYS:
* TUESDAY, WEDNESDAY AND THURSDAY UNLESS IT IS A HOLIDAY WEEK.
* IF A HOLIDAY WEEK, TAPS WILL NOT BE ALLOWED ON THE HOLIDAY, THE DAY BEFORE OR THE DAY AFTER THE HOLIDAY. THE CITY INSPECTOR SHALL BE ON SITE DURING ALL WATER TAPS. PLEASE DO NOT COVER ANY PIPING PRIOR TO INSPECTION.
6. THE CITY INSPECTOR WILL INSPECT ALL CONNECTIONS AND VERIFY THAT THE SERVICES ARE INSTALLED PER CITY OF MERCER ISLAND STANDARD DRAWINGS.
7. THE CITY WILL INSTALL THE WATER METER UPON COMPLETION AND APPROVAL OF WATER SERVICE. PLEASE ALLOW TWO WEEKS FOR THE METER TO BE INSTALLED AFTER MAKING A REQUEST FOR THE WATER METER TO BE INSTALLED.
8. ABANDON THE EXISTING SERVICES AT THE MAIN FOLLOWING INSTALLATION OF THE NEW SERVICE.
9. THE CONTRACTOR MUST FILL OUT THE WATER SERVICE AS-BUILT FORM DURING CONSTRUCTION AND GIVE IT TO THE CITY INSPECTOR AT FINAL INSPECTION.

NOTE: ⅝" CRUSHED ROCK BACKFILL IS REQUIRED IN RIGHT OF WAY AND PRIVATE ROADS/DRIVEWAYS.

GEOTECHNICAL NOTES

THE PROJECT GEOTECHNICAL ENGINEER OF RECORD OR HIS REPRESENTATIVE MUST BE ONSITE DURING CRITICAL EARTHWORK OPERATIONS. THE GEOTECHNICAL ENGINEER SHALL OBSERVE ALL EXCAVATIONS AND FILL AREAS. IN ADDITION, THE ENGINEER SHALL INSPECT THE SOIL CUTS PRIOR TO CONSTRUCTION OF THE ULTRABLOCK WALL AND INSPECT THE COMPACTION IN FILL AREAS. THE ENGINEER MUST SUBMIT FIELD REPORTS IN WRITING TO THE CITY INSPECTOR FOR SOILS VERIFICATION AND FOUNDATION CONSTRUCTION IF REQUESTED. ALL EARTHWORK SHOULD BE IN CONFORMATION WITH THE RECOMMENDATIONS IN THE GEOTECHNICAL REPORT.

RECOMMENDED CONSTRUCTION SEQUENCE

EROSION AND SEDIMENT CONTROL RECOMMENDED CONSTRUCTION SEQUENCE
(1) PRE-CONSTRUCTION MEETING.
(2) POST SIGN WITH NAME AND PHONE NUMBER OF ESC SUPERVISOR (MAY BE CONSOLIDATED WITH THE REQUIRED NOTICE OF CONSTRUCTION SIGN).
(3) FLAG OR FENCE CLEARING LIMITS.
(4) INSTALL CATCH BASIN PROTECTION IF REQUIRED.
(5) GRADE AND INSTALL CONSTRUCTION ENTRANCE(S).
(6) INSTALL PERIMETER PROTECTION (SILT FENCE, BRUSH BARRIER, ETC.).
(7) GRADE AND STABILIZE CONSTRUCTION ROADS.
(8) CONSTRUCT SURFACE WATER CONTROLS (INTERCEPTOR DIKES, PIPE SLOPE DRAINS, ETC.) SIMULTANEOUSLY WITH CLEARING AND GRADING FOR PROJECT DEVELOPMENT.
(9) MAINTAIN EROSION CONTROL MEASURES IN ACCORDANCE WITH CITY OF MERCER ISLAND STANDARDS AND MANUFACTURER'S RECOMMENDATIONS.
(10) RELOCATE EROSION CONTROL MEASURES OR INSTALL NEW MEASURES SO THAT AS SITE CONDITIONS CHANGE THE EROSION AND SEDIMENT CONTROL IS ALWAYS IN ACCORDANCE WITH THE CITY EROSION AND SEDIMENT CONTROL STANDARDS.
(11) COVER ALL AREAS THAT WILL BE UNWORKED FOR MORE THAN SEVEN DAYS DURING THE DRY SEASON OR TWO DAYS DURING THE WET SEASON WITH STRAW, WOOD FIBER MULCH, COMPOST, PLASTIC SHEETING OR EQUIVALENT.
(12) STABILIZE ALL AREAS THAT REACH FINAL GRADE WITHIN SEVEN DAYS.
(13) SEED OR SOD ANY AREAS TO REMAIN UNWORKED FOR MORE THAN 30 DAYS.
(14) UPON COMPLETION OF THE PROJECT, ALL DISTURBED AREAS MUST BE STABILIZED AND BMPS REMOVED IF APPROPRIATE.

VICINITY MAP
NTS

EROSION & SEDIMENTATION CONTROL NOTES

(1) APPROVAL OF THIS EROSION AND SEDIMENTATION CONTROL (ESC) PLAN DOES NOT CONSTITUTE AN APPROVAL OF PERMANENT ROAD OR DRAINAGE DESIGN (E.G. SIZE AND LOCATION OF ROADS, PIPES, RESTRICTORS, CHANNELS, RETENTION FACILITIES, UTILITIES, ETC.)
(2) THE IMPLEMENTATION OF THESE ESC PLANS AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT, AND UPGRADING OF THESE ESC FACILITIES IS THE RESPONSIBILITY OF THE APPLICANT/ESC SUPERVISOR UNTIL ALL CONSTRUCTION IS APPROVED.
(3) THE BOUNDARIES OF THE CLEARING LIMITS SHOWN ON THIS PLAN SHALL BE CLEARLY FLAGGED BY SURVEY TAPE OR FENCING, IF REQUIRED, PRIOR TO CONSTRUCTION (SWDM APPENDIX D). DURING THE CONSTRUCTION PERIOD, NO DISTURBANCE BEYOND THE CLEARING LIMITS SHALL BE PERMITTED. THE CLEARING LIMITS SHALL BE MAINTAINED BY THE APPLICANT/ESC SUPERVISOR FOR THE DURATION OF CONSTRUCTION.
(4) STABILIZED CONSTRUCTION ENTRANCES SHALL BE INSTALLED AT THE BEGINNING OF CONSTRUCTION AND MAINTAINED FOR THE DURATION OF THE PROJECT. ADDITIONAL MEASURES, SUCH AS CONSTRUCTED WHEEL WASH SYSTEMS OR WASH PADS, MAY BE REQUIRED TO ENSURE THAT ALL PAVED AREAS ARE KEPT CLEAN AND TRACK OUT TO ROAD RIGHT OF WAY DOES NOT OCCUR FOR THE DURATION OF THE PROJECT.
(5) THE ESC FACILITIES SHOWN ON THIS PLAN MUST BE CONSTRUCTED PRIOR TO OR IN CONJUNCTION WITH ALL CLEARING AND GRADING SO AS TO ENSURE THAT THE TRANSPORT OF SEDIMENT TO SURFACE WATERS, DRAINAGE SYSTEMS, AND ADJACENT PROPERTIES IS MINIMIZED.
(6) THE ESC FACILITIES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, THESE ESC FACILITIES SHALL BE UPGRADED AS NEEDED FOR UNEXPECTED STORM EVENTS AND MODIFIED TO ACCOUNT FOR CHANGING SITE CONDITIONS (E.G. ADDITIONAL COVER MEASURES, ADDITIONAL SUMP PUMPS, RELOCATION OF DITCHES AND SILT FENCES, PERIMETER PROTECTION ETC.).
(7) THE ESC FACILITIES SHALL BE INSPECTED DAILY BY THE APPLICANT/ESC SUPERVISOR AND MAINTAINED TO ENSURE CONTINUED PROPER FUNCTIONING. WRITTEN RECORDS SHALL BE KEPT OF WEEKLY REVIEWS OF THE ESC FACILITIES.
(8) ANY AREAS OF EXPOSED SOILS, INCLUDING ROADWAY EMBANKMENTS, THAT WILL NOT BE DISTURBED FOR TWO DAYS DURING THE WET SEASON OR SEVEN DAYS DURING THE DRY SEASON SHALL BE IMMEDIATELY STABILIZED WITH THE APPROVED ESC COVER METHODS (E.G., SEEDING, MULCHING, PLASTIC COVERING, ETC.).
(9) ANY AREA NEEDING ESC MEASURES, NOT REQUIRING IMMEDIATE ATTENTION, SHALL BE ADDRESSED WITHIN SEVEN (7) DAYS.
(10) THE ESC FACILITIES ON INACTIVE SITES SHALL BE INSPECTED AND MAINTAINED A MINIMUM OF ONCE A MONTH OR WITHIN 24 HOURS FOLLOWING A STORM EVENT.
(11) AT NO TIME SHALL MORE THAN ONE (1) FOOT OF SEDIMENT BE ALLOWED TO ACCUMULATE WITHIN A CATCH BASIN. ALL CATCH BASINS AND CONVEYANCE LINES SHALL BE CLEANED PRIOR TO PAVING. THE CLEANING OPERATION SHALL NOT FLUSH SEDIMENT-LADEN WATER INTO THE DOWNSTREAM SYSTEM.
(12) COVER MEASURES WILL BE APPLIED IN CONFORMANCE WITH APPENDIX D OF THE SURFACE WATER DESIGN MANUAL.
(13) PRIOR TO THE BEGINNING OF THE WET SEASON (OCT. 1), ALL DISTURBED AREAS SHALL BE REVIEWED TO IDENTIFY WHICH ONES CAN BE SEEDED IN PREPARATION FOR THE WINTER RAINS. DISTURBED AREAS SHALL BE SEEDED WITHIN ONE WEEK OF THE BEGINNING OF THE WET SEASON. A SKETCH MAP OF THOSE AREAS TO BE SEEDED AND THOSE AREAS TO REMAIN UNCOVERED SHALL BE SUBMITTED TO THE CITY INSPECTOR FOR REVIEW.

SHEET INDEX

SITE INFORMATION:

PROJECT ADDRESS: 8114 WEST MERCER WAY, MERCER ISLAND, WA 98040
PROJECT PARCEL NO. 3358500974
SECTION/TOWNSHIP/RANGE: S36, T24N, R4E, WM
TOTAL LOTS AREA = 17,603 S.F.

CONSTRUCTION NOTE

PRIOR TO STARTING CONSTRUCTION, CONTACT ONE-CALL 811 OR (1-800-424-5555) FOR UTILITIY LOCATIONS..

ISSUED DATE:
PERMIT SET
NOV 18, 2013

CIVIL ENGINEER:
CHOOMENG CHIN, P.E.
5610 145TH AVE. SE
BELLEVUE, WA 98006
(206) 427-4533
cm_chin@yahoo.com

CHOOMENG CHIN — STATE OF WASHINGTON — 30884 — REGISTERED PROFESSIONAL ENGINEER — 12/04/15

AN AND KIM
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Email: bennykim55@yahoo.com

LEE RESIDENCE
8114 WEST MERCER WAY
MERCER ISLAND WA 98040

GENERAL NOTES

FILE 21230

C0.0

NORTH

FND IP W/CAP W/TACK LS#20764 (11/12)

4" SPRUCE

18" FIR

14" FIR

18" FIR

18" FIR

10' STORM DRAINAGE AND SANITARY SEWER ESMT

5' UTILITY ESMT

SD CLEANOUT? (FND 6" METAL CAP) TOP CAP=224.62'

5'

5'

LAWN

S22°47'52"W 227.00' (BASIS OF BEARING)

10' UTILITY ESMT

20" DECIDUOUS

36" DECIDUOUS

(2) 18" DECIDUOUS

26" MADRONA

(2) 24" MAPLE

10" ALDER

16" ALDER

8" DECIDUOUS

30" DECIDUOUS

38" DECIDUOUS

S26°12'18"E 119.26'

SHORING ALONG UTILITY EASEMENT. SEE SHORING PLAN

PROPOSED BLDG.
1ST FL=200
BSMT=188

(2) PVC PIPES BELIEVED TO BE DRY UTILITY STUBS

10' STORM DRAINAGE AND SANITARY SEWER ESMT

NO STORM DRAIN FOUND

(4) 6" WIDE

12" ALDER

16" PINE

Mercer Island Short Plat
MI-82-04-09
PER AF#8310249004

3B

2

4

4C

CB; T-1 W/GT
RE=176.78'
IE=173.25' (8" PVC NW)
IE=172.74' (12" CMP NE)
IE=172.73' (12" CMP SE)

SSMH
RE=176.76'
℄ CHANNEL=171.06'
(10" PVC NE, SE)
(6" CONC NW)

CONC DRIVE

PROTECT CULVERT INLET

CB; T-2
RE=177.78'
IE=173.78' (6" PVC NE)

FND IP W/CAP W/TACK LS#20764 (11/12)

N24°47'52"E 142.51'

LAWN EDGE

TIMBER RET WALL

14" VERTICAL CMP W/GT
RE=196.66'
BTM=185.36'
(UNABLE TO IDENTIFY ANY INVERTS FROM SURFACE EXPLORATION)

CB; T-2 W/MH
RE=176.76'
IE=169.46' (12" CMP NW)
IE=168.86' (4" PVC N)
IE=168.86' (2" PVC N)
IE=165.11' (18" CMP S)
(171.51'=TOP OF 18" CMP STANDPIPE S)

ASPHALT THICKENED EDGE

ASPHALT DRIVE

SITE TBM
EL=177.94'

Mercer Island Short Plat
MI-82-04-09
PER AF#8310249004

3A

15' INGRESS/EGRESS & UTILITY ESMT

10'

LEGEND:

- CB INSERTS (STREAM GUARD, EMCON ENVIRODRAIN OR EQUIVALENT.
- TEMPORARY CONSTRUCTION ENTRANCE/EXIT
- —x——x— SILT FENCE/CLEARING LIMITS
- – – – – – – – CLEARING LIMITS

GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.

FILE NAME: 18300C1.0 PLOT DATE: 09/25/18 PLOT BY: CMC PLOT SCALE: 1=1

ISSUED DATE:

CRITICAL AREA DETERMINATION
SEP 25, 2018

CHOMENG CHIN
STATE OF WASHINGTON
20384
REGISTERED PROFESSIONAL ENGINEER
11/04/15

C2MY
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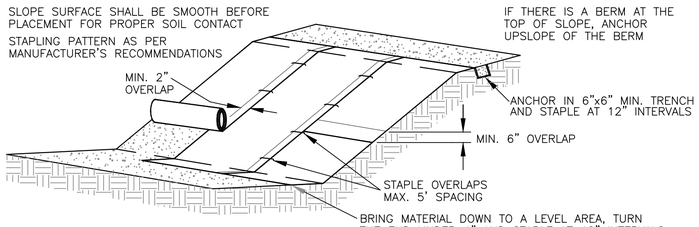
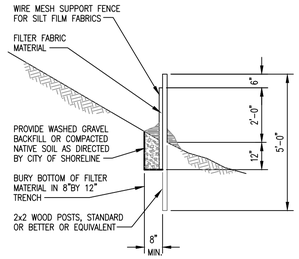
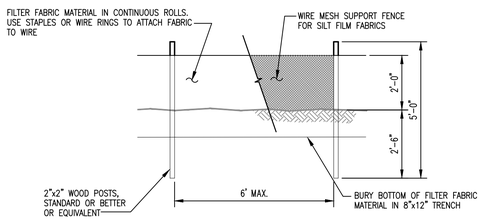


PERMAMENT SLOPE PROTECTION MATTING DETAIL

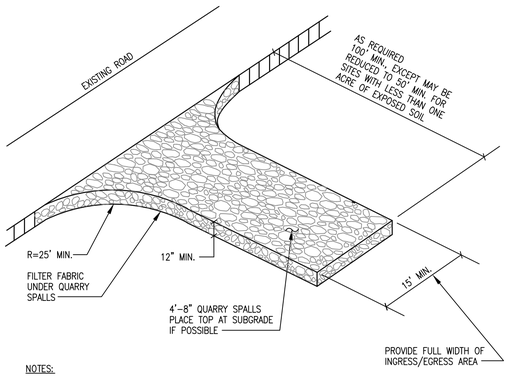
NO SCALE





SILT FENCE

NO SCALE

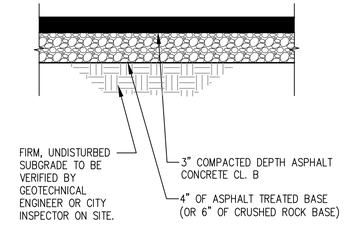


NOTES:

1. STONE SIZE – USE 4" QUARRY SPALLS.
2. LENGTH – AS REQUIRED, BUT NOT LESS THAN 50 FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY).
3. THICKNESS – NOT LESS THAN 12"
4. WIDTH – 15 FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS.
5. FILTER CLOTH – WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE. FILTER WILL NOT BE REQUIRED ON A SINGLE FAMILY RESIDENCE LOT.
6. SURFACE WATER – ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE – THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHT-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WASHING – WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

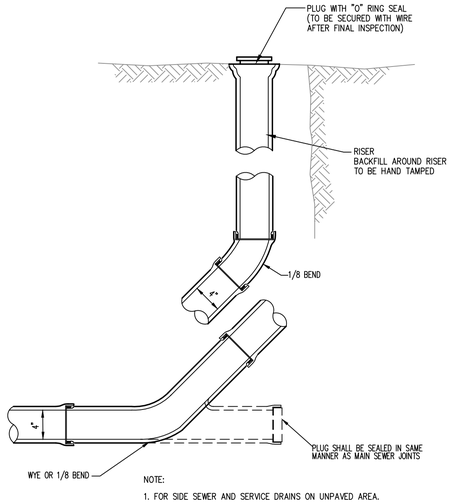
STABILIZED CONSTRUCTION ENTRANCE

NO SCALE



DRIVEWAY AC–PAVEMENT SECTION

NTS

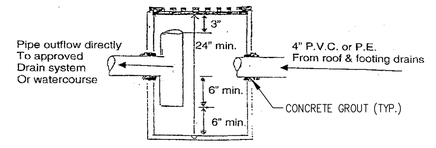


NOTE:

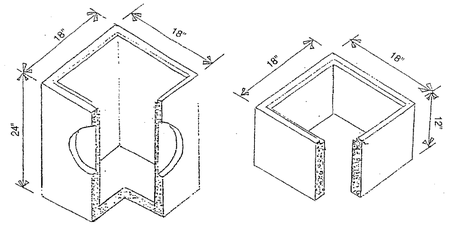
1. FOR SIDE SEWER AND SERVICE DRAINS ON UNPAVED AREA.

STORM DRAIN CLEANOUT

NTS



Catch Basin with Oil Separator



Catch Basin (C.B.)
Depth & Volume are Minimum Dimensions.

Minimum Volume = 24 gal.

6" & 12" Adjustment Riser

ISSUED DATE:

PERMIT SET
NOV 18, 2013

CIVIL ENGINEER:
CHOOMENG CHIN, P.E.
5610 145TH AVE. SE
BELLEVUE, WA 98006
(206) 427-4533
cm_chin@yahoo.com

CHOOMENG CHIN — STATE OF WASHINGTON — 30884 — REGISTERED PROFESSIONAL ENGINEER — 12/04/15

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Email: bennykim55@yahoo.com

LEE RESIDENCE
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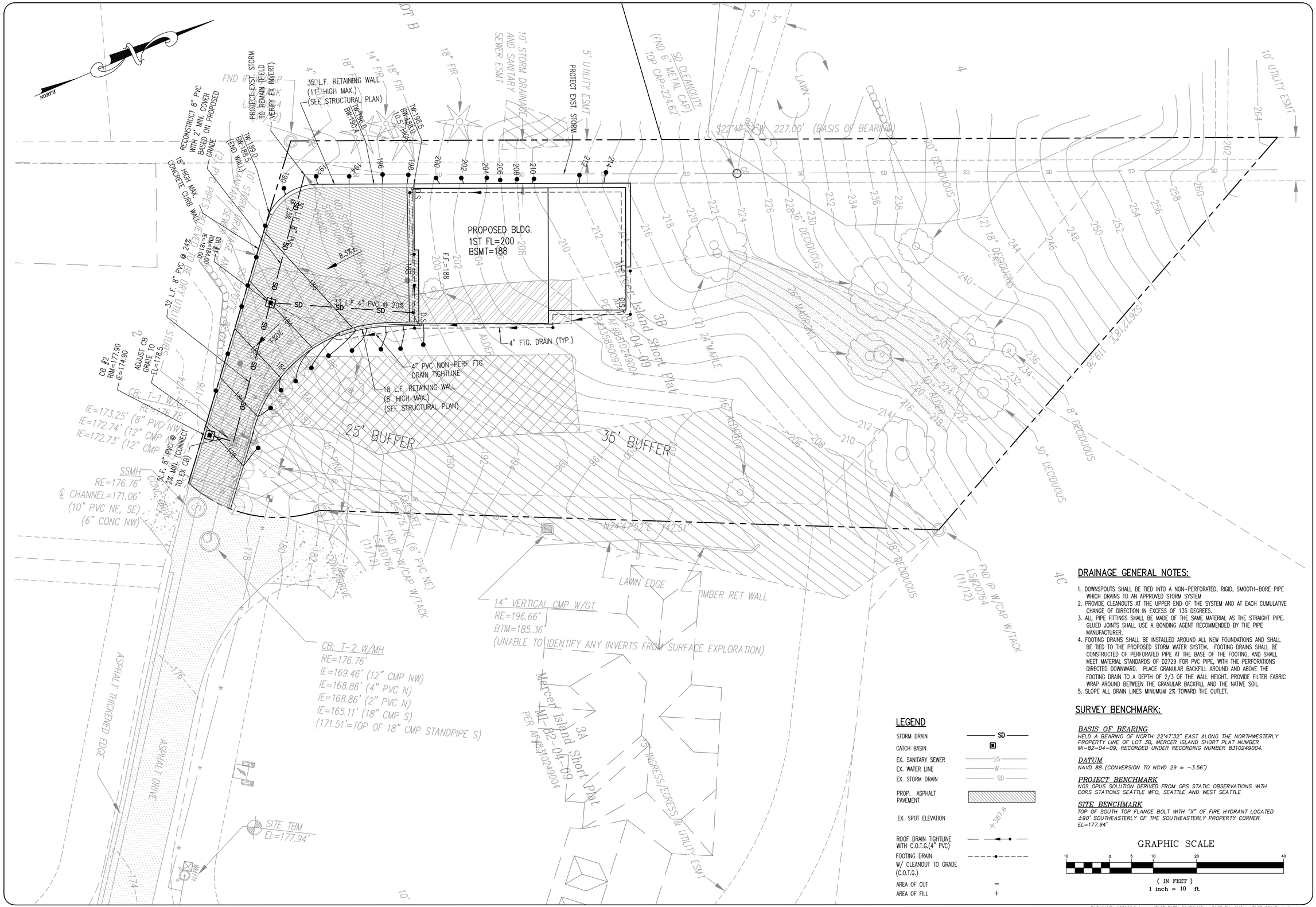
MERCER ISLAND WA 98040

DETAILS

FILE 21230

C1.1



LEGEND

STORM DRAIN	SD
CATCH BASIN	
EX. SANITARY SEWER	SS
EX. WATER LINE	W
EX. STORM DRAIN	SD
PROP. ASPHALT PAVEMENT	
EX. SPOT ELEVATION	+387.6
ROOF DRAIN TIGHTLINE WITH C.O.T.G.(4" PVC)	
FOOTING DRAIN W/ CLEANOUT TO GRADE (C.O.T.G.)	
AREA OF CUT	–
AREA OF FILL	+

DRAINAGE GENERAL NOTES:

1. DOWNSPOUTS SHALL BE TIED INTO A NON-PERFORATED, RIGID, SMOOTH-BORE PIPE WHICH DRAINS TO AN APPROVED STORM SYSTEM
2. PROVIDE CLEANOUTS AT THE UPPER END OF THE SYSTEM AND AT EACH CUMULATIVE CHANGE OF DIRECTION IN EXCESS OF 135 DEGREES.
3. ALL PIPE FITTINGS SHALL BE MADE OF THE SAME MATERIAL AS THE STRAIGHT PIPE. GLUED JOINTS SHALL USE A BONDING AGENT RECOMMENDED BY THE PIPE MANUFACTURER.
4. FOOTING DRAINS SHALL BE INSTALLED AROUND ALL NEW FOUNDATIONS AND SHALL BE TIED TO THE PROPOSED STORM WATER SYSTEM. FOOTING DRAINS SHALL BE CONSTRUCTED OF PERFORATED PIPE AT THE BASE OF THE FOOTING, AND SHALL MEET MATERIAL STANDARDS OF D2729 FOR PVC PIPE, WITH THE PERFORATIONS DIRECTED DOWNWARD. PLACE GRANULAR BACKFILL AROUND AND ABOVE THE FOOTING DRAIN TO A DEPTH OF 2/3 OF THE WALL HEIGHT. PROVIDE FILTER FABRIC WRAP AROUND BETWEEN THE GRANULAR BACKFILL AND THE NATIVE SOIL.
5. SLOPE ALL DRAIN LINES MINUMUM 2% TOWARD THE OUTLET.

SURVEY BENCHMARK:

BASIS OF BEARING
HELD A BEARING OF NORTH 22°47'32" EAST ALONG THE NORTHWESTERLY PROPERTY LINE OF LOT 3B, MERCER ISLAND SHORT PLAT NUMBER MI-82-04-09, RECORDED UNDER RECORDING NUMBER 8310249004.

DATUM
NAVD 88 (CONVERSION TO NGVD 29 = -3.56')

PROJECT BENCHMARK
NGS OPUS SOLUTION DERIVED FROM GPS STATIC OBSERVATIONS WITH CORS STATIONS SEATTLE WFO, SEATTLE AND WEST SEATTLE

SITE BENCHMARK
TOP OF SOUTH TOP FLANGE BOLT WITH "X" OF FIRE HYDRANT LOCATED ±90' SOUTHEASTERLY OF THE SOUTHEASTERLY PROPERTY CORNER. EL=177.94'

GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.

ISSUED DATE:

CRITICAL AREA DETERMINATION
SEP 25, 2018

CHOMENG CHIN
STATE OF WASHINGTON
21084
REGISTERED PROFESSIONAL ENGINEER

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LEE RESIDENCE
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MERCER ISLAND WA 98040

PAVING AND GRADING PLAN

FILE 21230

C2.0