From: Scott Greenberg
Sent: Tuesday, August 23, 2016 9:29 AM
To: Robert A. Medved
Subject: RE:

Hi Bob. Can you please re-send the Critical Areas Overview without password protection? I can open and read the file but can't combine it with other PDF files (which I'll need to do eventually when we compile all public comments as exhibits to future staff reports).

Thanks,
Scott

From: Robert A. Medved [mailto:robertamedved@msn.com]
Sent: Monday, August 22, 2016 10:06 PM
To: Scott Greenberg <Scott.Greenberg@mercergov.org>
Subject: File No. SEP16-015 and File No. ZTA-16-002 Comments

Dear Mr. Greenberg:

Pursuant to my below e-mail, I incorporated the contents of the attached document entitled "File No. SEP16-015 and File No. ZTA-16-002 Comments" as my comments on File No. SEP16-015 and File No. ZTR16-002 ("Comments"). Those Comments, at page 1, incorporated by reference a February 16, 2016 document entitled Mercer Island Critical Areas Overview and a March 7, 2016 document entitled The MICA Pre-Application Meeting. A copy of the February 16, 2016 Mercer Island Critical Areas Overview and a copy of the March 7, 2016 The MICA Pre-Application Meeting are attached for your convenience and are to be considered as part of my Comments.

Please call if you have any questions.

Thank you.

Robert A. Medved
7238 S.E. 32nd Street
Mercer Island, WA 99040
Phone No. (206) 550-3300

From: Robert A. Medved
Sent: Monday, August 22, 2016 4:54 PM
To: Scott Greenberg
Subject:

Dear Mr. Greenberg:

I hereby incorporate the contents of the attached document as my comments on File No. SEP16-015 and File No. ZTR16-002.

Thank you.

Robert A. Medved
7238 S.E. 32nd Street
Mercer Island, WA 99040
Phone No. (206) 550-3300

MEMORANDUM

Dated August 22, 2016

MEMORANDUM

To: Scott Greenberg,
Director, City of Mercer Island Development Services Group

Copy to: Kari Sand, Mercer Island City Attorney

From: Traci Granbois, 8440 SE 82nd Street, Mercer Island, WA 98040

Date: August 22, 2016

Re: *Comments on SEP16-015*
Comments on ZTR16-002
Location of the Property: Southwest corner of 77th Avenue SE and SE 32nd Street, Mercer Island, WA 98040

Warning: I note that all of the below questions on MICA's SEPA Checklist were cut off in the digital public records request (MICA SEPA & ZTR 08.17.2016). If the city only had access to this same digital copy, there is essential information missing:

1. section A, question 11
2. section B, question 3 (Water) subsection c (Water runoff) part 1
3. section B, question 8 (Land and shoreline use) subsection a
4. section B, question 11 (Light and glare) subsection a
5. section B, question 12 (Recreation) subsections a, b, & c
6. section B, question 14 (Transportation) subsection c

I incorporate by reference the February 16, 2016 Mercer Island Critical Area Ordinance Overview and the March 7, 2016 MICA Pre-Application Meeting Overview (both previously submitted to the City).

TABLE OF CONENTS

I. EXECUTIVE SUMMARY

On February 2, 2016, the Mercer Island Center for the Arts ("MICA") submitted a Draft SEPA Environmental Checklist at a pre-application meeting. Subsequently, this Draft SEPA Environmental Checklist was withdrawn. MICA again submitted a SEPA Environmental Checklist on August 8, 2016 which was amended on August 17, 2016.

A review of the MICA SEPA Environmental Checklist reveals numerous problematic issues, including:

(i) the inaccuracy of the SEPA Environmental Checklist
(ii) the incompleteness of the SEPA Environmental Checklist
(iii) MICA's failure to comply fully with SEPA
(iv) MICA's failure to comply fully with the Mercer Island City Code
(v) Mercer Island's failure to timely review and revise its critical area & wetland ordinances

II. REVIEW OF THE PROPOSED MICA CENTER FOR THE ARTS

A. Required Town Center Development And Design Standards Review

The planning and permitting processes for the proposed MICA Center for the Arts ("MICA Center") require MICA to comply with, among other things, Chapter 19.11 MICC, Town Center Development and Design Standards. *See* Mercer Island City Code ("MICC") 19.05.010(C).

B. Environmental Review And Project Review Must Be Combined

Local project review under the Growth Management Act requires Mercer Island to "**[c]ombine the environmental review process, both procedural and substantive, with the procedure for review of project permits**." (emphasis added). *See* RCW 36.70.B.050(1).

SEPA requires Mercer Island to "[i]ntegrate the requirements of SEPA with existing agency planning and licensing procedures and practices, so that such **procedures run concurrently rather than consecutively**." (emphasis added). *See* WAC 197-11-030(2)(d).

It appears that MICA failed to comply with the requirements of RCW 36.70.B.050(1) and WAC 197-11-030(2)(d) by not addressing the Town Center Development and Design Standards.

C. SEPA Environmental Checklist

1. Proposed timing or schedule
    a. The July 18, 2016 letter from Mercer Island Development Services Group Director, Scott Greenberg, to Lesley Bain specifically requests that MICA "modify the submitted SEPA Checklist to include a short subdivision (short plat) as part of the project.
    b. The SEPA Checklist § A, Q. 6 does not explicitly contemplate a short plat but rather states "a possible Short Plat if required by the City".

2. Earth
    a. The SEPA Checklist § B, Q. 1 subsection a is non responsive. The "steep slopes" box is not checked even though "excavation into the hillside" will be required. *See* SEPA Attachment D.

    b. The SEPA Checklist § B, Q. 1 subsection f is non responsive. The question whether erosion could occur "as a result of clearing, construction or use" has not been answered.

    c. The SEPA Checklist § B, Q. 1 subsection g is non responsive. The specific percentage of impervious surface coverage was not noted.

3. Air
    a. The SEPA Checklist § B, Q. 2 subsection a is non responsive. There are no details regarding specific emissions to the air typical to the construction process or "when the project is completed".

4. Water Runoff
    a. The SEPA Checklist § B, Q. 3 subsection c(1) contemplates a bioretention area, an underground stormwater detention vault and related drains *outside* of the lease boundaries. *See* SEPA Checklist Attachment M. There is no authority for MICA to build necessary building elements on city land without a lease for that specific area.
    b. The SEPA Checklist § B, Q. 3 subsection d contemplates a "proposed swale that will be strategically graded into the hillside" *outside* of the lease boundaries. *See* SEPA Checklist Attachment B. There is no authority for MICA to build necessary building elements on city land without a lease for that specific area.

5. Energy & natural resources
    a. The SEPA Checklist § B, Q. 6 subsection c states the project will meet "LEED Silver" standards. The current Mercer Island Development Code requires "LEED

Gold" standards. Mercer Island City Code (MICC) 19.11.050. MICA's proposal is not compliant with current Mercer Island Code.

6. Aesthetics
    a. The SEPA Checklist § B, Q. 10 subsection b states "building itself will not alter or obstruct any views". In fact, the MICA building will obstruct views of the wetlands and natural hillside.

7. Light & glare
    a. The SEPA Checklist § B, Q. 11 subsection d is non responsive. No specific details regarding lighting were provided.

8. Historic and cultural preservation
    a. The SEPA Checklist § B, Q. 13 subsection b fails to recognize the historical and cultural importance of the Bicentennial Park to many historians and veterans, who have served and currently serve our country. *See http://mercerislandhistory.org/historic.html.*

9. Transportation
    a. The correct answer to "how many parking spaces would the completed project have" is ZERO. The submitted response to SEPA Checklist § B, Q. 14 subsection c is purposefully evasive.

    b. The SEPA Checklist § B, Q. 14 subsection d is non responsive. There are three Attachment Gs – which document and sections within the document specifically address roads.

    c. The SEPA Checklist § B, Q. 14 subsection f is non responsive. There are three Attachment Gs – which document and sections within the document specifically address trip generation.

    d. The SEPA Checklist § B, Q. 14 subsection g is non responsive. Where specifically will the "queued vehicles" be other than in the street? There is no drop off area – how will the "staff outside" assist with cars lined up in the street?

10. Public services
    a. The SEPA Checklist § B, Q. 15 subsection a is non responsive. There is no answer to whether "the project resulted in an increased number of public services". In fact, neither the Chief of Police nor the Fire Chief have been consulted about whether this project will increase the demand for public services.

D. Unlawful Parking Proposal

Attachment G (#2) to the SEPA Environmental Checklist proposes parking that fails to acknowledge let alone comply with MICC 19.05.010(D) and MICC 19.05.020(B)(4). In fact, MICA is requesting special treatment, unlike any other business subject to MICC 19.05.010(D) and MICC 19.05.020(B)(4). Please see spot zoning argument below.

The Zoning Text Amendment (MICA SEPA Attachment H) purports to require shared parking "that can only be terminated upon not less than ninety (90) days notice to the code official, provided that one of the affected property owners has agreed to enter into a replacement parking contract or make alternative parking arrangments…" Proposed changes MICC 19.05.020(C)(3)(c). However the draft "Parking Spaces License Agreement" in MICA SEPA Attachment G (#2) states in section 5 "This Agreement may be terminated, without cause, by either party, on 30 days' written notice to the other". This draft agreement fails to meet the requirements proposed by MICA's own zoning text amendment.

E. Spot Zoning

The July 18, 2016 letter from Mercer Island Development Services Group Director, Scott Greenberg, to Lesley Bain, appears to ask the applicant to request that the city engage in spot zoning. *See* 7.18.16 letter section 8. Section 8 reads, "Attachment H (Zoning Code Text Amendment) would allow all public facilities (as defined in MICC 19.16) plus the primary uses listed in the proposal in all public parks. As submitted, we would need more information regarding the probable environmental impacts of the proposal. However, based on prior discussions, we do not believe that is your intent. *Narrowing the scope of the proposed code amendment could eliminate the need for this additional information.*" (emphasis added).

In accordance with this request, MICA has requested spot zoning in Attachment H. In essence, MICA is requesting that the city treat Mercerdale Park unlike any other plat of land located in a P zone.

In addition, MICA is requesting that a private building owned by a private organization be placed in a zone for Public Institutions. All of the other uses delineated in MICC 19.05.010 are publically owned[1]. This code text amendment would set a precedent for allowing private uses in a public zone.

F. Critical Area Study

Any alteration of a critical area or buffer requires a critical area determination. MICC 19.07.020. To date, there has been no critical area determination and MICA has not listed this required element in its SEPA application. Nor was there any mention of waiver or modification

[1] Wireless communications facilities (MICC 19.05.010(A)(6)) may be leased to a private company but the amount of space required for these leases is not comparable to the land MICA is seeking.

as may be allowed in MICC 19.07.050(E). MICA is surrounded by critical areas. *See* Exhibit 1, February 2016 Critical Area Overview.

Additionally, Mercer Island's critical area ordinance is out of date and needs updated as noted by City Attorney Kari Sand.

G. Reduction in Buffer Area

Per MICC 19.07.080(c)(2), a critical area study is necessary to reduce the size of a buffer zone. In addition, the code official must determine that:

1. A smaller area is adequate to protect the wetland functions;
2. The impacts will be mitigated consistent with MICC 19.07.070(B)(2); AND
3. The proposal will result in no net loss of wetland and buffer functions. MICC 19.07.080(c)(2).

To date, there is no critical area study and the above three separate elements have not been satisfied. More specifically, there is no showing of zero net loss of buffer function. It strains scientific credulity to believe that building on top of the current buffer will not result in reduction of buffer function.

H. Supplemental SEPA sheet is nonresponsive

The stock answer "The proposal is not likely to cause impacts beyond the project covered in the SEPA checklist because the language of the Text Amendment is very narrow and highly unlikely to result in other project actions." is not responsive to questions 1, 2, 3, 4, 5, and 6. This answer further supports the spot zoning argument above.

I. GMA

MICA fails to address the Growth Management Act ("GMA") requirement that the proposed text amendment is consistent with and implements Mercer Island's comprehensive plan. *See, e.g.,* RCW 36.70A.040.

MICA fails to address GMA concurrency requirements. *See, e.g.,* 36.70A.020 and RCW 36.70A.070.

MERCER ISLAND
CRITICAL AREAS OVERVIEW

Dated February 16, 2016

INCORPORATED BY REFERENCE AND ATTACHED TO MEMORANDUM DATED AUGUST 22, 2016

MERCER ISLAND
CRITICAL AREAS OVERVIEW

February 16, 2016

TABLE OF CONENTS

I. EXECUTIVE SUMMARY

The proposed siting of the Mercer Island Center For The Arts ("MICA") has unearthed a number of important environmental issues, including: (i) the inadequacy of the Mercer Island Center for the Arts Wetland Delineation Study, (ii) Mercer Island's failure to comply fully with the requirements of the Growth Management Act, (iii) Mercer Island's failure to timely review and revise its wetland ordinance, and (iv) the apparent destruction of Mercer Island wetlands.

II. LANDSLIDE RISKS AND OCCURRENCES

A. Landslide Risks On Mercer Island

In 2014, the Mercer Island City Manager was advised that there are high risks of landslides occurring over a substantial portion of Mercer Island. The high risks of landslides on Mercer Island are caused by a number of factors, including:

- Steep slopes,
- Loose Soil Deposits,
- Historical Landslides,
- Geologic Contact Points which capture water forming springs, seepage and high groundwater,
- Earthquakes.

See Exhibit 1.

B. Landslide Occurrences On Mercer Island

A significant number of landslides occur on Mercer Island every year. The most recent landslide on Mercer Island occurred on December 9, 2015. *See* Exhibit 2.

III. CRITICAL AREAS AND THE PROPOSED MICA BUILDING

A. Landslide Hazard Areas

The MICA building is proposed to be built on or near (i) a Landslide Hazard Area,[1] (ii) an area with slopes between 15% and 39%, (iii) an area with water less than 10 feet below the

[1] MICC, Chapter 19.16 defines Landslide Hazard Areas as:

> "Those areas subject to landslides based on a combination of geologic, topographic, and hydrologic factors, including:
> 1. Areas of historic failures;
> 2. Areas with all three of the following characteristics:
> a. Slopes steeper than 15 percent; and

ground surface and (iv) an area in which a spring is located. *See* Exhibit 3[2] and Exhibit 7. *See also* Exhibit 1.

B. Seismic Hazard Areas

The MICA building is proposed to be built on or near a Seismic Hazard Area.[3] *See* Exhibit 4[4] and Exhibit 7. *See also* Exhibit 1.

C. Erosion Hazard Areas

The MICA building is proposed to be built on or near an Erosion Hazard Area.[5] *See* Exhibit 5[6] and Exhibit 7. *See also* Exhibit 1.

> b. Hillsides intersecting geologic contacts with a relatively permeable sediment overlying a relatively impermeable sediment or bedrock; and
> c. Springs or ground water seepage;
> 3. Areas that have shown evidence of past movement or that are underlain or covered by mass wastage debris from past movements;
> 4. Areas potentially unstable because of rapid stream incision and stream bank erosion; or
> 5. Steep Slope. Any slope of 40 percent or greater calculated by measuring the vertical rise over any 30-foot horizontal run."

[2] Exhibit 3 is also available at: www.mercergov.org/files/LandslideHazard2009.pdf.

[3] MICC, Chapter 19.16 defines Seismic Hazard Areas as:

> "Seismic hazard areas are areas subject to severe risk of damage as a result of earthquake induced ground shaking, slope failure, settlement, soil liquefaction or surface faulting."

[4] Exhibit 4 is also available at: www.mercergov.org/files/SeismicHazard2009.pdf.

[5] MICC, Chapter 19.16 defines Erosion Hazard Areas as:

> "Those areas greater than 15 percent slope and subject to a severe risk of erosion due to wind, rain, water, slope and other natural agents including those soil types and/or areas identified by the U.S. Department of Agriculture's Natural Resources Conservation Service as having a 'severe' or 'very severe' rill and inter-rill erosion hazard."

[6] Exhibit 5 is also available at: www.mercergov.org/files/ErosionHazard2009.pdf.

D. Geologic Hazard Areas

The MICA building is proposed to be built in an area that is circumscribed by Geologic Hazard Areas.[7] *See* Exhibit 3, Exhibit 4, Exhibit 5 and Exhibit 7.

The Mercer Island City Code ("MICC") 19.07.060 D. 1. provides as follows:[8]

> "D. Site Development.
>
> 1. Development Conditions. Alterations of geologic hazard areas may occur if the code official concludes that such alterations:
>
> a. Will not adversely impact other critical areas;
>
> b. Will not adversely impact (e.g., landslides, earth movement, increase surface water flows, etc.) the subject property or adjacent properties;

---

[7] The Growth Management Act defines Geologically Hazardous Areas as:

> "… areas that because of their susceptibility to erosion, sliding, earthquake, or other geological events, are **not suited to the siting of commercial, residential, or industrial development consistent with public health or safety concerns**." (bold added). *See, e.g.,* RCW 36.70A.030(9).

MICC, Chapter 19.16 defines Geologic Hazard Areas as:

> "Areas susceptible to erosion, sliding, earthquake, or other geological events based on a combination of slope (gradient or aspect), soils, geologic material, hydrology, vegetation, or alterations, including **landslide hazard areas, erosion hazard areas and seismic hazard areas**." (bold added).

The differences between the two above definitions are examples of Mercer Island's failure to fully protect critical areas, public health and safety concerns.

[8] MICC 19.07.060 B. provides in part as follows:

> "Buffers. There are **no buffers** for geologic hazard areas…." (bold added).

The lack of geologic hazard area buffers is another example of Mercer Island's failure to fully protect critical areas. *Compare* MICC 19.07.060 B. *with, e.g.,* Issaquah Municipal Code 18.10.560 (requiring "a minimum buffer of fifty (50) feet from all edges of landslide hazard areas" and further providing that an "additional fifteen (15) foot building setback shall also be established from the outer edge of the [fifty (50) foot] buffer."

> c. Will mitigate impacts to the geologic hazard area consistent with best available science to the maximum extent reasonably possible such that the site is determined to be safe; and
> d. Include the landscaping of all disturbed areas outside of building footprints and installation of all impervious surfaces prior to final inspection."

E. Wetlands

The MICA building is proposed to be built in an area on or near wetlands. *See* Exhibit 7.

IV. THE MICA WETLAND DELINEATION STUDY

A. The MICA Delineation Study's Purported Classification And Delineation

The Mercer Island Center for the Arts Wetland Delineation Study ("MICA Delineation Study") purports to classify, categorize, type and delineate wetlands relating to the proposed MICA building. *See* Exhibit 6 and Exhibit 7.

The MICA Delineation Study is problematic for at least two reasons.

1. Understated Wetland Size And Inaccurate Wetland Boundaries

The MICA Delineation Study was conducted during the dry part of 2015, thus understating the size of the wetland and inaccurately locating the boundaries of the wetland.

2. Use Of The Incorrect Wetland Rating System And Wetland Rating Form

a. Incorrect Wetland Rating System

The MICA Delineation Study did not utilize the Washington State Wetland Rating System for Western Washington 2014 Update, Department of Ecology Publication no. 14-06-029 ("2014 DOE Updated Wetland Rating System").

Instead, the MICA Delineation Study utilized the "*Western Washington Wetland Rating System* (Ecology Rating System) (Ecology, Aug (sic) 2004, version 2)." *See* Exhibit 6, at page 2.

b. Incorrect Wetland Rating Form

The MICA Delineation Study did not utilize the Wetland Rating System For Western WA: 2014 Update Rating Form – Effective January 1, 2015 ("2014 DOE Updated Rating Form").

Instead, the MICA Delineation Study utilized the "Wetland Rating Form – western (sic) Washington Version 2 Updated with new WDF definitions Oct. 2008." *See* Exhibit 6, at attachment entitled "Wetland Rating Forms."

c. Use Of The Incorrect Rating System And Rating Form Is Fatal

The correct classification, categorization and rating of a wetland are essential. A few examples follow.

The size of a wetland buffer depends on the classification/category/rating of the wetland. *See* Exhibit 9, at pages 4-6, Exhibit 10, at pages 2-3, Exhibit 11, at pages 5-6, and Exhibit 12, at page 24.

Moreover, wetland buffer building setbacks[9] are measured from the edge of a wetland buffer which, in turn, depends on the category/classification/rating of the wetland. *See* Exhibit 9, at page 9, Exhibit 10, at page 4, Exhibit 11, at page 6, and Exhibit 12, at pages 16-17.

MICA has proposed reducing the Mercer Island Wetland Ordinance current standard 50 foot wetland buffer to 25 feet and constructing the MICA building within the required current standard 50 foot wetland buffer area. It is inconceivable that constructing the MICA building within the required current standard 50 wetland buffer area could be accomplished with "no net loss of wetland and buffer functions"[10] since one of the buffer functions is to "protect the [wetland] from degradation."[11]

Because the correct classification, categorization and rating of a wetland are essential and because the MICA Delineation Study failed to use the 2014 DOE Updated Wetland Rating System and the 2014 2014 DOE Updated Rating Form, the MICA Delineation Study is virtually useless.[12]

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[9] The Mercer Island Wetland Ordinance is devoid of wetland buffer building setbacks which is another example of the Mercer Island Wetland Ordinance's failure to fully protect wetlands. *See* Exhibit 8.

[10] *See* Exhibit 8.

[11] MICC, Chapter 19.16 defines a buffer as:

> "A designated area adjoining a critical area intended to protect the critical area from degradation."

[12] The Mercer Island Wetland Ordinance provides in part as follows:

> "Reduction of Wetland Buffer Widths. 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

V. THE GMA AND MERCER ISLAND WETLANDS

A. Classifying, Delineating, Designating And Inventorying Wetlands

The Growth Management Act ("GMA") requires Mercer Island, utilizing the best available science, to classify, delineate, designate and inventory wetlands located on Mercer Island. *See, e.g.*, RCW 36.70A.170(1)(d), RCW 36.70A.172, RCW 36.70A.175, RCW 36.70A.180, WAC 365-190-040 *and* WAC 365-190-090.

It appears[13] that Mercer Island has not complied fully with these GMA requirements.

B. Protecting The Functions And Values Of Wetlands

The GMA requires Mercer Island, utilizing the best available science, to adopt development regulations to protect the functions and values of wetlands located on Mercer Island ("Wetland Ordinance"). *See, e.g.*, RCW 36.70A.040(3), RCW 36.70A.060(2), RCW 36.70A.172, WAC 365-190-040, WAC 365-190-080, WAC 365-190-090 *and* WAC 365-195-900 *and* WAC 365-196-830.

It appears[14] that Mercer Island has not complied fully with these GMA requirements. *Compare* Exhibit 8 (Mercer Island Wetland Ordinance) *with, e.g.*, Exhibit 9 (Bainbridge Island Wetland Ordinance), Exhibit 10 (Bellevue Wetland Ordinance), Exhibit 11 (Issaquah Wetland Ordinance) and Exhibit 12 (Pullman Wetland Ordinance).

C. Reviewing And Revising The Mercer Island Wetland Ordinance

It appears[15] that the time for Mercer Island to review and revise its Wetland Ordinance is overdue. *See* Exhibit 13.

> 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." *See* Exhibit 8.

It is respectfully submitted that Mercer Island should retain independent, expert professionals in order to acquire the skill sets necessary: (i) to review and analyze wetland documents prepared and submitted to Mercer Island by professionals (such as ecologists, geologists and hydrologists) and (ii) to make accurate, correct and error free determinations regarding proposed reductions to wetland buffer widths.

[13] Because Mercer Island is in possession of the relevant wetland and critical area information, only Mercer Island can confirm this statement to an absolute certainty.

[14] *Id.*

[15] *Id.*

D. Destruction Of Mercer Island Wetlands

1. Northern Boundary

The MICA Delineation Study purports to delineate a wetland with a northern boundary that abruptly stops at the edge of a large man-made asphalted area. *See* Exhibit 6**,** at page 3, and Exhibit 7. Water streams from the northern boundary of that delineated wetland onto the man-made asphalted area.[16] *See* Exhibit 14, Exhibit 15 and Exhibit 16.

It appears[17] that a large area currently covered by asphalt was a wetland before that area of wetland was destroyed by the construction of the man-made asphalted area. *See* Exhibit 6**,** at page 3, Exhibit 7, Exhibit 14, Exhibit 15 and Exhibit 16.

The destruction of that wetland area diminishes the remaining wetlands' hydrologic functions of reducing flooding and erosion.

2. Eastern Boundary

The MICA Delineation Study delineates a wetland with an eastern boundary that abruptly stops at a man-made culvert and a man-made asphalted walk. *See* Exhibit 6, at page 3, and Exhibit 7. Water streams from the eastern boundary of that delineated wetland through the man-made culvert and under the man-made asphalt walkway.[18] *See* Exhibit 17**,** Exhibit 18 and Exhibit 19**.**

It appears[19] that the area in which the man-made culvert and the man-made asphalt walkway are located was a wetland before that wetland was destroyed by the construction of the man-made culvert and the man-made asphalt walkway. *See* Exhibit 6, at page 3, Exhibit 7, Exhibit 17, Exhibit 18 and Exhibit 19.

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[16] The streaming occurs even when it is not raining.

[17] *See supra* note 13.

[18] The streaming occurs even when it is not raining.

[19] *See supra* note 13.

VI. LIST OF EXHIBITS

1	April 23, 2014 – Memorandum Regarding "Landslide Risks On Mercer Island" (Highlighted)
2	December 16, 2015 – MI Weekly Regarding "Landslide Recap And Information" (Highlighted)
3	Mercer Island Landslide Hazard Area Map
4	Mercer Island Seismic Hazard Area Map
5	Mercer Island Erosion Hazard Area Map
6	May 21, 2015 – "Mercer Island Center For The Arts Wetland Delineation Study"
7	August 18, 2015 – "50-ft Buffer Wetland and Premises Delineation"
8	Mercer Island Wetland Ordinance
9	Bainbridge Island Wetland Ordinance
10	Bellevue Wetland Ordinance
11	Issaquah Wetland Ordinance
12	Pullman Wetland Ordinance
13	February 3, 2016 – Mercer Island Reporter City Briefs (Highlighted)
14	Photograph Of Water Streaming From Delineated Wetland North Boundary
15	Photograph Of Water Streaming From Delineated Wetland North Boundary
16	Photograph Of Water Streaming From Delineated Wetland North Boundary
17	Photograph Of Water Streaming From Delineated Wetland East Boundary
18	Photograph Of Water Streaming From Delineated Wetland East Boundary
19	Photograph Of Water Streaming From Delineated Wetland East Boundary

EXHIBIT 1

Memorandum

To: Noel Treat, City Manager
From: Don Cole, Building Official
Subject: Landslide Risks on Mercer Island
Date: April 23, 2014

As requested, the following memo is intended to be a brief summary about the landslide risks around Mercer Island and the efforts of DSG to mitigate these risks.

This memo includes general information about the geology of Mercer Island contributing to landslide susceptibility, a brief discussion of the frequency and character of landslides on Mercer Island, an introduction to DSG programs focused on mitigating landslide risks though the course of the development permit process, DSG's emergency response programs, and public education efforts to instruct homeowners about the recognition and avoidance of landslides.

Basic Mercer Island Geology relative to Landslides
The same glacial and tectonic activities that helped to create the beautiful hillside setting around Mercer Island are also responsible for the increased landslide risk over a substantial portion of the island. During the last glacial period, the lid area on top of Mercer Island was compressed beneath the weight of a 3000-foot tall glacier, leaving a dense soil known as glacial till after the glacier receded. Otherwise known as hardpan, this glacial till provides excellent support of building structures. However, as the glacier receded it also carved the steep slopes characteristic around the island's perimeter and loose soil was deposited by glacial melt-waters. These sloping hillsides and loose soil deposits, which were never compacted by the weight of the glacier, are key contributing factors to landslides.

Further increasing the landslide potential for the majority of island slopes is another significant factor, the presence of historic landslides. Such areas of past slope failure deposited even more of the loose, slide prone soils onto the slopes below. When driving around the island, these areas can often be recognized by their discernible head scarps.

As if the aforementioned landslide factors were not enough, there is yet another prevalent contributor to landslides occurring at the majority of island slopes; the presence of a geologic contact point. A geologic contact point occurs wherever a pervious soil layer overlies a less permeable soil layer, capturing water to form springs, seepage or high groundwater; all which are major contributors to landslides. On Mercer Island a commonly found geologic point is a soil layer of Esperance sand overlying Lawton clay. Landslides involving a geologic contact can be deeper-seated when compared to slides that only involve the loosely deposited surface soils.

And last, Mercer Island is also at risk to earthquake induced landslides. The earthquakes of 1949, 1965, and the 2001 Nisqually earthquake were deep earthquakes which triggered some landslides around Mercer Island. However, the island's greatest vulnerability to major landslides would be from a shallow earthquake occurring at the nearby Seattle fault. A prevalent theory of

geologists is that the submerged forests in Lake Washington, which can be found at several locations around Mercer Island, were the result of earthquake induced landslides caused by the Seattle fault about 1100 years ago. Such historical evidence supports the potential for a large landslide event resulting from an earthquake. In addition to causing landslides, an earthquake could result in soil liquefaction and lateral spreading of the loose soils found on slopes (as well as liquefaction of loose soil found at flat portions of the island too. Although the lid consists of approximately 80% glacial till which is not prone to liquefaction, the remaining 20% primarily consists of loose sedimentary deposits from a historic lake level. Such liquefaction susceptible areas include much of the town center and the city hall area, which is why the construction of our new town center buildings requires pilings, piers or other deep foundation systems).

Landslide information

Landslides are a risk to be taken seriously on Mercer Island where many homes are built on or near slopes. In a typical year, Mercer Island will sustain between six and fifteen landslides with resulting damage estimated to cost from a few thousand dollars for smaller slides to upwards of several hundred thousand dollars for those that are larger. In the winter of 1996, a snow and rain event throughout the Puget Sound region resulted in hundreds of landslides causing multiple fatalities and over a hundred million dollars in disaster relief. Slides are typically triggered by excess water and most include a contributing human factor such as people discharging their roof drains onto slopes, tree or vegetation removal from slopes, excavating into or placing fill onto slopes, or broken pipes. Understanding and avoiding common contributory causes can effectively reduce landslide risk.

Landslides primarily occur from late winter to early spring with January being the peak month for landslide activity. Snow events can increase the occurrence of landslides when the melting snow is accompanied by a significant rainfall, especially when a freeze occurs. As the ground becomes saturated over the winter, freezing weather can increase soil porosity allowing more rain and melting snow to penetrate the surface which increases soil saturation and slope stresses by adding weight and raising pore water pressure; increasing the chance of a "debris flow" (mudslide). These fast-moving flows of mud and debris are dangerous to life and property because of their high speed and a destructive force capable of knocking down trees, sweeping away vehicles, destroying homes, washing out roads, and obstructing streams. Debris flows are Mercer Island's most common type of landslide accounting for about 90% of island slides, they are shallow slides generally occurring within the loose soil (colluvium) that accumulates on slopes. As the colluvium becomes saturated with rainwater its weight can exceed its strength and slides occur.

Landslide occurrence increases and diminishes over the winter based on the amount of rainfall and the duration of the storms. To help predict when the ground is getting saturated and more likely to give way, the USGS monitors total rainfall, duration and intensity against historic landslide threshold data to forecast landslide potential. This prediction tool is available at the following link - http://landslides.usgs.gov/monitoring/seattle/rtd/plot.php

Landslides usually occur on steep slopes regardless of soil type, on moderate slopes with water and soil types that are conducive to sliding, or on any slope with a history of sliding. A map assessing known and suspected potential landslide hazard areas can be viewed at City Hall or the City website at http://www.mercergov.org/files/LandslideHazard2009.pdf

Landslide Hazard Mitigation through the Permit Process

Development within a landslide hazard area is subject to special land use regulations as part of the Critical Areas Ordinance. Compliance with these adopted regulations is reviewed and

inspected throughout the permit process with an end goal of establishing safe development practices within landslide hazard areas. This process includes the identification of landslide hazard areas and the mitigation of hazards by a geotechnical engineer (which will be discussed later in more detail).

Although DSG has long recognized and included regulations to address landslide hazard risks, there were two significant improvements made to the enforcement of regulations since 2001. First, previous plan review staff did not have the ideal skill set to review of the work submitted by engineers and architects. So with City Council approval, a minimum job qualification for plan review staff was upgraded to require a four year degree in engineering or architecture. Major improvements with code compliance were immediately evident.
Second, the old Landslide hazard maps contained obvious errors and failed to include the majority of known landslide areas along East Mercer Way and other parts of the island. Such map errors were immediately recognized and corrected.

Then in 2009, DSG spring-boarded off the success of a state of the art geologic map funded by the maintenance department and gained City Council approval to create the current geologic hazard map series. This cutting edge map series was recognized by the Geologic Society of America for its innovative design and superior detail. These maps significantly improve the identification of areas in which unregulated development may pose a threat to the health and safety of citizens. This suite includes a Seismic Hazard map, Landslide Hazard map and Erosion Hazard map, which were derived from a database of 2800 subsurface explorations and 164 exposure data points. The mapping utilized LIDAR data to identify scarps, displays critical geological contacts, infiltration potential, weak deposits, fill materials, and includes inventories of known landslides, subaqueous landslides, spring locations and depth to water data. This was a vast improvement to the precision and accuracy of island maps (Bellevue, Kirkland, Bothell and other Cities followed with similar maps).

Whenever development is proposed within an identified landslide hazard area, a geotechnical engineer is required to make an investigation, evaluate the hazards by performing site reconnaissance and subsurface explorations, prepare an engineered design for hazard mitigation in accordance with the critical areas ordinance, observe and inspect work for conformance to their design recommendations, and include any restrictions on development within the wet season. Staff reviews their work for conformance with adopted codes and provides correction letters as necessary to gain compliance.

For development to occur within a landslide hazard area, the code requires the applicant to demonstrate that mitigating construction practices will “render the development as safe as if it were not located within a geologic hazard area”. This criterion sets a high standard, above other commonly utilized standards that will allow development as long as the “risk is low” or “does not adversely affect the existing slope stability” (even though the existing stability may often be marginal or worse). To meet the higher criteria of the MI code, it is common for design features to include soldier pile retaining walls, cantilevered retaining walls, pile foundation systems, extensive site drainage systems, and other slope remediation practices. Generally speaking, the installation of such features will render a site “safer” than it was before development.

The permit process includes a drainage review by the development engineer to help ensure that drainage systems are effectively designed to collect and remove water from slopes, which is valuable because excess water is a major contributor to landslides. This standard practice to effectively remove storm water has resulted in a significant reduction in landslide occurrences.

To reduce the risk of landslides caused by construction during the rainy season, the Critical Areas Ordinance includes a seasonal development limitation between October 1 and April1 of each calendar year. This restriction on wet season work requires evidence of proposed features and practices that will allow the proposed work to safely commence within the rainy season. Approved deviations allowing for wet season work include a requirement for weekly site visits by the geotechnical engineer of record, as well as visits during periods of significant rainfall.

Emergency Response

City staff is prepared and ready to respond to landslide calls to evaluate public safety. DSG is a primary emergency responder to landslides and also provides regular training to the Mercer Island Volunteer Damage Assessment Team. Emergency response includes landslide hazard evaluation and placarding, as well as providing assistance and information to victims. See the attached document for excerpts from one of the training programs.

DSG Public education

To help residents understand how they can better manage their landslide risk, city staff presents free public landslide awareness meetings. Many of the same techniques that the city uses to reduce the chance of a slide occurring can be used by our citizens on a smaller scale. The best option is to avoid slides in the first place and citizens are asked to check their drain systems, to make sure that roof drains are routed away from steep slopes and to a safe location, to periodically inspect their steep slope areas for signs of slope movement or erosion, such as newly leaning trees or cracks opening up in the ground close to or on slopes. More tips for reducing landslide risk are available at: http://www.mercergov.org/files/Landslide_Risk_Reduction_Handout2014.pdf

Other City Programs

The Emergency Management office includes landslide response and recovery programs, and the Maintenance Department has established effective programs to help mitigate landslide hazards on public property. They developed the highly regarded geologic map and utilize the map to determine appropriate locations and designs for new projects, as well as when reviewing geologic concerns affecting the existing infrastructure. They conduct survey monitoring of areas with known or potential earth movement, and regularly utilize geotechnical engineering consultants for the investigation and design of hazard mitigation.

Summary

The geologic processes forming Mercer Island left many areas at risk to landslides. These areas are well identified and new development projects require effective hazard mitigation via the permit process, resulting in a safe installation. It is likely that many homes constructed prior to 2001 did not include the same level of effective design against landslides when compared to the homes constructed today. Under normal circumstances, there would be minimal landslide damage expected to hillside homes constructed after 2001. However, significant landslide damage would be expected from a major earthquake occurring at the Seattle fault (this damage is expected because the code does not require projects to be designed to resist the higher anticipated earthquake forces at the Seattle fault due to its long, 1100-year reoccurrence interval). Some good news is that public education programs continue to expose the substantial role that excess water contributes to the causation of landslides, which is a vital factor for reducing the landslide risk of older homes.

EXHIBIT 2

MI Weekly

A weekly update from the City of Mercer Island

Table of Contents

Like us on Facebook

Join our Mailing List

Calendar

(For event details, visit the City's online calendar or click on a specific event)

Dec 16

6:00pm Town Center Visioning Joint Commission Meeting

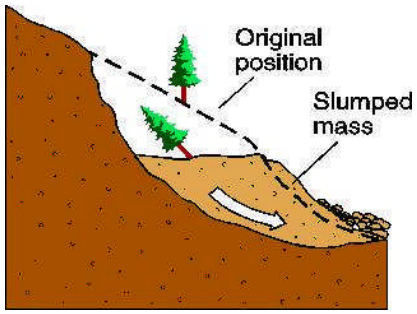
Dec 17

7:00pm Mercer Island Radio Operator Meeting

Dec 16, 2015 | Vol. 10 | No. 50

Landslide Recap and Information

As a result of the duration and intensity of last week's multiday rain event in the region, Mercer Island witnessed a significant landslide at SE 46th Street on Wednesday morning, December 9, involving three neighboring properties and no injuries.



Simplified landslide example; click for more information and City factsheets

As is customary in these situations, as soon as the City learns of such an event, the lead Building Official travels directly to the affected site to assess the damage firsthand, and determine whether the buildings involved are still safe for occupancy. Two of the three property owners were unaware of the incident until informed by the City.

Due to the ongoing risks posed by the possible expansion of the landslide, and supporting information from the City's GIS mapping data, all three properties were "red tagged" as unsafe at this time, obliging residents to find alternative accommodations. The City provides emergency services and support in these situations, and ensured that all families had access to housing elsewhere.

Under advice from the City, all of the involved owners began to contact State-licensed geotechnical engineers for a detailed evaluation and suggested mitigation measures.

The Island typically sustains 6 to 15 landslides per year, which are often exacerbated by many consecutive days of heavy rain.

Learn more about landslides and forecasting at this City webpage, or read and download a City landslide factsheet.

EXHIBIT 3

Mercer Island Landslide Hazard Assessment

by Kathy G. Troost & Aaron P. W
l 2009

GeoMapNW
geomapnw.ess.washington.edu

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0 0.5 1 Miles

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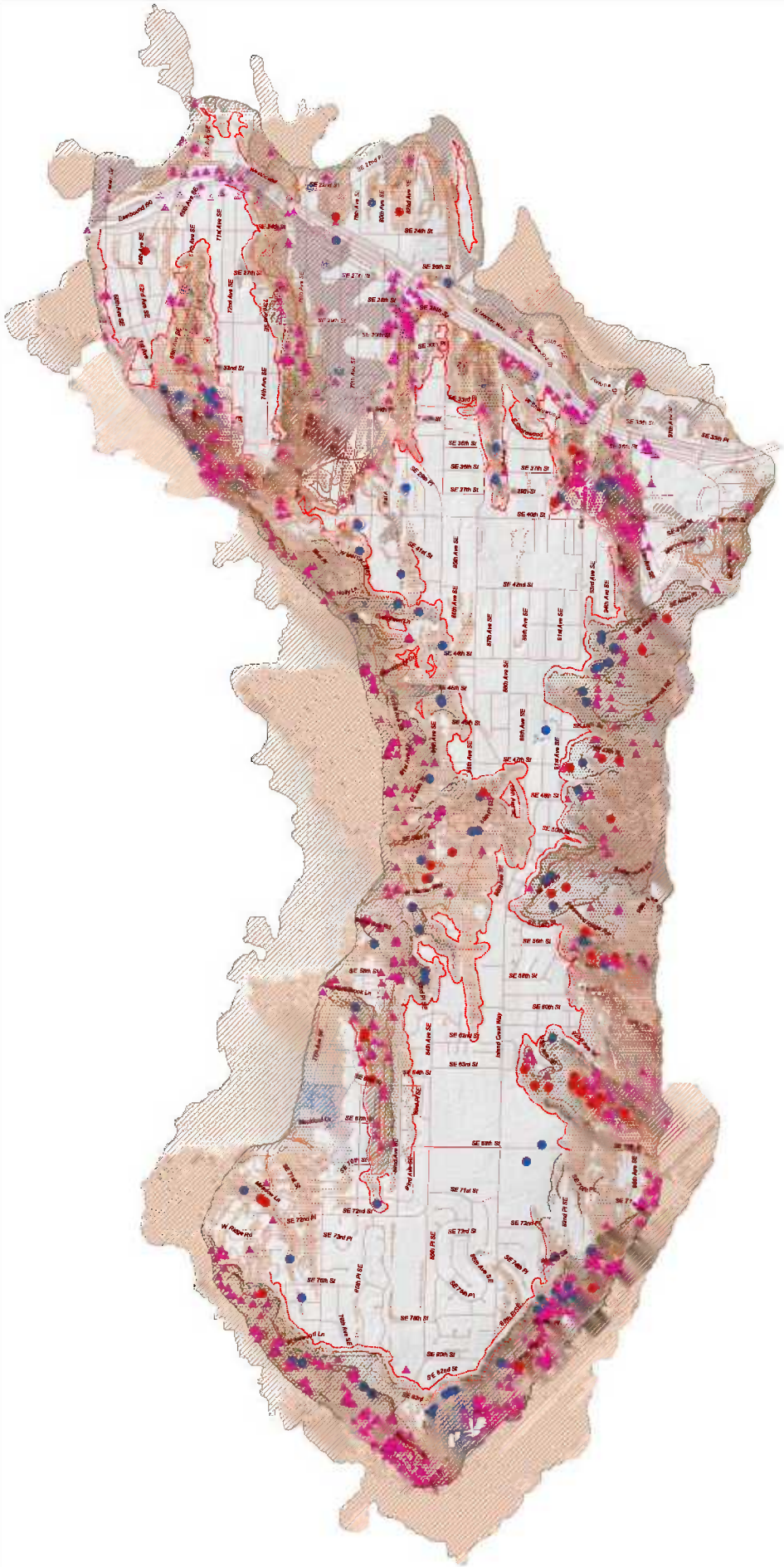

LANDSLIDE HAZARD AREAS
(WAC 365-190-080 4d and MICC 19.16.010)

Landslide hazard areas include areas potentially subject to landslides based on a combination of geologic, topographic, and hydrologic factors. They include areas susceptible because of any combination of bedrock, soil, slope (gradient), slope aspect, structure, hydrology, or other factors.

Areas susceptible to landsliding on Mercer Island include:

i. Areas of historic failure or that have been documented on published maps; *See mapped known landslides below;*
ii. Slopes steeper than 15%, intersecting a geologic contact of relatively permeable deposits over relatively impermeable deposits, and with springs or groundwater seepage; *See mapped potential sli*
. Areas that have shown movement during the Holocene epoch (last 10,000 years) or which are covered by Holocene-age mass wasting deposits; *See mapped known landslides below;*
iv. Slopes parallel or sub-p llel to planes of weakness (such as bedding planes, joint systems, and fault planes) in subsurface materials; *None identifi , but may be locall t*
v. Slopes having gradients steeper than 80% subject to rockfall during seismic shaking; *See slope classification below;*
vi. Areas potentially unstable as a result of rapid stream incision, stream bank erosion, and undercutting by wave action; *See mapped erosion locations below;*
vii. Areas that show evidence of, or are at risk from snow avalanche; *None identified on Mercer Island;*
viii. Areas located in a canyon or on an active alluvial fan, presently or potentially subject to inundation by debris flows or catastrophic flooding; *None identified on Mercer Island;*
ix. Any area with a slope of 40% or steeper and with a vertical relief of ten or more feet except where composed of consolidated rock; *See slope classification below.*

Landslide hazard areas include the following mapped areas:

Landslide Hazard
- Landslide Hazard Area (Known or Suspect)
- Landslide Hazard Assessment Setback

For all other areas hazard is unknown or unquantified

Supplemental Data

Known Landslides (I,III)
- Identified Landslide Location
- Scarp
- Landslide and Mass Wasting Deposits; subaerial and subaqueous

Slope (v) Class (ix)
- Slope 80% and higher
- Slope 40-79%

Potential Slide Area (II)
- Slope 15% and higher, and
- Geologic contact of coarse-grained deposits over fine-grained deposits where slope >= 15%, and
- Area where water less than 10 feet below ground surface based on limited data set (other areas of shallow water present), or
- Spring Locations, or
- Spring lines.

Areas of Rapid Stream Incision (vi)
- Areas of moderate to rapid stream incision/erosion; may result in unstable slopes and/or stream banks

GENERAL NOTES FOR GEOLOGICAL HAZARDS MAPS

This map is one of a suite of revised Geological Hazard Maps for the City of Mercer Island. This suite includes maps showing Seismic Hazards, Landslide Hazards, and Erosion Hazards.

Other geological and/or natural hazards may exist and geological events may occur on Mercer Island that are not specifically identified on these maps. Examples of geologic hazards and hazardous events that are not identified on these maps include, but are not limited to, tsunamis and seiches in Lake Washington.

These maps are for the sole use of the staff of the City of Mercer Island's Development Services Group (DSG) for the purposes of permit application evaluation. These maps provide DSG staff a general assessment of known or suspect geological hazard areas for which the City will require site and project-specific evaluation by a Washington State-licensed engineer, geologist or engineering geologist prior to issuing a permit for site development. All areas have not been specifically evaluated for geologic hazards and there may be locations that are not correctly represented on these maps. It is the responsibility of individual property owners and map users to evaluate the risk associated with their proposed development. No site-specific assessment of risk is implied or otherwise indicated by the City of Mercer Island by these maps.

The City of Mercer Island is using guidance provided by the State of Washington regarding the definition of geologically hazardous areas in accordance with WAC 365-190-0 t. "Geologically hazardous areas", by State definition, "include areas susceptible to erosion, sliding, earthquake, or other geological events. They pose a threat to the health and safety of citizens when incompatible commercial, residential, or industrial development is sited in areas of significant hazard."

This new set of maps represents an update of the 2002 Geologic Hazard Map Series and is based on a review of Best Available Science for the Seattle Fault and related events, a new Geological Map of Mercer Island by Troost and Wisher (2006), and a geologic database of Mercer Island compiled by GeoMapNW at the University of Washington. Information about data used for the maps, references, and data limitations are all described in an associated "Read Me" document. The digital version of these maps is accompanied by a meta data file containing pertinent information about map construction. These data and maps are all available on the City of Mercer Island website.

EXHIBIT 4

Mercer Island Seismic Hazard Assessment

by Kathy G. Troost & Aaron P. Wisher
April 2009

geomapnw.ess.washington.edu

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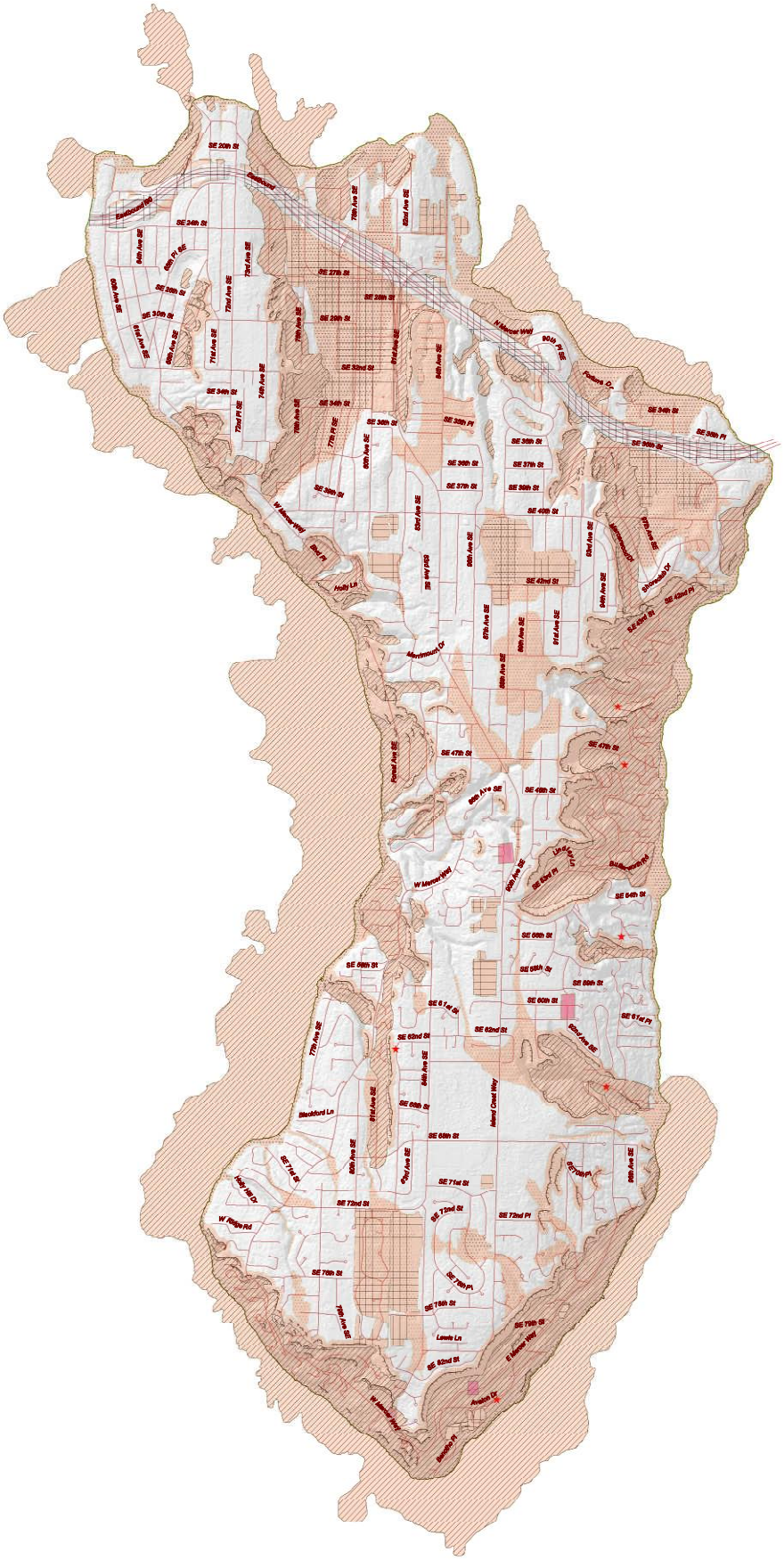


SEISMIC HAZARD AREAS (MICC 19.16.010)

Seismic Hazard areas are those areas subject to severe risk of damage as a result of earthquake-induced ground shaking, slope failure, settlement, soil liquefaction or surface faulting.

Seismic Hazard
- Seismic Hazard Area (Known or Suspect)

For all other areas risk is unknown or limited to ground shaking

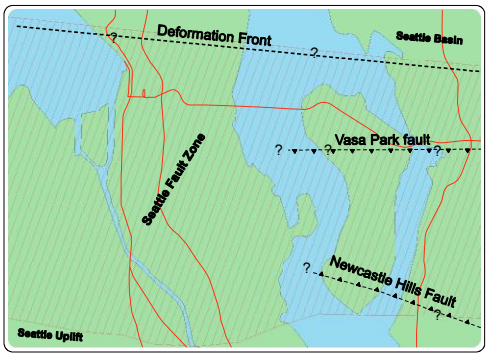
Supplemental Data

Seismically Hazardous Areas

Potential for seismically induced ground failures including settlement, cracking, lateral spreading, liquefaction due to ground shaking.
Seismically hazardous areas include the following:
- High Potential for seismically induced ground failures (Poorly consolidated, see note below)
- Moderate Potential for seismically induced ground failures (Moderately consolidated, see note below)
- Scarp
- Landslide and Mass Wastage Deposits (subaerial & subaqueous)
- Modified land

Documented Earthquake Ground Effects
- Miscellaneous Ground Effects of the 2001 Nisqually Earthquake (Approx. Area)
- Ground Settlement from the 1965 Earthquake (Approx. Area)
- Miscellaneous Ground Effects of the 1949 Earthquake (Approx. Area)

ACTIVE FAULTS



Mercer Island falls within the Seattle fault zone and at least two stands of the Seattle fault cross the island. No direct evidence of surface fault rupture has yet been documented for Mercer Island (Troost and Wisher, 2006).

The Seattle Fault Zone is the area where several parallel strands of the Seattle fault have either broken the ground surface or caused deformation of geologic materials. Earthquakes of magnitude M7 or greater have occurred on some of these fault strands within the Holocene (last 10,000 years) and will likely occur again (Blakely, et al., 2002; Sherrod 2002, 2005). The Seattle Fault Zone is one of several active crustal faults zones in the Puget Lowland currently undergoing research.

On Mercer Island, evidence for movement along these fault strands consists of exposures of deformed sedimentary strata and geophysical images of folded and faulted strata (Troost and Wisher, 2006; Stephenson et al., 2007). Elsewhere in the Puget Sound lowland, evidence for movement on the fault strands consists of uplifted beach deposits, down-dropped tidal marshes, offset strata, fault scarps, and deformation such as sheared and tightly folded strata. Evidence of the Seattle fault zone in the subsurface consists of aeromagnetic, gravitational, and seismic reflection anomalies (Liberty and Pratt, 2008).

East of Mercer Island, the Vasa Park fault and Newcastle Hills fault each have surface expression in the form of fault scarps and subsurface expression in the form of magnetic and seismic linear anomalies (Liberty and Pratt, 2008; Sherrod, 2002). The magnetic and seismic anomalies may be continuous with similar features to the west of Lake Washington, but those continuities are not firmly established (Liberty and Pratt, 2008). The locations of these faults are not well defined on Mercer Island (Pratt, 2009, pers. comm.)

The Deformation Front is an east-west-trending, convex-upward fold in geologic strata, where those strata drape over the northern-most thrust fault in the Seattle Fault Zone. North of the Deformation Front is the Seattle Basin, where strata lie nearly flat; south of the Deformation Front the strata dip down toward the north beneath the Seattle Uplift (Pratt, 2009). The location of the Deformation Front was moved northward from previous interpretations (Brocher, et al, 2004) following detailed evaluation of seismic lines by Pratt (2009).

Notes: Degree of consolidation

Geologic materials were assessed then classified as either strongly, moderately, or poorly consolidated. Degree of consolidation is a direct translation of geologic unit based on geologic history and predominant lithology. Because considerable variability exists within each geologic unit, more detailed analysis is needed for site-specific evaluations or to evaluate the degree of consolidation at a larger scale than provided. Slope and degree of saturation also affect the degree of consolidation, but have not been factored into this map. This qualitative assessment should be used to evaluate and understand the character of the island as a whole. These data should not be used for purposes of site-specific land-use planning or site-specific geologic evaluations. The classification shown on the map does not account for the built environment and impervious surfaces.

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The City of Mercer Island is using guidance provided by the State of Washington regarding the definition of geologically hazardous areas in accordance with WAC 365-190-080 and the Growth Management Act. "Geologically hazardous areas", by State definition, "include areas susceptible to erosion, sliding, earthquake, or other geological events. They pose a threat to the health and safety of citizens when incompatible commercial, residential, or industrial development is sited in areas of significant hazard."

This new set of maps represents an update of the 2002 Geologic Hazard Map Series and is based on a review of Best Available Science for the Seattle Fault and related events, a new Geological Map of Mercer Island by Troost and Wisher (2006), and a geologic database of Mercer Island compiled by GeoMapNW at the University of Washington. Information about data used for the maps, references, and data limitations are all described in an associated "Read Me" document. The digital version of these maps is accompanied by a meta data file containing pertinent information about map construction. These data and maps are all available on the City of Mercer Island website.

EXHIBIT 5

Mercer Island Erosion Hazard Assessment

by Kathy G. Troost & Aaron P. Wisher
April 2009

GeoMapNW
geomapnw.ess.washington.edu

0 0.5 1 Kilometers 1:12,000
0 0.5 1 Miles

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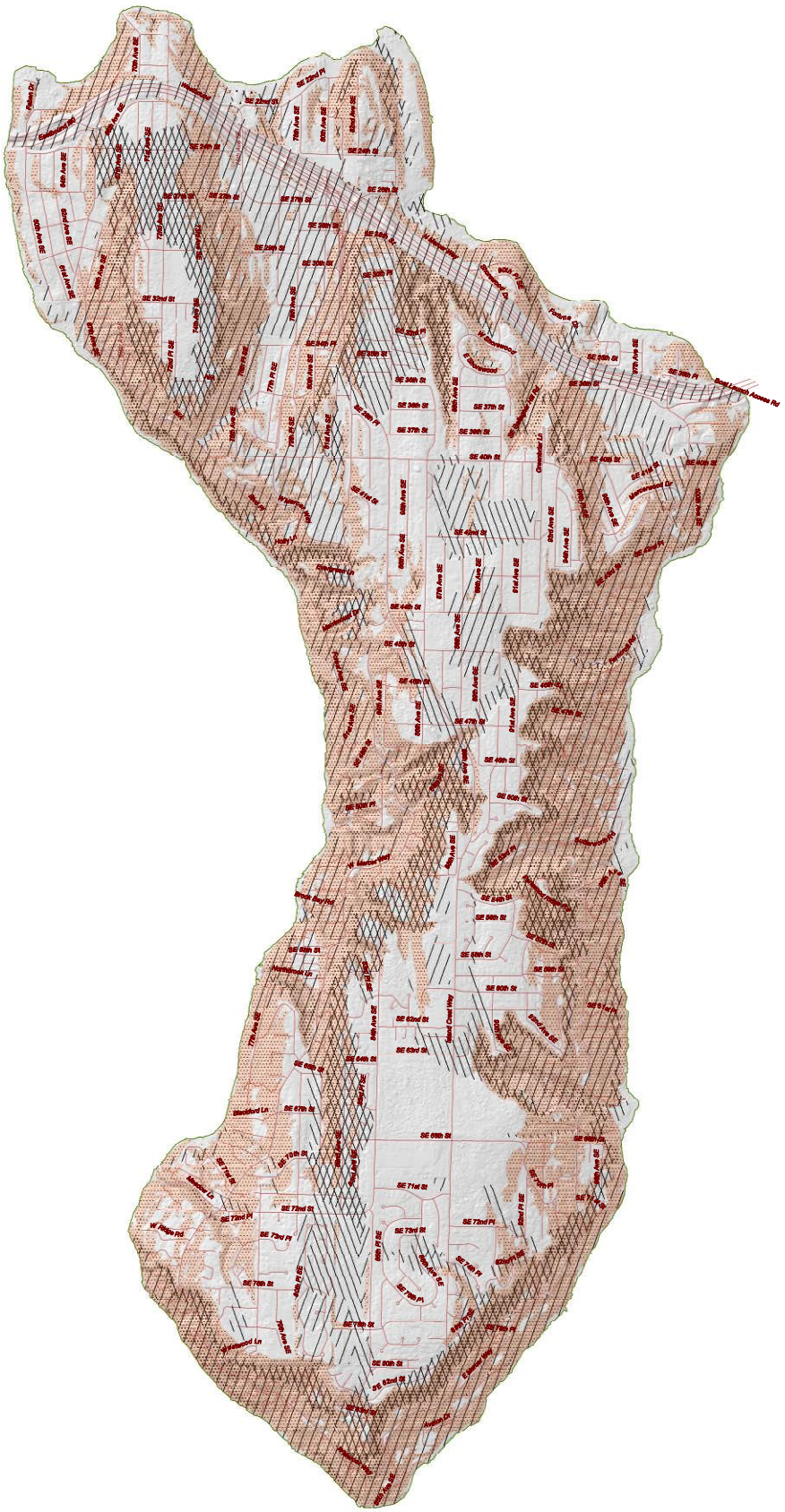

EROSION HAZARD AREAS (MICC 19.16.010)

Erosion hazards areas include those areas greater than 15% slope and subject to a severe risk of erosion due to wind, rain, water, slope and other natural agents including those soil types and/or areas identified by the U.S. Department of Agriculture's Natural Resource Conservation Service as having a "severe" or "very severe" rill and inter-rill erosion hazard.

Another factor in evaluating erosion potential is infiltration potential. If sandy material is present at the ground surface, rain water can infiltrate and loosen material for removal by erosion. Therefore the areas of sandy material have also been added to this hazard map for consideration along with the slope and erodible soils subclass.

Contributing factors not shown on the map include rainfall, areas of shallow groundwater, ground cover, wind, impervious surfaces, and changes to the ground surface. These factors and all the categories shown on the map should be used together to assess erosion potential. Individual areas less than 0.3 acres in size have been excluded.

Erosion Hazard

- Erosion Hazard Area (Known or Suspect)

For all other areas, hazard is unknown or unquantified

Supplemental Data

Infiltration Potential

- High - Coarse-grained deposits; e.g. gravel and clean sand
- Medium - Silty, sandy deposits
- Mixed - Interbedded or mixed fine and coarse-grained deposits

Slope Class

- Slope 80+%
- Slope 40-79%
- Slope 15-39%

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EXHIBIT 6

May 21, 2015

Katie Oman
Director
AMS Planning and Research
Seattle, Washington
Via email: koman@ams-online.com

Re: Mercer Island Center for the Arts Wetland Delineation Study
The Watershed Company Reference Number: 150320

Dear Katie:

On May 7, 2015 Ecologist Ryan Kahlo and I completed a wetland delineation study at the site of the proposed Mercer Island Center for the Arts (MICA) at Mercerdale Park located at 77th SE & SE 32nd Street (parcel # 1224049068) in the City of Mercer Island. The purpose of this study is to determine the jurisdictional boundary, size, classification, and associated buffer widths of Wetland A identified in the study area during a reconnaissance-level site investigation.

This letter summarizes the findings of this study and details applicable federal, state, and local regulations. The following attachments are included:

- Wetland Delineation Sketch
- Wetland Determination Data Forms
- Wetland Rating Forms

Methods

Public-domain information on the subject property was reviewed for this delineation study. These sources include USDA Natural Resources Conservation Service Soil maps, National Wetland Inventory maps, Washington Department of Fish and Wildlife (WDFW) Priority Habitat and Species interactive mapping system (PHS on the Web), King County's GIS mapping website (iMAP), and Mercer Island's GIS mapping website (Mercer Island GIS Portal).

The study area was evaluated for wetlands using methodology from the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region Version 2.0* (Regional Supplement) (US Army Corps of Engineers [Corps] May 2010). Wetland boundaries were determined on the basis of an examination of vegetation, soils, and hydrology. Areas meeting the criteria set forth in

the Regional Supplement were determined to be wetland. Soil, vegetation, and hydrologic parameters were sampled at several locations along the wetland boundaries to make the determination. Data points on-site are marked with yellow- and black-striped flags. Data were recorded at three of these locations.

Areas meeting wetland parameters were marked with pink- and black-striped flags. The boundary of the South Wetland was marked using 33 flags. Delineated wetlands were classified using the *Western Washington Wetland Rating System* (Ecology Rating System) (Ecology, Aug 2004, version 2).

Findings

Mercerdale Park is on the north end of Mercer Island, south of the downtown area. The MICA-identified study area is located north of the Mercerdale Skate Park (Figure 1) in the Cedar-Sammamish Water Resource Inventory Area (WRIA 8); Township 24N, Range 04E, Section 12. Developed areas are present north and northwest of the study area. A forested hillside with trails is located to the west, and a maintained park lawn area is present to the east.

Figure 1. MICA study area provided by AMS Planning and Research.

The study area contains a paved parking lot and building accessed from SE 32nd Street. The rest of the study area is undeveloped. Non-wetland, undeveloped areas are dominated by forested vegetation including Douglas-fir, red alder, bigleaf maple, and

Oregon ash in the canopy. One wetland, referred to here as Wetland A, is present in the study area and is described below.

Wetland A

Wetland A is narrow and located at the toe of a forested slope within the study area. Outside of the study area, the wetland unit extends to the south, and includes a relatively large forested slope to the southwest. The approximate wetland location is depicted in Figure 2, below.

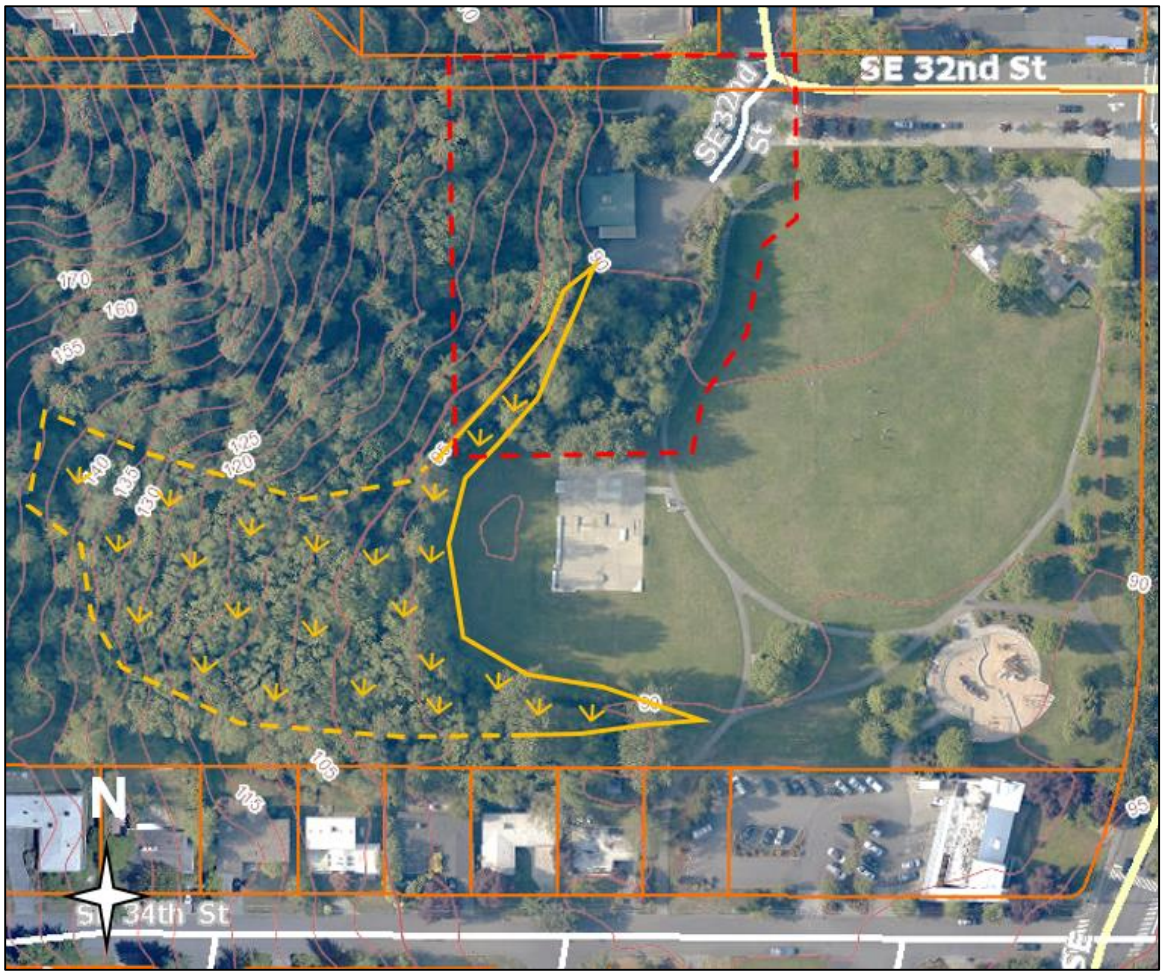


Figure 2. Approximate location and extent of Wetland A (yellow) with study area shown (red).

Wetland A contains slope and depressional hydrogeomorphic (HGM) classes; the depressional class is estimated to be less than 10 percent of the wetland unit. Therefore, Wetland A is rated as a slope wetland. Cowardin vegetation classes that are present in the wetland include palustrine forested and palustrine scrub-shrub. Common plants

observed during the site visit include Oregon ash, red alder, and black cottonwood in the canopy, with red-twig dogwood, Sitka willow, Dewey's sedge, creeping buttercup, soft rush, small-fruited bullrush, and giant horsetail in the shrub and herbaceous layers.

Sampled wetland soils in the study area contain a layer from 6 to 15 inches that is a dark (10 YR 3/1) clay loam with redox features present. Sampled soils meet hydric soil indicator Redox Dark Surface (F6). Soils were saturated to the surface during the field visit and a water table was observed at 6 inches below the soil surface. Several inches of standing water were present in a depressional area near the toe of the slope. The hydrology of Wetland A is provided by groundwater- and surface water-flow from the forested slope located to the west; water seasonally ponds at the toe of the slope near the extent of the maintained park area. According to the City's storm utility maps (Mercer Island GIS Portal), surface water from Wetland A flows both north and south into the City's storm-water system.

This wetland unit rates moderate for water quality functions, low for hydrologic functions, and moderate for habitat functions. The presence of dense herbaceous vegetation, and proximity to urban areas give this wetland the potential and opportunity to provide water quality functions. Hydrologic functions provided by Wetland A are low since flow from the wetland drains into the City's storm utility system; therefore the wetland does not have the opportunity to reduce flooding and erosion. Vegetative structure and diversity, and habitat features such as large woody debris and standing snags contribute to the moderate habitat functions score for this wetland unit.

Marginal Area (Non-wetland)

One marginal area is present on the western study area boundary; this area does not meet all three wetland criteria and is not considered a jurisdictional wetland. Vegetation at this location is dominated by a marginal, facultative vegetation assemblage including Oregon ash and bigleaf maple in the canopy with planted conifers in the understory and Dewey's sedge, creeping buttercup, and grass in the herbaceous layer. Sampled soils meet the conditions for hydric soil indicator Redox Dark Surface (F6). However, soils were not saturated at the time of sampling and did not meet any primary hydrology indicators. Due to the time of year and normal year-to-date precipitation, the lack of observed hydrology was judged to be reliable[1]. Furthermore, two or more secondary hydrology indicators were not met. When compared to similar forested slopes of

[1] Precipitation data gathered from National Oceanic and Atmospheric Administration's (NOAA's) National Weather Service Website (http://w2.weather.gov/climate/index.php?wfo=sew). On May 7, 2015, recorded precipitation for the Seattle-Tacoma area was within 0.3 inches of the normal year-to-date value.

Wetland A, this area is much dryer, and the vegetation assemblage generally reflects this observation.

Local Regulations

Wetlands in Mercer Island are regulated under the Mercer Island City Code (MICC) Unified Land Development Code Chapter 19.07, Environment. The Mercerdale Park parcel is zoned Public Institution (P).

Wetlands

Wetland A scored 12 points for water quality, 5 points for hydrology, and 15 points for habitat, for a total of 32 points. This score qualifies the Wetland A as a Category III wetland. Category III wetlands require a standard buffer width of 50 feet.

In general, site plans should avoid and minimize impacts to wetlands and buffers. However, the City may allow modification of the standard wetland buffer either through buffer reduction (19.07.08[C][2]) or buffer averaging (19.07.080[C][3]). The buffer reduction option would require a critical area study and mitigation, while the buffer averaging option does not require a critical area study but may require a mitigation plan.

Wetland buffers may be reduced to 25 feet via buffer reduction in accordance with an approved critical area study if the code official determines the following:

- That a smaller area is adequate to protect the wetland functions,
- Impacts will be mitigated consistent with MICC 19.07.070(B)(2), and
- The proposal will result in no net loss of wetland buffer functions.

Wetland buffers may be averaged in accordance with the following provisions outlined in MICC 19.07.070(B)(3):

- The proposal will result in a net improvement of critical area function;
- The proposal will include replanting of the averaged buffer using native vegetation;
- The total area contained in the averaged buffers on the development proposal site is not decreased below the total area that would be provided if the maximum width were not averaged;
- The standard buffer width is not reduced to a width that is less than the minimum buffer width (25 feet) at any location; and
- That portion of the buffer that has been reduced in width shall not contain a steep slope.

Direct wetland impacts are allowed for Category III wetlands less than one acre in size if proposed mitigation will result in equivalent or greater function (MICC 19.07.080(D)).

Wetland A is greater than 2 acres, thereby exceeding the alteration threshold. In addition, the City's reasonable use criteria found in MICC 19.07.030(B) is not applicable since an existing use (City park) has already been established on the parcel.

State and Federal Regulations

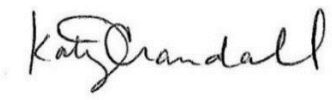
Wetlands are also regulated by the Corps under Section 404 of the Clean Water Act. Any filling of Waters of the U.S., including wetlands (except isolated wetlands), would require notification and permits from the Corps. Wetland A would likely not be considered isolated. Federally permitted actions that could affect endangered species (i.e. salmon or bull trout) may also require a biological assessment study and consultation with the U.S. Fish and Wildlife Service and/or the National Marine Fisheries Service. Application for Corps permits may also require an individual 401 Water Quality Certification and Coastal Zone Management Consistency determination from Ecology.

In general, neither the Corps nor Ecology regulates wetland buffers, unless direct impacts are proposed. When direct impacts are proposed, mitigated wetlands may be required to employ buffers based on Corps and Ecology joint regulatory guidance.

The information contained in this letter or report is based on the application of technical guidelines currently accepted as the best available science and in conjunction with the criteria outlined in the methods section. All discussions, conclusions and recommendations reflect the best professional judgment of the author(s) and are based upon information available to us at the time the study was conducted. All work was completed within the constraints of budget, scope, and timing. The findings of this report are subject to verification and agreement by the appropriate local, State and Federal regulatory authorities. No other warranty, expressed or implied, is made.

Please call if you have any questions or if we can provide you with any additional information.

Sincerely,

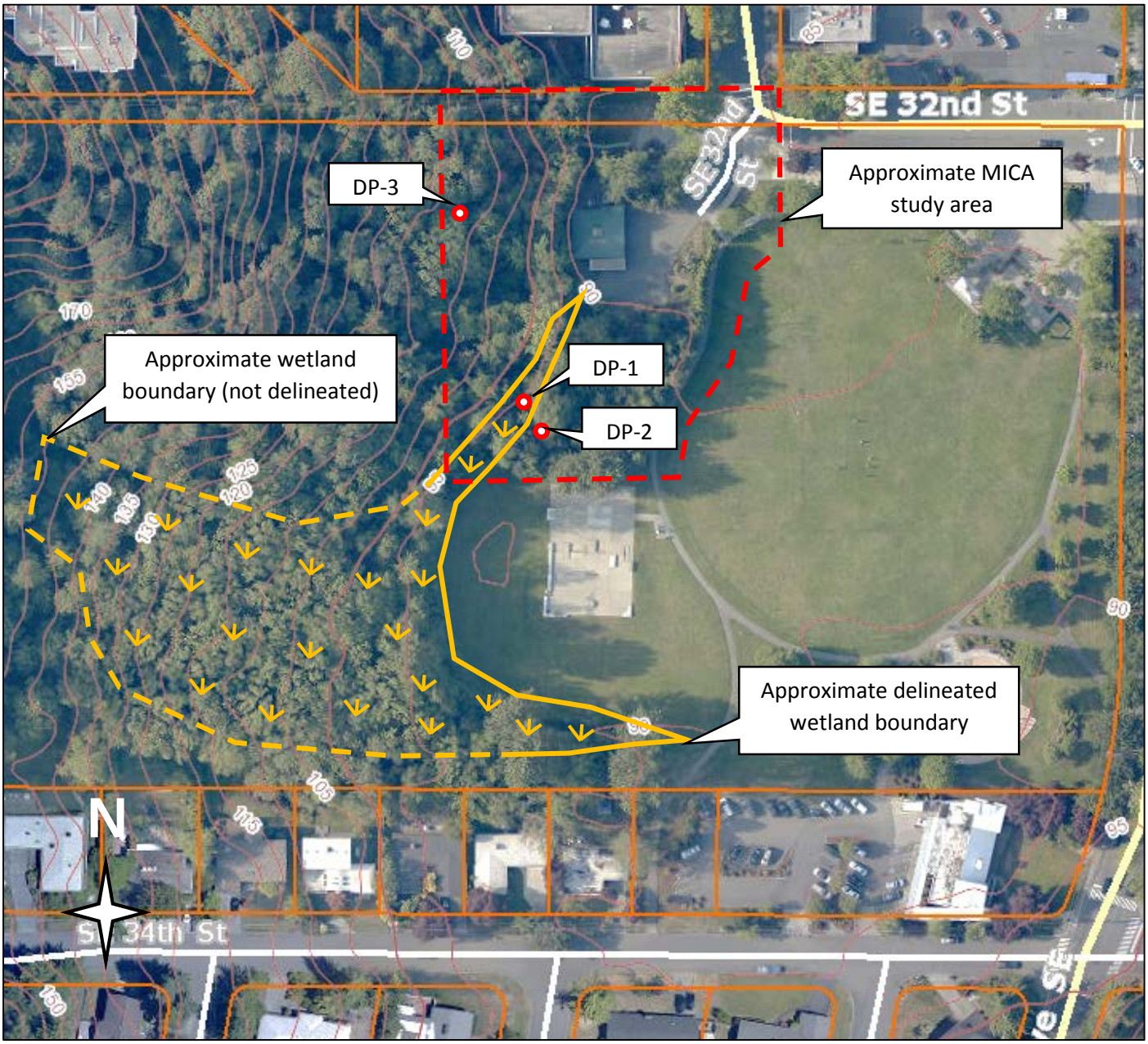


Katy Crandall, WPIT
Ecologist

Enclosures

THE WATERSHED COMPANY

750 Sixth Street South | Kirkland | WA 98033
p 425.822.5242 f 425.827.8136



Note: This is a field sketch. Wetland areas not surveyed. Areas depicted are approximate and not to scale.

LEGEND:

- Wetland edge, delineated
- Wetland edge, not delineated
- Wetland area
- Data Point (DP)

Wetland Delineation Sketch
Prepared for: Katie Oman, AMS Planning and Research
Located at: Mercerdale Park
Parcel Number 1224049068
3205 77th Ave. SE
Mercer Island, WA 98040

Site Visits: April 2 and May 7, 2015
TWC Ref. No. 150320

THE WATERSHED COMPANY

WETLAND DETERMINATION DATA FORM

Western Mountains, Valleys, and Coast Supplement to the 1987 COE Wetlands Delineation Manual

DP- 1

750 Sixth Street South
Kirkland, Washington 98033
(425) 822-5242
watershedco.com

Project Site:	**Mercerdale Park**	Sampling Date:	**4/2/2015**
Applicant/Owner:	**MICA**	Sampling Point:	DP- **1**
Investigator:	**K. Crandall**	City/County:	**Mercer Island**
Sect., Township, Range:	S **12** T **24N** R **04E**	State:	**WA**
Landform (hillslope, terrace, etc): **Toe of slope**	Slope (%): **5**	Local relief (concave, convex, none): **Concave**	
Subregion (LRR): **A**	Lat:	Long:	Datum:
Soil Map Unit Name: **Bh – Bellingham silt loam**		NWI classification: **NA**	
Are climatic/hydrologic conditions on the site typical for this time of year? ☒ Yes ☐ No		(If no, explain in remarks.)	
Are "Normal Circumstances" present on the site? ☒ Yes ☐ No			
Are Vegetation☐, Soil ☐, or Hydrology ☐ significantly disturbed?			
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 ☐	**Is the Sampling Point within a Wetland?**	Yes ☒	No ☐
Hydric Soils Present?	Yes ☒	No ☐			
Wetland Hydrology Present?	Yes ☒	No ☐			

Remarks: **Wetland A in-pit**

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 5m diam.)	Absolute % Cover	Dominant Species?	Indicator Status
1. ***Pseudotsuga menzeisii* (dying and rooted upslope)**			
2. ***Crataegus monogyna***	**30**	**Y**	**FAC**
3. ***Populus balsamifera***	**15**	**Y**	**FAC**
4. ***Fraxinus latifolia***	**3**	**N**	**FACW**
	48	= Total Cover	
Sapling/Shrub Stratum (Plot size: 3m diam.)			
1. ***Cornus sericea***	**20**	**Y**	**FACW**
2.			
3.			
4.			
5.			
	20	= Total Cover	
Herb Stratum (Plot size: 1m diam.)			
1. ***Ranunculus repens***	**40**	**Y**	**FAC**
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	40	= Total Cover	
Woody Vine Stratum (Plot size:)			
1. ***Rubus armeniacus***	**20**	**Y**	**FACU**
2.			
	20	= Total Cover	
% Bare Ground in Herb Stratum:			

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

- ☒ Dominance test is > 50%
- ☐ Prevalence test is ≤ 3.0 *
- ☐ Morphological Adaptations * (provide supporting data in remarks or on a separate sheet)
- ☐ Wetland Non-Vascular Plants *
- ☐ Problematic Hydrophytic Vegetation * (explain)

* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks:

SOIL **Sampling Point – DP-1**

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
0-6	**10YR 3/2**	**100**					**Clay loam**	
6-12	**10YR 3/1**	**93**	**7.5YR 3/4**	**7**	**C**	**M**	**Clay loam**	
12-15	**10YR 3/1**	**80**	**7.5YR 3/4**	**20**	**C**	**M**	**Clay loam**	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Loc: 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]

- ☐ 2cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Other (explain in remarks)
- ☐

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric soil present? Yes ☒ No ☐

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 (**except MLRA 1, 2, 4A & 4B**) (B9)
- ☐ 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 & 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

Field Observations

Surface Water Present?	Yes ☒	No ☐	Depth (in):	**~10 nearby**
Water Table Present?	Yes ☒	No ☐	Depth (in):	**6 BGS**
Saturation Present? (includes capillary fringe)	Yes ☒	No ☐	Depth (in):	**0 BGS**

Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks: **BGS = below ground surface**

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WETLAND DETERMINATION DATA FORM

Western Mountains, Valleys, and Coast Supplement to the 1987 COE Wetlands Delineation Manual

DP- 2

750 Sixth Street South
Kirkland, Washington 98033
(425) 822-5242
watershedco.com

Project Site:	**Mercerdale Park**	Sampling Date:	**4/2/2015**
Applicant/Owner:	**MICA**	Sampling Point:	DP- **2**
Investigator:	**K. Crandall**	City/County:	**Mercer Island**
Sect., Township, Range:	S **12** T **24N** R **04E**	State:	**WA**
Landform (hillslope, terrace, etc): **Terrace**	Slope (%): **0**	Local relief (concave, convex, none): **None**	
Subregion (LRR): **A**	Lat:	Long:	Datum:
Soil Map Unit Name: **Bh – Bellingham silt loam**		NWI classification: **NA**	

Are climatic/hydrologic conditions on the site typical for this time of year? ☒ Yes ☐ No (If no, explain in remarks.)
Are "Normal Circumstances" present on the site? ☒ Yes ☐ No
Are Vegetation☐, Soil ☐, or Hydrology ☐ significantly disturbed?
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 ☒			
Hydric Soils Present?	Yes ☒	No ☐	**Is the Sampling Point within a Wetland?**	Yes ☐	No ☒
Wetland Hydrology Present?	Yes ☐	No ☒			

Remarks: **Out-pit adjacent to Wetland A**

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 5m diam.)	Absolute % Cover	Dominant Species?	Indicator Status
1. ***Pseudotsuga menzeisii***	**50**	**Y**	**FACU**
2. ***Alnus rubrra***	**50**	**Y**	**FAC**
3. ***Acer macrophyllum***	**10**	**N**	**FACU**
4. ***Fraxinus latifolia***	**10**	**N**	**FACW**
		= Total Cover	
Sapling/Shrub Stratum (Plot size: 3m diam.)			
1. ***Rosa gymnocarpa***	**5**	**Y**	**FACU**
2.			
3.			
4.			
5.			
		= Total Cover	
Herb Stratum (Plot size: 1m diam.)			
1. ***Polystichum munitum***	**10**	**Y**	**FACU**
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
		= Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
		= Total Cover	

% Bare Ground in Herb Stratum:

Remarks:

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: **2** (A)

Total Number of Dominant Species Across All Strata: **4** (B)

Percent of Dominant Species that are OBL, FACW, or FAC: **50** (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

☐ Dominance test is > 50%
☐ Prevalence test is ≤ 3.0 *
☐ Morphological Adaptations * (provide supporting data in remarks or on a separate sheet)
☐ Wetland Non-Vascular Plants *
☐ Problematic Hydrophytic Vegetation * (explain)

* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? Yes ☐ No ☒

SOIL **Sampling Point – DP-2**

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 2/2**	**100**					**Gravelly sandy loam**	
8-14	**10YR 3/2**	**95**	**7.5YR 4/6**	**5**	**C**	**M**	**Gravelly sandy loam**	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Loc: 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]

- ☐ 2cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Other (explain in remarks)
- ☐

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric soil present? Yes ☒ No ☐

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 (**except MLRA 1, 2, 4A & 4B**) (B9)
- ☐ 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 & 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

Field Observations

Surface Water Present? Yes ☐ No ☒ Depth (in):

Water Table Present? Yes ☐ No ☒ Depth (in):

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (in):

Wetland Hydrology Present? Yes ☐ No ☒

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

Remarks: **Damp, not saturated**

THE WATERSHED COMPANY

WETLAND DETERMINATION DATA FORM

Western Mountains, Valleys, and Coast Supplement to the 1987 COE Wetlands Delineation Manual

DP- 3

750 Sixth Street South
Kirkland, Washington 98033
(425) 822-5242
watershedco.com

Project Site:	**Mercerdale Park**	Sampling Date:	**5/7/2015**
Applicant/Owner:	**MICA**	Sampling Point:	DP- **3**
Investigator:	**K. Crandall, R. Kahlo**	City/County:	**Mercer Island**
Sect., Township, Range:	S **12** T **24N** R **04E**	State:	**WA**

Landform (hillslope, terrace, etc): **Terrace** | Slope (%): **5** | Local relief (concave, convex, none): **Concave**

Subregion (LRR): **A** | Lat: | Long: | Datum:

Soil Map Unit Name: **KbP – Kitsap silt loam** | NWI classification: **NA**

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

Are "Normal Circumstances" present on the site? ☒ Yes ☐ No

Are Vegetation☐, Soil ☐, or Hydrology ☐ significantly disturbed?

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	☐	
Hydric Soils Present?	Yes	☒	No	☐	**Is the Sampling Point within a Wetland?** Yes ☐ No ☒
Wetland Hydrology Present?	Yes	☐	No	☒	

Remarks: **Marginal non-wetland area**

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 5m diam.)	Absolute % Cover	Dominant Species?	Indicator Status
1. ***Acer macrophyllum***	**50**	**Y**	**FACU**
2. ***Fraxinus latifolia***	**50**	**Y**	**FACW**
3.			
4.			
	100	= Total Cover	
Sapling/Shrub Stratum (Plot size: 3m diam.)			
1. ***Thuja plicata***	**10**	**Y**	**FAC**
2.			
3.			
4.			
5.			
	10	= Total Cover	
Herb Stratum (Plot size: 1m diam.)			
1. ***Ranunculus repens***	**70**	**Y**	**FAC**
2. ***Carex deweyana***	**60**	**Y**	**FAC**
3. ***Unk. Grass***	**40**	**Y**	**FAC***
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	170	= Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
		= Total Cover	
% Bare Ground in Herb Stratum:			

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: **5** (A)

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

Percent of Dominant Species that are OBL, FACW, or FAC: **83** (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

- ☒ Dominance test is > 50%
- ☐ Prevalence test is ≤ 3.0 *
- ☐ Morphological Adaptations * (provide supporting data in remarks or on a separate sheet)
- ☐ Wetland Non-Vascular Plants *
- ☐ Problematic Hydrophytic Vegetation * (explain)

* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks: ***Presumed FAC**

SOIL **Sampling Point – DP-3**

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
0-8	**2.5Y 3/1**	**92**	**7.5 YR 3/4**	**8**	**C**	**M**	**Silty clay loam**	
8-14	**10 YR 4/1**	**80**	**10 YR 4/6**	**20**	**C**	**M**	**Clay loam**	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Loc: 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]

- ☐ 2cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Other (explain in remarks)
- ☐

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric soil present? Yes ☒ No ☐

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 (**except MLRA 1, 2, 4A & 4B**) (B9)
- ☐ 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 & 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

Field Observations

Surface Water Present?	Yes ☐	No ☒	Depth (in):
Water Table Present?	Yes ☐	No ☒	Depth (in):
Saturation Present? (includes capillary fringe)	Yes ☐	No ☒	Depth (in):

Wetland Hydrology Present? Yes ☐ No ☒

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

Remarks: **Damp, not saturated**

WETLAND RATING FORM – WESTERN WASHINGTON
Version 2 – Updated July 2006 to increase accuracy and reproducibility among users
Updated Oct 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): Wetland A Date of site visit: 5/7/2015

Rated by: K. Crandall, R. Kahlo Trained by Ecology? Yes ☒ No ☐ Date of Training 09/2014

SEC: 12 TWNSHP: 24N RNGE: 04E Is S/T/R in Appendix D? Yes ☐ No ☒

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I ☐ II ☐ III ☒ IV ☐

Category I = Score ≥70
Category II = Score 51-69
Category III = Score 30-50
Category IV = Score < 30

Score for Water Quality Functions	12
Score for Hydrologic Functions	5
Score for Habitat Functions	15
TOTAL score for functions	**32**

Category based on SPECIAL CHARACTERISTICS of wetland

I ☐ II ☐ Does not Apply ☒

Final Category (choose the "highest" category from above) **III**

Check the appropriate type and class of wetland being rated.

Wetland Type		Wetland Class	
Estuarine	☐	**Depressional**	☐
Natural Heritage Wetland	☐	**Riverine**	☐
Bog	☐	**Lake-fringe**	☐
Mature Forest	☐	**Slope**	☒
Old Growth Forest	☐	**Flats**	☐
Coastal Lagoon	☐	**Freshwater Tidal**	☐
Interdunal	☐		
None of the above	☒	Check if unit has multiple HGM classes present	☐

Does the wetland unit being rated meet any of the criteria below?

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands That May Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered **animal** or **plant** species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X*
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered **animal** species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category I Natural Heritage Wetlands (see p. 19 of data form).		X*
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X*
SP4. *Does the wetland unit have a local significance in addition to its functions*? For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

***The study area was reviewed for the presence of endangered, threatened, and priority species using WDFW online Priority Habitat and Species Data, PHS on the Web (http://wdfw.wa.gov/mapping/phs/).**

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands into those that function in similar ways. Classifying the wetland first simplifies the questions needed to answer how it functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Classification of Wetland Units in Western Washington

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 wetland unit usually controlled by tides (i.e. except during floods)?

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

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? **YES – Freshwater Tidal Fringe NO – Saltwater Tidal Fringe (Estuarine)**

*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 rated as an **Estuarine** wetland.* Wetlands that were called estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

2. The entire wetland unit is flat and precipitation is 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 both** of the following criteria?

☐ The vegetated part of the wetland is on the shores of a body of open water (without any vegetation on the surface) at least 20 acres (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?

☒ The wetland is on a slope (*slope can be very gradual*),

☒ 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.

☒ The water leaves the wetland **without being impounded**?

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

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

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 two years

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

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

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 your wetland. 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 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	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

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

Wetland name or number: A

S	Slope Wetlands	Points
	WATER QUALITY FUNCTIONS - Indicators that wetland functions to improve water quality	
S	**S 1. Does the wetland have the potential to improve water quality?**	*(see p. 64)*
S	S 1.1 Characteristics of average slope of wetland: Slope is1% or less *(a 1% slope has a 1 foot vertical drop in elevation horizontal distance) for every 100 ft* ..... points = 3 Slope is 1% - 2% ..... points = 2 Slope is 2% - 5% ..... points = 1 Slope is greater than 5% ..... points = 0	0
S	S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic *(use NRCS definitions).* YES = 3 points NO = 0 points	0
S	S 1.3 Characteristics of the vegetation in the wetland that trap sediments and pollutants: *Choose the points appropriate for the description that best fits the vegetation in the wetland. Dense vegetation means you have trouble seeing the soil surface. Dense vegetation means you have trouble seeing the soil surface (>75% cover) and uncut means not grazed or mowed and plants are higher than 6 inches.* Dense, ungrazed, herbaceous vegetation > 90% of the wetland area ..... points = 6 Dense, ungrazed, herbaceous vegetation > 1/2 of area ..... points = 3 Dense, woody, vegetation > ½ of area ..... points = 2 Dense, ungrazed, herbaceous vegetation > 1/4 of area ..... points = 1 Does not meet any of the criteria above for vegetation ..... points = 0	6
S	**Total for S 1** *Add the points in the boxes above*	6
S	**S 2. Does the wetland have the opportunity to improve water quality?** ***(see p. 67)*** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants.A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* ☐ Grazing in the wetland or within 150 ft ☐ Untreated stormwater discharges to wetland ☐ Tilled fields, logging or orchards within 150 ft of wetland ☐ A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging ☒ Residential, urban areas, or golf courses are within 150 ft upslope of wetland ☐ Other_____ **YES** multiplier is **2** **NO** multiplier is **1**	(see p. 67) multiplier 2
S	**TOTAL - Water Quality Functions** Multiply the score from S 1 by S 2 ***Add score to table on p. 1***	**12**

S	Slope Wetlands	Points
	HYDROLOGIC FUNCTIONS - Indicators that wetland functions to reduce flooding and stream erosion	
	S 3. Does the wetland have the <u>potential</u> to reduce flooding and erosion?	***(see p. 68)***
S	S 3.1 Characteristics of vegetation that reduce the velocity of surface flows during storms. *Choose the points appropriate for the description that best fit conditions in the wetland. (stems of plants should be thick enough (usually > 1/8in), or dense enough, to remain erect during surface flows)* Dense, uncut, **rigid** vegetation covers > 90% of the area of the wetland. ..... points = 6 Dense, uncut, **rigid** vegetation > 1/2 area of wetland ..... points = 3 Dense, uncut, **rigid** vegetation > 1/4 area ..... points = 1 More than 1/4 of area is grazed, mowed, tilled or vegetation is not rigid ..... points = 0	3
S	S 3.2 Characteristics of slope wetland that holds back small amounts of flood flows: The slope wetland has small surface depressions that can retain water over at least 10% of its area. YES points = 2 NO points = 0	2
S	**Total for S 3** *Add the points in the boxes above*	5
S	**S 4. Does the wetland have the <u>opportunity</u> to reduce flooding and erosion?** ***(see p. 70)*** Is the wetland in a landscape position where the reduction in water velocity it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows? *Note which of the following conditions apply.* ☐ Wetland has surface runoff that drains to a river or stream that has flooding problems ☐ Other_____ *(Answer NO if the major source of water to the wetland is controlled by a reservoir or the wetland is tidal fringe along the sides of a dike)* **YES** multiplier is **2** **NO** multiplier is **1**	(see p. 70) multiplier **1**
S	**TOTAL - Hydrologic Functions** Multiply the score from S 3 by S 4 ***Add score to table on p. 1***	**5**

Comments

S 4 – Using the Mercer Island GIS Portal website, it appears that surface water leaving the wetland is directed into the City's storm utility system.

These questions apply to wetlands of all HGM classes.
HABITAT FUNCTIONS - Indicators that wetland functions to provide important habitat

H 1. Does the wetland have the potential to provide habitat for many species?

H 1.1 Vegetation structure ***(see p. 72)***

Check the types of vegetation classes present (as defined by Cowardin) if the class is ¼ acre or covers more than 10% of the area of the wetland if unit smaller than 2.5 acres.

- ☐ Aquatic bed
- ☐ Emergent plants
- ☒ Scrub/shrub (areas where shrubs have >30% cover)
- ☒ Forested (areas where trees have >30% cover)
- ☒ Forested areas have 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon

Add the number of vegetation types that qualify. If you have:

4 structures or more ..... points = 4
3 structures ..... points = 2
2 structures ..... points = 1
1 structure ..... points = 0

2

H 1.2. Hydroperiods ***(see p. 73)***

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 acre 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
- ☒ Occasionally flooded or inundated — 2 types present ..... points = 1
- ☒ Saturated only — 1 types 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 ***(see p. 75)***

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)*

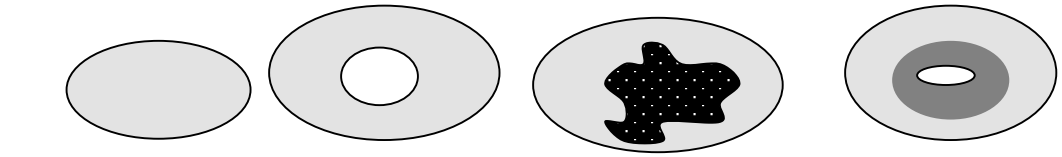
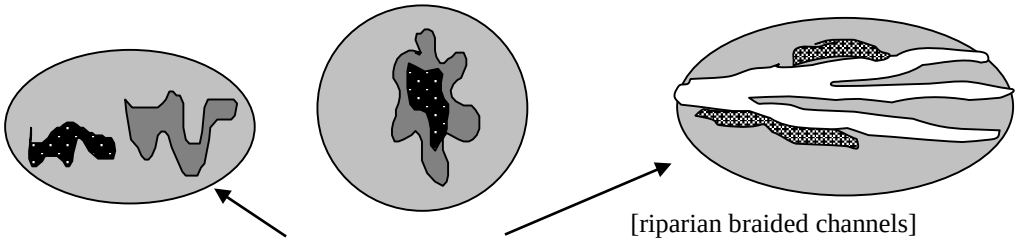
You do not have to name the species.

Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle

If you counted: > 19 species ..... points = 2
List species below if you want to: 5 - 19 species ..... points = 1
< 5 species ..... points = 0

FRLA, POBA, ALRU, THPL, ACMA, SASI, SALU, COSE, RUAR, POMU, JUEF, ATFI, SCMI, CADE, RARE, EQTE, EQAR, OESA, COAR, Grass1

2

H 1.4. Interspersion of habitats ***(see p. 76)*** Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  None = 0 points Low = 1 point Moderate = 2 points  High = 3 points [riparian braided channels] NOTE: If you have four or more vegetation types or three vegetation types and open water the rating is always "high".	1
H 1.5. Special Habitat Features: ***(see p. 77)*** *Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.* ☒ Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long). ☒ Standing snags (diameter at the bottom > 4 inches) in the wetland ☐ Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream for at least 33 ft (10m) ☐ Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present ☐ At least ¼ acre of thin-stemmed persistent vegetation 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 each stratum of plants *Note: The 20% stated in early printings of the manual on page 78 is an error.*	3
H 1. TOTAL Score - potential for providing habitat *Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5*	9

Wetland name or number: A

H 2. Does the wetland have the opportunity to provide habitat for many species?	
H 2.1 Buffers ***(see p. 80)*** *Choose the description that best represents condition of buffer of wetland. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."* ☐ 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No developed areas within undisturbed part of buffer. (relatively undisturbed also means no-grazing) ..... Points = 5 ☐ 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference..... Points = 4 ☐ 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference..... Points = 4 ☐ 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference..... Points = 3 ☐ 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. ..... Points = 3 **If buffer does not meet any of the criteria above** ☐ No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. ..... Points = 2 ☒ No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. ..... Points = 2 ☐ Heavy grazing in buffer. ..... Points = 1 ☐ Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland ..... Points = 0 ☐ Buffer does not meet any of the criteria above……..……...Points = 1	2
H 2.2 Corridors and Connections ***(see p. 81)*** H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (*dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor*). YES = **4 points** (*go to H 2.3*) **NO** = go to H 2.2.2 H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR** a **Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? YES = **2 points** (*go to H 2.3*) **NO** = H 2.2.3 H 2.2.3 Is the wetland: within 5 mi (8km) of a brackish or salt water estuary OR within 3 mi of a large field or pasture (>40 acres) OR within 1 mi of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	1

H 2.3 Near or adjacent to other priority habitats listed by WDFW ***(see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report http://wdfw.wa.gov/hab/phslist.htm)*** Which of the following priority habitats are within 330ft (100m) of the wetland? *(NOTE: the connections do not have to be relatively undisturbed)* ☐ **Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acres). ☒ **Biodiversity Areas and Corridors:** Areas of habitat that are relatively important to various species of native fish and wildlife (*full description in WDFW PHS report p. 152*) ☐ **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 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. (Mature forests.) Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; crown cover may be less that 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:** Woodlands 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.)* ☐ **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*) ☐ **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: pp. 167-169 and glossary in Appendix A.)* ☐ **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 7.6 m (25 ft) high and occurring below 5000 ft. ☐ **Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), 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 >51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30cm (12 in) in diameter at the largest end, and > 6m (20 ft) long. If wetland has **3 or more** priority habitats **= 4 points** If wetland has **2** priority habitats = **3 points** If wetland has **1** priority habitat **= 1 point** No habitats = **0 points** *Note: All vegetated wetland are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H2.4.*	3

H 2.4 Wetland Landscape *(choose the **one** description of the landscape around the wetland that best fits)* ***(see p. 84)*** There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. ..... points = 5 The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile ..... points = 5 There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed ..... points = 3 The wetland is Lake-fringe on a lake **with** disturbance and there are 3 other lake-fringe wetland within ½ mile ..... points = 3 There is at least 1 wetland within ½ mile. ..... points = 2 There are no wetlands within ½ mile. ..... points = 0	0
H 2. TOTAL Score - opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*	6
TOTAL for H1 from page 14	9
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	15

H 2.4 – No *known* wetlands within ½ mile

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate Category.

Wetland Type *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	**Category**
SC 1.0 Estuarine wetlands (*see p. 86)* Does the wetland unit meet the following criteria for Estuarine wetlands? ☐ The dominant water regime is tidal, ☐ Vegetated, and ☐ With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO ☒	
SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-151? ☐ YES = Category I ☒ NO = go to SC 1.2	**Cat. I**
SC 1.2 Is the wetland unit at least 1 acre in size and meets at least two of the following three conditions? ☐ YES = Category I ☐ NO = Category II ☐ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native Spartina spp. are the only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II) The are aof Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. ☐ At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed wetland. ☐ The wetland has at least 2 or the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual rating I/II**

SC 2.0 Natural Heritage Wetlands ***(see p. 87)*** Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a Natural Heritage wetland? *(this question is used to screen out most sites before you need to contact WNHP/DNR)* S/T/R information from Appendix D ☒ or accessed from WNHP/DNR web site ☐ YES ☐ – contact WNHP/DNR (see p. 79) and go to SC 2.2 NO ☒ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as or as a site with state threatened or endangered plant species? YES = Category I NO ☐ Not a Heritage Wetland	**Cat. I**
SC 3.0 Bogs ***(see p. 87)*** Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? *Use the key below to identify if the wetland is a bog. If you answer yes, you will still need to rate the wetland based on its functions.* 1. Does the wetland have organic soils horizons (i.e. layers of organic soil), either peats or mucks, that compose 16" or more of the first 32 inches of the soil profile? (See Appendix B for a field key to identify organic soils.) Yes - go to Q.3 NO - go to Q.2 2. Does the wetland have organic soils, either peats or mucks, that are less than 16 inches deep over bedrock or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? Yes - go to Q.3 NO ☒ is not a bog for purpose of rating 3. Does the wetland have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists species in Table 3)? Yes – Is a bog for purpose of rating NO - go to Q.4 *NOTE: If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog.* 4. Is the wetland forested (>30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover (*>30% coverage of the total shrub/herbaceous* cover)? YES = Category I NO ☐ is not a bog for purpose of rating	**Cat. I**

SC 4.0 Forested Wetlands *(see p. 90)*	
Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its functions.* ☐ Old growth forests: (west of Cascade crest) Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm) or more. *Note: The criterion for dbh is based on measurements for upland forests. Two hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter.* ☐ Mature forests: (west of the Cascade crest) Stands where the largest trees are 80-200 years old OR have average diameters (dbh) exceeding 21 in (53 cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quanitity of large downed material is generally less than that found in old-growth YES = Category 1 NO ☒ not a forested wetland with special characteristics	**Cat. I**
SC 5.0 Wetlands in Coastal Lagoons (see p. 91) Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? ☐ The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks. ☐ The lagoon in which the wetland is located contains surgace water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon (*needs to be measured near the bottom*) YES – Go to SC 5.1 NO ☒ not a wetland in a coastal lagoon	**Cat. I**
SC 5.1 Does the wetland meet all of the following three conditions? ☐ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of invasive plant species (see list of invasive species on p. 74). ☐ At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. ☐ The wetalnd is larger than 1/10 acre (4350 square feet) YES = Category I NO = Category II	**Cat. II**

SC 6.0 Interdunal Wetlands (see p. 93) Is the wetalnd unit west of the 1889 line (also called the Westarn Boundary of Upland Ownership or WBUO)? YES – go to SC 6.1 NO ☒ not an interdunal wetland for rating *If you answer yes you will still need to rate the wetland based on its functions.* In practical terms that means the following geographic areas: – Long Beach Peninsula – lands west of SR 103 – Grayland-Westport – lands west of SR 105 – Ocean Shores-Copalis – lands west of SR 115 and SR 109 SC 6.1 Is the wetland 1 acre or larger, or is it in a mosaic of wetlands that is 1 acre or larger? YES = Category II NO – go to SC 6.2 SC 6.2 Is the unit between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
Category of wetland based on Special Characteristics *Choose the "highest" rating if wetland falls into several categorie, and record on p. 1 .* If you answered NO for all types enter "Not Applicable" on p.1.	NA

EXHIBIT 7

50-Ft Buffer

Proposed Lease Line

Proposed Building

Wetland Boundary

50-ft Buffer
Wetland and Premises Delineation

Information & Geographic Services

WetlandPremises50ft.mxd

Map Date: 8/18/2015

EXHIBIT 8

19.07.080 Wetlands.

A. Wetland Designation. All property meeting the definition of a wetland in the Wetland Manual is designated as a wetland.

B. Wetland Ratings. Wetlands shall be rated as Category I, Category II, Category III or Category IV according to the wetland classification system.

C. Wetland Buffers.

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

* Note: There are no known Category I wetlands in the city.

2. Reduction of Wetland Buffer Widths. 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.

3. Averaging of Wetland Buffer Widths. The code official may allow averaging of the standard wetland buffer widths in accordance with the criteria of MICC 19.07.070(B)(3).

D. Alterations. 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. (Ord. 05C-12 § 5).

EXHIBIT 9

BAINBRIDGE ISLAND WETLAND ORDINANCE

16.20.160 Wetlands.

A. Purpose. This section applies to all regulated uses within or adjacent to areas designated as wetlands, as categorized in subsection B of this section. The intent of this section is listed in no specific priority, as follows:

1. Preserve, protect, restore, and improve wetland functions and values. Achieve no net loss and increase the quality of wetland acreage, functions, and values within the city. Mitigation measures, as conditions of permits, must have a reasonable expectation of success. Under the conditions of this section, the director may deny development proposals that would irreparably impact regulated wetlands; and

2. Protect the public's health, safety, and welfare, while preventing public expenditures that could arise from improper wetland uses and activities; and

3. Plan wetland uses and activities in a manner that protects and enhances the natural systems and environmental quality of Bainbridge Island and allows property holders to benefit from wetland property ownership wherever allowable under the conditions of this chapter; and

4. Preserve ecological functions and values of wetlands which provide water quality protection, natural flood control, storm water storage, contributes to groundwater and stream flow, shoreline stabilization, and wildlife and fish habitat; and

5. Prevent turbidity and pollution of wetlands and fish or shellfish bearing waters, and maintain healthy wildlife habitat; and

6. Encourage land use development patterns that maintain, enhance, or restore natural wetland systems and protect disturbance-sensitive and wetland-dependent wildlife, fish resources, and open space; and

7. Protect and preserve wetlands values as natural areas providing aesthetic, recreational, and educational opportunities that need to be preserved for future generations; and

8. Enhance the connectivity between wetland landscapes.

B. Wetland Categories. For regulatory purposes, wetland delineations shall be determined by using the Washington State Wetlands Identification and Delineation Manual, March 1997, or as amended hereafter.

The city uses the Department of Ecology's (DOE's) Washington State Wetland Rating System for Western Washington, 2004, or as amended hereafter and adopted by the director to categorize

wetlands for the purposes of establishing wetland buffer widths, wetland uses and replacement ratios for wetlands. Once a wetland has been classified using the current DOE rating system, the city shall not reclassify the wetland without clearly documenting the reason for the change. If the wetland has a rating in the city GIS system, this rating can be used for regulatory purposes. This system consists of four wetland categories generally described as follows:

1. Category I wetlands are those that:

a. Represent unique or rare wetland type; or

b. Are more sensitive to disturbance than most wetlands; or

c. Are relatively undisturbed and contain ecological attributes that are impossible to replace within a human lifetime; or

d. Provide a high level of function.

Category I wetlands include estuarine wetlands larger than one acre, bogs, mature and old-growth wetlands over one acre, wetlands in coastal lagoons, and wetlands that perform many functions very well as demonstrated by a score of over 70 points using the DOE rating system.

2. Category II wetlands are difficult, though not impossible, to replace, and provide a high level of function. Category II wetlands include estuarine wetlands smaller than one acre or disturbed and larger than one acre and wetlands that perform functions well as demonstrated by a score of 51 to 69 using the DOE rating system.

3. Category III wetlands are wetlands with a moderate level of function as demonstrated by a score of 30 to 50 points using the DOE rating system.

4. Category IV wetlands have the lowest level of function as demonstrated by a score less than 30 points using the DOE rating system and are often heavily disturbed.

C. Regulated and Nonregulated Wetlands Classification.

1. Regulated Wetlands.

a. All natural wetlands that meet the criteria in the Washington State Wetland Identification and Delineation Manual and are greater than 1,000 square feet.

b. Unintentionally created wetlands that meet the criteria in the Washington State Wetland Identification and Delineation Manual except as listed in subsection C.2.b of this section.

c. Wetlands intentionally created from nonwetland areas to mitigate conversion of other wetlands.

d. Wetlands less than or equal to 1,000 square feet if the wetland is associated with a riparian corridor or is part of a wetland mosaic, or contains habitat identified as essential for local populations of priority species identified by the Washington State Department of Fish and Wildlife.

2. Nonregulated Wetlands.

a. Wetlands less than or equal to 1,000 square feet if the wetland is not associated with a riparian corridor or is not part of a wetland mosaic, or does not contain habitat identified as essential for local populations of priority species identified by the Washington State Department of Fish and Wildlife.

b. Created Wetlands. Wetlands created intentionally from a nonwetland site that was not required to be constructed as mitigation for adverse wetland impacts. These may include, but are not limited to, irrigation and drainage ditches, grass-lined swales, canals, detention facilities, wastewater treatment ponds, farm ponds not contiguous, as defined in this chapter, and landscape amenities. The applicant shall bear the burden of proving that the wetland was intentionally created from a nonwetland site. Where enhancements or restorations are made to wetlands for purposes other than mitigation, the original rating shall be maintained even if the changes would otherwise result in a higher classification.

c. Recent, Road Construction Related Wetlands. Wetlands created after July 1, 1990, that were unintentionally created as a result of the construction of a road, street, or highway. The applicant shall bear the burden of proving that the wetland meets these criteria.

D. Development Standards.

1. Water Quality Buffers. An applicant shall provide the prescribed water quality buffers in this section (Tables 3 through 6) unless a reasonable use exception is granted pursuant to BIMC 16.20.080.

2. Habitat Buffers. An applicant shall provide either:

a. The prescribed habitat buffers specified in this section (Tables 3, 4, 5, and 6); or

b. An approved habitat management plan, pursuant to BIMC 16.20.060, that clearly provides greater habitat functions and values in perpetuity than the prescribed habitat buffers in this section (Tables 3, 4, 5, and 6).

BAINBRIDGE ISLAND WETLAND ORDINANCE

3. Buffers. Buffers shall remain undisturbed natural vegetation areas except where the buffer can be enhanced to improve its functional attributes. Any buffer enhancement and/or limited view clearing activity must be reviewed and approved by the director. No refuse shall be placed in the buffer. Alteration of habitat buffer areas may be allowed for water dependent and water related activities and for development authorized by BIMC 16.20.040.C (Exemptions), or BIMC 16.20.040.D (Standards for Existing Development), or BIMC 16.20.050.B (Buffer Averaging), or BIMC 16.20.070 (Variances), or BIMC 16.20.080 (Reasonable Use Exceptions).

4. If a wetland meets more than one of the criteria listed in each table, the buffer needed to protect the wetland is the widest one.

Table 3: Category I Wetlands – Buffers					
Wetland Characteristics	Impact of Land Use	Water Quality Buffer	Habitat Buffer	Total Buffer	Other Protection
Natural Heritage Wetlands	Low	50 ft.	75 ft.	125 ft.	No additional discharge of surface water.
	Moderate	75 ft.	115 ft.	190 ft.	
	High	100 ft.	150 ft.	250 ft.	No septic systems within 300 ft. Restore degraded parts of the buffer.
Bogs	Low	50 ft.	75 ft.	125 ft.	No additional surface discharges.
	Moderate	75 ft.	115 ft.	190 ft.	
	High	100 ft.	150 ft.	250 ft.	Restore degraded parts of the buffer.
Forested	Low	50 ft.	75 ft.	125 ft.	If forested wetland scores high for habitat, maintain connectivity to other natural areas.
	Moderate	75 ft.	115 ft.	190 ft.	
	High	100 ft.	150 ft.	250 ft.	
Estuarine	Low	50 ft.	50 ft.	100 ft.	N/A
	Moderate	75 ft.	75 ft.	150 ft.	
	High	100 ft.	100 ft.	200 ft.	

Wetlands in Coastal Lagoon	Low Moderate High	50 ft. 75 ft. 100 ft.	50 ft. 75 ft. 100 ft.	100 ft. 150 ft. 200 ft.	N/A
High level of function for habitat (score for habitat is 29 – 36 pts.)	Low Moderate High	50 ft. 75 ft. 100 ft.	100 ft. 150 ft. 200 ft.	150 ft. 225 ft. 300 ft.	Maintain connectivity to other natural areas. Restore degraded parts of the buffer.
Moderate level of function for habitat (score for habitat is 20 – 28 pts.)	Low Moderate High	50 ft. 75 ft. 100 ft.	25 ft. 35 ft. 50 ft.	75 ft. 110 ft. 150 ft.	N/A
High level of function for water quality improvement and low for habitat (score for water quality 24 – 32 pts.; habitat less than 20 pts.)	Low Moderate High	50 ft. 75 ft. 100 ft.	0 ft. 0 ft. 0 ft.	50 ft. 75 ft. 100 ft.	No additional discharges of untreated runoff.
Not meeting any of the above criteria.	Low Moderate High	50 ft. 75 ft. 100 ft.	0 ft. 0 ft. 0 ft.	50 ft. 75 ft. 100 ft.	N/A

Table 4: Category II Wetlands – Buffers

Wetland Characteristics	Impact of Land Use	Water Quality Buffer	Habitat Buffer	Total Buffer	Other Protection
High level of function for habitat (score for habitat is 29 – 36 pts.)	Low Moderate High	50 ft. 75 ft. 100 ft.	100 ft. 150 ft. 200 ft.	150 ft. 225 ft. 300 ft.	Maintain connectivity to other natural areas.
Moderate level of function for habitat (score for habitat is 20 – 28 pts.)	Low Moderate High	50 ft. 75 ft. 100 ft.	25 ft. 35 ft. 50 ft.	75 ft. 110 ft. 150 ft.	N/A

Estuarine	Low	50 ft.	25 ft.	75 ft.	N/A
	Moderate	75 ft.	35 ft.	110 ft.	
	High	100 ft.	15 ft.	115 ft.	
Not meeting any of the above criteria	Low	50 ft.	0 ft.	50 ft.	N/A
	Moderate	75 ft.	0 ft.	75 ft.	
	High	100 ft.	0 ft.	100 ft.	

Table 5: Category III Wetlands – Buffers

Wetland Characteristics	Impact of Land Use	Water Quality Buffer	Habitat Buffer	Total Buffer	Other Protection
Moderate level of function for habitat (score for habitat is 20 – 28 pts.)	Low	40 ft.	35 ft.	75 ft.	N/A
	Moderate	60 ft.	50 ft.	110 ft.	
	High	80 ft.	70 ft.	150 ft.	
Not meeting above criterion	Low	40 ft.	0 ft.	40 ft.	N/A
	Moderate	60 ft.	0 ft.	60 ft.	
	High	80 ft.	0 ft.	80 ft.	

Table 6: Category IV Wetlands – Buffers

Wetland Characteristics	Impact of Land Use	Water Quality Buffer	Habitat Buffer	Total Buffer	Other Protection
Larger than 10,000 square feet	Low	25 ft.	0 ft.	25 ft.	N/A
	Moderate	40 ft.	0 ft.	40 ft.	
	High	50 ft.	0 ft.	50 ft.	
Smaller than 10,000 square feet	Low	25 ft.	0 ft.	25 ft.	N/A
	Moderate	25 ft.	0 ft.	25 ft.	
	High	25 ft.	0 ft.	25 ft.	

a. For Category II or III wetlands smaller than 10,000 square feet with a habitat score of less than 20 points, the buffer may be reduced by 50 percent.

b. For the purpose of determining the impact of land use, unless the director determines a lesser level of impact is appropriate based on information provided by the applicant, the intensity of impact of the adjacent land use is determined based on the "impact of land use" definition.

5. If an applicant elects to propose an HMP, and that HMP proposes habitat buffer widths less than those prescribed in Tables 3 through 6, the HMP shall be prepared pursuant to BIMC 16.20.060 and fulfill all requirements specified therein.

6. Table 7 provides examples of measures that might be provided in an HMP or when prescribed buffers are otherwise altered with by buffer averaging (BIMC 16.20.050.B), variance (BIMC 16.20.070), or reasonable use exception (BIMC 16.20.080) to minimize impacts of certain activities. Other measures may also be effective in minimizing impacts depending on site-specific circumstances and the nature of proposed activity.

Table 7: Examples of Measures to Minimize Impacts to Wetlands from Different Types of Activities

Examples of Disturbance	Examples of Measures to Minimize Impacts	Activities that Cause the Disturbance
Lights	Direct lights away from wetland.	Parking lots, warehouses, manufacturing, residential
Noise	Locate activity that generates noise away from wetland.	Manufacturing, residential
Toxic runoff*	Route all new runoff away from wetland. Establish covenants limiting use of pesticides within 150 ft. of wetland. Apply integrated pest management.	Parking lots, roads, manufacturing, residential areas, application of agricultural pesticides, landscaping
Change in water regime	Infiltrate or treat, detain, and disperse new runoff into buffer.	Impermeable surfaces, lawns, tilling
Pets	Plant dense vegetation around buffer, such as rose, hawthorn, etc.	Residential areas

Human disturbance	Plant buffer with impenetrable natural vegetation appropriate for region.	Residential areas
Dust	Utilize best management practices to control dust.	Tilled fields
*These examples are not necessarily adequate to meet the rules for minimizing toxic runoff if threatened or endangered species are present at the site.		

7. Small Wetlands.

a. Wetlands of less than 1,000 square feet are exempt from regulation of this section where the applicant has shown that they are not associated with a riparian corridor, are not part of a wetland mosaic, and do not contain habitat identified as essential for local populations of priority species identified by the Washington State Department of Fish and Wildlife.

b. All wetlands between 1,000 and 4,000 square feet shall be evaluated using Department of Ecology's Wetland Rating System for Western Washington (2004) to establish category and evaluate functions. Using the following criteria, the director shall determine whether to exempt wetlands between 1,000 and 4,000 square feet from the requirement to avoid impacts:

i. The wetland is not associated with a riparian corridor; and

ii. The wetland is not part of a wetland mosaic; and

iii. The wetland does not score 20 points or more for habitat in the wetland rating system; and

iv. The wetland does not contain habitat identified as essential for local populations of priority species identified by Washington Department of Fish and Wildlife; and

v. The wetland is substantially covered by invasive species or otherwise severely disturbed.

8. Buffer Measurement. All buffers shall be measured on a horizontal plane from the regulated wetland edge as marked in the field.

9. Fencing and Signs. This section applies to those wetlands and their buffers that are within 200 feet of regulated development activities.

a. Wetland buffers shall be temporarily fenced or otherwise suitably marked, as required by the director, between the area where the construction activity occurs and the buffer. Fences shall be made of a durable protective barrier and shall be highly visible. Silt fences and plastic

construction fences may be used to prevent encroachment on wetlands or their buffers by construction. Temporary fencing shall be removed after the site work has been completed and the site is fully stabilized per city approval.

b. The director may require that permanent signs and/or fencing be placed on the common boundary between a wetland buffer and the adjacent land. Such signs will identify the wetland buffer. The director may approve an alternate method of wetland and buffer identification, if it provides adequate protection to the wetland and buffer.

10. Building or Impervious Surface Setback Lines. A building or impervious surface setback line of 15 feet is required from the edge of any wetland buffer. Minor structural or impervious surface intrusions into the areas of the setback may be permitted if the director determines that such intrusions will not adversely impact the wetland. The setback shall be identified on a site plan and filed as an attachment to the notice on title as required by BIMC 16.20.190 (Notice on title).

E. Regulated Uses and Activities. New development activities on properties containing regulated wetlands and buffers are subject to the development standards in this section, as permitted in the underlying zoning designation. Requirements for additional activities are specified in Table 8. The city may grant exceptions to these uses and activities according to the intent and specifications of this chapter. All authorized uses and activities in a regulated wetland or its buffer shall be subject to conditions established by the director and may be subject to mitigation as required by this chapter.

Development shall be classified as "allowed," "permitted," "special use" or "prohibited" according to this section. Any regulated uses not specifically listed in Table 8 shall be considered unclassified and may be allowed if granted a special use review in accordance with this chapter. For the purpose of Table 8, "W" and "B" refer to the terms "wetland" and "buffer."

Table 8: Regulated Uses and Activities in Regulated Wetlands and Buffers

	Category I		Category II		Category III		Category IV	
	W	B	W	B	W	B	W	B
1. Agriculture – Existing and ongoing	A	A	A	A	A	A	A	A
2. Agriculture – Building (grazed wet meadows)	X	X	X	S	S	S	S	S
3. Agriculture conversion								
A) (Wetland dependent)	X	S	X	S	S	S	S	S

B) (Nonwetland dependent)	X	S	X	S	X	S	X	S
4. Bank stabilization	X	X	S	S	S	S	P	P
5. Boat ramp	X	X	S	S	S	S	S	S
6. Dock/float	S	S	S	S	S	S	P	P
7. Draining wetlands (associated with no other permitted use, except as allowed under BIMC 16.20.120.C)	X	N/A	X	N/A	X	N/A	X	N/A
8. Educational or scientific activities	P	P	P	P	P	P	P	P
9. Enhancement	S	S	P	P	P	P	P	P
10. Excavation (not associated with enhancement)	X	X	S	S	S	S	S	S
11. Fill (associated with no other use)	X	X	X	X	X	X	X	X
12. Fish hatchery	X	X	S	S	S	S	S	S
13. Flooding (associated with no other use)	X	X	S	S	S	S	S	S
14. Forest practice – Class IV General or COHP	X	X	X	X	X	X	X	X
15. Golf course	X	X	X	X	S	S	S	S
16. Land division	P	P	P	P	P	P	P	P
17. Mineral extraction	X	X	S	S	S	S	S	S
18. Parks development – Public and private	S	S	S	S	S	S	P	P
19. Ponds – Stock watering	X	X	X	S	X	S	S	P
20. Public facility	X	X	X	S	S	S	S	S
21. Public project of significant importance	S	S	S	S	S	S	S	S
22. Radio/TV towers	X	X	S	S	S	S	S	S
23. Restoration/revegetation of site	S	S	P	P	P	P	P	P
24. Road/street – Public/private access								
A) Expand within existing ROW	S	S	S	S	S	S	P	P
B) New facilities	X	X	S	S	S	S	S	S
25. Signs (interpretation, hazard, critical area boundary, survey markers)	P	P	P	P	P	P	P	P
26. Site investigation								
A) Nonmechanized	A	A	A	A	A	A	A	A
B) Mechanized	P	P	P	P	P	P	P	P
27. Storm water, private R/D facility	X	X	X	S	S	S	S	S
28. Storm water, regional R/D facility	X	X	X	S	S	S	S	S

29. Trails and trail related facilities	P	P	P	P	P	P	P	P
30. Utility facility	X	X	S	S	S	S	S	S
31. Utility – On-site sewage facility	X	X	X	S	X	S	X	S
32. Utility line – Overhead	S	S	S	S	S	S	P	P
33. Utility line – Underground	X	S	S	S	S	S	S	S
Key: A = Allowed Outright P = Permitted Subject to Development Standards and Underlying Permit S = Special Use Review Required X = Prohibited								

F. Additional Development Standards for Regulated Uses. In addition to meeting the development standards in subsection D of this section, those regulated uses identified below shall also comply with the standards of this section and other applicable state, federal and local ordinances.

1. Docks. Construction of a dock, pier, moorage, float, or launch facility may be permitted where no existing buffer or wetland vegetation would be significantly altered.

2. Forest Practice, Class IV General, and Conversion Option Harvest Plans (COHPs). All timber harvesting and associated development activity, such as construction of roads, shall comply with the provisions of this chapter, including the maintenance of buffers around regulated wetlands.

3. Agricultural Restrictions. In all development proposals which would permit introduction of agricultural uses, all regulated wetlands shall be avoided. These restrictions shall not apply to those regulated wetlands defined as grazed wet meadows, regardless of their classification, only where grazing has occurred within the last five years. Wetlands shall be protected by installation of fencing located not closer than the outer buffer edge.

4. Road/Street Repair and Construction. Any private or public road or street repair, maintenance, expansion or construction may be permitted, subject to the following standards:

a. No other reasonable or practicable alternative exists and the road or street crossing serves multiple properties whenever possible;

b. Publicly owned or maintained road or street crossings should provide for other purposes, such as utility crossings, pedestrian or bicycle easements, viewing points, etc.;

c. The road or street repair and construction are the minimum necessary to provide safe roads and streets;

d. Mitigation shall be performed in accordance with specific project mitigation plan requirements.

5. Land Divisions and Land Use Permits. All land divisions and land uses proposed on a site that include regulated wetlands shall comply with the procedures and standards listed below. When a parcel contains a wetland, city policy shall always be to primarily protect the functions and values of the wetland, while recognizing the value of the development rights provided to the property by its zoning.

a. Density Calculation.

i. The actual density that will be allowed to be built upon a parcel containing a wetland shall ultimately be determined during the site-specific review of the parcel's planned development;

ii. In determining the actual density of a parcel based on a specific site plan, the site plan shall locate all buildings outside of the wetland buffers;

iii. The number of development rights allowed for any residentially zoned parcel shall be its size in square feet divided by the number of square feet per home that is required by its zoning;

iv. If the land can be subdivided such that all setbacks, buffers, and other zoning requirements can be observed, and no variances are requested, the density from the wetland can be transferred within the property;

v. To the extent that the number of allowable development rights cannot be used on-site, they may be sold, traded, or transferred by the property owner through the transfer of development rights program pursuant to Chapter 18.27 BIMC;

vi. Property owners may voluntarily extinguish development rights that are provided by the underlying zoning, but the city shall not extinguish any of these rights outside the aforementioned transactions.

b. Land division approvals shall be conditioned to require that regulated wetlands and regulated wetland buffers be designated as an easement or covenant encumbering the wetland and wetland buffer. Such easement or covenant shall be recorded together with the land division and represented on the final plat or binding site plan, and title.

c. In order to implement the goals and policies of this chapter, to accommodate innovation, creativity, and design flexibility, and to achieve a level of environmental protection that would not be possible by typical lot-by-lot development, the use of the clustered development or similar innovative site planning is strongly encouraged for projects with regulated wetlands on the site.

6. Surface Water Management. The following storm water management activities may be allowed within wetland or buffer areas only if they meet the following requirements, in addition

to the development standards in this section and in conformance with the storm water management ordinance, Chapter 15.20 BIMC:

a. Surface water discharges from storm water facilities or structures; provided, that the new surface water discharges to regulated wetlands from retention/detention facilities;

b. Presettlement ponds or other surface water management structures; provided, that the discharge does not significantly increase or decrease the rate of flow and/or hydroperiod, nor decrease the water quality of the wetland. Water quality treatment best management practices will be required prior to discharge. Pretreatment of surface water discharge through biofiltration or other means shall be required.

7. Trails and Trail-Related Facilities. Construction of public and private trails and trail-related facilities, such as benches and viewing platforms, may be allowed in wetlands or wetland buffers pursuant to the following guidelines:

a. Trails and related facilities shall, to the extent feasible, be placed on existing road grades, utility corridors, or any other previously disturbed areas.

b. Trails and related facilities shall be planned to minimize removal of trees, soil disturbance, and existing hydrological characteristics, shrubs, snags, and important wildlife habitat.

c. Viewing platforms and benches, and access to them, shall be designed and located to minimize disturbance of wildlife habitat and/or critical characteristics of the affected wetland.

d. Trails and related facilities shall generally be located outside required buffers. Where trails are permitted within buffers they shall be located in the outer portion of the buffer and a minimum of 25 feet from the wetland edge, except where wetland crossings or viewing areas have been approved by the director. Trail locations close to the wetland may be allowed if the primary purpose of the trail is wetland viewing or enjoyment.

e. Trails shall generally be limited to pedestrian use unless other more intensive uses, such as bike or horse trails, have been specifically allowed and mitigation has been provided. Trail width shall not exceed five feet unless there is a demonstrated need, subject to review and approval by the director. Trails shall be constructed with pervious materials unless otherwise approved by the director.

8. Utilities in Wetlands or Wetland Buffers.

a. The utility maintenance authorized in BIMC 16.20.040.C shall be allowed, subject to best management practices in wetlands and wetland buffers.

b. Construction of new utilities outside the road right-of-way or existing utility corridors may be permitted in wetlands or wetland buffers, only when no reasonable alternative location is available and the utility corridor meets the requirements for installation, replacement of vegetation and maintenance outlined below, and as required in the filing and approval of applicable permits and special reports required by this chapter.

c. Sewer or On-Site Sewage Utility. Construction of sewer lines or on-site sewage systems may be permitted in regulated wetland buffers only when:

i. The applicant demonstrates it is necessary to meet state and/or local health code minimum design standards (not requiring a variance for either horizontal setback or vertical separation); and/or

ii. There are no other practicable or reasonable alternatives available and construction meets all other applicable requirements of this section and the special use review requirements pursuant to subsection G of this section. Joint use of the sewer utility corridor by other utilities may be allowed.

d. New utility corridors shall not be allowed when the regulated wetland or buffer has known locations of federal or state listed endangered, threatened or sensitive species, heron rookeries or nesting sites of raptors which are listed as species of concern, except in those circumstances where an approved habitat management plan indicates that the utility corridor will not significantly impact the wetland or wetland buffer.

e. New utility corridor construction and maintenance shall protect the regulated wetland and buffer environment by utilizing the following methods:

i. New utility corridors shall be aligned when possible to avoid cutting trees greater than 12 inches in diameter at breast height (four and one-half feet), measured on the uphill side.

ii. New utility corridors shall be revegetated with appropriate native or equivalent vegetation at preconstruction densities or greater, immediately upon completion of construction, or as soon thereafter as possible, if due to seasonal growing constraints. The utility shall ensure that such vegetation survives.

iii. Any additional utility corridor access for maintenance shall be provided as much as possible at specific points, rather than by parallel roads. If parallel roads are necessary, they shall be of a minimum width but no greater than 15 feet, and shall be contiguous to the location of the utility corridor on the side away from the wetland. Mitigation will be required for any additional access through restoration of vegetation in disturbed areas.

iv. The director may require other additional mitigation measures.

f. Utility corridor maintenance shall include the following measures to protect the regulated wetland and buffer environment:

i. Where feasible, painting of utility equipment such as power towers shall not be sprayed or sandblasted, nor should lead-based paints be used.

ii. No pesticides, herbicides or fertilizers may be used in wetland areas or their buffers except those approved by the EPA and Ecology. Where approved, herbicides must be applied by a licensed applicator in accordance with the safe application practices on the label.

9. Parks. Development of public park and recreation facilities may be permitted; provided, that no alteration of wetlands or wetland buffers is allowed except for uses allowed in Table 8. For example, enhancement of wetlands and development of trails may be allowed in wetlands and wetland buffers subject to special use requirements and approval of a wetland mitigation plan.

10. Educational or Scientific Activities. These activities shall only be permitted if they are directly related to the affected wetland and related buffers, and may include the viewing and sampling of natural systems. They may also include the installation of physical structures, including pervious trails, benches, permanent wildlife watching blinds, boardwalks, viewing platforms, or similar structures, or minor modifications to wetlands and their buffers. Any physical structures or minor modifications are subject to city approval to minimize the impacts of human intrusion on the functions and values of critical areas and their buffers according to the following criteria:

a. Minimize the footprint of structures and the number of access points to any particular critical area;

b. Minimize the amount of clearing and grading;

c. Elevate structures where possible;

d. Avoid impacting the flow of water;

e. Use appropriate building materials; and

f. Minimize the impacts of construction.

G. Special Use Review. Development identified as a special use review in Table 8 of this section may be approved, with conditions, or denied according to the procedures and criteria outlined in

this subsection. Special use review is an administrative process unless the underlying permit requires a public hearing.

1. The director is authorized to take action on permits as required by this chapter.

2. The director may approve a permit after review of the application and a wetland mitigation plan submitted in accordance with this chapter. The director shall determine whether the use or activity cannot be avoided because no reasonable or practicable alternative exists, the proposed use is consistent with the spirit and intent of this chapter and it will not cause adverse impacts to the wetland or the wetland buffer which cannot be mitigated. In taking action to approve a special use review, the director may attach reasonable conditions as necessary to minimize impacts, rectify impacts or compensate for impacts to the wetland or wetland buffer.

3. The director shall deny a special use review request if the proposed use or activity is inconsistent with this chapter and/or will cause adverse impacts to the wetland or wetland buffer, which cannot be adequately mitigated and/or avoided.

4. Special use review requests for agricultural conversions shall include a farm plan developed by the Kitsap Conservation District. The plan shall identify the best management practices for the proposed agricultural activity.

5. Special use review determinations are appealable to the hearing examiner pursuant to BIMC 2.16.130.

H. Wetlands and Streams Restoration, Creation, Mitigation, or Enhancement.

1. Any person who alters regulated wetlands or streams or their standard buffers as required by this chapter shall restore, create or enhance equivalent areas or greater areas than those altered in order to compensate for losses. In the alternative, conservation easements or mitigation banking may be considered as appropriate mitigation; provided, that areas equivalent to those altered are achieved.

2. Where feasible, restored or created wetlands and streams shall be a higher category than the altered wetland or stream.

3. Compensation areas shall be determined according to function, acreage, type, location, time factors, ability to be self-sustaining and projected success. Multiple compensation projects may be proposed for one project in order to best achieve the goal of no net loss.

4. Given the need for expertise and monitoring, voluntary restoration, creation or enhancement projects or compensatory projects may be permitted only when the director finds that the

proposed project is associated with an activity or development otherwise permitted. Additionally, the applicant shall:

a. Demonstrate sufficient scientific expertise, supervisory capability, and financial resources to carry out the project;

b. Demonstrate the capability for monitoring the site and to make corrections during this period if the project fails to meet projected goals and plans; and

c. Provide for the long-term protection and management of the compensation area to avoid further development or degradation.

5. Acreage Replacement Ratio. Any applicant proposing to alter wetlands may propose to re-establish, create, rehabititate, or enhance wetlands in order to compensate for the wetland losses.

a. Replacement Ratios for Wetlands. Table 9 provides the required replacement ratios for the re-establishment or creation, rehabilitation, or enhancement of a wetland. The first number specifies the replacement acreage of wetlands and the second specifies the acreage of wetlands altered.

Table 9: Replacement Ratios for Wetlands

Category and Type	Re-establishment or Creation	Rehabilitation	1:1 Re-establishment or Creation (R/C) or Enhancement (E)	Enhancement Only
I – Forested	6:1	12:1	1:1 R/C 10:1 E	24:1
I – Highly functioning	4:1	8:1	1:1 R/C 6:1 E	16:1
I – Bog	Not possible	6:1 of a Bog	Case-by-Case	Case-by-Case
I – Estuarine	Case-by-Case	6:1 – Estuarine	Case-by-Case	Case-by-Case
II – Estuarine	Case-by-Case	4:1 – Estuarine	Case-by-Case	Case-by-Case
II – Others	3:1	8:1	1:1 R/C 4:1 E	12:1
III	2:1	4:1	1:1 R/C 2:1 E	8:1
IV	1.5:1	3:1	1:1 R/C 2:1 E	6:1

b. Replacement ratios for buffers shall be 1:1.

c. Increased Replacement Ratio. The director may increase the ratios under the following circumstances:

i. Uncertainty as to the probable success of the proposed rehabitation or creation;

ii. Significant period of time between destruction and replication of wetland functions; or

iii. Projected losses in functional value.

d. Decreased Replacement Ratio. The director may decrease these ratios when there are findings of special studies coordinated with agencies with expertise which demonstrate that no net loss of wetland function or value is attained under the decreased ratio.

e. In all cases, a minimum acreage replacement ratio of 1:1 shall be required.

6. Wetland Type. In-kind compensation shall be provided except where the applicant can demonstrate that:

a. The wetland system is already significantly degraded and out-of-kind replacement will result in a wetland with greater functions and values;

b. Scientific problems such as invasive/exotic vegetation and changes in watershed hydrology make implementation of in-kind compensation impossible;

c. Out-of-kind replacement will best meet identified regional goals (e.g., replacement of historically diminished wetland types); and

d. Where out-of-kind replacement is accepted, greater acreage replacement ratios may be required to compensate for lost functions and values.

7. Location. On-site compensation shall be provided except where the applicant can demonstrate that:

a. The hydrology and ecosystem of the original wetland and those who benefit from the hydrology and ecosystem will not be substantially damaged by the on-site loss;

b. On-site compensation is not scientifically feasible due to problems with hydrology, soils, or other factors;

c. Compensation is not practical due to potentially adverse impacts from surrounding land uses;

d. Existing functions and values at the site of the proposed restoration are significantly greater than lost wetland functional values;

e. Established regional goals for flood storage, flood conveyance, habitat or other wetland functions have been established and strongly justify location of compensatory measures at another site;

f. There is no feasible location for on-site mitigation;

g. Off-site compensation shall occur within the same watershed, if feasible, as the wetland loss occurred; provided, that Category IV wetlands may be replaced outside of the watershed when there is no reasonable alternative; and

h. In selecting compensation sites, an applicant shall pursue siting in the following order of preference:

i. Upland sites which were formerly wetlands;

ii. Idled upland sites generally having bare ground or vegetative cover consisting primarily of invasive introduced species, weeds, or emergent vegetation; or

iii. Other disturbed upland.

8. Timing. Wherever feasible, compensatory projects shall be completed prior to activities that will disturb wetlands, and immediately after activities that will temporarily disturb wetlands. In all other cases, except for Category I wetlands, compensatory projects should be completed prior to use or occupancy of the activity or development which was conditioned upon such compensation. Construction of compensation projects shall be timed to reduce impacts to existing wildlife and flora.

9. Cooperative Restoration, Creation or Enhancement Projects. The director may encourage, facilitate, and approve cooperative projects wherein a single applicant or other organization with demonstrated capability may undertake a compensation project with funding from other applicants under the following circumstances:

a. Restoration, creation or enhancement at a particular site may be scientifically difficult or impossible; or

b. Creation of one or several larger wetlands may be preferable to many small wetlands;

c. Persons proposing cooperative compensation projects shall:

i. Submit a joint permit application;

ii. Demonstrate compliance with all standards;

iii. Demonstrate the organizational and fiscal capability to act cooperatively; and

iv. Demonstrate that long-term management can and will be provided.

10. Mitigation Banking.

a. The city may consider and approve replacement or enhancement of wetlands to address unavoidable adverse impacts caused by development activities through an approved wetland mitigation bank. Compensatory mitigation in advance of authorized impacts must be provided through an approved mitigation bank if a bank is used.

b. When off-site mitigation is authorized, the director shall give priority to locations within the same drainage basin as the development proposal site that meet the following:

i. Mitigation banking sites and resource mitigation reserves as authorized by this chapter;

ii. Private mitigation sites that are established in compliance with the requirements of this chapter and approved by the director; and

iii. Public mitigation sites that have been ranked in a process that has been supported by ecological assessments.

c. The director may require documentation that the mitigation site has been permanently preserved from future development or alteration that would be inconsistent with the functions of the mitigation. The documentation may include, but need not be limited to, a conservation easement, transfer of clearing credits or other agreement between the applicant and owner of the mitigation site. The city may enter into agreements or become a party to any easement or other agreement necessary to ensure that the site continues to exist in its mitigated condition.

d. The director shall maintain a list of sites available for use for off-site mitigation projects.

e. The director may develop a program to allow the payment of a fee in lieu of providing mitigation on a development site. The program should address:

i. When the payment of a fee is allowed, considering the availability of a site in geographic proximity with comparable hydrologic and biological functions and potential for future habitat fragmentation and degradation; and

ii. The use of the fees for mitigation on public or private sites that have been ranked according to ecological criteria through one or more programs that have included a public process. (Ord. 2005-03 § 2, 2005)

EXHIBIT 10

BELLEVUE WETLAND ORDINANCE

H. WETLANDS

20.25H.095 Designation of critical area and buffers.

A. Definition of Wetland.

Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. Wetlands do not include those artificial wetlands intentionally created from nonwetland sites, including, but not limited to, irrigation and drainage ditches, grass-lined swales, canals, detention facilities, wastewater treatment facilities, farm ponds, and landscape amenities, or those wetlands created after July 1, 1990, that were unintentionally created as a result of the construction of a road, street, or highway. Wetlands may include those artificial wetlands intentionally created from nonwetland areas to mitigate the conversion of wetlands.

B. Designation of Critical Area.

The following wetlands are hereby designated as critical areas subject to the requirements of this part. Wetlands are classified into category I, category II, category III and category IV wetlands based on the adopted Washington State Wetland Rating System for Western Washington, Washington State Department of Ecology Publication Number 04-06-025, published August, 2004.

1. Category I Wetlands. Category I wetlands are those that (a) represent a unique or rare wetland type; or (b) are more sensitive to disturbance than most wetlands; or (c) are relatively undisturbed and contain ecological attributes that are impossible to replace within a human lifetime; or (d) provide a high level of functions.

2. Category II Wetlands. Category II wetlands are difficult, though not impossible, to replace, and provide high levels of some functions. These wetlands occur more commonly than category I wetlands, but still need a relatively high level of protection. Category II wetlands in western Washington include: wetlands scoring between 51 to 69 points (out of 100) on the questions related to the functions present. Wetlands scoring 51 to 69 points were judged to perform most functions relatively well, or performed one group of functions very well and the other two moderately well.

3. Category III Wetlands. Category III wetlands are wetlands with a moderate level of functions (scores between 30 to 50 points). Wetlands scoring between 30 to 50 points generally have been disturbed in some ways, and are often less diverse or more isolated from other natural resources in the landscape than category II wetlands.

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4. Category IV Wetlands Over 2,500 Square Feet. Category IV wetlands have the lowest levels of functions (scores less than 30 points) and are often heavily disturbed. These are wetlands that we should be able to replace, and in some cases be able to improve. However, experience has shown that replacement cannot be guaranteed in any specific case. These wetlands may provide some important functions, and also need to be protected.

C. Designation of Wetland Critical Area Buffer.

The following critical area buffers are hereby established:

1. Wetland Critical Area Buffer.

a. General.

i. Undeveloped Sites. An undeveloped site is any site where the wetland and wetland buffer have not previously been included within a Native Growth Protection Area (NGPA) or Native Growth Protection Easement (NGPE), regardless of whether the site contains a primary structure. Wetlands on undeveloped sites shall have the following critical area buffers, measured from the wetland boundary:

Category	Wetland Characteristic	Buffer
I	Natural heritage wetlands	190 feet
	Bogs	190 feet
	Forested	Based on score for habitat or water quality functions
	Habitat score of 29 to 36	225 feet
	Habitat score of 20 to 28	110 feet
	Water quality score of 24 to 32 and habitat score of less than 20	75 feet
	Not meeting any of the above	75 feet
II	Habitat score of 29 to 36	225 feet
	Habitat score of 20 to 28	110 feet
	Water quality score of 24 to 32 and habitat score of less than 20	75 feet
	Not meeting any of the above	75 feet
III	Habitat score of 20 to 28 points	110 feet
	Not meeting any of the above	60 feet

BELLEVUE WETLAND ORDINANCE

Category	Wetland Characteristic	Buffer
IV over 2,500 square feet	Score for functions less than 30 points	40

ii. Developed Site. A developed site is any site where the wetland and wetland buffer have been included within an NGPE or NGPA approved and recorded prior to August 1, 2006, or any site abutting an NGPA approved and recorded prior to August 1, 2006, containing the wetland and wetland buffer where such site does not also contain a wetland. Wetlands on developed sites shall be governed by the buffer established within the approved and recorded NGPA or NGPE, no additional wetland buffer shall apply.

b. Buffer and Setback on Sites with Existing Development. Where a primary structure legally established on a site prior to August 1, 2006, encroaches into the critical area buffer or structure setback established in this section, the critical area buffer and/or structure setback shall be modified to exclude the footprint of the existing primary structure. Expansion of any existing primary structure into the critical area buffer or critical area structure setback shall be allowed only pursuant to the provisions of LUC 20.25H.055 (single-family primary structures) or LUC 20.25H.230 (all other primary structures).

2. Buffer Modification. Modifications to the wetland critical area buffer may be approved pursuant to this section. Modifications to the wetland critical area buffer that do not meet the criteria of this subsection may be considered through a critical areas report, LUC 20.25H.230:

a. Buffer Averaging. Buffer averaging may be allowed if all the following criteria are satisfied. Proposals to average the wetland critical area buffer under this subsection shall require a Critical Areas Land Use Permit; provided, that a mitigation or restoration plan is not required for buffer averaging.

i. Buffer averaging may be approved only if the applicant demonstrates that a modification to non-critical area setbacks pursuant to LUC 20.25H.040 would not accommodate the proposed development in a manner consistent with its intended use and function;

ii. Through buffer averaging, the ecological structure and function of the resulting buffer is equivalent to or greater than the structure and function before averaging;

iii. The total buffer area is not reduced;

iv. The buffer area is contiguous;

v. Averaging does not result in any impact to slope stability and does not increase the likelihood of erosion or landslide hazard;

vi. Averaging does not result in a significant adverse impact to habitat associated with species of local importance; and

vii. At no point is the critical area buffer width less than 75 percent of the required buffer dimension.

b. Transportation or Utility Infrastructure. Where a legally established right-of-way, railroad right-of-way or other similar infrastructure of a linear nature crosses a wetland critical area buffer, the edge of the improved right-of-way shall be the extent of the buffer, if the part of the critical area buffer on the other side of the right-of-way provides insignificant biological or hydrological function in relation to the portion of the buffer adjacent to the wetland.

D. Structure Setbacks.

1. General. The requirements of this section apply along with any other dimensional requirements of the Land Use Code (see LUC 20.20.010, 20.20.130, 20.20.190 and Parts 20.25A – 20.25G). The most restrictive dimension controls. Structure setbacks are required in order to:

a. Minimize long-term impacts of development adjacent to critical areas and critical area buffers; and

b. Protect critical areas and critical area buffers from adverse impacts during construction.

2. Minimum Setback of Structures – Undeveloped and Developed Sites. The following structure setbacks apply to both undeveloped and developed sites. Structure setbacks shall be measured from the edge of the critical area buffer on undeveloped sites, or from the edge of the approved and recorded NGPE or NGPA on developed sites:

Category I wetlands	20 feet
Category II wetlands	20 feet
Category III wetlands	15 feet
Category IV wetlands	None required

3. Structure Setback Modification – Undeveloped Sites. The Director may waive or modify the structure setback on an undeveloped site as part of the permit or approval for the underlying proposal if the applicant demonstrates that:

a. Water quality, or slope stability as documented in a geotechnical report, will not be adversely affected;

b. Encroachment into the structure setback will not disturb habitat of a species of local importance within a critical area or critical area buffer;

c. Vegetation in the critical area and critical area buffer will not be disturbed by construction, development, or maintenance activities and will be maintained in a healthy condition for the anticipated life of the development; and

d. Enhancement planting on the boundary between the structure setback and the critical area buffer will reduce impacts of development within the structure setback.

4. Structure Setback Modification – Developed Sites. Structure setbacks on developed sites may be modified only through an approved critical areas report. (Ord. 5680, 6-26-06, § 3)

20.25H.100 Performance standards.

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

A. Lights shall be directed away from the wetland.

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

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

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

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

F. Use of pesticides, insecticides and fertilizers within 150 feet of the edge of the stream buffer shall be in accordance with the City of Bellevue's "Environmental Best Management Practices," now or as hereafter amended. (Ord. 5680, 6-26-06, § 3)

20.25H.105 Mitigation and monitoring – Additional provisions.

In addition to the provisions of LUC 20.25H.210, mitigation plans designed to mitigate impacts to wetlands and wetland critical area buffers shall meet the requirements of this section.

A. Preference of Mitigation Actions.

1. Mitigation for Impacted Wetland Critical Area. Mitigation actions that require compensation of impacted wetland critical area shall occur in the following order of preference, subject to the location requirements of subsection B of this section:

a. Restoring wetlands on upland sites that were formerly wetlands.

b. Creating wetlands on disturbed upland sites such as those with vegetative cover consisting primarily of nonnative introduced species. This should only be attempted when there is a consistent source of hydrology and it can be shown that the surface and subsurface hydrologic regime is conducive for the wetland community that is being designed.

c. Enhancing significantly degraded wetlands.

2. Mitigation for Impacted Wetland Critical Area Buffer. Mitigation actions that require compensation of impacted critical area buffer shall occur in the following order of preference and in the following locations:

a. On-site, through replacement of lost critical area buffer;

b. On-site, through enhancement of the functions and values of remaining critical area buffer;

c. Off-site, through replacement or enhancement, in the same sub-drainage basin;

d. Off-site, through replacement or enhancement, out of the sub-drainage basin but in the same drainage basin.

B. Type and Location of Mitigation for Wetland Critical Area.

Compensatory mitigation for critical areas functions and values shall be either in-kind and on-site, or in-kind and within the same drainage sub-basin. Mitigation actions may be conducted off-site and outside of the drainage sub-basin when all of the following are demonstrated through a critical areas report:

1. There are no reasonable on-site or in-sub-drainage basin opportunities or on-site and in-sub-drainage basin opportunities do not have a high likelihood of success, after a determination of the natural capacity of the site to mitigate for the impacts. Consideration should include: anticipated wetland mitigation replacement ratios, buffer conditions and proposed widths, hydrogeomorphic classes of on-site wetlands when restored, proposed flood storage capacity, and potential to mitigate stream fish and wildlife impacts (such as connectivity);

2. Off-site mitigation has a greater likelihood of providing equal or improved wetland functions than the impacted wetland; and

3. Off-site locations shall be in the same sub-drainage basin unless established watershed goals for water quality, flood or conveyance, habitat, or other wetland functions have been established and strongly justify location of mitigation at another site.

C. Mitigation Ratios.

1. Wetland Acreage Replacement Ratios. The following ratios shall apply to creation or restoration that is in-kind, is on-site, is the same category of wetland, is timed prior to or concurrent with alteration, and has a high probability of success. The first number specifies the acreage of replacement wetlands and the second specifies the acreage of wetlands altered.

Category I	6-to-1
Category II	3-to-1
Category III	2-to-1
Category IV	1.5-to-1

2. Increased Replacement Ratio. The Director may increase the ratios where proposed mitigation will result in a lower category wetland or reduced functions relative to the wetland being impacted.

3. Critical Area Buffer Mitigation Ratio. Critical area buffer disturbed or impacted under this part shall be replaced at a ratio of one-to-one.

D. Wetlands Enhancement as Mitigation.

Impacts to wetland critical area functions may be mitigated by enhancement of existing significantly degraded wetlands. Applicants proposing to enhance wetlands must produce a critical areas report meeting the requirements of LUC 20.25H.110 and 20.25H.230 that identifies how enhancement will increase the functions of the degraded wetland and how this increase will adequately mitigate for the loss of wetland area and function at the impact site. An enhancement proposal must also show whether existing wetland functions will be reduced by the enhancement actions. (Ord. 5680, 6-26-06, § 3)

20.25H.110 Critical areas report – Additional provisions.

A. Limitation on Modification.

A critical areas report may not be used to fill a wetland critical area, except where filling is required to allow a use set forth in LUC 20.25H.055.

B. Additional Content.

BELLEVUE WETLAND ORDINANCE

In addition to the general requirements of LUC 20.25H.230, a critical areas report for wetlands shall include a written assessment and accompanying maps of the wetlands and buffers within 300 feet of the project area, including the following information at a minimum:

1. A discussion of measures, including avoidance, minimization, and mitigation, proposed to preserve existing wetlands and restore any wetlands that were degraded prior to the current proposed land use activity.

2. A habitat and native vegetation conservation strategy that addresses methods to protect and enhance on-site habitat and wetland functions.

3. Functional evaluation for the wetland and adjacent buffer using a local or state agency staff-recognized method and including the reference of the method and all data sheets. (Ord. 5680, 6-26-06, § 3)

EXHIBIT 11

18.10.590 Wetlands – General protection mechanisms.

Development activity on sites containing wetlands or wetland buffers shall meet the requirements of this chapter. Wetlands and associated buffers shall not be altered (see definition of "alteration," IMC 18.10.390) except as expressly authorized by this chapter. The applicant is responsible for ensuring that the requirements of all other agencies with jurisdiction have been met. (Ord. 2669 § 1 (Exh. A), 2013; Ord. 2455 § 4, 2006; Ord. 2108 § 10.2.26.1 – 4, 1996).

18.10.600 Regulated wetland activities.

Project Permit approval through the appropriate land use permitting process, or if none is required, then through Level 1 Review, shall be obtained from the City prior to undertaking the following activities in a regulated wetland or its buffer unless authorized by IMC 18.10.610(A):

A. The removal, excavation, grading, or dredging of soil, sand, gravel, minerals, organic matter, or material of any kind;

B. The dumping, discharging, or filling with any material;

C. The draining, flooding, or disturbing of the water level or water table;

D. The driving of pilings;

E. The placing of obstructions or fences;

F. The construction, reconstruction, demolition, or expansion of any structure;

G. The destruction or alteration of wetlands vegetation through clearing, grubbing, harvesting, shading, intentional burning, or planting of vegetation that would alter the character of a regulated wetland; provided, that these activities are not part of a forest practice governed under Chapter 76.09 RCW and its rules;

H. Activities that result in a significant change of water temperature, a significant change of physical or chemical characteristics of wetlands water sources, including quantity, or the introduction of pollutants;

I. Any development or construction activity not specifically authorized as an allowed activity in IMC 18.10.610(A);

J. Restoration or enhancement projects; or

K. Introduction into any wetland area or associated buffers of all vegetation or wildlife shall be indigenous to the Issaquah region unless authorized by the state of Washington or a federal license or permit. (Ord. 2669 § 1 (Exh. A), 2013; Ord. 2455 § 5, 2006; Ord. 2301 § 3, 2001; Ord. 2108 §

10.2.26.5, 1996).

18.10.610 Allowed wetland activities.

A. Activities Not Subject to Review or Approval: The following activities shall be allowed without a wetland reconnaissance or wetland study and without notice to the Director, within a wetland or wetland buffer to the extent that they are not prohibited by any other ordinance or law and provided they are conducted using best management practices, except where such activities result in the conversion of a regulated wetland or wetland buffer to an activity to which it was not previously subjected; and provided further, that forest practices and conversions shall be governed by Chapter 76.09 RCW and its rules. These activities are not subject to any review or approval process.

1. Conservation or preservation of soil, water, vegetation, fish, shellfish, and other wildlife;

2. Outdoor recreational activities, including fishing, bird watching, hiking, hunting, boating, swimming and canoeing. Horseback riding and bicycling are allowed only on designated, established, public trails;

3. The noncommercial harvesting of wild crops in a manner that is not injurious to natural reproduction of such crops and provided the harvesting does not require tilling of soil, planting of crops, or alteration of the wetland by changing existing topography, water conditions or water sources;

4. Existing and ongoing agricultural activities including farming, horticulture, aquaculture, irrigation, ranching or grazing of animals. Activities on areas lying fallow as part of a conventional rotational cycle are part of an ongoing operation. Activities which bring an area into agricultural use are not part of an ongoing operation. An operation ceases to be ongoing when the area on which it was conducted has been converted to another use or has lain idle for twenty-four (24) consecutive months;

5. The maintenance (but not construction) of existing ditches. Maintenance includes clearing the ditch of sediment, debris and/or vegetation, but does not include additional excavation that increases the depth or width of the ditch. Excavation of sediment deposited in the ditch shall not exceed the original construction elevation;

6. Education, scientific research, and use of publicly designated nature trails;

7. Navigation aids and boundary markers;

8. Boat mooring buoys;

9. Normal maintenance, repair, or operation of existing serviceable structures, facilities, or improved areas. Maintenance and repair does not include any modification that changes the

character, scope, or size of the original structure, facility, or improved area and does not include the construction of a maintenance road;

10. Minor modification of existing serviceable structures (e.g., utilities, monitoring equipment, etc.) within a buffer where modification does not adversely impact wetland functions;

11. Site investigative work necessary for land use application submittals such as delineations, surveys, soil logs, percolation tests and other related activities; and

12. Removal of exotic, invasive plants in wetlands and buffers as established in IMC 18.10.400(K), Removal of Nonnative Invasive Vegetation.

B. Activities Allowed in Wetland Buffers: In wetland buffers, regulated activities which have minimal adverse impacts within the buffers and no adverse impacts on wetlands may be allowed through the Land Use Permit process, provided they are conducted using best management practices and restoration. These activities include:

1. Low impact, passive recreation-related activities such as development of pervious recreation trails, nonpermanent wildlife watching blinds, short-term scientific or educational activities; or

2. Stormwater management facilities having no feasible alternative on-site locations, where appropriate restoration is included, and which would not adversely affect the function or values of the buffer or wetland, may be allowed in buffers associated with Category II, III and IV wetlands only. Stormwater management facilities shall not encroach into wetland buffers by more than twenty-five (25) percent of the standard wetland buffer width, per IMC 18.10.640, or use more than twenty-five (25) percent of the total buffer area without a variance. Any wetland buffer area displaced by a stormwater management facility shall be compensated for by adding wetland buffer area in accordance with IMC 18.10.650(D)(3) so that no net loss of wetland buffer area results from the construction of the facility; or

3. Flood conveyance compensatory storage, where there is no other feasible alternative, where appropriate restoration is included, and where wetland hydrology or vegetation will not be significantly impacted; or

4. Surface water discharge to a wetland from a detention facility, presettlement pond or other surface water management activity or facility may be allowed if the discharge enhances the wetland and/or does not increase the rate of flow, change the plant composition in a forested wetland, or decrease the water quality of the wetland; or

5. Trails. Construction of public and private trails may not be allowed in wetland buffers unless a critical areas study per IMC 18.10.410 documents no loss of buffer functions and values.

Additional buffer width equal to the width of the trail tread and the cleared trail shoulders shall be required, except where existing development prevents adding buffer width. In this case, other mitigating measures shall be required to ensure no loss of buffer functions and values.

C. Utilities in Wetland Buffers: Sewer utility corridors may be allowed in wetland buffers only if the applicant demonstrates that sewer lines are necessary for gravity flow and no other technologically practical alternative exists, and:

1. The corridor is not located in a wetland or buffer used by species listed as endangered or threatened by the state or federal government or containing critical or outstanding actual habitat of those species, and consider construction timing in areas with heron rookeries or raptor nesting trees;

2. The corridor alignment including, but not limited to, any allowed maintenance roads shall not encroach into the wetland buffer at any location by more than twenty-five (25) percent of the standard wetland buffer width, per IMC 18.10.640;

3. Corridor construction and maintenance protects the wetland and buffer and is aligned to avoid cutting trees greater than twelve (12) inches in diameter at breast height, when practical;

4. An additional, contiguous and undisturbed buffer, equal in width to the proposed nonvegetated areas, including any allowed maintenance roads, is provided to protect the wetland;

5. The corridor is revegetated with appropriate vegetation native to King County at preconstruction densities or greater immediately upon completion of construction or as soon thereafter as possible, and the sewer utility ensures that such vegetation is established for at least five (5) years;

6. Any additional corridor access for maintenance is provided, to the extent possible at specific points rather than by a parallel road; and

7. The width of any necessary parallel road providing access for maintenance is as small as possible, but not greater than fifteen (15) feet, and the location of the road is within the utility corridor on the side away from the wetland.

D. Temporary Construction Disturbance: Except as otherwise specified, where temporary buffer disturbance has occurred during construction, revegetation with native vegetation is required. (Ord. 2669 § 1 (Exh. A), 2013; Ord. 2491 § 6, 2007; Ord. 2455 § 6, 2006; Ord. 2314 § 1, 2001; Ord. 2301 § 3, 2001; Ord. 2108 § 10.2.26.6 – 7, 1996).

18.10.615 Wetland delineations.

A. A wetland report shall be prepared either prior to or with a development application, where a site inspection or other available information indicates the potential presence of a wetland on any portion of the subject property or within two hundred (200) feet of the subject property.

B. A field identification or delineation of the wetland edge shall be conducted by a qualified wetland professional based on the procedures provided in the currently approved federal manual and applicable regional supplements and WAC 173-22-035.

C. Wetland delineations and wetland ratings shall be based on the entire extent of the wetland, irrespective of property lines, ownership patterns, or other factors.

D. The Planning Director/Manager shall approve a wetland delineation and wetland rating prior to approval of development permits. The City may require additional review of a wetland delineation and/or wetland rating by a wetland professional not associated with an applicant. Additional wetland review shall be at the applicant's expense.

E. A final wetland delineation report shall be valid for three (3) years. Additional time may be approved by the Planning Director/Manager if an application is proceeding through the permit process in a timely manner. The Planning Director/Manager may require an updated wetland delineation report whenever physical circumstances have markedly and demonstrably changed on the subject property or the surrounding area as a result of natural processes or human activity.

F. After City approval of the wetland delineation and required wetland buffer, a professional survey of the wetland edge and required wetland buffer shall be shown on the permit application. The survey of the wetland delineation shall be tied to a known monument. (Ord. 2669 § 3 (Exh. A), 2013).

18.10.630 Wetland buffers.

Repealed by Ord. 2669. (Ord. 2108 § 10.2.27.4, 1996).

18.10.640 Wetland buffer width requirements.

A. Wetland buffers shall be required for all regulated activities adjacent to wetlands.

B. Any wetland created, restored or enhanced as mitigation or compensation for approved wetland alterations shall also include the standard wetland buffer required for the category of the created, restored, or enhanced wetland.

C. All wetland buffers shall be measured from the wetland boundary as delineated using the DOE Wetland Manual and surveyed in the field. The width of the wetland buffer shall be determined according to the wetland category, as follows:

Table 18.10.640.C Wetland Buffer Standards		

Category	Wetland Characteristic	Buffer
I (Wetlands with a total score of 70 points or more on the DOE Wetland Rating form)	Natural heritage wetlands	190 feet
	Bogs	190 feet
	Forested	Based on score for habitat or water quality functions
	Habitat score of 31 to 36	225 feet
	Habitat score of 26 to 30	150 feet
	Habitat score of 22 to 25	100 feet
	Habitat score of 21 or less	75 feet
II (Wetlands with a total score of 51 to 69 points on the DOE Wetland Rating form)	Habitat score of 31 to 36	225 feet
	Habitat score of 26 to 30	150 feet
	Habitat score of 22 to 25	100 feet
	Habitat score of 21 or less	75 feet
III (Wetlands with a total score of 30 to 50 points on the DOE Wetland Rating form)	Habitat score of 26 to 30	110 feet
	Habitat score of 22 to 25	75 feet
	Habitat score of 21 or less	50 feet
IV over 2,500 square feet (Wetlands scoring less than 30 points on the DOE Wetland Rating form)	Total score for functions less than 30 points	40 feet
IV less than 2,500 square feet		No buffer required

D. Building Setback: An additional fifteen (15) foot building setback shall also be established from the outer edge of the buffer as regulated by IMC 18.10.515(D), Building Setback Areas. (Ord. 2669 § 1 (Exh. A), 2013; Ord. 2664 § 2 (Exh. A1), 2012; Ord. 2455 § 8, 2006; Ord. 2301 § 3, 2001; Ord. 2108 § 10.2.27.5 – 9, 1996).

18.10.650 Exceptions to wetland buffer width requirements.

A. Existing Conditions:

1. Previously Established Buffers: Where a wetland buffer has been previously established through City or County development approval on or after November 27, 1990, and is permanently recorded on title or placed within a separate tract, the buffer shall be as previously established, provided it is at least fifty (50) percent of the required standard wetland buffer width in Table 18.10.640.C.

2. Roads or Infrastructure in Wetland Buffers: Where a legally established road right-of-way or similar infrastructure is located within a wetland buffer, the edge of the improved right-of-way shall be the extent of the buffer, provided it is demonstrated that the buffer area on the opposite side of the right-of-way provides insignificant biological or hydrological functions in relation to the buffer area adjacent to the wetland.

B. Buffer Requirements for Wetlands Adjacent to Steep Slopes: Wetlands within twenty-five (25) feet of the toe of slopes equal to or greater than forty (40) percent shall have the following minimum buffers:

1. Where the horizontal length of the slope including small benches and terraces is within the buffer for that wetland category, the buffer width shall be the greater of:

a. The minimum for that wetland category; or

b. Twenty-five (25) feet beyond the toe of the slope.

2. Where the horizontal length of the slope extends beyond the minimum buffer for that wetland category, the buffer shall extend to a point twenty-five (25) feet beyond the minimum buffer for that wetland category.

3. No reduction to wetland buffer standards in IMC 18.10.640 is allowed.

4. The Director may recommend buffer averaging in instances where it will provide additional resource protection; provided, that the total area on site contained in the buffer remains the same.

C. Increasing Wetland Buffer Requirements: The Director shall require increased buffer widths as necessary to protect wetlands. The additional buffer widths and other issues shall be determined by development application review on a case-by-case basis. This determination shall be supported by appropriate documentation demonstrating that an increased buffer is necessary to:

1. Maintain viable populations of existing species;

2. Protect critical fish and wildlife habitat;

3. Protect critical drainage areas;

4. Protect groundwater recharge or discharge areas;

5. Protect adjacent land from landslides or severe erosion.

D. Reducing Wetland Buffer Requirements:

1. Wetland buffer reduction provisions in this section may be used separately or together; provided, that the cumulative, total wetland buffer reduction shall not exceed twenty-five (25) percent of the required wetland buffer area or encroach into the buffer at any location by more than twenty-five (25) percent of the standard wetland buffer width, per IMC 18.10.640.

2. A variance is required for wetland buffer reductions exceeding twenty-five (25) percent of the required buffer area or encroachments exceeding twenty-five (25) percent of the standard wetland buffer width.

3. Wetland Buffer Reduction with Buffer Vegetation Enhancement:

a. Purpose: The standard wetland buffer widths identified in Table 18.10.640.C may be reduced when enhancement of the existing wetland buffer vegetation would demonstratively improve water quality and habitat functions.

b. Applicability – Qualifying Wetland Buffers: A wetland buffer may qualify for a buffer reduction under this section when:

(1) The wetland buffer proposed to be enhanced/reduced meets all of the following characteristics:

(A) More than forty (40) percent of the buffer area is covered by nonnative and/or invasive plant species; or

(B) Tree and/or shrub vegetation cover less than twenty-five (25) percent of the buffer area; and

(C) The wetland buffer has slopes of less than twenty-five (25) percent.

(2) The proposed development incorporates performance standards to minimize the impacts of the proposed land use, consistent with IMC 18.10.660.

c. Critical Area Study Required: A critical area study consistent with the requirements of IMC 18.10.410(C) and the following provisions is required in order to evaluate and approve a reduction of the standard buffer width. The critical area study shall:

(1) Evaluate the water quality, habitat, groundwater recharge, stormwater detention,

and erosion protection functions of the wetland buffer;

(2) Document whether or not the:

(A) Wetland buffer under consideration meets the criteria established in subsection (D)(3)(b) of this section and qualifies for consideration of a buffer reduction under this section;

(B) Buffer reduction would adversely affect the functions and values of the adjacent wetland; and

(C) Ecological structure and function of the reduced buffer after planting enhancement would improve water quality and habitat functions.

(3) Propose a wetland buffer enhancement plan including:

(A) Removal of all invasive, nonnative vegetation; and

(B) Planting of appropriate native tree and shrub species at a minimum planting density of ten (10) feet on center for trees and five (5) feet on center for shrubs; and

(C) A monitoring and maintenance plan for the enhanced buffer for a five (5) year period, consistent with IMC 18.10.760 and 18.10.810.

d. Allowed Buffer Reduction: Following are the wetland buffer reductions allowed when all of the criteria in subsections B and C of this section are met:

Wetland Category	Maximum Buffer Reduction at Any Location
Category I and II wetlands	25 percent of the standard buffer width
Category III wetlands with habitat scores of 26 points or more	25 percent of the standard buffer width
Category III with habitat scores less than 26 points and Category IV wetlands	15 percent of the standard buffer width

4. Wetland Buffer Reduction with Removal of Impervious Surface Area: The standard wetland buffer area may be reduced at a 1:1 ratio with the removal of existing, legally nonconforming impervious surface area located within the wetland buffer area. For example, if one hundred

(100) square feet of existing impervious area are removed, the wetland buffer area may be reduced by one hundred (100) square feet. The removed impervious area shall be located closer toward the wetland than the proposed buffer reduction area. The removed impervious area shall be restored with native vegetation, consistent with the wetland buffer enhancement plan requirements in subsection (D)(3)(c)(3) of this section. Existing site characteristics, including buffer vegetation, slopes, etc., and the proposed development shall be considered in determining the location of the allowed reduced buffer area.

5. Wetland Buffer Averaging Requirements: Standard wetland buffer widths may be modified by averaging buffer widths after review of a critical area study prepared by a qualified wetland professional for compliance with the following criteria:

a. The proposed site plan demonstrates efforts to avoid and minimize wetland and wetland buffer impacts;

b. Buffer width averaging is consistent with the best available science and will not adversely impact functions or values;

c. The total area within the wetland buffer after averaging is not less than the area within the standard buffer prior to averaging. The location of the replacement buffer area shall be contiguous to the standard buffer to be averaged;

d. The buffer width shall not be reduced by more than twenty-five (25) percent of the standard buffer width at any location, unless a variance is approved in accordance with IMC 18.10.430;

e. A maximum of fifty (50) percent of the buffer perimeter on a site may be reduced by buffer averaging;

f. Buffer averaging shall consider physical characteristics on a site, including but not limited to existing wetland and buffer vegetation, slopes, floodplain, hydrology, surface drainage, and association with nearby wetlands and/or streams;

g. Buffer averaging credit shall not be allowed in areas already protected by the critical area regulations; and

h. Mitigation, such as revegetation and enhancement of existing vegetation, may be required by the Director. (Ord. 2669 § 1 (Exh. A), 2013; Ord. 2664 § 2 (Exh. A1), 2012; Ord. 2455 § 9, 2006; Ord. 2108 § 10.2.27.10, 1996).

18.10.660 Performance standards.

Development on sites with a wetland or wetland buffer shall incorporate the following performance

standards to minimize the impacts of the proposed land use, as applicable:

A. Lights shall be directed away from the wetland. Lighting levels shall meet the outdoor lighting standards for spillover into critical areas, per IMC 18.07.107.

B. Activities that generate noise shall be located away from the wetland, or noise impacts shall be minimized through design or insulation techniques.

C. Toxic runoff from new impervious surface area shall be directed away from wetlands.

D. Treated stormwater runoff may be allowed into wetland buffers. Channelized flow should be prevented.

E. Use of pesticides, insecticides and fertilizers within one hundred fifty (150) feet of wetland boundary shall be limited and follow best management practices (BMPs).

F. The outer edge of the wetland buffer shall be planted with dense vegetation and/or fencing to limit pet and human disturbance. (Ord. 2455 § 10, 2006; Ord. 2301 § 3, 2001; Ord. 2108 § 10.2.27.11, 1996).

18.10.670 Mitigation sequence.

Repealed by Ord. 2669. (Ord. 2455 § 11, 2006; Ord. 2301 § 3, 2001; Ord. 2108 § 10.2.27.12, 1996).

18.10.680 Reducing buffer requirements.

Repealed by Ord. 2669. (Ord. 2108 § 10.2.27.13 – 14, 1996).

18.10.690 Utilities in wetland buffers.

Repealed by Ord. 2669. (Ord. 2301 § 3, 2001; Ord. 2108 § 10.2.27.15, 1996).

18.10.700 Avoiding wetland impacts.

A. To further the goal of no net loss of wetland functions or values, regulated activities shall not be authorized in a wetland except as provided in this section or where it can be demonstrated that the impact is both unavoidable and necessary and/or that all reasonable uses are denied through the variance provision established in IMC 18.10.430.

B. With respect to Category I and II wetlands, an applicant must demonstrate through the variance provision, as established in IMC 18.10.430, that denial of the proposal would preclude all reasonable use of the subject property on the part of the applicant brought about by circumstances peculiar to the subject property.

C. With respect to Category III and IV wetlands, the following provisions shall apply:

1. For water-dependent activities, unavoidable and necessary impacts can be authorized by the Director where it is demonstrated that there are no practicable alternatives that would not involve a wetland or which would not have less adverse impact on a wetland, and would not have other significant adverse environmental consequences.

2. Where non-water-dependent activities are proposed, it shall be presumed that adverse impacts are avoidable. This presumption may be rebutted upon a demonstration to the Director that:

a. The basic project purpose cannot reasonably be accomplished using one (1) or more other sites in the general region (outside the hydraulic influence area) that would avoid, or result in less, adverse impact on a regulated wetland;

b. The basic purpose of the project cannot be accomplished by reducing the size, scope, configuration, or density of the project, as proposed, and by using any alternative designs of the project, as proposed, that would avoid, or result in less adverse impact on a wetland or its buffer;

c. In cases where the applicant has rejected alternatives to the project, as proposed, due to constraints such as zoning, deficiencies of infrastructure, or parcel size, the applicant has made reasonable attempt to remove or accommodate such constraints.

D. If an applicant for a development proposal which has Category III or IV wetlands can demonstrate to the satisfaction of the Director that application of the standards provided in this chapter will deny all reasonable use of the property, development as conditioned shall be allowed if the applicant also demonstrates all of the following to the satisfaction of the Director. The Director has the option to forward the decision to a Hearing Examiner through the variance provision outlined in IMC 18.10.430.

1. That the proposed project is water-dependent or requires access to the wetland as a central element of its basic function, or is not water-dependent but has no practicable alternative pursuant to this section;

2. That no reasonable use with less impact on the wetland and its buffer is possible (e.g., agriculture, aquaculture, transfer or sale of development rights or credits, sale of open space easements, etc.);

3. That there is no feasible on-site alternative to the proposed activities, including reduction in density, phasing of project implementation, change in timing of activities, revision of road and lot layout, and/or related site planning considerations, that would allow a reasonable use with less adverse impacts to wetlands and wetland buffers;

4. That the proposed activities will result in minimum feasible alteration or impairment to the wetland's functional characteristics and its existing contours, vegetation, fish and wildlife resources, and hydrological conditions;

5. That disturbance of wetlands has been minimized by locating any necessary alteration in wetland buffers to the extent possible;

6. That the proposed activities will not jeopardize the continued existence of endangered, threatened, rare, sensitive, or monitor species as listed by the federal government or the state of Washington;

7. That the proposed activities will not cause significant degradation of groundwater or surface water quality;

8. That the proposed activities comply with all state, local and federal laws, including those related to sediment control, pollution control, floodplain restrictions, and on-site wastewater disposal;

9. That any and all alterations to wetlands and wetland buffers will be mitigated as provided in IMC 18.10.750;

10. That there will be no damage to nearby public or private property and no threat to the health or safety of people on or off the property; and

11. That the inability to derive reasonable use of the property is not the result of actions by the applicant in segregating or dividing the property and creating the undevelopable condition after the effective date of the ordinance codified in this chapter. (Ord. 2669 § 1 (Exh. A), 2013; Ord. 2108 § 10.2.27.16 – 19, 1996).

18.10.710 Minimizing wetlands impacts.

A. After it has been determined by either the Hearing Examiner or the Director pursuant to IMC 18.10.700 (Avoiding Wetland Impacts) that losses of wetlands are necessary and unavoidable or that all reasonable use has been denied, the applicant shall take deliberate measures to minimize wetland impacts.

B. Minimizing impacts to wetlands shall include but is not limited to:

1. Limiting the degree or magnitude of the regulated activity;

2. Limiting the implementation of the regulated activity;

3. Using appropriate and best available technology;

4. Taking affirmative steps to avoid or reduce impacts;

5. Sensitive site design and siting of facilities and construction staging areas away from regulated wetlands and their buffers;

6. Involving resource agencies early in site planning;

7. Providing protective measures such as siltation curtains, hay bales and other siltation prevention measures, scheduling the regulated activity to avoid interference with wildlife and fisheries rearing, resting, nesting or spawning activities;

8. Prohibiting the intentional introduction of nonnative vegetation, except in conjunction with approved restoration projects; and

9. Providing preventative measures for soil erosion such as inspections and a monitoring plan. (Ord. 2301 § 3, 2001; Ord. 2108 § 10.2.27.20 – 21, 1996).

18.10.720 Mitigating for wetland impacts.

A. Goal: All approved impacts to regulated wetlands require compensatory mitigation so that the goal of no net loss of wetland function, value and acreage is achieved. Mitigation actions shall provide equivalent or greater wetland and buffer functions compared to wetland and buffer conditions existing prior to the proposed alteration.

B. Wetland Mitigation Ratios:

1. The following ratios apply to mitigation which is in kind, on site, the same wetland category, timed prior to or concurrent with alteration, and has a high probability of success. The first number specifies the acreage of required wetlands to be created, re-established, rehabilitated or enhanced and the second number specifies the acreage of existing wetlands proposed for alteration.

2. Minimum Replacement Ratio: In order to maintain no net loss of wetland acreage, in all cases the wetland creation or re-establishment ratio shall be a minimum of 1:1.

Category and Type of Wetland Impacts	Creation or Re-establishment	Rehabilitation Only	Creation or Re-establishment (R/C) and Rehabilitation (RH)	Creation or Re-establishment (R/C) and Enhancement (E)
Category IV Greater			1:1 R/C and 1:1	

Greater than 2,500 SF in size	1.5:1	3:1	1:1 R/C and 1:1 RH	1:1 R/C and 2:1 E
All Category III	2:1	4:1	1:1 R/C and 2:1 RH	1:1 R/C and 4:1 E
Category II	3:1	6:1	1:1 R/C and 4:1 RH	1:1 R/C and 8:1 E
Category I Forested	6:1	12:1	1:1 R/C and 10:1 RH	1:1 R/C and 20:1 E
Category I – based on score for functions	4:1	8:1	1:1 R/C and 6:1 RH	1:1 R/C and 12:1 E
Category I Natural Heritage site	Not allowed	6:1 Rehabilitation of a Natural Heritage site	Not allowed	Not allowed
Category I Bog	Not allowed	6:1 Rehabilitation of a bog	Not allowed	Not allowed

3. Category IV Wetlands Less Than Two Thousand Five Hundred (2,500) Square Feet: Category IV wetlands less than two thousand five hundred (2,500) square feet in size, that are not part of a wetland complex, may be altered if mitigation is provided to demonstrate no net loss of functions or values. No buffer is required for these wetlands. The following criteria shall apply in preferential order to avoid or mitigate impacts to Category IV wetlands less than two thousand five hundred (2,500) square feet in size:

a. Preserve the wetland or demonstrate through mitigation sequencing that avoidance or minimization of impacts have been considered; or

b. Relocate the wetland on site by creating, re-establishing or rehabilitating a new, equal size wetland; or

c. Enhance an equal area of another existing wetland on site, demonstrating equivalent or greater functions; or

d. Protect significant on-site trees. Protect an area of significant trees equal to the wetland area or enhance an equal upland area with native tree planting. This shall not apply to areas already protected as critical area buffers and shall be in addition to the tree retention requirements in IMC 18.12.1385; or

e. Off-site mitigation opportunities may be considered.

4. Increased Mitigation Ratio: The Director may increase the ratios under the following circumstances:

a. Uncertainty as to the probable success of the proposed restoration or creation;

b. Significant period of time between destruction and replication of wetland functions;

c. Projected losses in functional value; or

d. Off-site compensation.

e. Mitigation ratios may be increased for remedial actions along with other penalties resulting from illegal, unpermitted wetland alterations.

5. Decreased Mitigation Ratio:

a. The Director may decrease the replacement ratios specified in this section; provided, that findings of critical areas studies coordinated with the participation of agencies having expertise demonstrates that no net loss of wetlands function or value is attained under the decreased ratio.

C. Wetland Buffer Requirements for Mitigation Wetlands: Wetland buffer impacts are assumed when wetland fill or modification is proposed. A new wetland buffer shall be established around the wetland mitigation area equal in width to the standard wetland buffer width specified in IMC 18.10.640.

D. Criteria for Approval: Given the uncertainties in scientific knowledge and the need for expertise and monitoring, wetland compensatory projects may be permitted only when the Director finds that the compensation project is associated with an activity or development proposal directly associated with an approved Hearing Examiner's and/or Director's decision (as set forth in IMC 18.10.700) or an approved variance (IMC 18.10.430), and that the restored, created, or enhanced wetland will be as persistent as the wetland it replaces. A maintenance bond will be required pursuant to IMC 18.10.810.

E. Type of Compensation Project: Compensation areas shall be determined according to function,

acreage, type, location, time factors, ability to be self sustaining and projected success. Wetland functions and values shall be calculated using the best professional judgment of a qualified wetland professional using the best available techniques. Multiple compensation projects may be proposed for one (1) project in order to best achieve the goal of no net loss.

F. In-Kind Compensation:

1. In-kind compensation shall be provided except where the applicant can demonstrate that:

a. Scientific problems such as exotic vegetation and changes in watershed hydrology make implementation of in-kind compensation impossible; or

b. Out-of-kind replacement will best meet identified regional goals (e.g., replacement of historically diminished wetland types)

G. Timing:

1. Where feasible, mitigation projects shall be completed prior to activities that will disturb wetlands. In all other cases, mitigation shall be completed immediately following disturbance and prior to use or occupancy of the activity or development.

2. Construction of compensation projects shall be timed to reduce impacts to existing wildlife and flora.

H. Location:

1. On-site compensation shall be provided except where the applicant can demonstrate that:

a. The hydrology and ecosystem of the original wetland and those who benefit from the hydrology and ecosystem will not be substantially damaged by the on-site loss; and

b. On-site compensation is not scientifically feasible due to problems with hydrology, soils, waves, or other factors; or

c. Compensation is not practical due to potentially adverse impact from surrounding land uses; or

d. Existing functional values at the site of the proposed restoration are significantly greater than lost wetland functional values; or

e. Established regional goals for flood storage, flood conveyance, habitat or other wetland functions have been established and strongly justify location of compensatory measures at another site.

2. Off-site compensation shall occur within the same watershed as the wetland loss occurred.

3. In selecting compensation sites, applicants shall pursue siting in areas conducive to wetland creation, enhancement, or restoration based on recommendations of a wetland biologist and approved by the City.

I. Wetland Mitigation Banking: The City may consider and approve replacement or enhancement of unavoidable adverse impacts to wetlands caused by development activities through an approved wetland mitigation bank, in advance of authorized impacts. Criteria governing the creation and use of a mitigation bank shall be established in administrative rules.

J. Cooperative Projects:

1. The Director may encourage, facilitate, and approve cooperative projects wherein a single applicant or other organization with demonstrated capability may undertake a compensation project with funding and/or support from other applicants under the following circumstances:

a. Restoration, creation or enhancement at a particular site may be scientifically difficult or impossible; or

b. Creation of one (1) or several larger wetlands may be preferable to many small wetlands.

2. Persons proposing cooperative compensation projects shall:

a. Submit a joint permit application;

b. Demonstrate compliance with all standards;

c. Demonstrate the organizational and fiscal capability to act cooperatively; and

d. Demonstrate that long-term management can and will be provided. (Ord. 2669 § 1 (Exh. A), 2013; Ord. 2301 § 3, 2001; Ord. 2108 § 10.2.27.22 – 28, 1996).

18.10.730 Wetland restoration and creation.

Repealed by Ord. 2669. (Ord. 2108 § 10.2.27.29 – 35, 1996).

18.10.740 Wetland enhancement.

Repealed by Ord. 2669. (Ord. 2301 § 3, 2001; Ord. 2108 § 10.2.27.36 – 39, 1996).

EXHIBIT 12

16.50.080 Jurisdiction—Critical Areas.

(1) The city shall regulate all uses within 200 feet of, or that are likely to affect, one or more critical areas, consistent with the best available science and the provisions contained within this Chapter.

(2) Critical areas regulated by this Chapter include:

(a) wetlands;

(b) critical aquifer recharge areas;

(c) frequently flooded areas;

(d) geologically hazardous areas; and

(e) fish and wildlife habitat conservation areas.

(3) All areas within the city meeting the definition of one or more critical areas, regardless of any formal identification, are hereby designated critical areas and are subject to the provisions of this Chapter. (Ord. 03-18, §9, 2003).

16.50.090 Protection of Critical Areas. Any action taken pursuant to this Chapter shall result in equivalent or greater functions and values of the critical areas associated with the proposed action, as determined by the best available science. All actions and developments shall be designed and constructed in accordance with the mitigation sequencing requirements in Section 16.50.170 to avoid, minimize and restore all adverse impacts. Applicants must first demonstrate an inability to avoid or reduce

impacts before restoration and compensation of impacts will be allowed. No activity or use shall be allowed that results in a net loss of the functions or values of critical areas. (Ord. 03-18, §10, 2003).

16.50.100 Best Available Science.

(1) Best Available Science Must Be Consistent with Criteria. The best available science is that scientific information applicable to the critical area prepared by local, state or federal natural resource agencies, a qualified scientific professional or team of qualified scientific professionals, that is consistent with criteria established in WAC 365-195-900 through WAC 365-195-925. In the context of critical areas protection, best available science must also be based upon a valid scientific process as defined in WAC 365-195-905. Best available science sources are available in records maintained by the department.

(2) Absence of Valid Scientific Information. Where there is an absence of valid scientific information or incomplete scientific information relating to a critical area, leading to uncertainty about the specific boundary of a critical area, and risk to critical area function of permitting an alteration of or impact to the critical area, the planning director shall:

(a) Take a “precautionary or a no-risk approach,” that strictly limits development and land use activities until the uncertainty is sufficiently resolved;

(b) Require an effective adaptive management program that relies on scientific methods to evaluate how well regulatory and non-regulatory actions protect the critical area. An adaptive management program is a formal and deliberate scientific approach to taking action and obtaining information in the face of uncertainty. An adaptive management program shall:

(i) address funding for the research component of the adaptive management program;

(ii) change course based on the results and interpretation of new information that resolves uncertainties;

(iii) commit to the appropriate time frame and scale necessary to reliably evaluate regulatory and non-regulatory actions affecting protection of critical areas; and

(c) Maintain a critical areas designation certification

program for wetlands and habitat conservation areas by periodically updating the city critical area maps with new information as it is provided to the city. Currently the city has two types of boundaries depicted on the wetlands and habitat conservation area maps:

(i) Certified. Where the critical area boundary has been verified and mapped by a qualified professional (e.g. delineated wetland) and this information has been provided to the city.

(ii) Uncertified. Where more specific information needs to prepared by a qualified professional and provided to the city to accurately show the boundary of a given critical area.

The most recent city critical area map revision identifying certified and uncertified wetlands and habitat conservation areas becomes the map of record for demonstrating compliance with the state requirement for designating and classifying these critical areas. (Ord. 03-18, §11, 2003).

16.50.110 Allowed Activities.

(1) Process. The planning director shall allow activities that are verified to comply with this Chapter. Documentation of allowed activities shall be maintained on file at the department.

(2) Allowed Activities Shall Avoid Impacts to Critical Areas. All allowed activities shall use reasonable methods to avoid potential impacts to critical areas, using best management practices that result in the least amount of impact to the critical areas where practicable. Designation as an allowed activity does not give permission to degrade a critical area or ignore risk from natural hazards. Best management practices shall be used for tree and vegetation protection, construction management, erosion and sedimentation control, water quality protection, and regulation of chemical applications. The city shall observe the use of best management practices to ensure that the activity does not result in degradation to the critical area. Any incidental damage to, or alteration of, a critical area that is not a necessary outcome of the exempted activity shall be restored, rehabilitated, or replaced at the responsible party’s expense.

(3) Allowed Activities. The activities identified in this Subsection are allowed in or near critical areas and shall be exempt from the standards of this Chapter as qualified for each individual activity cited, provided they are otherwise

consistent with applicable local, state, and federal laws. If a proposed or unauthorized activity does not meet the qualifications specified for that activity in this Subsection, it shall be addressed through the general review procedures set forth in Section 16.50.130 or the enforcement provisions set forth in Section 16.50.220, as applicable. Allowed activities are as follows:

(a) Emergencies. Emergency activities are those activities necessary to prevent an immediate threat to public health, safety, or welfare, or that pose an immediate risk of damage to private property and that require remedial or preventative action in a time frame too short to allow for compliance with the requirements of this Chapter. Emergency actions that create an impact to a critical area or its buffer shall use reasonable methods to address the emergency; in addition, they must have the least possible impact to the critical area or its buffer. The person or agency undertaking such action shall notify the planning director within one working day following commencement of the emergency activity. Within 30 days, the planning director shall determine if the action taken was within the scope of the emergency actions allowed in this Paragraph. If the planning director determines that the action taken, or any part of the action taken, was beyond the scope of an allowed emergency action, then enforcement provisions of Section 16.50.220 shall apply. After the emergency, the person or agency undertaking the action shall fully restore and/or mitigate any impacts to the critical area and buffers resulting from the emergency action in accordance with the critical area report and mitigation plan. The person or agency undertaking the action shall apply for review, and the critical area report and mitigation plan shall be reviewed by the planning director in accordance with the review procedures contained herein. Restoration and/or mitigation activities must be initiated within one year of the date of the emergency, and completed in a timely manner;

(b) Operation, Maintenance or Repair. Operation, maintenance or repair of existing structures, infrastructure improvements, utilities, public or private roads, dikes, levees or drainage systems that do not require a development permit, if the activity does not further alter or increase the impact to, or encroach further within, the critical area or buffer and there is no increased risk to life or property as a result of the proposed operation, maintenance, or repair;

(c) Passive Outdoor Activities. Recreation, education, and scientific research activities that do not degrade the

critical area, including fishing, hiking, and bird watching;

(d) Permit Requests Subsequent to Previous Critical Area Review. Development permits that involve both discretionary land use approvals (such as subdivisions, rezones, or conditional use permits), and construction approvals (such as building permits) if all of the following conditions have been met:

(i) the provisions of this Chapter have been previously addressed as part of another approval;

(ii) there have been no material changes in the potential impact to the critical area or buffer since the prior review;

(iii) there is no new information available that is applicable to any critical area review of the site or particular critical area;

(iv) the permit or approval has not expired or, if no expiration date, no more than five years has elapsed since the issuance of that permit or approval; and

(v) compliance with any standards or conditions placed upon the prior permit or approval has been achieved or secured;

(e) Modification to Existing Structures. Structural modification of, addition to, or replacement of an existing legally constructed structure that does not further alter or increase the impact to the critical area or buffer and there is no increased risk to life or property as a result of the proposed modification or replacement, provided that restoration of structures substantially damaged by fire, flood, or act of nature must be initiated within one year of the date of such damage, as evidenced by the issuance of a valid building permit, and diligently pursued to completion;

(f) Activities Within the Improved Right-of-Way. Replacement, modification, installation, or construction of utility facilities, lines, pipes, mains, equipment, or appurtenances, not including substations, when such facilities are located within the improved portion of the public right-of-way or a city authorized private roadway, except those activities that alter a wetland or watercourse (such as culverts or bridges) or result in the transport of sediment or increased stormwater;

(g) Planting of Vegetation. Planting of vegetation within a critical area or its buffer, provided a landscaping plan for this activity has been approved by the city;

(h) Conservation Activities. Conservation, restoration, or preservation of soil, water, vegetation, fish, and other wildlife that does not entail changing the structure or functions of the existing critical area;

(i) Pedestrian/Bicycle Trails. Pedestrian/bicycle trails that are located in buffer areas but not within wetlands or habitat conservation areas, where the trail surface meets all other requirements including water quality standards set forth in the city's Design Standards;

(j) Select Vegetation Removal Activities. Select vegetation removal activities are allowed. Accepted vegetation removal activities include: a) removing and controlling invasive or noxious weeds; b) harvesting wild crops in a manner that is not injurious to natural reproduction of such crops and provided the harvesting does not require tilling of soil, planting of crops, or alteration of the critical area by changing existing topography, water conditions, or water sources; c) removing trees that are hazardous, posing a threat to public safety, or posing an imminent risk of damage to private property; or c) removing vegetation to control a fire or halt the spread of disease or damaging insects consistent with the State Forest Practices Act (Chapter 76.09 RCW). Unless otherwise provided or as a necessary part of an approved alteration, removal of any vegetation or woody debris from a habitat conservation area or wetland shall be prohibited;

(k) Chemical Applications. The application of herbicides, pesticides, organic or mineral-derived fertilizers, or other hazardous substances, if necessary, provided that their use shall be conducted in accordance with applicable state and federal law;

(l) Minor Site Investigative Work. Work necessary for land use submittals, such as surveys, soil logs, percolation tests, and other related activities, where such activities do not require construction of new roads or significant amounts of excavation. In every case, impacts to the critical area shall be minimized and disturbed areas shall be immediately restored; and

(m) Boundary Markers. Installation or modification of boundary markers. (Ord. 03-18, §12, 2003).

16.50.120 Exception—Reasonable Use.

(1) If the application of this Chapter would deny all reasonable use of the subject property, the property owner may apply for an exception pursuant to this Section.

(2) An application for a reasonable use exception shall be made to the planning director and shall include a critical area report, including a mitigation plan, if necessary; and any other related project documents, such as permit applications to other agencies, special studies, and environmental documents prepared pursuant to the State Environmental Policy Act (Chapter 43.21C RCW). The planning director shall approve, approve with conditions, or deny the exception request based on review of the submitted information, a site inspection, and the proposal's ability to comply with the following reasonable use exception criteria:

(a) the application of this Chapter would deny all reasonable use of the property;

(b) no other reasonable use of the property has less impact on the critical area;

(c) any alteration is the minimum necessary to allow for reasonable use of the property;

(d) the inability of the applicant to derive reasonable use of the property is not the result of actions by the applicant after the effective date of this Chapter, or the city's 1992 Critical Areas Ordinance;

(e) the proposal meets the requirements set forth in this Chapter; and

(f) the use does not pose an unreasonable threat to the public health, safety, or welfare.

(3) The burden of proof shall be on the applicant to bring forth evidence in support of the application and to provide sufficient information on which any decision has to be made on the application. (Ord. 03-18, §13, 2003).

16.50.130 General Review Process for Activities Affecting Critical Areas. The city shall follow the process discussed below and as outlined in Figure 16.50.1.

(1) Initial Review. The planning director shall take the following actions during the initial review of a project application:

(a) verify the information submitted by the applicant for the applicable development permit;

(b) evaluate the project area and vicinity for critical areas;

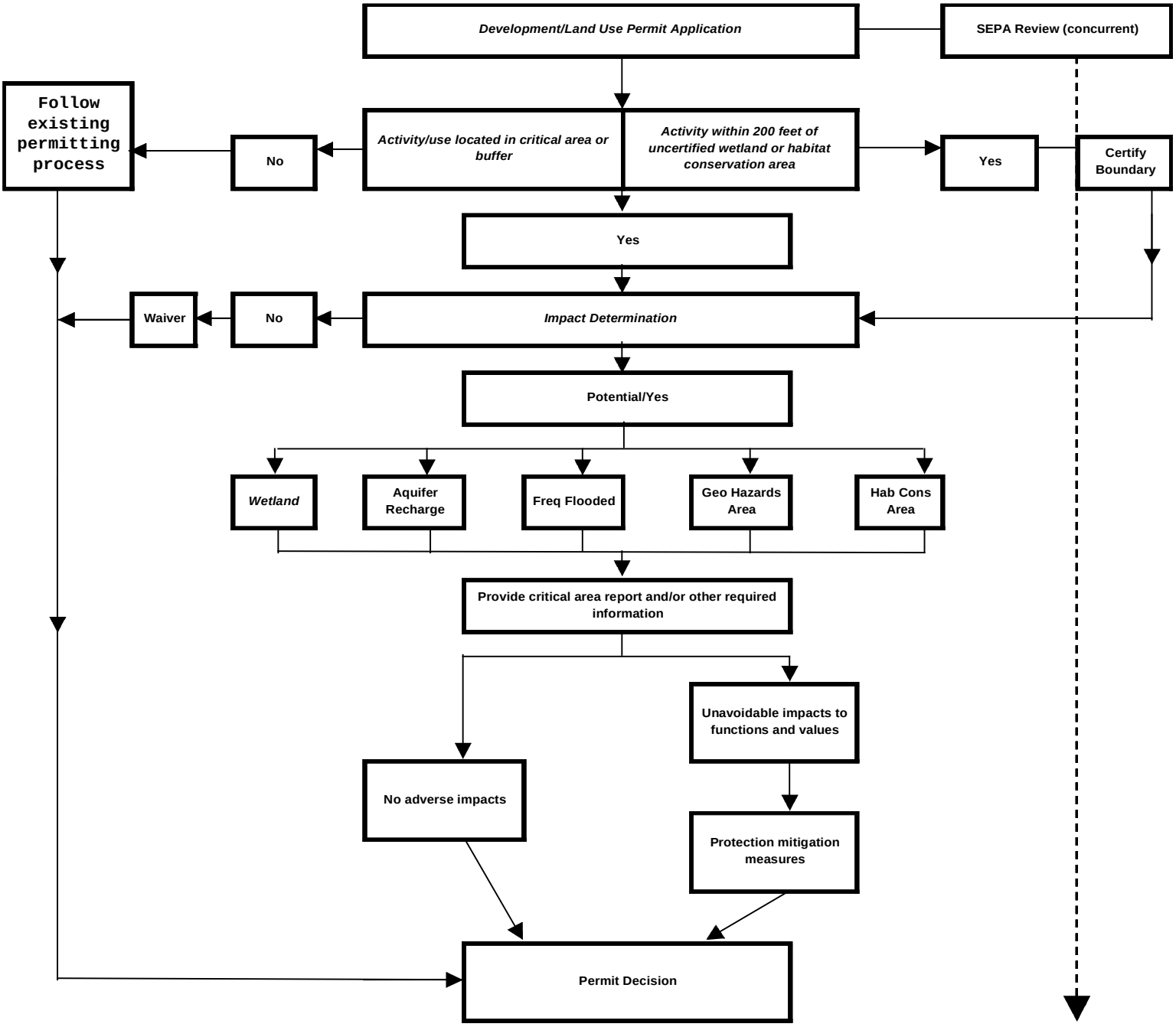
(c) for wetlands or habitat conservation areas, require that their boundaries be verified by a qualified professional, and require that a map of such boundaries be submitted to the planning director as part of the application for the applicable development permit if the project:

(i) is within 200 feet of a wetland or habitat conservation area for which the boundaries have not been certified and depicted on the city critical area maps; and

(ii) will not be receiving a determination of unlikely impact as provided in Subsection 16.50.130(2); and

(d) determine whether the proposed project is likely to impact the functions or values of critical areas.

Figure 16.50.1
City of Pullman
Critical Areas Process/Other Permits



NOTE: Appeal process follows route of associated permit. For appeals of administrative decisions regarding provisions of Chapter 16.50, use the administrative appeal process contained within the Zoning Code (Title 17) or Plats and Subdivisions Code (Title 13).

(2) Determination of Unlikely Impact. If the planning director determines that there are critical areas within or adjacent to the project area, but that the proposed activity is unlikely to degrade the functions or values of the critical area, the planning director may waive the requirement for a critical

area report. A waiver may be granted if there is substantial evidence that all of the following criteria will be met:

(a) there will be no significant alteration of the critical area or buffer;

(b) the development proposal will not impact the critical area in a manner contrary to the purpose, intent, and requirements of this Chapter; and

(c) the proposal is consistent with other applicable regulations and standards.

The planning director shall prepare a written summary of the analysis and findings demanded within this Subsection prior to the city's decision on the applicable development permit. This summary may take the form of a letter to the applicant.

(3) Determination of Likely Impact. If the planning director determines that the proposed project is likely to impact a critical area, the planning director shall:

(a) notify the applicant that a critical area report must be submitted prior to further review of the project, and indicate each of the critical area types that should be addressed;

(b) require a critical area report from the applicant that has been prepared by a qualified professional;

(c) review and evaluate the critical area report to determine whether the development proposal conforms to the purposes and standards of this Chapter;

(d) assess potential impacts to the critical area and determine if they are necessary and unavoidable;

(e) determine if any mitigation proposed by the applicant is sufficient to protect the functions and values of the critical area and public health, safety, and welfare concerns consistent with the purpose, intent, and requirements of this Chapter; and

(f) prepare a written summary of the analysis and findings demanded within this Subsection prior to the city's

decision on the applicable development permit. This summary may take the form of a letter to the applicant. Critical area review findings may result in: a) no adverse impacts to critical areas, b) a list of critical areas protection conditions for the applicable development permit, or c) denial of the applicable development permit based upon unavoidable impacts to critical areas functions and values. (Ord. 03-18, §14, 2003).

16.50.140 Wetland, Habitat Conservation Areas, and Critical Aquifer Recharge Areas—Critical Area Report Requirements.

(1) Prepared by Qualified Professional. If the planning director determines, by means of the process described in Section 16.50.130, that a proposed project is likely to impact a wetland, habitat conservation area, or critical aquifer recharge area, the applicant shall submit a critical area report prepared by a qualified professional as defined herein.

(2) Incorporating Best Available Science. The critical area report shall use scientifically valid methods and studies in the analysis of data and field reconnaissance and reference the source of science used. The critical area report shall evaluate the proposal and all probable impacts to critical areas in accordance with the provisions of this Chapter.

(3) Minimum Critical Area Report Contents. At a minimum, the critical area report shall contain the following:

(a) the name and contact information of the applicant, a description of the proposal, and identification of the development permit(s) requested;

(b) a copy of the site plan for the development proposal showing:

(i) identified critical areas, buffers, and the development proposal with dimensions;

(ii) limits of any areas to be cleared; and

(iii) a proposed stormwater management plan for the development consistent with the current edition of the city's Design Standards;

(c) the names and professional qualifications of the persons preparing the critical area report and documentation of any fieldwork performed on the site;

(d) identification and characterization of all critical areas, wetlands, water bodies, and buffers adjacent to the proposed project area;

(e) a statement specifying the accuracy of the report, and all assumptions made and relied upon;

(f) an assessment of the probable cumulative impacts to critical areas resulting from development of the site and the proposed development;

(g) a description of reasonable efforts made to apply mitigation sequencing pursuant to Section 16.50.170 to avoid, minimize, or mitigate impacts to critical areas;

(h) plans for adequate mitigation, as needed, to offset any impacts, in accordance with Sections 16.50.160 through 16.50.190;

(i) a discussion of the standards applicable to the critical area and proposed activity; and

(j) financial guarantees to ensure compliance, if applicable.

(4) Additional Information. Additional information is required for critical area reports related to wetlands and habitat conservation areas pursuant to applicable wetlands standards (Section 16.50.260) and habitat conservation area standards (Section 16.50.450). (Ord. 07-27 §3, 2007; Ord. 03-18 §15, 2003).

16.50.150 Wetland, Habitat Conservation Areas, and Critical Aquifer Recharge Areas—Critical Area Report Modifications.

(1) Limitations to Study Area. The planning director may limit the required geographic area of the critical area report as appropriate if:

(a) the applicant, with assistance from the city, cannot obtain permission to access properties adjacent to the project area; or

(b) the proposed activity will affect only a limited part of the subject site.

(2) Modifications to Required Contents. The applicant may consult with the planning director prior to or during preparation of the critical area report to obtain

concurrence on modifications to the required contents of the critical area report where, in the judgment of a qualified professional, more or less information is required to adequately address the potential critical area impacts and required mitigation.

(3) Reports Previously Prepared. A critical area report may be supplemented by or composed, in whole or in part, of any reports or studies required by other laws and regulations or previously prepared for and applicable to the development proposal site, as approved by the planning director. (Ord. 07-27 §4, 2007; Ord. 03-18 §16, 2003).

16.50.160 Mitigation Requirements.

(1) The applicant shall avoid all impacts that degrade the functions and values of a critical area or areas. Unless otherwise provided in this Chapter, if alteration to the critical area is unavoidable, all adverse impacts to or from critical areas and buffers resulting from a development proposal or alteration shall be mitigated in accordance with the critical area report and SEPA documents.

(2) Mitigation shall be in-kind and on-site, when possible, and sufficient to maintain the functions and values of the critical area, and to prevent risk from a hazard posed by a critical area.

(3) Except as otherwise allowed by this Chapter, mitigation shall not be implemented until: a) the planning director has approved a critical area report that includes a mitigation plan, and b) the city has approved the applicable development permit. (Ord. 03-18, §17, 2003).

16.50.170 Mitigation Sequencing. Applicants shall demonstrate that all reasonable efforts have been examined with the intent to avoid and minimize impacts to critical areas. When an alteration to a critical area is proposed, such alteration shall be avoided, minimized, or compensated for in the following order of preference:

(1) avoiding the impact altogether by not taking a certain action or parts of an action;

(2) minimizing impacts by limiting the degree or magnitude of the action and its implementation, by using appropriate technology, or by taking affirmative steps, such as project

redesign, relocation, or timing, to avoid or reduce impacts;

(3) rectifying the impact to wetlands, critical aquifer recharge areas, frequently flooded areas, and habitat conservation areas by repairing, rehabilitating, or restoring the affected environment to the historical conditions or the conditions existing at the time of the initiation of the project;

(4) minimizing or eliminating the hazard by restoring or stabilizing the hazard area through engineered or other methods;

(5) reducing or eliminating the impact or hazard over time by preservation and maintenance operations during the life of the action;

(6) compensating for the impact to wetlands, critical aquifer recharge areas, frequently flooded areas, and habitat conservation areas by replacing, enhancing, or providing substitute resources or environments; and

(7) monitoring the hazard or other required mitigation and taking remedial action when necessary.

Mitigation for individual actions may include a combination of the above measures. (Ord. 03-18, §18, 2003).

16.50.180 Mitigation Plan Requirements. When mitigation is required, the applicant shall submit to the planning director a mitigation plan as part of the critical area report. The mitigation plan shall include:

(1) Environmental Goals and Objectives. The mitigation plan shall include a written narrative identifying environmental goals and objectives of the compensation proposed and including:

(a) a description of the anticipated impacts to the critical areas and the mitigating actions proposed and the purposes of the compensation measures, including the site selection criteria, identification of compensation goals, identification of resource functions, and dates for beginning and completion of site compensation construction activities; the goals and objectives shall be related to the functions and values of the impacted critical area;

(b) a review of the best available science supporting the proposed mitigation and a description of the critical area report author’s experience to date in restoring or creating the type of critical area proposed; and

(c) an analysis of the likelihood of success of the compensation project.

(2) Performance Standards. The mitigation plan shall establish performance standards to meet the environmental goals and objectives required in this Section.

(3) Detailed Construction Plans. The mitigation plan shall include written specifications and descriptions of the mitigation proposed, such as:

(a) the proposed construction sequence, timing, and duration;

(b) grading and excavation details;

(c) erosion and sediment control features;

(d) a vegetation planting plan specifying plant species, quantities, locations, size, spacing, and density; and

(e) measures to protect and maintain plants until established.

These written specifications shall be accompanied by detailed site diagrams, scaled cross-sectional drawings, topographic maps showing slope percentage and final grade elevations, and/or other drawings appropriate to show construction techniques or anticipated final outcomes.

(4) Monitoring Program. The mitigation plan shall include a program for monitoring construction of the compensation project, and for assessing a completed project. The plan shall provide for the preparation of a compliance report by a qualified professional indicating that the mitigation measures proposed in the mitigation plan have been effected. A protocol shall also be included outlining the schedule for site monitoring in years 1, 3, and 5 after site construction, and how the monitoring data will be evaluated to determine if the performance standards are being met. A monitoring report shall be submitted as needed to document milestones, successes, problems, and contingency actions of the compensation project.

(5) Contingency Plan. The mitigation plan shall include identification of potential courses of action, and any corrective measures to be taken if monitoring or evaluation indicates project performance standards are not being met.

(6) Financial Guarantees. The mitigation plan shall include financial guarantees, if necessary, to ensure that the mitigation plan is fully implemented. Financial guarantees ensuring fulfillment of the compensation project, monitoring program, and any contingency measures shall be posted in accordance with Section 16.50.230. (Ord. 03-18, §19, 2003).

16.50.190 Innovative Mitigation.

(1) The planning director may encourage and facilitate innovative mitigation projects. Advance mitigation or mitigation banking are examples of alternative mitigation projects allowed under the provisions of this Section where one or more applicants, or an organization with demonstrated capability, may undertake a mitigation project together if it is demonstrated that all of the following circumstances exist:

(a) creation or enhancement of a larger system of critical areas and open space is preferable to the preservation of many individual habitat areas;

(b) the group demonstrates the organizational and fiscal capability to act cooperatively; (c) the group demonstrates that long-term management of the habitat area will be provided; and

(d) there is a clear potential for success of the proposed mitigation at the identified mitigation site.

(2) Conducting mitigation as part of a cooperative process does not reduce or eliminate the required replacement ratios.

(3) Innovative mitigation projects as described in this Section may, at the discretion of the planning director, be exempted from the timing requirements set forth in Subsection 16.50.160(3). (Ord. 03-18, §20, 2003).

16.50.200 Critical Area Markers and Signs. The critical area or buffer shall be identified with temporary signs prior to any site alteration. Such temporary signs may be replaced with permanent signs, as determined appropriate by the planning director. The planning director may also require that fencing be installed or native vegetation be planted or retained at a site to delineate and protect critical areas and/or their buffers. (Ord. 03-18, §21, 2003).

16.50.210 Building Setbacks. Unless otherwise provided by means of an approved critical area report or the provisions of this Chapter, buildings and other structures shall be set back a minimum of 15 feet from the edges of all critical area buffers or from the edges of all critical areas, if no buffers are required. The following may be allowed in the building setback area:

(1) landscaping;

(2) uncovered decks;

(3) building overhangs if such overhangs do not extend more than two feet into the setback area; and

(4) impervious ground surfaces, such as driveways, parking areas,

and patios, provided that such improvements are constructed in accordance with the city's Design Standards.(Ord. 03-18, §22, 2003).

16.50.220 Unauthorized Critical Area Alterations and Enforcement.

(1) Unauthorized Alteration. When a critical area or its buffer has been altered in violation of this Chapter, the city shall have the authority to issue a stop work order to cease all ongoing development work, and order restoration, rehabilitation, replacement, or, where determined appropriate by the planning director, mitigation measures at the owner's or other responsible party's expense to compensate for violation of provisions of this Chapter and other applicable Pullman City Code provisions governing the applicable development permit.

(2) Restoration/Mitigation Plan Required. All development work shall remain stopped until a restoration/mitigation plan is prepared and approved by the planning director. Such a plan shall be prepared by a qualified professional and shall describe how the actions proposed meet the minimum standards described in Subsection 16.50.220(3) and/or mitigation requirements outlined in Sections 16.50.160 through 16.50.190, if mitigation is determined to be appropriate by the planning director. The planning director shall, at the violator's expense, seek expert advice in determining the adequacy of the plan. Inadequate plans shall be returned to the applicant or violator for revision and resubmittal.

(3) Minimum Standards for Restoration or Mitigation.

(a) For alterations to critical aquifer recharge areas, frequently flooded areas, wetlands, and habitat conservation areas, the following minimum standards shall be met for the restoration or mitigation of impacts to a critical area, provided that if the violator can demonstrate in a restoration/mitigation plan that greater functional and habitat values can be obtained, these standards may be modified by the planning director:

(i) the historic structural and functional values shall be restored, including water quality and habitat functions;

(ii) the historic soil types and configuration shall be replicated;

(iii) the critical area and buffers shall be replanted with native vegetation that replicates the vegetation historically found on the site in

species types, sizes, and densities; and

(iv) the historic functions and values should be replicated at the location of the alteration.

(b) For alterations to flood and geological hazards, the following minimum standards shall be met for the restoration of a critical area, provided that, if the violator can demonstrate that greater safety can be obtained, these standards may be modified:

(i) the hazard shall be reduced to a level equal to, or less than, the pre-development hazard;

(ii) any risk of personal injury resulting from the alteration shall be eliminated or minimized; and

(iii) the hazard area and buffers shall be replanted with native vegetation sufficient to minimize the hazard.

(3) Penalties. Any violation or failure to comply with any of the provisions of this Chapter, or any amendment thereto, shall be a civil infraction and shall be subject to a fine in an amount not to exceed $500.00 for each violation. Each day in which a violation continues shall be deemed a separate offense. Any activity carried out contrary to the provisions of this Chapter shall constitute a public nuisance and may be enjoined as provided by the statutes of the state of Washington. Daily fines shall not be levied until after a violator has received a written notice of the violation and shall not be levied while a written notice of violation is under appeal through the applicable appeal process. (Ord. 03-18, §23, 2003).

16.50.230 Financial Guarantees to Ensure Mitigation and Maintenance.

(1) Mitigation required pursuant to a development proposal should be completed prior to final project approval. When the planning director determines it is not feasible for required mitigation to be completed prior to final project approval, the planning director shall require the applicant to post a financial guarantee in a form and amount deemed acceptable by the planning director. Acceptable financial guarantees include, but are not limited to, cash, bond, promissory note, or letter of credit.

(2) Once mitigation measures have been completed, the planning director may require a financial guarantee for maintenance of said mitigation measures.

(3) The financial guarantee shall be in the amount of 125 percent of the estimated cost of the improvements or the estimated cost of restoring the functions and values of the critical area that are at risk, whichever is greater.

(4) The financial guarantee shall remain in effect until the planning director determines, in writing, that the standards bonded for have been met. Financial guarantees for maintenance shall be held by the city for a minimum of five years to ensure that the required mitigation has been fully implemented and demonstrated to function, and may be held for longer periods when necessary.

(5) Depletion, failure, or collection of financial guarantee funds shall not discharge the obligation of an applicant or violator to complete required mitigation, maintenance, monitoring, or restoration.

(6) Public development proposals shall be relieved from having to comply with the requirements of this Section if public funds have previously been committed for mitigation, maintenance, monitoring, or restoration.

(7) Any failure to satisfy critical area requirements established by law or condition including, but not limited to, the failure to provide a monitoring report within 30 days after it is due or the failure to comply with other provisions of a mitigation plan may be deemed by the planning director to constitute a default, and the planning director may demand payment of any financial guarantees or require other action authorized by the Pullman City Code or any other law.

(8) Any funds recovered pursuant to this Section shall be used to complete the required mitigation. (Ord. 03-18, §24, 2003).

16.50.240 Critical Area Inspections. Reasonable access to the site shall be provided to the city, state, and federal agency review staff for the purposes of inspections during any proposal review, restoration, emergency action, or monitoring period. Additionally, the city or its agent shall have reasonable access to the site for completing necessary remediation work in the event of noncompliance. Failure to provide access shall be deemed a violation and shall be subject to the penalties set forth in Subsection 16.50.220(4). (Ord. 03-18, §25, 2003).

16.50.250 Designation, Rating, and Mapping Wetlands.

(1) Designating Wetlands. Wetlands are those areas, designated in accordance with the *Washington State Wetland Identification and Delineation Manual* (*Department of*

Ecology Publication #96-94), that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation adapted for life in saturated soil conditions. All areas within the city meeting the wetland designation criteria in the *Identification and Delineation Manual*, regardless of any formal identification, are hereby designated critical areas and are subject to the provisions of this Chapter.

(2) Wetland Ratings. Wetlands shall be rated according to the Department of Ecology wetland rating system found in the Washington State Wetland Rating System for Eastern Washington—Revised (*Department of Ecology Publication #04-06-15*), as amended. This document contains definitions and methods for determining if the general criteria below are met.

(a) Wetland Rating Categories.

(i) Category I. Category I wetlands are those that meet the following criteria:

(aa) documented habitat for federal or state listed endangered or threatened fish, animal, or plant species;

(bb) high quality native wetland communities, including documented category I or II quality Natural Heritage wetland sites and sites which qualify as a category I or II quality Natural Heritage wetland (defined in the rating system documents);

(cc) high quality, regionally rare wetland communities with irreplaceable ecological functions, including sphagnum bogs and fens, wetlands, or mature forested swamps (defined in the rating system documents); or

(dd) wetlands of exceptional local significance.

(ii) Category II. Category II wetlands are those not defined as Category I wetlands that meet the following criteria:

(aa) documented habitats for state listed sensitive plant, fish or animal species;

(bb) wetlands that contain plant, fish or animal species listed as priority species by the Department of Fish and Wildlife;

(cc) wetland types with significant functions

that may not be adequately replicated through creation or restoration;

(dd) wetlands possessing significant habitat value based on a score of 22 or more points in the habitat rating system; or

(ee) documented wetlands of local significance.

(iii) Category III. Category III wetlands are those that do not satisfy category I, II or IV criteria, and with a habitat value rating of 21 points or less.

(iv) Category IV. Category IV wetlands are those that meet the following criteria:

(aa) hydrologically isolated wetlands that are less than or equal to one acre in size, have only one wetland class, and are dominated (greater than 80 percent areal cover) by a single non-native plant species (monotypic vegetation); or

(bb) hydrologically isolated wetlands that are less than or equal to two acres in size, have only one wetland class, and have greater than 90 percent areal cover of non-native plant species.

(b) Wetland Ratings for Selected Areas. Wetland rating categories have been tentatively assigned to the following areas within the city:

Wetland	Category
Missouri Flat Creek	II
Paradise Creek	II
South Fork Palouse River	II
Sunshine Creek	II
Dry Fork Creek	III
Hall Drive Wetland	III
Terre View Drive Wetland	II
Airport Road Creek	II

(c) Date of Wetland Rating. Wetland rating categories shall be applied as the wetland exists on the date of adoption of the rating system by the local government, as the wetland naturally changes thereafter, or as the wetland changes in accordance with permitted activities. Wetland rating categories shall not change due to illegal modifications.

(3) Mapping. The approximate location and extent of known wetlands are shown on the pertinent city critical area map. National Wetland Inventory Maps and the city critical area map regarding wetlands are to be used as a guide for the city, project applicants, and property owners, and will be periodically updated as new information becomes available. These maps are a reference and do not provide a final critical area designation. The exact location of a wetland's boundary shall be determined throughthe performance of a field investigation by a qualified professional applying the *Washington State Wetlands Identification and Delineation Manual* as required by RCW 36.70A.175 (*Department of Ecology Publication #96-94*). Wetland boundaries shall be clearly demarcated with non-degradable survey flagging labeled “WETLAND BOUNDARY” or “WETLAND DELINEATION.” Flagging shall be attached to existing vegetation or stakes at a maximum interval of 50 linear feet. Individual flags should be labeled with a wetland identifier and consecutive numbers (e.g., A-1 through A-8). (Ord. 07-27 §5, 2007; Ord. 03-18 §26, 2003).

16.50.260 Wetlands Critical Area Report—Additional Requirements.

(1) Areas Addressed in Report. The following areas shall be

addressed in a critical area report for wetlands:

(a) the project area of the proposed activity;

(b) all wetlands and recommended buffers within 200 feet of the project area; and

(c) all shoreline areas, water features, flood plains, and other critical areas, and related buffers within 200 feet of the project area.

(2) Wetland Analysis. In addition to the minimum required contents of reports in Sections 16.50.140 and 16.50.150, a critical area report for wetlands shall contain an analysis of the wetlands including the following site- and proposal-related information at a minimum:

(a) a written assessment and accompanying maps of the wetlands and buffers within 200 feet of the project area, including the following information at a minimum:

(i) wetland delineation and required buffers;

(ii) existing wetland acreage;

(iii) wetland category; vegetative, faunal, and hydrologic characteristics; and

(iv) soil and substrate conditions;

(b) a discussion of measures, including avoidance, minimization and mitigation, proposed to preserve existing wetlands and restore any wetlands that were degraded prior to the current proposed land use activity.

(c) proposed mitigation, if needed, including a written assessment and accompanying maps of the mitigation area, including the following information at a minimum:

(i) existing wetland acreage and proposed impact area;

(ii) vegetative, faunal, and hydrologic conditions;

(iii) relationship within watershed and to existing water bodies;

(v) soil and substrate conditions, topographic elevations;

(vi) existing and proposed adjacent site conditions;

(vii) proposed wetland buffers; and

(vii) property ownership; and

(d) a discussion of ongoing management practices that will protect wetlands after the project site has been developed, including proposed monitoring and maintenance programs.

(3) Additional Information. When appropriate, the planning director may also require the critical area report to include an evaluation by the Department of Ecology or an independent qualified expert regarding the applicant's analysis and the effectiveness of any proposed mitigating measures or programs, and to include any recommendations as appropriate. (Ord. 03-18, §27, 2003).

16.50.270 General Requirements Pertaining to Wetlands.

(1) Activities in Wetland Areas. A proposed activity may only be permitted in a wetland or wetland buffer if the applicant can show that the activity, including associated mitigation measures, will not degrade the functions and values of the wetland and other critical areas.

(2) Wetland Buffers. Unless otherwise provided for in this Chapter, wetland buffers are required.

(a) Standard Buffer Widths. The standard buffer widths presume the existence of a relatively intact native vegetation community in the buffer zone adequate to protect the wetland functions and values at the time of the proposed activity. If the vegetation is inadequate then the buffer width shall be increased or the buffer should be planted to maintain the standard width. Required standard wetland buffers, based on wetland category and land use intensity, are as follows:

(i)	Category I	
	High intensity land use	200 feet
	Low intensity land use	150 feet
(ii)	Category II	
	High intensity land use	150 feet
	Low intensity land use	100 feet
(iii)	Category III	
	High intensity land use	100 feet
	Low intensity land use	50 feet
(iv)	Category IV	
	High intensity land use	50 feet
	Low intensity land use	25 feet

(b) Measurement of Wetland Buffers. All buffers shall be measured from the wetland boundary as surveyed in the field. The width of the wetland buffer shall be determined according to the wetland category and the proposed land use. The buffer for a wetland created, restored, or enhanced as compensation for wetland alterations shall be the same as the buffer required for the category of the created, restored, or enhanced wetland.

(c) Increased Wetland Buffer Width. The planning director may require increased buffer width in accordance with the critical area report and the best available science on a case-by-case basis when a larger buffer is necessary to protect wetland functions and values based on site-specific characteristics. This determination shall be based on one or more of the following criteria:

(i) a larger buffer is needed to protect other critical areas;

(ii) the buffer or adjacent uplands has an overall slope steeper than 15 percent or is susceptible to erosion and standard erosion control measures will not prevent adverse impacts to the wetland; or

(iii) the buffer area has minimal vegetative cover, although implementation of a buffer planting plan may substitute for increasing the buffer width.

In no case shall wetland buffers be increased to a width two times that of the standard required buffer.

(d) Reduced Wetland Buffer Width. The planning director may allow the standard wetland buffer width to be reduced in accordance with the critical area report and the best available science on a case-by-case basis when it is determined that a smaller area is adequate to protect the wetland functions and values based on site-specific characteristics. This determination shall be supported by documentation showing that a reduced buffer is adequate based on all of the following criteria:

(i) requiring the standard buffer poses an extraordinary hardship on the landowner;

(ii) the existing buffer area is well-vegetated with native species and has an overall slope of less than ten percent; and

(iii) no direct or indirect, short-term or long-term, adverse impacts to wetlands will result from the

proposed activity.

In no case shall the standard buffer width be reduced by more than 50 percent, or the buffer width be less than 25 feet unless the applicant demonstrates an acceptable reasonable use as described in 16.50.120.

(e) Wetland Buffer Width Averaging. The planning director may allow modification of the standard wetland buffer width in accordance with the critical area report and the best available science on a case-by-case basis by averaging buffer widths. Averaging of buffer widths may only be allowed where a qualified wetlands professional demonstrates that:

(i) it will not reduce wetland functions or values;

(ii) the wetland contains variations in sensitivity due to existing physical characteristics or the character of the buffer varies in slope, soils, or vegetation, and the wetland would benefit from a wider buffer in places and would not be adversely impacted by a narrower buffer in other places;

(iii) the total area contained in the buffer area after averaging is no less than that which would be contained within the standard buffer; and

(iv) the buffer width is not reduced to less than 50 percent of the standard width or 25 feet, whichever is greater, unless the applicant demonstrates an acceptable reasonable use as described in 16.50.120.

(f) Buffers for Mitigation Shall be Consistent. All mitigation sites shall have buffers consistent with the buffer requirements of this Chapter.

(g) Buffer Conditions Shall be Maintained. Except as otherwise specified or allowed in accordance with this Chapter, wetland buffers shall be retained in their natural condition.

(h) Functionally Isolated Buffer Areas. Areas that are functionally separated from a wetland and do not provide protection to the wetland from potential adverse impacts due to preexisting roads, facilities, or vertical separation, shall be excluded from buffers otherwise required by this chapter.

(3) Stormwater Management Facilities. Stormwater management facilities are not allowed in buffers of Category I wetlands. Stormwater management facilities may be allowed within the

buffer of Category II, III, or IV wetlands, provided that:

(a) no other location is feasible, and

(b) the location of such facilities will not degrade the functions or values of the wetland.

(4) Subdivisions. The subdivision and short subdivision of land in wetlands and associated buffers is subject to the following: (a) Land that is located wholly within a wetland or its buffer may not be subdivided.

(b) Land that is located partially within a wetland or its buffer may be divided provided that an accessible and contiguous portion of each new lot:

(i) is located outside of the wetland and its buffer; and

(ii) meets the minimum lot size requirements of the city zoning code (Title 17).

(c) Access roads and utilities serving a proposed subdivision or other property may be permitted within the wetland and associated buffers only if the planning director determines that no other feasible alternative exists and these facilities are otherwise established consistent with the provisions of this Chapter.

(5) Signs and Fencing of Wetlands.

(a) Temporary Markers. The outer perimeter of the wetland or buffer and the limits of those areas to be disturbed pursuant to an approved development permit shall be marked in the field in such a way as to ensure that no unauthorized intrusion will occur prior to the commencement of permitted activities. This temporary marking shall be maintained throughout construction, and shall not be removed until permanent signs, if required, are in place.

(b) Permanent Signs. As a condition of any development permit, the planning director may require the applicant to install permanent signs along the boundary of a wetland and/or buffer. If required, permanent signs shall be made of a metal face and attached to a metal post, or another material of equal durability. Signs must be posted at an interval of one per lot or every 50 linear feet, whichever yields the greater amount of signs, and must be maintained by the property owner in perpetuity. The sign shall be worded as follows or with alternative language approved by the director:

"Protected Wetland Area
Do Not Disturb Contact City of Pullman
Regarding Uses and Restrictions"

(c) Fencing.

(i) As a condition of any development permit, the planning director may require the applicant to install a permanent fence at the edge of the wetland buffer, when fencing will prevent future impacts to the wetland.

(ii) The applicant shall be required to install a permanent fence around the wetland or buffer when domestic grazing animals are present or may be introduced on site.

(ii) Fencing installed as part of a proposed activity or as required in this Paragraph shall be designed so as to not interfere with species migration, including fish runs, and shall be constructed in a manner that minimizes impacts to the wetland and associated habitat.

(iii) At no time shall treated wood posts (e.g., creosote) be allowed in wetland areas or in adjacent uplands to prevent chemicals from migrating into the wetland. (Ord. 03-18, §28, 2003).

16.50.280 Mitigation Requirements Pertaining to Wetlands.

(1) Mitigation Shall Achieve Equivalent or Greater Biological Functions. Mitigation for proposed or unauthorized alterations to wetlands and/or buffer areas shall achieve equivalent or greater biologic functions and shall be consistent with the Department of Ecology *Guidelines for Developing Freshwater Wetlands Mitigation Plans and Proposals*, 1994, as revised.

(2) Mitigation Shall Result in No Net Loss. Wetland mitigation actions shall not result in a net loss of wetland area except when the following criteria are met:

(a) the lost wetland area provides minimal functions and the mitigation action(s) results in a net gain in wetland functions as determined by a site-specific function assessment using Department of Ecology *Methods for Assessing Wetland Functions Vol. 2 – Depressional Wetlands in the Columbia Basin of Eastern Washington, Part 1 & 2,* December 2000, as amended; or

(b) the lost wetland area provides minimal functions as

determined by a site-specific function assessment and other protected or enhanced habitats provide greater benefits to the functioning of the watershed, such as riparian habitat protection and enhancement.

(3) Mitigation for Lost Functions and Values. Mitigation actions shall address functions affected by the alteration to achieve functional equivalency or improvement, and shall provide similar wetland functions as those lost except when:

(a) the lost wetland provides minimal functions as determined by a site-specific function assessment and the proposed mitigation action(s) will provide equal or greater functions or will provide functions shown to be limiting within a watershed through a formal watershed assessment protocol; or

(b) out-of-kind replacement will best meet formally identified regional goals, such as replacement of historically diminished wetland types.

(4) Preference of Mitigation Actions. Mitigation actions that require compensation by replacing, enhancing, or substitution, shall occur in the following order of preference:

(a) restoring wetlands on upland sites that were formerly wetlands;

(b) creating wetlands on disturbed upland sites such as those with vegetative cover consisting primarily of exotic introduced species;

(c) enhancing significantly degraded wetlands;

(d) preserving high-quality wetlands that are under imminent threat.

(5) Location of Mitigation.

(a) Mitigation actions shall be conducted on the same site as the alteration except when the following apply:

(i) there are no reasonable on-site opportunities or on-site opportunities do not have a high likelihood of success due to development pressures, adjacent land uses, or on-site buffers or connectivity are inadequate;

(ii) off-site mitigation has a greater likelihood of providing equal or improved wetland functions than the impacted wetland.

(b) If the planning director authorizes off-site mitigation, the location of this mitigation shall be in the same drainage basin and the same Water Resource Inventory Area (WRIA) as the site of the alteration unless:

(i) established regional or watershed goals for water quality, flood or conveyance, habitat, or other wetland functions have been established and strongly justify location of mitigation at another site; or

(ii) credits from a state certified wetland mitigation bank are used as mitigation and the use of these credits justifies location of mitigation at another site.

(c) Off-site locations for mitigation should be within the city limits if feasible opportunities for appropriate mitigation are available.

(6) Mitigation Ratios.

(a) Acreage Replacement Ratios. The following ratios shall apply to creation or restoration that is in-kind, on-site, the same category, timed prior to or concurrent with alteration, and has a high probability of success. These ratios do not apply to remedial actions resulting from unauthorized alterations; greater ratios shall apply in those cases. These ratios do not apply to the use of credits from a state certified wetland mitigation bank. When credits from a certified bank are used, replacement ratios should be consistent with the requirements of the bank's certification. The first number specifies the acreage of replacement wetlands and the second specifies the acreage of wetlands altered.

Category I	6-to-1
Category II	3-to-1
Category III	2-to-1
Category IV	1.5-to-1

(b) Increased Replacement Ratio. The planning director may increase the ratios under the following circumstances:

(i) uncertainty exists as to the probable success of the proposed restoration or creation;

(ii) a significant period of time will elapse between impact and replication of wetland functions;

(iii) proposed mitigation will result in a lower category wetland or reduced functions relative to the

wetland being impacted; or

(iv) the impact was an unauthorized impact.

(c) Decreased Replacement Ratio. The planning director may decrease these ratios under the following circumstances:

(i) documentation by a qualified wetlands specialist demonstrates that the proposed mitigation actions have a very high likelihood of success;

(ii) documentation by a qualified wetlands specialist demonstrates that the proposed mitigation actions will provide functions and values that are significantly greater than the wetland being impacted; or

(iii) the proposed mitigation actions are conducted in advance of the impact and have been shown to be successful.

(d) Minimum Replacement Ratio. In all cases, a minimum acreage replacement ratio of 1-to-1 shall be required.

(7) Wetland Mitigation Banks.

(a) Credits from a wetland mitigation bank may be approved for use as compensation for unavoidable impacts to wetlands when:

(i) the bank is certified through applicable provisions administered by the Department of Ecology and the Army Corps of Engineers;

(ii) the planning director determines that the wetland mitigation bank provides appropriate compensation for the authorized impacts; and

(iii) the proposed use of credits is consistent with the terms and conditions of the bank's certification.

(b) Replacement ratios for projects using bank credits shall be consistent with replacement ratios specified in the bank's certification.

(c) Credits from a certified wetland mitigation bank may be used to compensate for impacts located within the service area specified in the bank's certification. In some cases, bank service areas may include portions of more than one WRIA for specific wetland functions.

(8) Wetlands Enhancement as Mitigation.

(a) Impacts to wetlands may be mitigated by enhancement of existing significantly degraded wetlands. Applicants proposing to enhance wetlands must produce a critical area report that identifies how enhancement will increase the functions of the degraded wetland and how this increase will adequately mitigate for the loss of wetland area and function at the impact site. An enhancement proposal must also show whether existing wetland functions will be reduced by the enhancement actions.

(b) At a minimum, enhancement acreage shall be double the acreage required for creation or restoration under Subsection 16.50.280(6). The ratios shall be greater than double the required acreage where the enhancement proposal would result in minimal gain in the performance of wetland functions and/or result in the reduction of other wetland functions currently being provided in the wetland.

(9) Wetland Preservation as Mitigation. Impacts to wetlands may be mitigated by preservation of wetland areas when used in combination with other forms of mitigation such as creation, restoration, or enhancement at the preservation site or at a separate location. Preservation may also be used by itself, but more restrictions, as outlined below, will apply.

(a) Preservation in Combination with Other Forms of Compensation. Preservation as mitigation is acceptable when done in combination with restoration, creation, or enhancement providing that a minimum of 1-to-1 acreage replacement is provided by restoration or creation and the following criteria are met:

(i) the impact area is small, and/or impacts are to a Category III or IV wetland;

(ii) preservation of a high quality system occurs in the same WRIA or drainage basin as the wetland impact; and

(iii) preservation sites include buffer areas adequate to protect the habitat and its functions from encroachment and degradation.

(b) Preservation as the Sole Means of Mitigation for Wetland Impacts. Preservation of at-risk, high-quality habitat may be considered as the sole means of mitigation for wetland impacts when all of the following criteria are met:

(i) preservation is used as a form of mitigation only after the standard sequencing of mitigation (avoid, minimize, and then compensate) has been applied;

(ii) creation, restoration, and enhancement opportunities have also been considered, and preservation is the best mitigation option;

(iii) the impact area is small and/or impacts are to a Category III or IV wetland; (iv) preservation of a high quality system occurs in the same WRIA or drainage basin where the wetland impact occurs;

(v) preservation sites include buffer areas adequate to protect the habitat and its functions from encroachment and degradation;

(vi) the preservation site is determined to be under imminent threat—specifically, sites with the potential to experience a high rate of undesirable ecological change due to on- or off-site activities ("potential" includes permitted, planned, or perceived actions); and

(vii) the area proposed for preservation is of high quality and critical for the health of the watershed or basin, with the following characteristics serving as indicators of high quality sites:

(aa) Category I or II wetland rating;

(bb) rare wetland type (for example, bogs, estuaries);

(cc) habitat for threatened or endangered species;

(dd) provides biological and/or hydrological connectivity;

(ee) high regional or watershed importance (for example, listed as priority site in watershed plan); and

(ff) large size with high species diversity (plants and/or animals) and/or high abundance.

(c) Mitigation Ratios for Preservation as the Sole Means of Mitigation. Mitigation ratios for preservation as the sole means of mitigation shall range from 7-to-1 to 20-

to-1, as determined by the planning director, depending on the quality of wetlands being mitigated and the quality of the wetlands being preserved. (Ord. 03-18, §29, 2003).

16.50.290 Development Standards—Wetland Categories.

(1) Category I Wetlands. Activities and uses shall be prohibited from Category I wetlands, except as provided for in the public agency and utility exception and reasonable use exception sections of this Chapter.

(2) Category II and III Wetlands. With respect to activities proposed in Category II and III wetlands, the following standards shall apply:

(a) Water-dependent activities may be allowed where there are no practicable alternatives that would not have a less adverse impact on the wetland and other critical areas.

(b) Where nonwater-dependent activities are proposed, it shall be presumed that alternative locations are available, and activities and uses shall be prohibited, unless the applicant demonstrates that:

(i) the basic project purpose cannot reasonably be accomplished and successfully avoid, or result in less adverse impact on, a regulated wetland on another site or sites in the general region; and

(ii) all alternative designs of the project as proposed, that would avoid, or result in less of an adverse impact on a regulated wetland or its buffer, such as a reduction in the size, scope, configuration, or density of the project, are not feasible.

(3) Category IV Wetlands. Activities and uses that result in unavoidable and necessary impacts may be permitted in Category IV wetlands and associated buffers in accordance with the critical area report and mitigation plan, and only if the proposed activity is the only reasonable alternative that will accomplish the applicant's objectives. (Ord. 03-18, §30, 2003).

EXHIBIT 13

ty contemplates property tax increase

By Katie Metzger
metzger@mi-reporter corn

espite coming out of 3 with a $1.1 million Aus, the Mercer Island Council is considergoing to voters in 2017 isk them to pay higher perty taxes.

'his property levy lid lift Id come in many forms. ante Director Chip :der laid out several scenios at the council's plang session on Jan. 23 to pare the group for facing eral tough budget decins this fall.

viercer Island is extremereliant on property tax e to a "minimal" retail es tax base, Corder said. gh levels of developmt activity in 2015 — mely the permit fees and ces paid by Legacy and e Mercer Island School strict for their construcm projects — have caused big spike in revenues that n't be counted on as ongog funding sources.

Corder said he anticiited a decline in that)ike, and the moratorium n downtown developLent hasn't helped. The sp between revenues and Kpenditures is widening as ie cost of business goes up. roperty tax increases are apped at 2 percent per year.

The council has taken a few looks at reducing expenditures, including reviewing compensation policies and conducting an audit of the maintenance department.

There are other options besides a tax increase, Corder said. The city spends 73 percent of its budget on personnel costs, and could look at reducing staffing levels. But Mercer Island currently has the lowest number of full-time employees per 1,000 population in King County. The council could also increase the Transportation Benefit District annual license fee.

Corder suggested using surpluses to bridge the gap for the next biennium. It's a "temporary fix that buys time," Corder said.

Mercer Island currently has two levy lid lifts on the books — one for parks that ends in 2021 and one for fire services that ends in 2023.

If another lift were to be proposed, it would likely be voted on during the 2017 primary election, Corder said. It would pass with a simple majority (50 percent plus one) and cost the average household — $900,000 home assessed value on Mercer Island — $21.75 per month, according to Corder's preferred scenario. Currently, Island residents pay an average of $167 per month to the city, and $205 to Puget Sound Energy, $225 to Comcast and $234 to Verizon.

If voters say no, the city could be facing a huge deficit at the end of 2017. Funding for "low priorities of government; like mental health counselors in schools and field maintenance, could go away. Corder said going to voters is "always a gamble" — one that prompted council members to ask if it would be prudent to go to voters this year and get another shot next year if the levy lid lift is rejected.

Mayor Bruce Bassett said that because the city is coming off a contentious election year, sitting on a surplus -and facing a community with seemingly low confidence in its government; the tax increase could be a "hard sell" this year

The city also has $2.34 million in its rainy day fund, and if development activity continues at its current pace, "that would erase the deficit; Corder said.

Deficits are projected in the General Fund, Youth and Family Services Fund and Capital Improvement Fund, and the city also needs money for a fire apparatus replacement and a new IT position.

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MICA I FROM 1

said many times that he would support an advisory vote.

"The decision to prioritize one nonprofit over another to be the beneficiary of public assets seems like an issue for the voters and not seven residents alone' Wisenteiner said in the group's voters guide.

Sanderson ran unopposed, but was also interviewed by the group for the voters guide.

"Specifically on the MICA issue, I support going to the citizens on this (and a number of other important issues) and abiding by their responses; Sanderson said, though he said MICA would enhance Mercerdale if it can get over certain hurdles, including raising money and providing parking and clear financials.

Other council members weren't as enthusiastic. New Councilmernber Wendy Weiker said a special election could be "divisive." Deputy Mayor Debbie Bertlin said an advisory vote "would not provide sufficient clarity and be a substantial expense'

An advisory vote could cost anywhere from $20,000 to $70,000, depending on when the election is held and how many other items are on the ballot, as the costs are

Some Islanders want voters to *not the Mercer Island Center fo] corner of Mercerdale Park*

City briefs

Critical areas update is overdue

Mercer Island's critical areas regulations, which dictate city policies on wetlands, watercourses, geologic hazard areas and wildlife habitat conservation areas, are due for an update.

The regulations were passed in 2005, and a 2014 audit of the city by the Washington Cities Insurance Authcirity (WCIA) recommended that they be revisited, said City Attorney Kari Sand. The city is scheduled for another WCIA audit in May. Sand said these regulations usually become stricter when updated. The changes may affect the pending lease with the Mercer Island Center for the Arts (MICA), located in Mercerdale Park near a two-acre wetland.

City outlines funding needs

At the City Council's January planning session, Finance Director Chip Corder pointed out

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EXHIBIT 14

EXHIBIT 15

EXHIBIT 16

EXHIBIT 17

EXHIBIT 18

EXHIBIT 19

THE MICA PRE-APPLICATION MEETING

Dated March 7, 2016

INCORPORATED BY REFERENCE AND ATTACHED TO MEMORANDUM DATED AUGUST 22, 2016

THE MICA PRE-APPLICATION MEETING

March 7, 2016

TABLE OF CONENTS

I. EXECUTIVE SUMMARY

On February 2, 2016, the Mercer Island Center for the Arts ("MICA") submitted a Draft SEPA Environmental Checklist at a pre-application meeting. The Draft SEPA Environmental Checklist was the only document MICA submitted at that February 2, 2016, pre-application meeting.[1]

A review of the MICA pre-application meeting files and the Draft SEPA Environmental Checklist reveals numerous problematic issues, including: (i) MICA's apparent failure to schedule and attend a required pre-design meeting, (ii) MICA's failure to address development and design review at the February 2, 2016, pre-application meeting, (iii) MICA's failure to submit required development and design review documents at the February 2, 2016, pre-application meeting, (iv) the inaccuracy of the Draft SEPA Environmental Checklist, (v) the incompleteness of the Draft SEPA Environmental Checklist, (vi) MICA's failure to comply fully with the Growth Management Act, (vii) MICA's failure to comply fully with the State Environmental Policy Act ("SEPA"), and (viii) MICA's failure to comply fully with the Mercer Island City Code.

II. REVIEW OF THE PROPOSED MICA CENTER FOR THE ARTS

A. Required Town Center Development And Design Standards Review

The planning and permitting processes for the proposed MICA Center for the Arts ("MICA Center") require MICA to comply with, among other things, Chapter 19.11 MICC, Town Center Development and Design Standards. *See* Mercer Island City Code ("MICC") 19.05.010(C).

B. Required Pre-Design Meeting

MICC 19.05.040(F)(2)(b)(i) provides that: "A predesign meeting must be scheduled with staff from the development services group (DSG) prior to formal project development and application." *See* Exhibit 1.

It appears[2] that MICA failed to comply with the requirements of MICC 19.05.040(F)(2)(b)(i).

[1] *See* Exhibit 3 and Exhibit 4.

[2] Because Mercer Island is in possession of the relevant information, only Mercer Island can confirm this statement to an absolute certainty.

C. February 2, 2016, MICA Pre-Application Meeting

On February 2, 2016, MICA attended a pre-application meeting with Mercer Island. The only document MICA submitted at that February 2, 2016, pre-application meeting was a "Draft SEPA Environmental Checklist." *See* Exhibit 3 and Exhibit 4.

D. Environmental Review And Project Review Must Be Combined

Local project review under the Growth Management Act requires Mercer Island to "**[c]ombine the environmental review process, both procedural and substantive, with the procedure for review of project permits**." (bold added). *See* RCW 36.70.B.050(1).

SEPA requires Mercer Island to "[i]ntegrate the requirements of SEPA with existing agency planning and licensing procedures and practices, so that such **procedures run concurrently rather than consecutively**." (bold added). *See* WAC 197-11-030(2)(d).

It appears[3] that MICA failed to comply with the requirements of RCW 36.70.B.050(1) and WAC 197-11-030(2)(d) by not addressing the Town Center Development and Design Standards at the February 2, 2016, pre-application meeting. *See* Exhibit 3 and Exhibit 4.

E. Required Pre-Application Meeting

MICC 19.05.040(F)(2)(c)(i) provides that: "A complete application on forms provided by the development services group (DSG) and **all materials pertaining to the project shall be submitted at a formal preapplication meeting with DSG staff**." (bold added). *See* Exhibit 1.

It appears[4] that MICA failed to comply with MICC 19.05.040(F)(2)(c)(i) by not addressing the Town Center Development and Design Standards at the February 2, 2016, pre-application meeting. *See* Exhibit 3 and Exhibit 4.

F. Required Pre-Application Meeting Materials

Some of the materials that must be submitted at the required pre-application meeting are:

1. Site survey
2. Vicinity maps
3. Site plans
4. Architectural plans—including elevations, sections, roof plans
5. Renderings and/or models
6. Landscaping plan
7. Tree plan
8. Parking plan

[3] *Id.*

[4] *Id.*

9. Photographic examples of colors and materials of the proposed project
10. Site photographs of the existing condition
11. SEPA checklist
12. Traffic study
13. Pedestrian and vehicle circulation plans.
14. Written narrative describing the project proposal and detailing how the project is meeting the applicable design objectives and standards established in Mercer Island City Code 19.11 or 19.12
15. Submittal of lighting and sign master plans may be deferred to final design review.
16. All other information deemed necessary by DSG staff to determine if the proposal complies with Mercer Island City Code

See Exhibit 2. *See also* MICC 19.05.040(F)(2)(c)(i).

It appears[5] that MICA failed to submit the materials required by MICC 19.05.040(F)(2)(c)(i) at the February 2, 2016, pre-application meeting. *See* Exhibit 3 and Exhibit 4. *Compare* Exhibit 2 *with* Exhibit 4.

G. Draft SEPA Environmental Checklist

1. Unlawful Parking Proposal

Attachment G to the Draft SEPA Environmental Checklist proposes parking that fails to acknowledge let alone comply with MICC 19.05.010(D) and MICC 19.05.020(B)(4).

2. Omission Of Material Documents

The Draft SEPA Environmental Checklist did not attach important documents such as a Transportation Impact Study and Architectural Plans. *See* Exhibit 4. *Compare* Exhibit 2 *with* Exhibit 4.

3. Evasive Responses

The Draft SEPA Environmental Checklist is evasive and disingenuous.

For example, when asked to describe the "total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill." the Draft SEPA Environmental Checklist provides the following responses: (i) "Excavation: *Will be required at hillside (cubic yards tbd by civil)*" and (ii) "Fill: *Some fill will be used to shape grade below the first floor. (cubic yards tbd by civil; fill source by contractor)*." *See* Exhibit 4, page 6, at Section B(1)(e). (italics in the original).

[5] *Id.*

By way of another example, when asked "how many additional parking spaces … the completed project [would] have," the Draft SEPA Environmental Checklist provides the following response: "There will be accessible parking available on SE 32nd Street." *See* Exhibit 4, page 17, at Section B(14)(d). This response fails to acknowledge let alone address the requirements of MICC 19.05.010(D) and MICC 19.05.020(B)(4).

4. Incorrect Documents

The Draft SEPA Environmental Checklist attached the following eight documents:

1. Attachment A – "Proposed Lease Boundary"
2. Attachment B – "Proposed Building Footprint"
3. Attachment C – Hart Crowser "Geotechnical Engineering Design Report"
4. Attachment D – Hart Crowser "Supplemental Memorandum."
5. Attachment E – "Wetland Delineation Report"
6. Attachment F – "Conceptual Mitigation Plan"
7. Attachment G – "Parking and Access Sketch"
8. Attachment H – "Phase 1 Environmental Review"

Of the eight documents attached to the Draft SEPA Environmental Checklist, the following five documents did not address the proposed current site but addressed the proposed old site:

1. Attachment C – Hart Crowser "Geotechnical Engineering Design Report"
2. Attachment D – Hart Crowser "Supplemental Memorandum"
3. Attachment E – "Wetland Delineation Report"
4. Attachment F – "Conceptual Mitigation Plan."
5. Attachment G – "Parking and Access Sketch"

See Exhibit 4.

III. CONCLUSION

The February 2, 2016, pre-application meeting and the Draft SEPA Environmental Checklist exemplify a lack of good faith and impede any meaningful review (environmental or otherwise) of the proposed MICA Center.

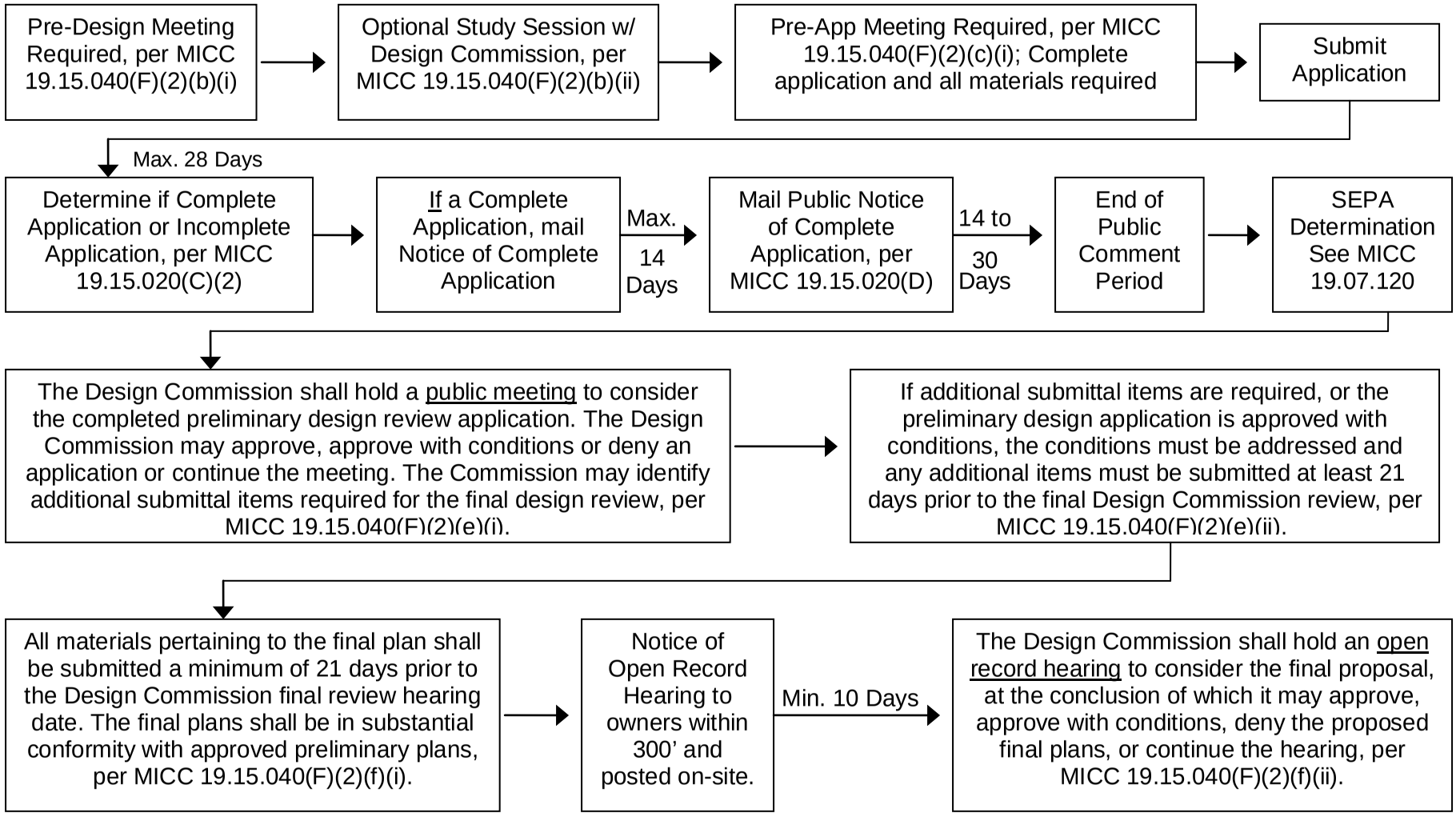
IV. LIST OF EXHIBITS

1	Design Commission Process (Highlighted)
2	Submittal Checklist For Design Review
3	February 29, 2016 – E-Mail From City Clerk (Highlighted)
4	February 2, 2016 – Draft SEPA Environmental Checklist

EXHIBIT 1

TYPICAL DESIGN COMMISSION PROCESS FOR MAJOR NEW CONSTRUCTION

The following is only a summary of the City of Mercer Island Design Review Process. Please refer to Mercer Island City Code (MICC) requirements for design review, which shall always govern.



This summary is provided for informational purposes only and is not intended as a complete or legally sufficient summary. The City of Mercer Island, its elected officials, officers, employees or agents make no warranty of any kind, express or implied, in relation to any information on this summary or any use made of this summary by any person. As with any document affecting the rights and responsibilities of real property ownership, the City of Mercer Island recommends that you consult with your private legal counsel before proceeding on any land use action after review of this summary.

CITY OF MERCER ISLAND, DEVELOPMENT SERVICES GROUP
9611 S.E. 36 ST., MERCER ISLAND, WA 98040 (206) 275-7605 FAX: (206) 275-7726
WWW.MERCERGOV.ORG

Submittal Requirements for Design Commission Review - Major New Construction

Design Review is the process by which the City evaluates developments within the City that meet the definition of "regulated improvements" in Mercer Island City Code (MICC) 19.16.010. Regulated improvements are defined as:

Any development of any property within the city, except:
1. *Property owned or controlled by the city; or*
2. *Single-family dwellings and the buildings, structures and uses accessory thereto; or*
3. *Wireless communications structures, including associated support structures and equipment cabinets.*

Design review ensures a proposal's consistency with MICC 19.11 Town Center Development and Design Standards or MICC 19.12 Design Standards for Zones outside Town Center and is intended to promote and enhance environmental and aesthetic design. Single family development is not a regulated improvement, and is therefore excluded from design review.

Regulated improvements are classified as either a major new construction, which is defined by MICC 19.16.010 as "construction from bare ground or an enlargement or alteration that changes the exterior of an existing structure that costs in excess of 50 percent of the structure's assessed value" or a minor new construction. Minor new construction is "exterior modification to an existing development or site that does not constitute major new construction."

The Design Commission is the decision authority for review of major new construction as well as minor exterior modifications in the Town Center with a with a construction valuation (as defined by MICC 17.14.010) of $100,000 or greater. All minor exterior modifications outside of the Town Center as well as minor exterior modifications in the Town Center with a with a construction valuation (as defined by MICC 17.14.010) less than $100,000 are reviewed by the Code Official. The Code Official may choose to send any application to the Design Commission for review.

PRE-DESIGN MEETING AND STUDY SESSION: The applicant shall participate in a pre-design meeting with staff prior to formal project development and application. The applicant may present schematic sketches and a general outline of the proposal for the City staff comments prior to preparation of formal plans. This meeting will allow city staff to acquaint the applicant with the design standards, submittal requirements, and the application procedures and provide early input on the proposed project. Additionally, the applicant is strongly encouraged to schedule a Study Session with the Design Commission to discuss project concepts before the plans are fully developed. At this session, which will be open to the public, the applicant should provide information regarding the site, the intended mix of uses, and how it will fit into the focus area objectives. The Commission may provide feedback to be considered in the design of the project.

PRE-APPLICATION: Applicants are required to participate in a pre-application meeting with City staff per MICC 19.15.040(F)(2)(c). Call Development Services staff to schedule a pre-application meeting. Pre-application meetings with the staff provide an opportunity to discuss the proposal in conceptual terms, identify the applicable City requirements, and delineate the proposal review process. Applicants are also encouraged to talk with surrounding property owner and residents about their proposal. Meetings and/or correspondence with the neighborhood serve the purpose of informing the neighborhood of the project proposal prior to the formal notice provided by the City.

APPLICATION: All applications for permits or actions by the City shall be submitted on forms provided by the Development Services Group. An application shall contain all information required by the applicable development regulations. The city cannot accept an application that does not have ***all*** of the required items. In order to accept your application, each of the required items shall be submitted to permit counter staff ***at the same time***. Please double-side your application materials.

FILING REQUIREMENTS: Please fold all plans and attachments to a size not exceeding 8½" x 14" for storage in a legal-size folder. Plans not folded to the proper size will not be accepted. Please submit **fifteen (15) copies** each of the following:

- ☐ Development Application Coversheet
- ☐ Design Review Filing Fee: **see Development Application**
- ☐ Land Use Action sign deposit (refunded when sign is returned to the City): **see Development Application**
- ☐ A **State Environmental Policy Act (SEPA) Checklist** may be required. The checklist is available at the Development Services Group counter. Development Services Group personnel can assist you in determining if your proposal is exempt.
- ☐ Elevations of the existing and/or proposed structures
- ☐ Site plan (sheet size: 8.5" x 11", 11" x 17", 18" x 24", or a maximum 24" x 36" - if submitting 24" x 36" drawings, include one reduced 11" x 17" copy) that includes the following:
  - ☐ A Title Block to be located on the right-hand margin of all sheets and include the following:
    - ☐ Project
    - ☐ Drawing Title
    - ☐ Drawing No., Date, and Revision Column
    - ☐ Project Address
    - ☐ Name, Address, and Phone of the firm primarily responsible for drawings
    - ☐ Scale: Numerical and Bar Scale
    - ☐ North Arrow
  - ☐ Parcel size
  - ☐ Property lines
  - ☐ Existing and proposed topographic contours at two foot intervals
  - ☐ Adjacent right-of-ways, private roads and access easements
  - ☐ Existing and proposed structures
  - ☐ Existing and proposed vehicular circulation system, parking spaces designed for all required parking spaces, driveways, service areas, loading zones, pedestrian circulation.
- ☐ Statistical Information including the following:
  - ☐ The number of dwelling units/acre
  - ☐ The area of proposed structure in square feet
  - ☐ The lot coverage by structures (in both sq. ft. and a percentage)
  - ☐ The lot coverage by impervious surfaces (in both sq. ft. and a percentage)
  - ☐ The building height from Average Building Elevation (include ABE calculations) to highest projection of the building
  - ☐ The existing and finished grades
  - ☐ The number of parking spaces (both compact and standard)
  - ☐ The area of existing and proposed landscaping in sq.ft.
- ☐ Conceptual Floor Plans including the following:
  - ☐ Include exterior access points
  - ☐ Clarify the relationship between the interior spaces and the outside (decks, etc.) spaces
- ☐ Landscape Plan to include the following:
  - ☐ Minimum landscaping plan sheet size is 11" X 17".
  - ☐ Extent and location of all plant materials and other landscape features. Plant materials must be identified by direct labeling of each plant or by a clearly understandable legend.
  - ☐ Flower and shrub bed definition must be clear and drawn to scale with dimensions.
  - ☐ Proposed plant material should be indicated at mature sizes and in appropriate relation to scale.
  - ☐ Species and size of existing plant materials.
  - ☐ Proposed treatment of all ground surfaces must be clearly indicated (paving, turf, gravel, grading, etc.)
  - ☐ Location of water outlets. If areas of planting are extensive, plans for an underground sprinkler system will be required.
- ☐ Exterior Lighting Plan: Indicate new or modified lighting locations and provide specifications for proposed lighting.
- ☐ Indication of Materials & Colors: Two color copies of a color palette. The palette shall indicate which construction materials will be used.
- ☐ Sign Program: Illustrate location, size, height, material, color, letter dimensions, structural components and landscaping
- ☐ Birdseye Perspective or Massing Model: *Major projects only*
- ☐ Staff may require additional information or materials when necessary.

EXHIBIT 2

City of Mercer Island

Development Services Group
9611 SE 36th Street, Mercer Island, WA 98040
(206) 275-7605 www.mercergov.org

Submittal Checklist for Design Review*

*Please see the handout for Design Review of Signs or Wireless Communications Facilities, if applicable.

MICC 19.15.040(F)(1)(b) states that no building permit or other required permit shall be issued by the city for any major new construction or minor exterior modification of any regulated improvement without prior approval of the Design Commission or Code Official as authorized by MCC 19.15.010(E).

For projects required to be reviewed by the Design Commission, please see the handout entitled "Typical Design Commission Process For Major New Construction"

	The following are required to be submitted for Design Review applications (per MICC 19.15.040.F.2.c.ii). Unless noted otherwise, **14 copies** are necessary for Design Commission Submittal.	Submittal	N/A	Staff Use
1.	**Development Application**			
2.	**Site survey**			
3.	**Vicinity maps**			
4.	**Site plans**			
5.	**Architectural plans –** including elevations, sections, roof plans			
6.	**Renderings and/or models**			
7.	**Landscaping plan**			
8.	**Tree Plan –** Trees may be shown either on the site plan or on a separate Tree Plan. Must show the location, diameter and species of significant trees (conifers > 6 feet tall or deciduous trees > 6 inches in diameter at 4 ½ feet above the ground), including trees on site and in adjacent rights of way. Clearly designate all eagle perch/nest trees. Draw an "X" through trees to be removed and note tree protection fencing for trees near construction activities.			
9.	**Parking plan**			
10.	**Photographic examples of colors and materials** of the proposed project			
12.	**Site photographs** of the existing condition			
13.	**SEPA checklist** - Exemption depends on proposal (check with Planner and WAC 197-11-800(25))			
14.	**Traffic study**			
15.	**Pedestrian and vehicle circulation plans**			
16.	**Written narrative** describing the project proposal and detailing how the project is meeting the applicable design objectives and standards established in Mercer Island City Code 19.11 or 19.12			
17.	**Submittal of lighting and sign master plans** may be deferred to final design review			
18.	**All other information deemed necessary by DSG staff** to determine if the proposal complies with Mercer Island City Code.			
19.	**Application fee -** Dependent on project value and if subject to SEPA review (see fee schedule). Public Notice sign deposit fee can be submitted at application time.			

Note: this process is only to receive design review approval. A separate process and fee are necessary in order to receive a building permit.

EXHIBIT 3

From: Ali Spietz <Ali.Spietz@mercergov.org>
Date: 2/29/2016 15:59 (GMT-08:00)
To: Carv Zwingle <carvz@yahoo.com>
Subject: RE: SEPA CHECKLIST

Hi Carv,

Thank you, I am looking forward to some time off. ☺

Attached is the only document related to the MICA pre-application meeting of 2/2/16. Please note that this is a DRAFT SEPA checklist.

At this time, there are no additional records regarding MICA's SEPA Checklist. They have not applied for a permit or submitted any documentation.

Pursuant to WAC 44-14-04004(4)(a), "An agency must only provide access to public records in existence at the time of the request. An agency is not obligated to supplement responses," you will need to submit subsequent requests for records.

Let me know if you have further questions.

Ali

EXHIBIT 4

Draft SEPA Environmental Checklist

Mercer Island Center for the Arts

February 2, 2016

SEPA environmental checklist

Purpose of checklist:
Governmental agencies use this checklist to help determine whether the environmental impacts of your proposal are significant. This information is also helpful to determine if available avoidance, minimization or compensatory mitigation measures will address the probable significant impacts or if an environmental impact statement will be prepared to further analyze the proposal.

***Instructions for applicants*:**
This environmental checklist asks you to describe some basic information about your proposal. Please answer each question accurately and carefully, to the best of your knowledge. You may need to consult with an agency specialist or private consultant for some questions. You may use "not applicable" or "does not apply" only when you can explain why it does not apply and not when the answer is unknown. You may also attach or incorporate by reference additional studies reports. Complete and accurate answers to these questions often avoid delays with the SEPA process as well as later in the decision-making process.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

Instructions for Lead Agencies:
Please adjust the format of this template as needed. Additional information may be necessary to evaluate the existing environment, all interrelated aspects of the proposal and an analysis of adverse impacts. The checklist is considered the first but not necessarily the only source of information needed to make an adequate threshold determination. Once a threshold determination is made, the lead agency is responsible for the completeness and accuracy of the checklist and other supporting documents.

Use of checklist for nonproject proposals:
For nonproject proposals (such as ordinances, regulations, plans and programs), complete the applicable parts of sections A and B plus the supplemental sheet for nonproject actions (part D). Please completely answer all questions that apply and note that the words "project," "applicant," and "property or site" should be read as "proposal," "proponent," and "affected geographic area," respectively. The lead agency may exclude (for non-projects) questions in Part B - Environmental Elements –that do not contribute meaningfully to the analysis of the proposal.

A. Background

1. Name of proposed project, if applicable:
Mercer Island Center for the Arts

2. Name of applicant:
Lesley Bain, Architect for Mercer Island Center for the Arts

3. Address and phone number of applicant and contact person:
Framework Cultural Placemaking
1429 12th Avenue, Suite C,
Seattle WA 98101

4. Date checklist prepared:
January 25, 2016

5. Agency requesting checklist:
City of Mercer Island

6. Proposed timing or schedule (including phasing, if applicable):
The lease agreement, the trigger for this review, is expected to be approved in winter or spring of 2016. Construction expected to begin in 2017.

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.
No. The intent of the project is construction of a performing arts/educational center building.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.

a. *Geotechnical Engineering Design Report, Proposed Mercer Island Center for the Arts, Hart Crowser, March 31, 2015*
b. *Supplemental Memorandum, Hart Crowser, May 6, 2015*
c. *Wetland Delineation Report, Mercer Island Center for the Arts, The Watershed Company. May 21, 2015*
d. *Mercer Island Center for the Arts Conceptual Mitigation Plan. The Watershed Company, August 20, 2015*
e. *Parking and Access sketches, Transpo. August 25, 2015*
f. *Phase 1 Environmental Review*

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal?
No.

10. List any government approvals or permits that will be needed for your proposal, if known.
Land Use Approval, City of Mercer Island
Building Permit Approval, City of Mercer Island

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.)

The proposal is to build a center for the arts, which includes a building approximately 34,000 gsf housing a 300-seat main stage theatre, a 100-seat black box theatre and a 100-seat recital hall. Educational spaces include classrooms for art, dance and music. A public lobby faces the park; public bathrooms accessible from the exterior and storage space for the Mercer Island Farmers Market are provided.

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.

The location is generally on the Southwest corner of 77th Avenue SE and SE 32nd Street. See Attachment A: Proposed Lease Boundary, and Attachment B: Proposed Building Footprint.

B. environmental elements

Earth

a. General description of the site:

(circle one): Flat, rolling, hilly, steep slopes, mountainous, other __
Partially flat, partially sloped

b. What is the steepest slope on the site (approximate percent slope)?
The steepest portion of the slope is approximately 22%

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat,

muck)? If you know the classification of agricultural soils, specify them and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils.

According to the geotechnical report, soils are fine-grained glacial deposits, overlain by non-glacial deposits, clay and Vashon till. For more detail, see Geotechnical Report, Attachment B

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

According to the geotechnical report, the site is in a landslide location and partially within mapped landslide deposits. In the opinion of the geotechnical engineers, the construction of the building will not increase or decrease the landslide hazard in the vicinity. There is a risk that debris could travel down slope if there were a landslide up the hill to the west. The slope near the proposed building, according to the report, is not considered steep enough to pose a seismic slope stability risk.

e. Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill.

Excavation: *Will be required at hillside. (cubic yards tbd by civil)*
Fill: *Some fill will be used to shape grade below the first floor. (cubic yards tbd by civil; fill source by contractor)*

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.

No.

• About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

A majority of the area within the lease boundary will be impervious surface: building, plaza or fire access. (percentage by civil tbd)

• Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

Multiple best management practices will be used including a construction entrance, silt fence, a concrete truck and pump washout area and catch basin inserts. Strict maintenance and monitoring criteria will be provided so that the temporary erosion and sediment control systems are in good working order throughout the duration of construction.

2. Air

a. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known.

Typical emissions from construction equipment during construction.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

No.

c. Proposed measures to reduce or control emissions or other impacts to air, if any:

None needed.

3. **Water**

a. Surface Water:

• Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.

Wetlands are in the vicinity, as described in Attachment E: Wetland Delineation Report, Mercer Island Center for the Arts, The Watershed Company.

2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.

Work is anticipated outside of the minimum allowed buffer of 25 feet near the wetland. Wetland mitigation will be proposed per City of Mercer Island requirements, 19.07.080(C).

3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.

No fill or dredge material will be placed in or removed from the wetland.

4) Will the proposal require surface water withdrawals or diversions? Give general

description, purpose, and approximate quantities if known.

No

5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.

No

6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.

No

b. Ground Water:

1) Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give general description, purpose, and approximate quantities if known.

No

2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals. . . ; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.

None

c. Water runoff (including stormwater):

1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.

The on-site stormwater management requirement requires roof downspout controls to be utilized. Infiltration and dispersion is infeasible due to the presence of fine grained, poorly draining soils and the possibility of high groundwater conditions. As such, roof downspouts will be directed to a bioretention area to the south of the building. The bioretention cell will be lined and contain underdrains that will collect the treated water prior to discharging it into the proposed detention vault. Additional underdrains may be required under the liner if groundwater is present.

Stormwater runoff from the non-pollution generating areas of the site will be collected in area drains and catch basins before being routed to the public storm drainage system. Runoff from pollution generating impervious surfaces (i.e. the northern fire lane and loading dock) will be routed through a StormFilter treatment device. The southern fire lane will contain a gate with a knox box off of SE 34th Street and thus the impervious surfaces associated with these improvements will not require treatment emergency fire truck traffic will be seldom. It is understood that the landscape will not be subject to fertilizers or pesticides and thus only the northern fire lane and loading dock areas will be treated.

2) Could waste materials enter ground or surface waters? If so, generally describe.

No

3) Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe.

No

d. Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any:

Surface runoff from the hillside will be intercepted by the proposed swale that will be strategically graded into the hillside to minimize impacts to the existing vegetation. The swale will convey hillside runoff to the wetland. Shoring wall drainage will also be directed to the wetland. The wetland will overflow into the bioretention cell that will overflow into a catch basin on the edge of the path. A new storm drainage pipe will be installed from this catch basin to the connection to the existing storm drain system on SE 32nd Street.

Wetland mitigation for buffer reduction is addressed in Attachment F: Mercer Island Center for the Arts Conceptual Mitigation Plan, prepared by The Watershed Company.

4. **Plants**

• Check the types of vegetation found on the site:

__x__deciduous tree: alder, maple, aspen, other
__x__evergreen tree: fir, cedar, pine, other
__x__shrubs
____grass
____pasture
____crop or grain
____ Orchards, vineyards or other permanent crops.

_____ wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other
_____water plants: water lily, eelgrass, milfoil, other
_____other types of vegetation

b. What kind and amount of vegetation will be removed or altered?

Vegetation will be removed on the portion of the site that is not currently impervious. The vegetation is in fill dirt and is not generally healthy.

c. List threatened and endangered species known to be on or near the site.

None known.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:

Site will be replanted around new building with new trees and shrubs that will be planted in appropriate soil and growing conditions.

e. List all noxious weeds and invasive species known to be on or near the site.

Some invasive ivy is on site.

5. **Animals**

a. List any birds and other animals which have been observed on or near the site or are known to be on or near the site.

Examples include:

birds: hawk, heron, eagle, songbirds, other:
mammals: deer, bear, elk, beaver, other:
fish: bass, salmon, trout, herring, shellfish, other
typical bird and small mammal species are likely to be on the site

b. List any threatened and endangered species known to be on or near the site.

None known

c. Is the site part of a migration route? If so, explain.

No

d. Proposed measures to preserve or enhance wildlife, if any:

The project will include planting healthier native habitat.

e. List any invasive animal species known to be on or near the site.

None known.

6. **Energy and Natural Resources**

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

Electricity will be used to power variable air volume heat pump units for heating, cooling and ventilation.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.

No

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:

The building will meet, at a minimum, the provisions of the Washington State Energy Code, and LEED Silver. We expect a well-insulated building envelope and energy efficient building systems.

7. **Environmental Health**

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe.

• Describe any known or possible contamination at the site from present or past uses.

A Phase 1 Environmental Review was done by on the site, and indicates that any environmental contamination is highly unlikely. The review found that no Phase 2 Review would be merited. See Attachment H.

• Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity.

None known.

• Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project.

None known.

• Describe special emergency services that might be required.

No special emergency services are anticipated.

• Proposed measures to reduce or control environmental health hazards, if any:

No measures anticipated to be necessary.

b. Noise

1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?

None.

2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.

Sounds generated within the building will primarily stay within the building.

3) Proposed measures to reduce or control noise impacts, if any:

Attention to acoustic performance by a professional acoustical engineer.

8. **Land and Shoreline Use**

a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe.

Much of the site was used as a recycle center until 2010. On the north end of the site is a plaza with seating and a flagpole, built in 1976 for the country's bicentennial, and the Farmers New World Life Insurance office building. To the west is a wooded slope and to the east is the lawn of Mercerdale Park. To the south is a vegetated area located on top of fill dirt, generally in poor condition. A skatepark is also to the south.

b. Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses as a result of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use?

No

1) Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how:

No

c. Describe any structures on the site.

The site has a one-story structure built in the 1970's for a recycle center. The site also has public restrooms, and sinks used by the Farmers Market.

d. Will any structures be demolished? If so, what?

The structures described above will be demolished.

e. What is the current zoning classification of the site?

Public Institution—P

f. What is the current comprehensive plan designation of the site?

Park

g. If applicable, what is the current shoreline master program designation of the site?

Not applicable

h. Has any part of the site been classified as a critical area by the city or county? If so, specify.

Yes. The Landslide Hazard Area Map (MICC 19.16.010) indicates that there has been an identified landslide on the site. The area is identified for potential high water table and near a spring. For more specific information, refer to the geotechnical report.

i. Approximately how many people would reside or work in the completed project?
It is estimated that MICA would have approximately a dozen staff.

j. Approximately how many people would the completed project displace?

None

k. Proposed measures to avoid or reduce displacement impacts, if any:

None

l. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:

Regulations for the P-zone will need to be adjusted by the City of Mercer Island to allow building permit approval for the project.

m. Proposed measures to ensure the proposal is compatible with nearby agricultural and forest lands of long-term commercial significance, if any:

Not applicable

9. **Housing**

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.

None

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.

None

c. Proposed measures to reduce or control housing impacts, if any:

Not applicable

10. **Aesthetics**

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?

The tallest portion of the structure is approximately 35' high. The exterior building materials on the most visible facade will be heavily glazed.

b. What views in the immediate vicinity would be altered or obstructed?

The design is intended to include landscaping along the edge of the park to soften the edge of the building.

• Proposed measures to reduce or control aesthetic impacts, if any:

The portion of the building along the edge of the park will be lowered for scale, with quality materials and views into the cafe, lobby, a reclaimed wood truss roof and art gallery.

11. **Light and Glare**

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

Light from the interior of the building will be visible along the path. Supplemental lighting may be included if needed to make walking in the vicinity feel safe after dark.

b. Could light or glare from the finished project be a safety hazard or interfere with views?

No

c. What existing off-site sources of light or glare may affect your proposal?

None

d. Proposed measures to reduce or control light and glare impacts, if any:

Landscape screening will control glare from across the park.

12. **Recreation**

a. What designated and informal recreational opportunities are in the immediate vicinity?

Mercerdale Park's lawn and walking path; trails through the woods; a skatepark and exercise equipment. A children's play area is also nearby, to the southeast of the lawn area. The Farmers Market takes place in the adjacent streets during warmer months. SE 32nd Street and 77th Avenue SE are closed on Sundays from 10 to 3 for the Farmers Market, and for Summer Celebration weekend. Concerts and other events take place on the lawn during the summer.

b. Would the proposed project displace any existing recreational uses? If so, describe.

The project will remove public restrooms available to park users and sinks used by the Farmers Market. The flagpole and concrete plaza at Bicentennial Park will be removed. Part of what was once referred to as the native plant garden will be removed.

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:

Mercer Island Center for the Arts has been working with the Parks Department and the Farmers Market to ensure that these recreational activities are supported by MICA's new facility. The project will provide the same number of public restrooms; it will replace the sinks and provide storage for the Farmers Market.A plaza area with seating will be provided by the new project, and the flagpole will be relocated. The design will incorporate outdoor performance space. The addition of the new center for the arts is expected to increase usage of the park.

13. **Historic and cultural preservation**

a. Are there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers located on or near the site? If so, specifically describe.

No

b. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources.

No

c. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the department of archeology and historic preservation, archaeological surveys, historic maps, GIS data, etc.

Not applicable

d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required.

Not applicable

14. **Transportation**

a. Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. Show on site plans, if any.

The site is served by the street grid of Mercer Island's Town Center. The site is southwest of the intersection of 77th Avenue SE and SE 32nd Street; access will be from that intersection.

b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop?

The Town Center is well served by King County Metro and Sound Transit at the Park and Ride, which is approximately a ten minute walk from the site. Metro routes 201 and 204 have stops a block to the east of the site, on 78th Avenue SE. Buses from the Mercer Island School District also take children to and from schools, and are expected to be a major source of transportation for classes.

c. How many additional parking spaces would the completed project or non-project proposal have? How many would the project or proposal eliminate?
The project will not eliminate any parking spaces. There will be accessible parking available on SE 32nd Street.

d. Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private).

Some work will likely be done near the intersection of 77th Avenue SE and SE 32nd Street for access, drop-off and accessible parking. Sketch alternatives have been looked at by the Transpo Group. See Attachment G: Parking and Access sketches, Transpo. August 25, 2015.

e. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.

No

f. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and nonpassenger vehicles). What data or transportation models were used to make these estimates?

Transpo is engaged to do a transportation study and a transportation management plan for MICA.

g. Will the proposal interfere with, affect or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe.

No

h. Proposed measures to reduce or control transportation impacts, if any:

No

15. **Public Services**

a. Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe.

No

b. Proposed measures to reduce or control direct impacts on public services, if any.

None

16. **Utilities**

a. Circle utilities currently available at the site:
electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other _____

electricity, natural gas, water, refuse service, telephone, sanitary sewer are available

b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.

Electricity:	*Puget Sound Energy*
Water:	*City of Mercer Island*
Refuse Service:	*Allied Waste*
Sanitary Sewer	*City of Mercer Island contracting with King County Wastewater Treatment*

C. Signature

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: _____
Name of signee _____
Position and Agency/Organization _____
Date Submitted: _____

Attachments

Attachment A: Proposed Lease Boundary

Attachment B: Proposed Building Footprint

Attachment C: Geotechnical Engineering Design Report, Proposed Mercer Island Center for the Arts, Hart Crowser, March 31, 2015

Attachment D: Supplemental Memorandum, Hart Crowser, May 6, 2015

Attachment E: Wetland Delineation Report, Mercer Island Center for the Arts, The Watershed Company. May 21, 2015

Attachment F: Mercer Island Center for the Arts Conceptual Mitigation Plan. The Watershed Company, August 20, 2015

Attachment G: Parking and Access sketches, Transpo. August 25, 2015

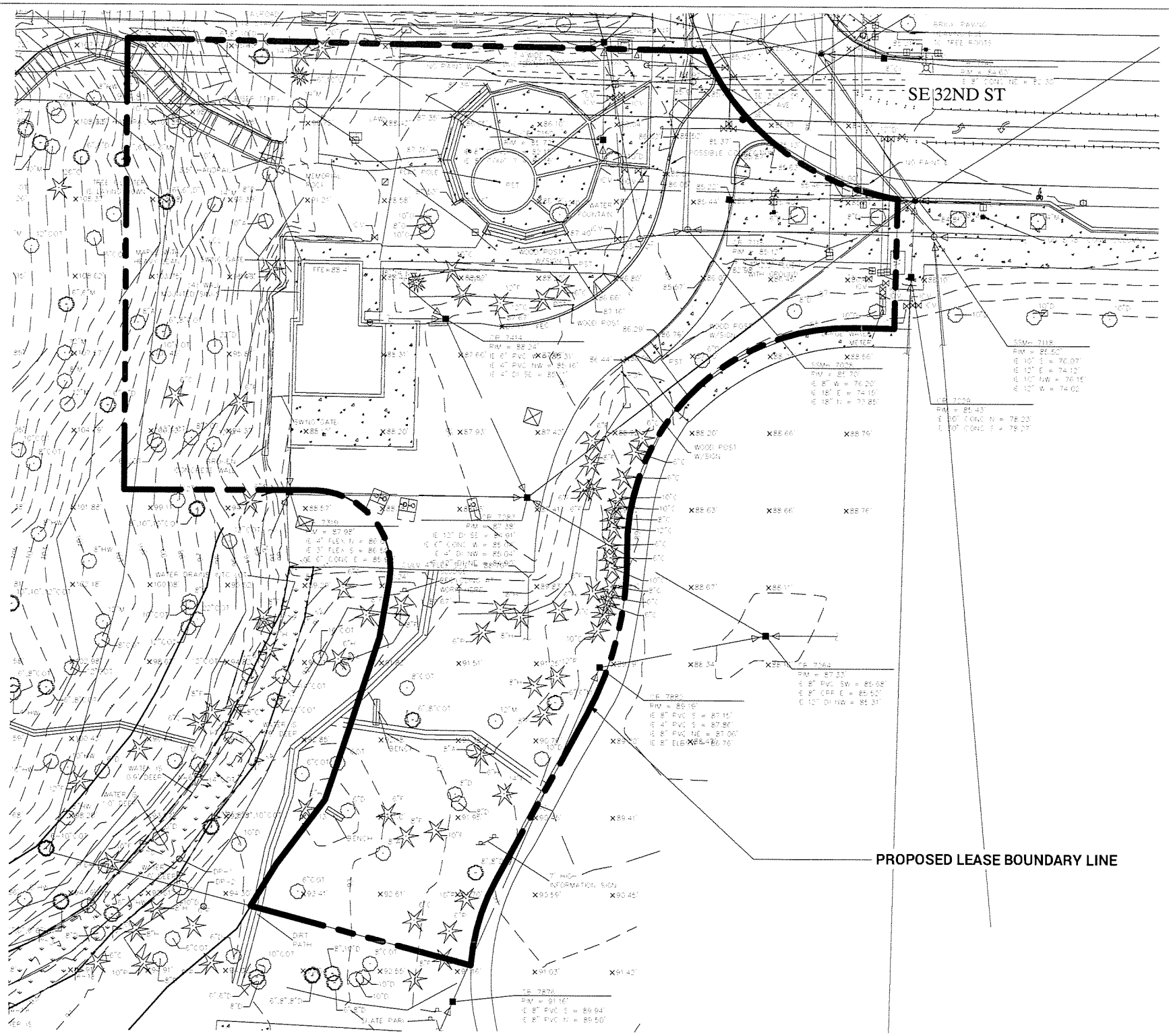
Attachment H: Phase 1 Environmental Review

Draft SEPA Environmental Checklist

Mercer Island Center for the Arts

Attachment A
Proposed Lease Boundary

February 2, 2016



framework
1433 12TH AVE
SEATTLE, WA 98122 / 206.347.8533

ORA
1205 East Pike Street Suite 2B
Seattle, WA 98122 / 206.625.0941

MICA
MERCER ISLAND CENTER FOR THE ARTS

PROJECT:
MERCER ISLAND CENTER FOR THE ARTS
PREPARED FOR:
MICA
LOCATION:
MERCER ISLAND, WA

SHEET NAME
PROPOSED LEASE BOUNDARY LINE
SCALE
1" = 40'-0"

ORIGINAL SHEET SIZE 11"X17" 1/5/2016 12:04:23 PM

Draft SEPA Environmental Checklist

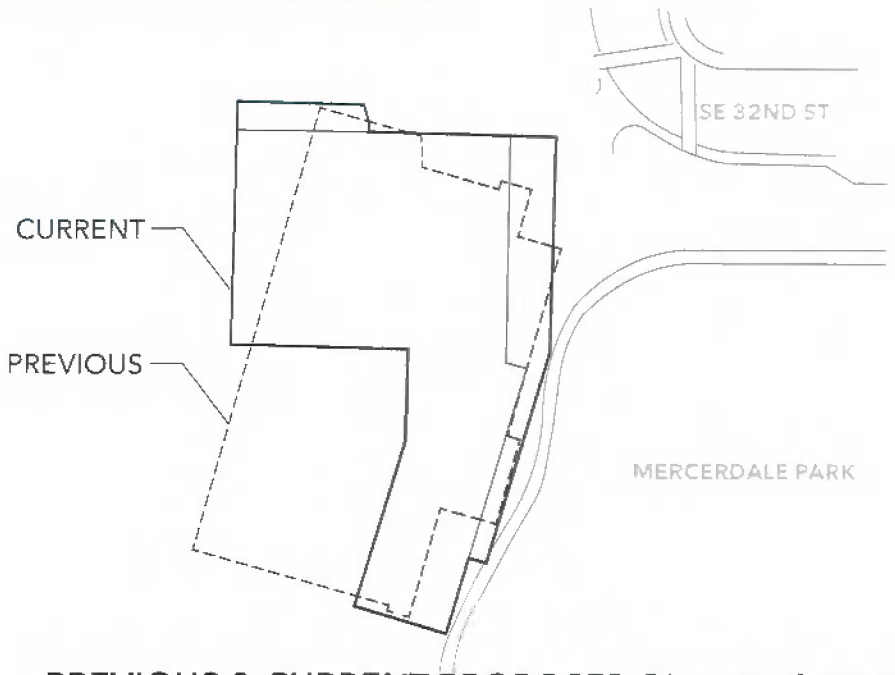
Mercer Island Center for the Arts

Attachment B
Proposed Building Footprint

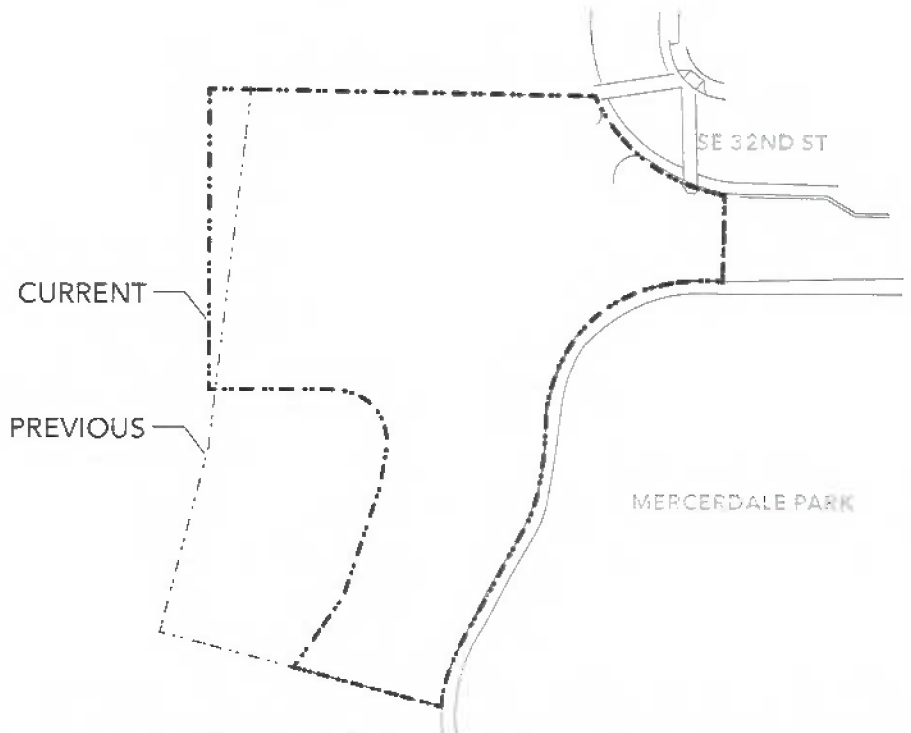
February 2, 2016

MICA

MERCER ISLAND CENTER FOR THE ARTS



PREVIOUS & CURRENT PROPOSED BUILDING FOOTPRINTS



PREVIOUS & CURRENT PROPOSED LEASE BOUNDARIES

CURRENT PROPOSED LEASE BOUNDARY AND BUILDING FOOTPRINT

Draft SEPA Environmental Checklist
Mercer Island Center for the Arts

Attachment C
Geotechnical Engineering Design Report,
Proposed Mercer Island Center for the Arts,
Hart Crowser, March 31, 2015

February 2, 2016

Geotechnical Engineering Design Report

Proposed Mercer Island Center for the Arts Building

Mercer Island, Washington

Prepared for

Mercer Island Center for the Arts

March 31, 2015

19120-00

HARTCROWSER

celebrating 40 YEARS HARTCROWSER

Geotechnical Engineering Design Report

Proposed Mercer Island Center for the Arts Building

Mercer Island, Washington

Prepared for

Mercer Island Center for the Arts

March 31, 2015
19120-00

Prepared by

Hart Crowser, Inc.

3/31/15

Matthew W. Veenstra, PE
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Field Exploration Methods and Analysis

APPENDIX B

Laboratory Testing Program

APPENDIX C

Historical Explorations

Proposed Mercer Island Center for the Arts Building

Mercer Island, Washington

This report provides our geotechnical engineering recommendations for the proposed Mercer Island Center for the Arts building in Mercer Island, Washington.

Our scope of work was to:

- Collect and assess subsurface conditions from historical explorations;
- Drill seven borings from 21.5 to 51 feet deep;
- Prepare logs of the soil explorations;
- Assess groundwater conditions;
- Conduct engineering analysis; and
- Prepare this report.

We completed this work in general accordance with our contract dated February 5, 2015. This report is for the exclusive use of Mercer Island Center for the Arts and their design consultants for specific application to this project and site. We completed this work in accordance with generally accepted geotechnical engineering practices for the nature and conditions of the work completed in the same or similar localities, at the time the work was performed. We make no other warranty, express or implied.

PROJECT AND SITE DESCRIPTION

The site vicinity map and exploration plan are shown on Figures 1 and 2.

The proposed building will be located on city-owned land adjacent to the northwest corner of the Mercerdale Park. The property consists of a relatively flat, mowed lawn area to the east and a wooded slope to the west.

The top of the wooded slope begins near 74th Place SE, about elevation 280 feet, and descends eastward down to about elevation 90 feet at the toe. Upslope from the building site, the slope gradient varies from about 20 percent to greater than 40 percent across the western half of the slope and the gradient varies from less than 5 percent to about 22 percent across the eastern half of the slope. The portion of the slope that was surveyed for this study (about 120 feet west of the toe) has average gradients of about 5 to 22 percent.

Slope vegetation is primarily Alder and Maple with occasional Douglas Fir and Western Red Cedar. The Alder and Maple are frequently bowed downhill which suggests possible downhill soil creep.

The eastern half of the site varies from about elevation 88 to 91 feet and primarily consists of landscaped grass lawn and paved walking paths. The northern portion of the building site, adjacent to SE 32nd Street, is partially occupied by asphalt pavement, a one-story building, and a concrete paved area. We understand that the eastern half of the site was filled about 48 years ago when a school building was planned, but never built (Shannon & Wilson 1985).

We understand that the building location, size, and ground floor elevation are subject to change. However, we have been provided two preliminary concepts, Concept A and Concept C. Concept A is oriented slightly farther from the slope than Concept C. This report assumes Concept C because it is the worst-case scenario from a geotechnical perspective. The building is expected to be two stories tall and have a roughly 28,000 square foot footprint. The finish floor elevation is expected to be between elevations 88 to 91 feet in both concepts. The building may be cut into the west slope and retained soil cuts could be on the order of 12 to 18 feet tall.

We understand that there is no new surface parking planned at this time, but there will be a new paved fire lane.

MAPPED GEOLOGY

According to the Geologic Map of Mercer Island, Washington (Troost & Wisher 2006), the mapped geology in the vicinity of the building site includes Quaternary Vashon recessional lacustrine deposits overlain by landslide deposits and artificial fill. The encountered soils are consistent with the mapped geology.

Upslope from the site, the soils are mapped as Pre-Olympia fine-grained glacial deposits, overlain by pre-Fraser nonglacial deposits, overlain by Lawton Clay, overlain by Vashon advance outwash, overlain by Vashon subglacial till.

SUBSURFACE CONDITIONS

Subsurface Explorations

Subsurface exploration locations are shown on Figure 2 and generalized subsurface cross sections A-A' and B-B' are shown on Figures 3 and 4 respectively.

Our understanding of the subsurface conditions is based on current and historical explorations at the site and laboratory analysis of samples from the borings. On February 25 and 27, 2015, we completed seven borings, HC-1 to HC-7, to depths of 21.5 to 51.0 feet below ground surface (bgs). The exploration logs are provided in Appendix A. The results of laboratory tests are provided in Appendix B.

We also reviewed historical logs of explorations and laboratory results by Shannon & Wilson Inc. (1985). These included five soil borings, B-1 to B-5, drilled to depths of 24.5 to 39.5 feet bgs and seven test pits, TP-1 to TP-7, excavated to 10.5 to 13 feet bgs. Relevant explorations in the vicinity of the building site are SW-B-5 and SW-TP-1.

We also reviewed the historical logs of explorations and laboratory results by Hart Crowser & Associates, Inc. (1979) for the Farmers Insurance Group Building immediately north of the building site. Relevant explorations near the building site include boring HC-B-5.

Relevant historical exploration locations are shown on Figure 2 and the historical boring logs, test pit logs and laboratory results are provided in Appendix C.

Soil Conditions

The interpreted soil conditions in the vicinity of the building site generally consists of three basic soil units:

Soil Unit 1: Fill and Colluvium Soils

Interpreted fill or colluvium soils were encountered in all of explorations done for this study as well as HC-B-5, SW-B-5, and SW-TP-1 and typically consisted of as much as 2 feet of silty gravel or silty sand typically overlaying medium stiff to stiff silt, silty clay, and clay to about 4 to 9 feet bgs. Boring HC-3 encountered loose sand to 9.5 feet bgs. Test pit SW-TP-1 encountered remnant topsoil from 5 to 6.5 feet bgs and boring HC-4 encountered remnant topsoil from about 5 to 5.5 feet bgs. This soil unit is generally not suitable for heavy foundation loads or large tieback loads.

Soil Unit 2: Fine-Grained Recessional Lacustrine Soils

This soil unit generally consists of normally consolidated soft to stiff silt, clayey silt, and clay soils with occasional loose to medium dense silty and gravelly sand layers. The consistency of this soil unit is variable and is not considered suitable for support of heavy loads or settlement-sensitive structures. This soil unit is generally not suitable for heavy foundation loads or large tieback loads.

Soil Unit 3: Fine-Grained Glacially Overridden Soils

This soil unit generally consists of stiff to hard clayey silt and clay soils with occasional slickensides and highly organic zones. The depth to the top of this unit varied from about 13 to 33 feet bgs but was typically encountered within about 25 feet bgs. We recommend that pile foundations and soldier piles bear within this soil unit.

Groundwater Conditions

At the time of our visit, the ground surface was wet and soft across the site because the near-surface soils are typically fine-grained and poorly drained.

Borings HC-3, HC-4, and HC-7 encountered groundwater at about 20 feet bgs during drilling. However, most of the current and historical explorations did not encounter free water at the time of drilling/excavation but indicate groundwater levels within 1 to 2 feet bgs, suggesting excess water pressure within the relatively permeable (sandy) soil layers below ground surface (Shannon & Wilson 1985).

The regional groundwater table is deeper than the borings done for this project; however, perched groundwater within sandy soil layers and poorly draining near-surface soils can lead to local water within a couple feet of ground surface. Also, excavations into the hillside may encounter water seepage in sandy zones that can cause running or caving soils and reduced face stability.

Based on the observed and reported groundwater conditions, we recommend that drainage and waterproofing for walls and foundations be designed assuming the groundwater table is at the ground surface.

Note that water levels were measured at the times and under conditions stated on the boring logs. Fluctuations in the groundwater conditions may be caused by variations in rainfall, temperature, season, and other factors. Subsurface conditions interpreted from explorations at discrete locations on the site and the soil properties inferred from the field and laboratory tests, formed the basis of the geotechnical recommendations in this report. The nature and extent of variations between explorations may not become evident until additional explorations are performed or construction begins. If variations are encountered, it may be necessary to reevaluate the recommendations in this report.

MAPPED LANDSLIDE HAZARD REVIEW

We reviewed the Mercer Island Landslide Hazard Assessment map (Troost & Wisher 2009) for the site location. The site is mapped as an identified land slide location and is partially within mapped landslide deposits. Upslope from the building site, the map identifies areas of historic slope failure. These include:

- Slopes steeper than 15 percent (3.7H:1V) intersecting a geologic contact of relatively permeable deposits over relatively impermeable deposits with groundwater seepage
- Areas of slope steeper than 40 percent (1.2H:1V) with a vertical relief of ten or more feet (Qualifications i, ii, iii, ix)

In our opinion, construction of this building will not increase or decrease the landslide hazard in this vicinity. There is a risk that if a landslide occurs upslope from the site, the resulting landslide debris could travel down the slope and impact the proposed building. It is outside the scope of this report to provide recommendations for the potential impacts on the proposed building caused by a landslide well upslope of the building site.

GEOTECHNICAL ENGINEERING CONCLUSIONS AND RECOMMENDATIONS

Our recommendations are based on our understanding of the project and the subsurface conditions interpreted from explorations at and near the site by Hart Crowser and others. If the nature or location of the facilities is different than we have assumed, we should be notified so we can review, change, and/or confirm our recommendations.

Earthquake Engineering

Seismic Setting

The seismicity of western Washington is dominated by the Cascadia Subduction Zone (CSZ), where the offshore Juan de Fuca plate subducts beneath the continental North American plate. Three main types of earthquakes are typically associated with subduction zone environments: crustal, intraplate, and interplate earthquakes. Seismic records in the Puget Sound area clearly indicate a distinct shallow zone of crustal seismicity, the Seattle Fault, which may have surficial expressions and can extend to depths of 25 to 30 km. A deeper zone is associated with the subducting Juan de Fuca plate and produces intraplate earthquakes at depths of 40 to 70 km beneath the Puget Sound region (e.g., the 1949, 1965, and 2001 earthquakes) and interplate earthquakes at shallow depths near the Washington coast (e.g., the 1700 earthquake with an approximate magnitude of 9.0).

Seismic Hazards

- **Liquefaction induced subsidence.** There appear to be isolated zones of medium dense, wet sand beneath the building site that could lose strength during or after an earthquake. However, because significant free water and a continuous sand layer was not encountered, it is our opinion that the risk of liquefaction-induced subsidence is low.

- **Slope stability.** The slope within 120 feet or so of the Concept C building (about 14 to 18 percent slope) site is not steep enough to pose a seismic slope stability risk. Further upslope there are mapped historic failures, steep slopes, and groundwater seepage that present a risk of future landslides which could impact the proposed building. An earthquake would increase the risk of a landslide occurring.

- **Fault rupture.** The mapped northernmost splay of the Seattle Fault is about 0.3 miles south of the site. There is a remote potential for surface rupture at the site from a new splay of the Seattle Fault. However, this hazard is very low based on the Seattle Fault's 3,000-year recurrence interval, the many possible locations for surface rupture, and the likelihood that the fault would not produce surface rupture at this location.

Building Code Seismic Parameters

Based on the measured and extrapolated average SPT blowcount in the top 100 feet of soil, it is our opinion that the site class is best characterized as D.

Table 1 provides 2012 International Building Code (IBC) seismic design parameters for the site and the recommended soil Site Class. The parameters were obtained from the USGS US Seismic Design Maps web application (http://earthquake.usgs.gov/designmaps/us/application.php) accessed March 2015.

Table 1 - 2012 IBC Seismic Design Parameters

Parameter	Value
Latitude	47.58151
Longitude	-122.23552
Site Class	D
PGA	0.572 g
S_S	1.388 g
S_1	0.538 g
F_a	1.0
F_v	1.5

Excavation and Shoring Options

We understand that the location of the building is subject to change. If the building is situated west of the toe of the existing slope, then shoring and/or regrading will be required to maintain soil cut and slope stability. We recommend considering the following options:

Option 1. Locate the building beyond the toe of the slope. The advantage of this option is that shoring would not need to be designed or built. The building would also not need to accommodate the relatively large static and seismic loads of the retained soil.

Option 2. Locate the building within the existing slope and retain the cut using temporary shoring; also, place the permanent building wall directly against the shoring so that the soil loads are transferred to the building structure. With this option, the building will need to be designed for the static and seismic earth pressures of the retained sloping soils.

Option 3a. Locate the building within the existing slope and retain the soil cut using permanent shoring that is not structurally connected to the building structure. With this option, the building will not need to be designed for the static or seismic earth pressures from the retained slope. The shoring will need to be designed as a permanent structure, which is more expensive than temporary shoring.

Option 3b. Locate the building about 4 feet interior of the temporary shoring wall. The gap between the shoring wall and permanent wall can be backfilled with gravel. The shoring tiebacks would be de-stressed as the gravel backfill is placed. The permanent building wall can then be designed for a conventional triangular active earth pressure distribution.

Option 4. Locate the building within the existing slope, but regrade and move the toe of the slope west, outside the building footprint. This option would not require temporary shoring and the building would not need to be designed to accommodate retained earth pressures. A permanent slope would need to be designed to be no steeper than 2H:1V.

Temporary Shoring Recommendations

Shoring should be designed by a professional structural engineer registered in the State of Washington. We recommend that we be given the opportunity to review the geotechnical aspects of the shoring design before construction. It is not the purpose of this report to provide specific criteria for the contractor's construction means and methods. The shoring contractor should be responsible for verifying actual ground conditions and determining the construction methods and procedures needed to install an appropriate shoring system.

This section addresses a temporary shoring wall built into the existing slope at the west side of the Concept C building location. Assuming an excavation down to elevation 88 feet, the slope cut could be on the order of 12 to 18 feet tall.

We did not do soil explorations along a substantial portion of the Concept C west building line, so we have assumed that the retained soils would primarily consist of Soil Unit 1 or 2.

Lateral Pressures

We expect that temporary shoring will consist of soldier piles and timber lagging with cantilevered and tied-back sections and that active earth pressures are applicable. Active earth pressures assume that the top of the shoring is allowed to deform on the order of 0.001 to 0.002 times the shoring height.

For cantilevered walls, we recommend a triangular earth pressure distribution. For tied-back walls, we recommend a trapezoidal earth pressure distribution. Our recommended earth pressures for temporary shoring are provided on Figure 5.

Timber lagging is expected to freely drain so that water does not build up behind the walls. Assuming a free-draining wall, the temporary shoring does not need to be designed for water pressure behind the wall.

Additional lateral pressures due to surcharge loads (e.g., buildings, footings, heavy equipment, large material stockpiles) should be calculated using methods shown on Figure 7. These loads would be added to the loads calculated for the shoring walls. We recommend Hart Crowser review or calculate the estimated surcharge loads when surcharge loads, footprints, and foundation plans of adjacent structures are available.

Soldier Pile Design

We make the following recommendations for soldier pile design:

- Use the axial pile capacity parameters in Table 2 to calculate the vertical capacity of the soldier piles. We recommend embedding piles at least 10 feet into the fine-grained glacially overridden soils (Soil Unit 3). Neglect the pile-side friction above the bottom of the excavation.

Table 2 - Axial Capacity Parameters for Drilled Soldier Piles

Soil Unit	Allowable Unit Side Capacity	Allowable Unit End Capacity
1 and 2	0.2 ksf	N/A
3	1.0 ksf	30 ksf

- Design soldier piles for bending using a uniform loading value equivalent to 80 percent of the design values and analyze for shear using total load.
- To design against kickout, compute the lateral resistance using the passive pressure on Figure 5 acting over two times the diameter of the concrete shaft section or the pile spacing, whichever is less.
- The embedded portion of the pile shaft should be at least 2 feet in diameter.

These recommendations assume proper installation of the soldier piles as discussed in the construction recommendations section of this report.

Lagging Design

Temporary lagging should be designed in accordance with FHWA GEC 4 (FHWA 1999), structural engineering guidelines, soil type, and local experience. Table 3 provides recommended lagging thicknesses based on the FHWA recommendations.

Based on our site investigation, we recommend using a Soil Type of "Competent."

Table 3 – Recommended Temporary Lagging Thickness

Soil Type	Exposed Wall Height (feet)	Clear Span of Lagging (feet)					
		5	6	7	8	9	10
		Minimum Actual Thickness of Rough Cut Timber Lagging (inches)					
Competent[1]	25 and under	2	3	3	3	4	4
	Over 25 to 60	3	3	3	4	4	5
Difficult[1]	25 and under	3	3	3	4	4	5
	Over 25 to 60	3	3	4	4	5	5
Potentially Dangerous[1]	15 and under	3	3	4	5	See Note[2]	See Note[2]
	Over 15 to 25	3	4	5	6	See Note[2]	See Note[2]
	Over 25	4	5	6	See Note[2]	See Note[2]	See Note[2]

[1]Soil Type as defined in WSDOT Standard Specifications section 6-16.3(6)A

[2]For exposed wall heights exceeding the limits in Table 3, or where minimum rough cut lagging thickness is not provided, the Contractor should design the lagging in accordance structural engineering guidelines and local experience. Soldier pile and lagging shoring may not be appropriate in these cases.

Tieback Design

We recommend the tentative allowable tieback pullout values in Table 4 for a typical 6-inch-diameter drilled hole with a pressure-grouted bond zone. The allowable transfer load includes a recommended factor of safety of 2.0. The factor of safety should be confirmed by completing at least two successful verification tests in each soil type. Additionally, each tieback should be proof tested to 133 percent of the design load. Our recommended tieback testing program is provided in the construction recommendations section of this report. We recommend that the shoring contractor and/or designer determine a final design tieback pullout resistance based on their previous experience on Mercer Island, which must then be confirmed by field testing.

Table 4 – Tentative Pullout Capacity for Temporary Tiebacks with Pressure-Grouted Bond Zone

Soil Unit	Allowable Capacity
1 and 2	1 kip per foot
3	3 kip per foot

We make the following additional recommendations for tieback design:

- Do not install the bond zone within Soil Units 1 or 2, if possible.
- Tieback bond zones should be located outside of the no-load zone. The no-load zone is shown on Figure 5 as a zone bounded by a 60-degree line to the horizontal that starts at a distance of H/4 from the bottom of the excavation where H is the excavation height.
- Locate anchors at least three tieback diameters apart.

- Design anchor lengths so that they do not conflict with any underground support elements of adjacent structures.
- Identify existing facilities adjacent to the project site including buried utilities and foundations, as these may affect the location and the length of the anchors.
- Allow the contractor to select the tieback anchor material and the installation technique. The shoring contractor should be contractually responsible for the design of the tieback anchors, as tieback capacity is largely a function of the means and methods of installation. The selected installation method must be confirmed using verification and proof testing as discussed below.
- Hart Crowser should review the design for anchor locations, capacities, and related criteria prior to implementation.

Permanent Subgrade Walls

This section addresses permanent walls built against temporary shoring that would retain cuts into the existing slope on the west side of the building. This section also addresses backfilled walls that are not connected to temporary shoring.

Earth Pressures

Permanent subsurface walls constructed adjacent to soldier pile shoring may be designed using the same earth pressure values and distribution that was used for shoring design. If there is a gap between the shoring and permanent walls then use a conventional active earth pressure for the backfill material. The earth pressure does not include surcharge loads such as loads from adjacent buildings; these must be calculated separately and added to get the total permanent lateral pressure.

Permanent walls that are backfilled and are not adjacent to shoring walls should be designed using a triangular earth pressure distribution. For typical granular fill soil, active and at-rest pressures may be determined using the equivalent fluid unit weights in Table 5. Note that the equivalent fluid density does not include any surface loading conditions or loading due to groundwater hydrostatic pressure; also, the ground surface behind the wall is assumed to be horizontal. Walls without drainage must be designed for full hydrostatic pressure.

The use of active and passive pressure is appropriate if the wall is allowed to yield a minimum 0.001 times the wall height. For a non-yielding wall, at-rest pressures should be used.

Table 5 - Soil Equivalent Fluid Unit Weights for Walls Backfilled with Structural Fill

Soil Type	Parameter	Value (pcf)
Structural Fill	Active Earth Pressure	35
	At-Rest Earth Pressure	55
	Passive Earth Pressure [a]	300

Notes:

a. Includes a factor of safety of 1.5.

Hydrostatic Groundwater Pressure

We recommend full height drainage for all walls and foundations in order to preclude water pressure loads against the walls or foundations.

Seismic Earth Pressure on Walls

For walls retaining the soil slope, use a seismic earth pressure increment of 13H psf. For wall retaining level backfill use a seismic earth pressure increment of 9H psf. These earth pressures assume Soil Units 1 or 2 are present behind the wall with an average soil backslope of 7H:1V (8 degrees). The seismic earth pressure is calculated using the 2012 IBC design hazard level (2/3 of the MCE) for the site.

Apply the seismic increments as a uniform pressure from the top to the bottom of the wall as shown on Figure 6.

Surcharge Pressures on Walls

The pressures shown on Figures 5 and 6 do not include surcharge loads due to buildings, footings, heavy equipment, large stockpiles, etc. These loads must be calculated separately, using the methods shown on Figure 7, or similar, and added to the pressures determined using Figures 5 and 6.

We recommend Hart Crowser that review or complete the estimated surcharge loads when surcharge loads, footprints, and foundation plans of adjacent structures are available.

Foundation Design Recommendations

Axial Pile Capacity

We recommend pile foundations for the building because the upper soils are relatively weak and compressible and we expect that the building loads will be relatively high. In our opinion, the most suitable pile type is augercast piles because they typically offer the best combination of capacity and cost. Driven piles are not recommended because of potential noise issues and also ground vibrations that could adversely affect nearby slope stability.

Calculate the diameter and length of the piles using the allowable unit side and end capacities in Table 6. Do not include base capacity when calculating the total uplift capacity. Neglect side friction of the upper 5 feet of the shaft to accommodate potential soil disturbance. All piles should be embedded a minimum of 10 feet into Soil Unit 3.

Table 6 - Axial Capacity Parameters for Augercast Piles

Soil Unit	Allowable Unit Side Capacity	Allowable Unit End Capacity
1 and 2	0.2 ksf	Note recommended
3	1 ksf	35 ksf

Axial Pile Group Effects

To avoid axial group effects, we recommend a minimum center-to-center pile spacing of 3D, where D is the smallest pile diameter.

Lateral Pile Capacity

Lateral loads are resisted primarily by the horizontal bearing support of near-surface soils around the piles and pile caps. The lateral capacity of a pile depends on its length, stiffness in the direction of loading, proximity to other piles, and degree of fixity at the head, as well as on the engineering properties of the upper soils. The design lateral capacity of vertical piles will depend largely on the allowable lateral deflections of the piles.

Lateral pile analysis may be done using LPILE software using the soil parameters in Table 7.

Table 7 – LPILE Soil Parameters

Soil Unit	Soil Model	Effective Unit Weight (pcf)	Undrained Cohesion (psf)	Strain Factor, E50 (pci)
1 and 2	Soft Clay	110	600	Default
3	Stiff Clay w/o Free Water	120	4,000	Default

Lateral Pile Group Effects

Lateral group effects must be considered for pile spacings less than 5D, where D is the smallest pile diameter. We recommend the group reduction factors in Table 8 be used for LPILE analysis.

Table 8 – LPILE Reduction Factors for Lateral Pile Group Effects

Pile Center-to-Center Spacing (ft)	P-Multipliers, Pm		
	Row 1	Row 2	Row 3 and higher
3D	0.8	0.4	0.3
5D	1.0	0.85	0.7

Lateral Earth Pressures for Pile Caps and Beams

Active and passive earth pressures act over the embedded portion of pile caps and grade beams. We recommend backfilling around pile caps and beams with structural fill. We recommend using the values in Table 9 to determine the lateral earth pressure for pile caps and beams. Neglect the upper 1 foot of soil resistance unless the soil surface is covered by pavement or slabs. Passive resistance assumes a safety factor of 1.5, which may be increased by 1/3 for short-term loads such as wind or earthquake.

Table 9 – Lateral Earth Pressure Determination for Pile Caps and Beams

Parameter	Soil Type	Value (pcf)
Active Earth Pressure	Structural Fill	35
Passive Earth Pressure	Structural Fill	300

Mobilization of passive pressure may be calculated from Figure 4-6 of ASCE 41-06 for varying degrees of movement as calculated iteratively using LPILE. Alternatively, full passive pressure may be used for movement of 0.05H, where H is the depth below ground surface to the bottom of the pile cap or beam.

Bearing Layer Depth for Piles

As previously discussed, we recommend that all piles penetrate at least 10 feet into Soil Unit 3, the bearing layer. Table 10 provides the depth to the bearing layer at specific exploration locations. The depth to the top of Soil Unit 3 varied from about 13 to 33 feet bgs in the soil borings but was typically encountered within about 25 feet bgs. The depth to the bearing layer could vary significantly within unexplored areas of the site.

Table 10 – Depth Top of Soil Unit 3 at Exploration Locations

Exploration ID	Depth to Bearing Layer (feet)
HC-3	27
HC-4	33
HC-5	Greater than 21.5
SW-B5	21
HC-6	13
HC-7	23
HC-B-5	26

The depth to the top of Soil Unit 3 is likely highly variable across the site; therefore, for estimating pile drilling and material quantities, we recommend adding 5 feet to the calculated pile lengths. The final pile lengths should be should be established during drilling based on interpreted soil conditions. If

unexpected subsurface conditions are encountered during construction, the pile lengths may need to be adjusted.

Note on that borings HC-5 an SW-B-5 were drilled close to each other; however, the SPT blowcounts in SW-B5 are considerably higher at shallower depths than in HC-5, in fact HC-5 did not encounter suitable bearing soils to the depth drilled. This is indicative of a high potential for unexpected subsurface conditions and variability across the site that can cause uncertainty and variability of construction estimates and actual construction costs.

To reduce the uncertainty of as-built pile lengths and potential construction cost overruns, additional explorations could be done across the finalized building footprint to refine the depth to the top of Soil Unit 3. For the sake of time and cost efficiency, we recommend doing these explorations using a Cone Penetration Test (CPT) or drilled borings. These explorations should be done after the building location is finalized and the resulting information should be provided to pile contractors as part of the request for bid.

GROUNDWATER CONTROL

Temporary Construction Dewatering

Water collected and discharged during construction will include stormwater, groundwater, and process water from construction activities.

Groundwater was not encountered during drilling in most of the current and historical borings; however, borings HC-3, HC-4, and HC-7, encountered water at about 20 feet bgs. Also, historical reports (Hart Crowser 1979, Shannon & Wilson 1985) show accumulated groundwater in monitoring wells near the ground surface within several hours after drilling.

For the planned finish floor elevation of about elevation 88 to 91 feet, groundwater inflow is expected to be minimal during excavation, manageable using trenches and sumps. Excavations left open for several hours may accumulate groundwater near the ground surface. Deep excavations for building spaces below the finish floor, such as elevator pits, may require active dewatering prior to excavation. Active dewatering may include wellpoints or sumps installed around the perimeter of the excavation.

The amount of water discharged from the site depends on many factors including design and operation of the dewatering system (if applicable), the excavation depth and extent, and the variability in soil and groundwater properties. Note that rainfall, surface water, and groundwater from adjacent utility trenches can significantly increase short-term water discharge rates. Also, the time of year and nearby construction dewatering activities can affect groundwater flows.

Permanent Drainage

Walls Placed against Shoring

We recommend installing drainage board (e.g., Miradrain 6100) between the shoring and permanent wall from the ground surface down to the full depth of the wall. The purpose of the drainage board is to prevent hydrostatic groundwater pressure buildup caused by surface water infiltration or perched groundwater above the water table. The drainage board can be connected to a pipe and discharged into a sump. We also recommend full coverage waterproofing for all below-grade, occupied spaces to provide a dry space. If the permanent wall has backfill behind it, install a perforated drain pipe at the bottom of the backfill to convey water to a suitable discharge point.

Slabs-on-Grade

- Slab-on-grade floors should be underlain by at least 6 inches of capillary break consisting of mineral aggregate Type 21 or Type 22, City of Seattle Standard Specification 9-03.16, with the exception that this material should have less than 10 percent sand and less than 3 percent fines.
- Any soil that is to be considered as capillary break and/or drainage material should be submitted to Hart Crowser for gradation analysis and approval.
- Provide underslab drainage using a combination of perimeter and cross drains. Drains should consist of perforated pipe placed in trenches at least 12 inches deep where the top of the trench is the bottom of the capillary break.
- Cross drains should be spaced about 30 to 40 feet apart and perimeter drains should extend around the perimeter of the building. The cross drains and the perimeter drains should be tied together and sloped to drain to a suitable discharge point.
- A layer of polyethylene sheeting should be used to protect the drainage layer from concrete as the floor slab is poured.
- Drainage material should be compacted to 90 percent of maximum dry density as determined by the Modified Proctor Method, ASTM D 1557.

Backfilled Walls

Walls with soil backfilled on one side only will require drainage or they must be designed for full hydrostatic pressure. We recommend the following:

- Backfill with a minimum thickness of 18 inches of free-draining sand or sand and gravel that is well-graded (i.e., has a wide range in particle size).
- Install drains behind any backfilled subgrade walls. The drains, with cleanouts, should consist of a minimum 4-inch-diameter perforated pipe that is placed on a bed of, and surrounded by, at least 6

inches of free-draining sand or sand and gravel. The drains should be sloped to carry the water to a sump or other suitable discharge.

- The backfill should be continuous and envelop the drainage behind the wall.
- The drainage fill surrounding the pipe should be compatible with the size of the holes in the pipe.
- Where dry interior spaces are required, backfilled walls should be waterproofed.

Final Site Drainage

The site should be graded in such a way that surface water will not pond near the structures. Roof drains should not be connected to the subgrade drainage system and should be sloped and tightlined to a suitable outlet away from the proposed building.

Pavement Areas

The pavement areas should be graded in such a way that surface water will not pond and will drain to a suitable outlet.

Pavement Design

We understand that new pavement is limited to a fire lane that will approach the building from the south.

For asphalt pavement we recommend 6 inches of hot mix asphalt (HMA) in high-traffic or heavy-duty zones and 3 inches of HMA in light-duty zones. HMA should be underlain by 6 inches of crushed rock base course conforming to City of Seattle Standard Spec Aggregate Type 2 – 3/4" Minus Crushed Gravel.

The subgrade beneath the crushed rock base course should be compacted to 95 percent of maximum dry density as determined by the modified Proctor test (ASTM D 1557) or otherwise deemed acceptable by Hart Crowser. Where the existing subgrade consists of fine-grained native soils or uncontrolled fill, we recommend excavation and replacement with up to 1.5 feet of compacted structural fill. Structural fill should conform to City of Seattle Standard Spec Aggregate Type 17. The structural fill should be underlain by a woven geotextile such as Mirafi 500x or better.

GEOTECHNICAL RECOMMENDATIONS FOR CONSTRUCTION

Recommendations for Soldier Pile Installation

- Conditions such as caving soil and groundwater can loosen soil at the bottom of the soldier pile borehole and reduce bearing capacity in the zone of disturbed soil.

- Tieback de-tensioning and shoring failure could occur if bearing capacity is inadequate and soldier piles settle under the vertical component of the inclined tieback load. We recommend that a Hart Crowser representative closely monitor soldier pile installation for these conditions so that construction methods can be adjusted accordingly.

- The contractor should be prepared to case the soldier pile holes where loose soils or groundwater seepage could cause loss of ground. Fill soils can be especially prone to caving and may require casing. The actual need for casing should be determined in the field at the time of installation.

- If the shaft excavation contains water or slurry, the contractor should place backfill using a tremie. Lean mix, concrete, and controlled density fill should not be end-dumped through water or slurry.

- The contractor should be prepared to excavate the soldier piles in a manner that prevents heave or boiling at the bottom of the soldier pile excavation. It may be possible to over-drill the borehole and backfill the bottom of the borehole with structural concrete bearing on undisturbed soil.

- Drilling mud should not be used unless use of the mud is reviewed and approved by Hart Crowser, the shoring designer, and the structural engineer.

- Soldier-pile shoring construction may be difficult if cobbles or loose sand and gravel are encountered in the excavation. If these conditions are encountered, substantial soil raveling could occur.

Recommendations for Lagging Installation

- Prompt and careful installation of lagging, particularly in areas of seepage and loose soil, is important to maintain the integrity of the excavation. The contractor should be prepared to place lagging in small vertical increments and to backfill voids caused by ground loss behind the shoring system. Proper installation to prevent soil failure and sloughing and loss of ground, and to provide safe working conditions, should be the responsibility of the shoring contractor.

- Backfill voids greater than 1 inch using sand, pea gravel, or a porous slurry. Backfill the void spaces progressively as the excavation deepens. The backfill must not allow hydrostatic pressure buildup behind the wall. Drainage behind the wall must be maintained or hydrostatic water pressure should be added to the recommended lateral earth pressures.

- If there is a slope above the wall, install extra lagging above the shoring wall to provide a partial barrier for material that could ravel down from the slope face and fall into the excavation.

Recommendations for Tieback Installation

- Pump structural grout into the anchor zone using a grout hose or tremie hose placed at the bottom of the anchor.

- Fill the portion of the tieback in the no-load zone with a non-cohesive mixture of sand-pozzolan-water or equivalent; or, install a bond breaker such as plastic sheathing or a polyvinyl chloride (PVC) pipe around the tie rods within the no-load zone.
- Grout and backfill tiebacks immediately after placing the anchor. To prevent collapse of anchor holes, ground loss, and surface subsidence, do not leave anchor holes open overnight.
- Take care not to mine out large cavities in granular soil.
- If using pneumatic drilling techniques near utility vaults, corridors, or subgrade slabs, maintain continuous cutting return so those structures are not damaged by the air pressure.
- Install anchors to minimize ground loss and do not disturb previously installed anchors. During tieback drilling, wet or saturated zones may be encountered and caving or blow-in could occur. Drilling with a casing may reduce the potential for these conditions and ground loss.
- Test the tiebacks to confirm the appropriateness of the anchor design values and to verify that a suitable installation is achieved.

Recommendations for Tieback Testing

The tieback anchor testing program should include verification testing of select tiebacks and proof testing of all production tiebacks. We recommend that tieback testing be done in general accordance with the recommendations in the publication Recommendations for Prestressed Rock and Soil Anchors by the Post Tensioning Institute (PTI 2004) and the recommendations below.

Verification Tests

We recommend a minimum of two verification tests per soil type before installation of production anchors to validate the design pullout value. The geotechnical engineer will select the testing locations with input from the shoring subcontractor. The geotechnical engineer or shoring designer may require additional verification tests when creep susceptibility is suspected or when varying ground conditions are encountered.

Verification tiebacks should be installed by the same methods and personnel, using the same material and equipment, as the production tiebacks; the engineer will determine whether deviations require additional verification testing. At least two successful verification tests should be performed for each installation method and each soil type.

Verification tests load the tieback to 200 percent of the DL and include a 60-minute hold time at 150 percent of the DL. The tieback DLs will be on the shoring drawings. The tieback load should not exceed 80 percent of the steel's ultimate tensile strength. Verification test tiebacks should be incrementally loaded and unloaded using the schedule in Table 11.

Table 11 – Tieback Verification Test Schedule

Load Level	Hold Time
Alignment load	Until stable
0.25DL	10 min
0.5DL	10 min
0.75DL	10 min
1.0DL	10 min
1.25DL	10 min
1.5DL	**60 min**
1.75DL	10 min
2.0DL	10 min

The alignment load should be the minimum load required to align the testing assembly and should be less than 5 percent of the DL. The dial gauge should be zeroed after the alignment load has stabilized. Perform a creep test at 1.5DL by holding the load constant to within 50 psi and recording deflections at 1, 2, 3, 5, 6, 10, 20, 30, 50, and 60 minutes.

The acceptance criteria for a verification test are:

- The creep rate at 1.5DL is less than 0.08 inches between 6 and 60 minutes and the creep rate is linear or decreasing during the creep test;
- The total tieback displacement is greater than 80 percent of the theoretical elastic elongation of the design unbonded length plus the jack length; and
- The anchor does not pull out under repeated loading.

Proof Tests

Proof tests load the tieback to 1.33DL and include a 10-minute hold time at 1.33DL. The tieback DLs should be on the shoring drawings. The tieback load should not exceed 80 percent of the steel's ultimate tensile strength. Proof tests should be incrementally loaded and unloaded using the schedule in Table 12.

Table 12 – Tieback Proof Test Schedule

Load Level	Hold Time
Alignment load	Until stable
0.25DL	1 min
0.5DL	1 min
0.75DL	1 min
1.0DL	1 min
1.33DL	10 min

The alignment load should be the minimum load required to align the testing assembly and should be less than 5 percent of the design load. The dial gauge should be zeroed after the alignment load has stabilized.

The load should be held constant to within 50 psi and deflections recorded at 1, 2, 3, 5, 6 and 10 minutes. If the tieback deflection between 1 and 10 minutes at 1.33DL exceeds 0.04 inches, the load should be held for an additional 50 minutes and deflections recorded at 20, 30, 50, and 60 minutes.

The acceptance criteria for a proof test are:

- The creep rate at 1.33DL is less than 0.04 inches between 1 and 10 minutes or less than 0.08 inches between 6 and 60 minutes and the creep rate is linear or decreasing during the creep test;
- The total tieback displacement is greater than 80 percent of the theoretical elastic elongation of the design unbonded length plus the jack length; and
- The anchor does not pull out under repeated loading.

Shoring Monitoring Program

A shoring monitoring program is recommended to provide early warning of shoring not performing as expected and to identify potential remedial measures. For this project, potential shoring includes a wall to retain soil cuts into the west slope and structures below finish grade, such as elevator or orchestra pits.

Prior to shoring, we recommend doing a pre-construction survey. A preconstruction survey documents the condition of pavement, utilities, buildings and upslope areas. The survey should include video and/or photographic documentation. The size and location of existing cracks in streets and buildings should receive special attention and may be monitored with a crack gauge.

During construction, we recommend optical surveys of horizontal and vertical movements of (1) the surface of the sloping ground above the building, (2) buildings adjacent to the site, and (3) the shoring system itself. The points on the adjacent buildings can be set either at the base or on the roof of the buildings. Points on the shoring should be set on every soldier pile.

For shoring that cuts into the west slope, we recommend installing a minimum of two slope inclinometer casings, one inclinometer casing attached to a soldier pile and the other inclinometer casing installed upslope from the shoring at a horizontal distance equal to the wall height.

The optical survey, or other measuring systems, should have an accuracy of at least 0.001 foot. All reference points on the ground surface should be installed and read before excavation begins. The frequency of readings will depend on the results of previous readings and the rate of construction. At a minimum, readings on the external points should be taken twice a week through construction until below-grade structural elements (such as floors, decks, columns) are completed, or as specified by the structural and geotechnical engineers. Readings on the top of soldier piles and the face of existing

buildings on or adjacent to the property should be taken at least twice a week during this time. We recommend that the owner hire an independent surveyor to record the data at least once per week; the surveyor or contractor could take the other weekly reading.

For buildings and streets adjacent to excavations we recommend a post-construction survey. A post-construction survey includes reviewing the preconstruction survey and comparing it to post-construction conditions. The survey should include video and/or photographic documentation. Changes in the number, size, or location of cracks in streets and buildings should be given special attention.

Augercast Pile Construction

We recommend that we observe the installation of augercast piles, so we can evaluate the contractor's operation and collect and interpret the installation data. Because a completed pile is below the ground surface and cannot be observed during construction, judgment and experience must be used to aid in determining the acceptability of the pile. We recommend close monitoring of installation procedures such as installation sequence, auger withdrawal rate, grouting pressure, and quantity of grout used per pile. Variations from the established pattern, such as low grout pressure, excessive settlement of grout in a completed pile, etc., would make the pile susceptible to rejection.

We make the following recommendations for augercast pile installation:

- Do not install two piles within 5-pile diameters of each other (center to center spacing) within a 12-hour period. This is intended to prevent interconnection of grout between piles.
- Require the contractor to provide a pressure gage in the grout line.
- Minimum pressures should be those required to maintain a steady flow of grout to the auger. A typical value of 100 pounds per square inch (psi) should be used for this purpose.
- Rapid drops in the grout pressure of 50 psi or more occurring when otherwise accepted procedures are used should be specified as a possible cause for reconstructing the pile.
- The rate of grout injection and rate of auger withdrawal from the soils should be able to maintain a positive grout head of at least 10 feet above the bottom of the auger. Loss of head during grout injection due to interrupted grout flow should be remedied by reinsertion of the auger 5 to 10 feet below the depth at which the interruption occurred, or to the bottom of the pile if the depth is unknown.
- Withdraw auger from hole at a slow rate so that pressure on the grout column is maintained.
- Require contractor to provide a means of monitoring quantity of grout used per pile. A stroke counter on the grout pump is the most efficient means to obtain grout quantity. Each time a new grout pump is used a new calibration in cubic yards per stroke should be provided. Typically, the ratio of measured to theoretical grout volume should be maintained between 1.2 and 1.5.

- Require the contractor to rotate the auger after initial grout pumping (about 2 cubic feet) prior to the beginning of auger withdrawal to help establish a firm bearing condition at the end of the pile.

Earthwork

Site Preparation and Grading

We recommend all site grading, paving, and any utility trenching be conducted during relatively dry weather conditions. At the time of our site explorations the ground surface was wet, soft and muddy. The existing ground surface is not suitable for construction traffic or staging areas. Working areas will need to be built using geotextile, quarry spalls, etc. Maintaining an adequate working surface should be the responsiblity of the contractor.

It may be necessary to relocate or abandon some utilities. Excavation of these utility lines will probably occur through fill. Abandoned underground utilities should be removed or completely grouted. Ends of remaining abandoned utility lines should be sealed to prevent piping of soil or water into the pipe. Soft or loose backfill should be removed, and excavations should be backfilled with structural fill. Coordination with the utility agency is generally required.

Structural Fill

Backfill placed within the building area or below paved areas should be considered structural fill. We make the following recommendations for structural fill:

- For imported soil to be used as structural fill, use a clean, well-graded sand or sand and gravel with less than 5 percent by weight passing the No. 200 mesh sieve (based on the minus 3/4-inch fraction). Compaction of soil containing more than about 5 percent fines may be difficult if the material is wet or becomes wet during rainy weather.

- Place and compact all structural fill in lifts with a loose thickness no greater than 10 inches. For hand-operated "jumping jack" compactors, loose lifts should not exceed 6 inches. For small vibrating plate/sled compactors, loose lifts should not exceed 3 inches.

- Compact all structural fill to at least 95 percent of the modified Proctor maximum dry density (as determined by ASTM D 1557 test procedure).

- Control the moisture content of the fill to within 2 percent of the optimum moisture. Optimum moisture is the moisture content corresponding to the maximum Proctor dry density.

- In wet subgrade areas, clean material with a gravel content of at least 30 to 35 percent may be necessary. Gravel is material coarser than a US No. 4 sieve.

- Before filling begins, provide samples of the structural and drainage fill for laboratory testing. Laboratory testing will include a Proctor test and gradation for structural fill and a gradation for drainage fill. Field testing with a nuclear density gauge uses the maximum dry density determined

from a Proctor test so it is important to complete the laboratory testing as soon as possible in order to not delay backfilling.

Use of On-Site Soil as Structural Fill

Our explorations indicated that the near-surface site soil includes silty to very silty, slightly gravelly to gravelly sand, silt, and clay with scattered organic material; we do not recommend using these soils for structural fill.

Temporary Cuts

Because of the variables involved, actual slope grades required for stability in temporary cut areas can only be estimated before construction. We recommend that stability of the temporary slopes used for construction be the sole responsibility of the contractor, since the contractor is in control of the construction operation and is continuously at the site to observe the nature and condition of the subsurface. Excavations should be made in accordance with all local, state, and federal safety requirements.

The stability and safety of open trenches and cut slopes depend on a number of factors, including the soil conditions, seepage conditions, depth of cuts, duration, proximity to surcharge loads and soil stockpiles, and general care and methods used by the contractor.

Temporary excavations should either be shored or sloped in accordance with Part N, WAC 296-155-650 through 296-155-66411. For planning purposes, we recommend maximum temporary cuts of 2H:1V.

In addition to the WAC requirements, we recommend limiting the depth and duration of temporary cuts and using plastic sheeting to protect the soil from rain. Also, if groundwater seepage is encountered during excavation, the contractor should install temporary drainage to reduce caving or sloughing of cut faces and to protect adjacent soil from becoming wet and soft. Temporary cuts that encounter seepage may need to be flattened to maintain stability.

RECOMMENDATIONS FOR CONTINUING GEOTECHNICAL SERVICES

Before construction begins, we recommend that we continue to meet with the design team, as needed, to address geotechnical questions that may arise throughout the remainder of the design and permitting process. We also recommend that we review the project plans and specifications to confirm that the geotechnical engineering recommendations have been properly interpreted.

During construction, we recommend that Hart Crowser be retained to perform the following tasks:

- Review contractor submittals;
- Observe shoring installation;

- Observe foundation installations;
- Observe foundation drainage installation;
- Other observations as required by the city of Mercer Island;
- Attend meetings, as needed; and
- Provide geotechnical engineering support that may arise during construction.

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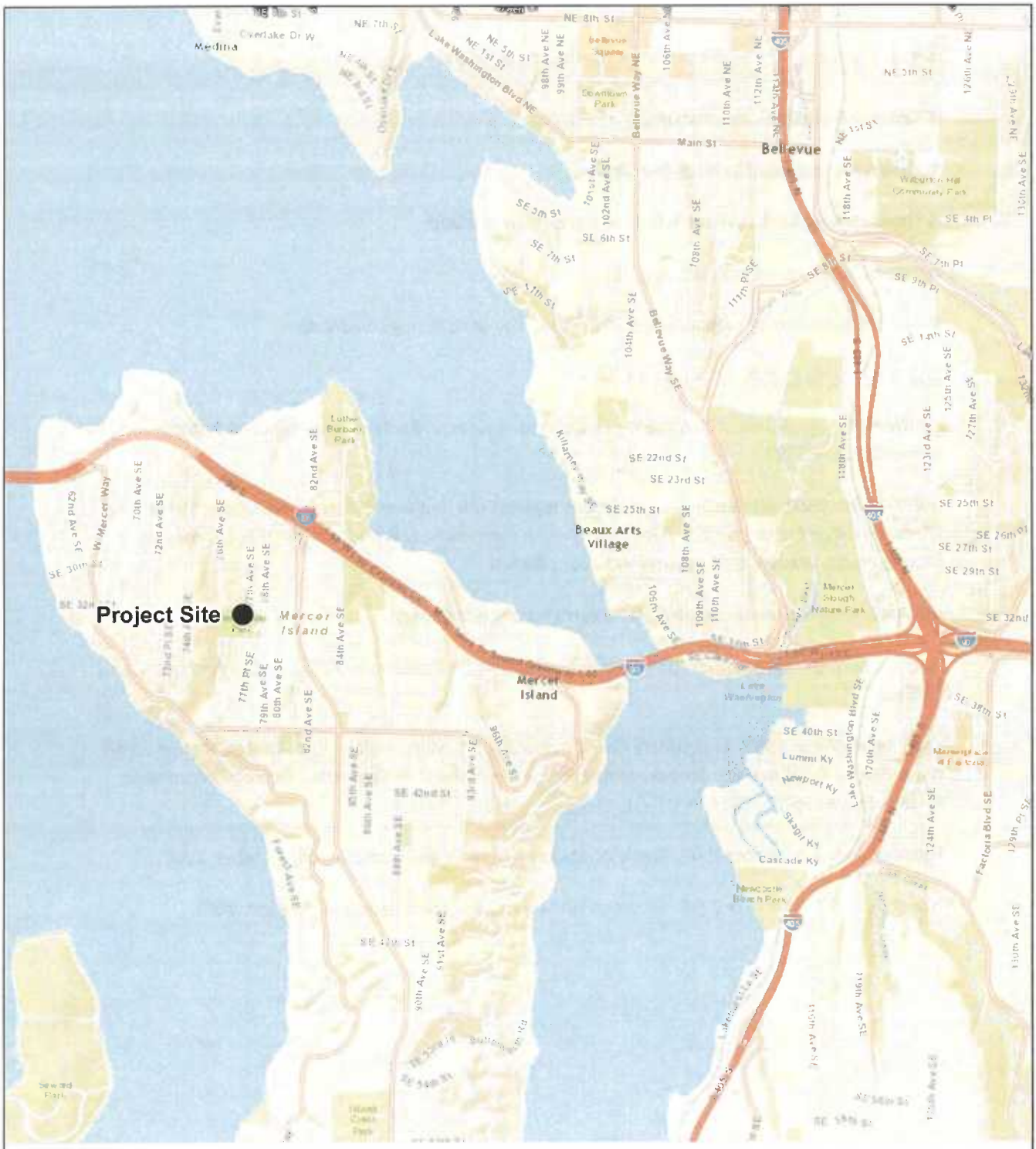

Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

3,000 1,500 0 3,000

Scale in Feet

N

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Mercer Island, Washington

Vicinity Map

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Figure
1

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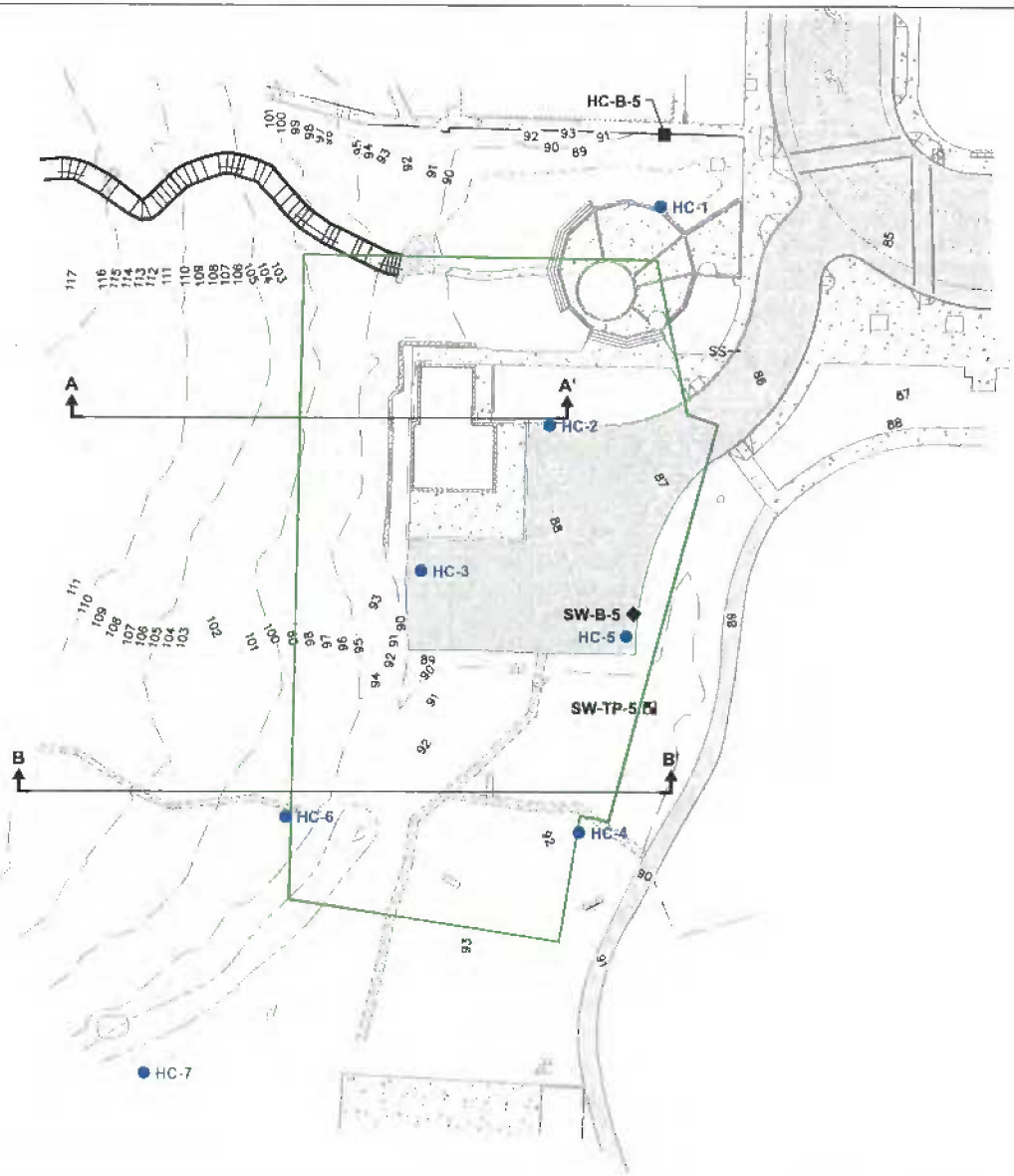

Legend

- HC-1 ● Boring (Hart Crowser 2015)
- SW-B-5 ◆ Boring (Shannon & Wilson 1985)
- SW-TP-5 ◘ Test Pit (Shannon & Wilson 1985)
- HC-B-5 ■ Boring (Hart Crowser 1980)
- Proposed building (Concept C)
- A A' Cross section

N

0 40 80

Scale in Feet

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Site and Exploration Plan

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Figure 2

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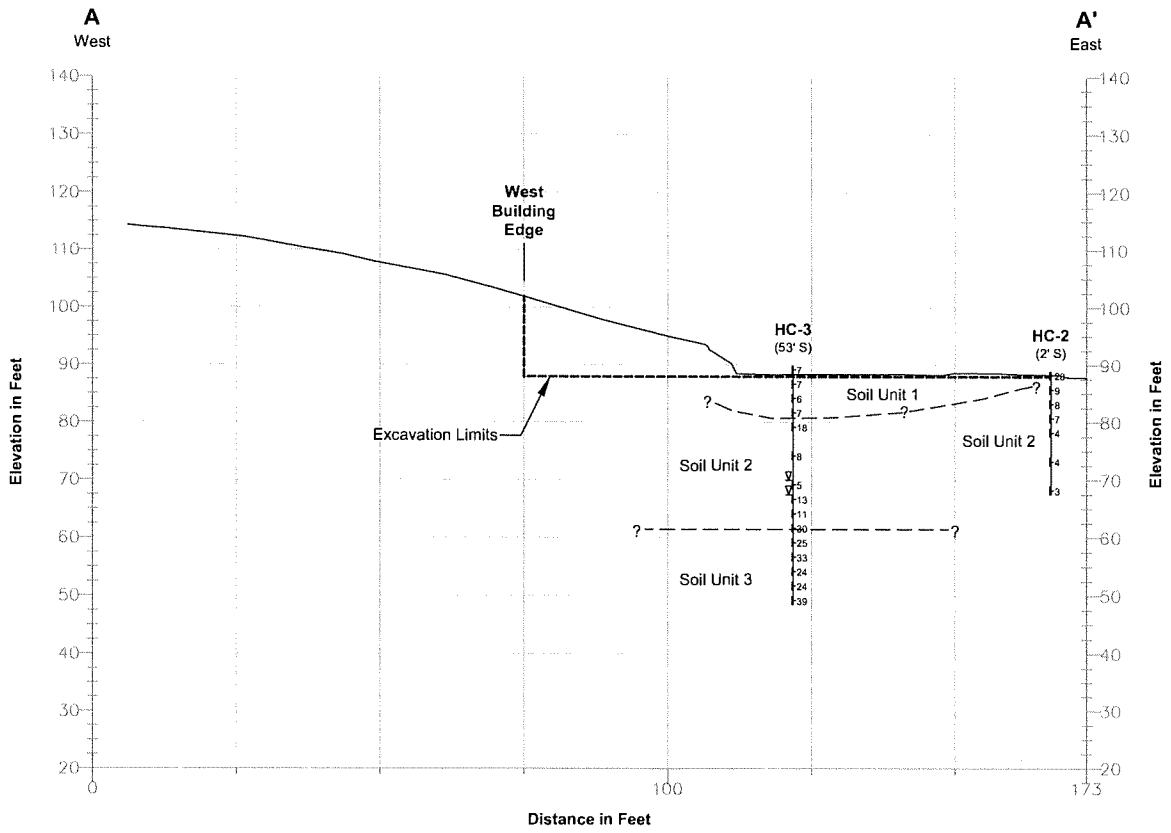

HC-2 (2' S) Exploration number (Offset distance and direction)

Exploration

Water level

9 Standard penetration resistance in blows per foot

0 20 40
Scale in Feet

Note:
Contact between soil units is interpolated between borings and represents our interpretation of subsurface conditions based on currently available data.

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Mercer Island, Washington

Generalized Subsurface Cross Section A-A'

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Figure 3

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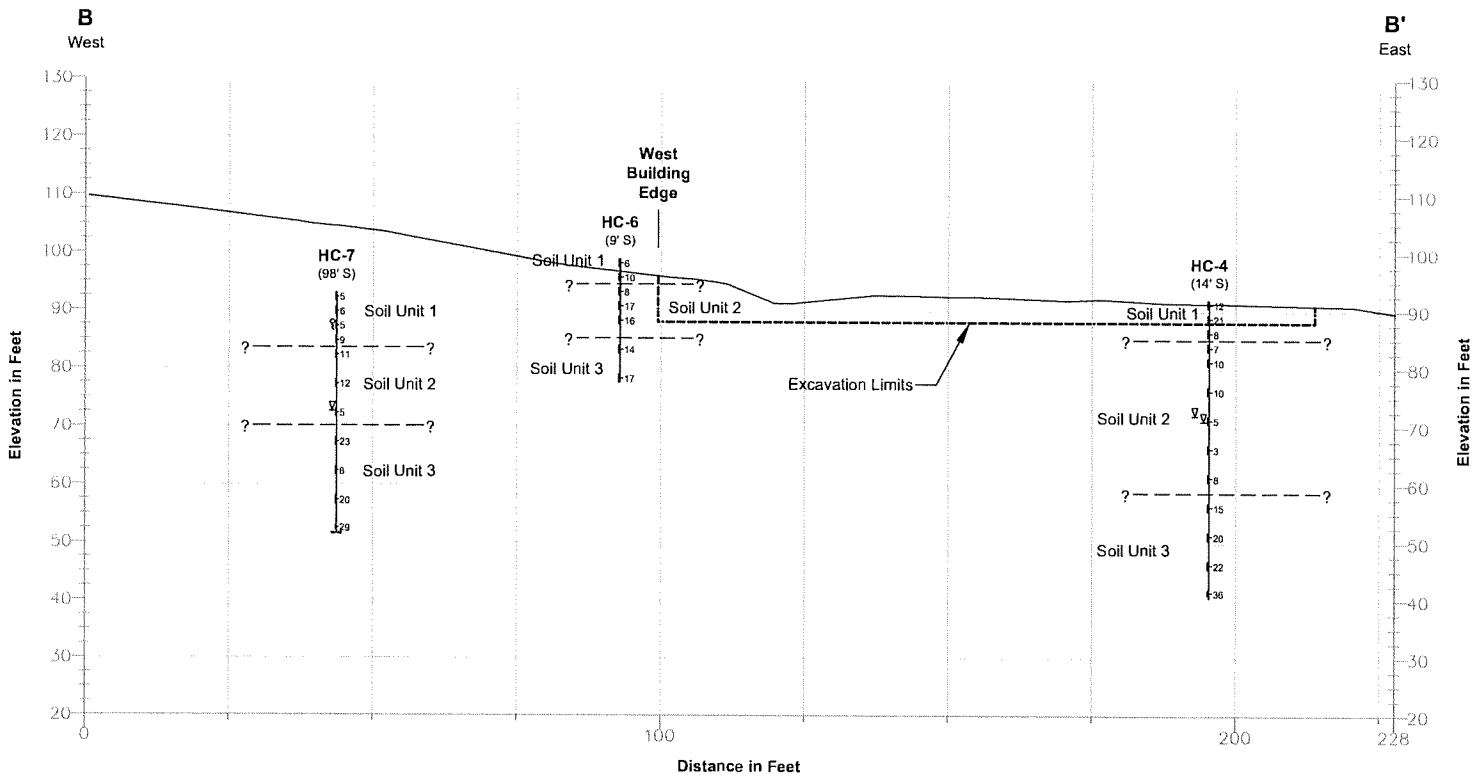

HC-2 (2' S) Exploration number (Offset distance and direction)

Exploration

Water level

9 Standard penetration resistance in blows per foot

0 20 40
Scale in Feet

Note:
Contact between soil units is interpolated between borings and represents our interpretation of subsurface conditions based on currently available data.

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Generalized Subsurface Cross Section B-B'

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Figure 4

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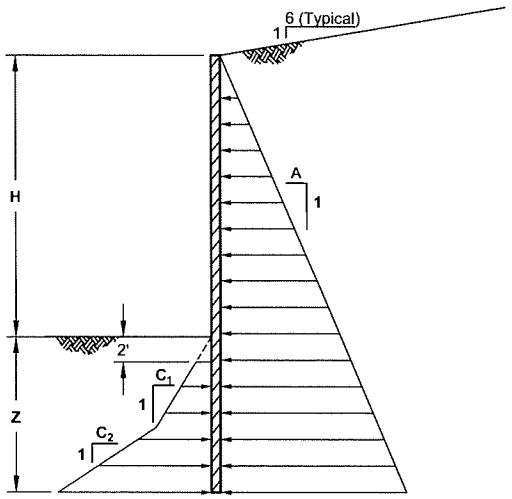
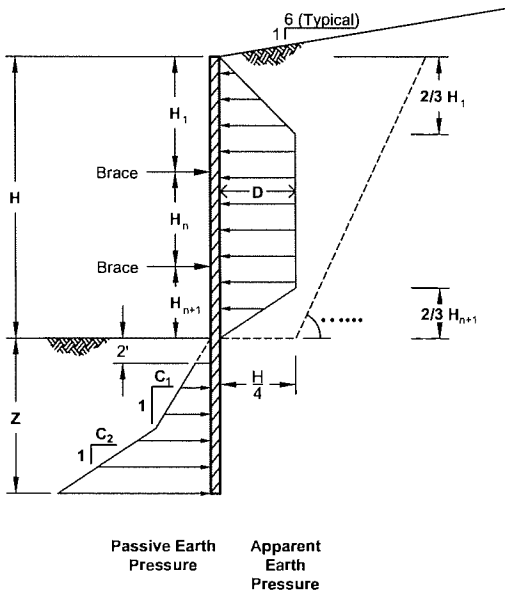


Cantilever Soldier Pile and Single-Braced Wall



Multiple-Braced Wall

Recommended Lateral Earth Pressures

	A	C_1 (Soil Units 1-2)	C_2 (Soil Unit 3)	D
Active	60 pcf	-	-	38H
Passive	-	215 pcf	350 pcf	-

Notes:

1. For design, add 2 feet to the retained height.
2. B and D are recommended equivalent uniform values.
3. All earth pressures are in units of pounds per square foot.
4. Minimum recommended embedment (Z) is 10 feet.
5. Passive pressures are allowable values and include a 1.5 factor of safety.
6. Passive pressure acts over 2.5 times the concreted diameter of the soldier pile or the pile spacing, whichever is less.
7. Apparent earth pressure and surcharge act over the pile spacing above the base of the excavation.
8. Active pressure acts over the pile diameter below the excavation.
9. Additional surcharge (e.g. from footings, large stockpiles, heavy equipment), must be added to these pressures.
10. All dimensions are in feet.
11. Diagrams are not to scale.

Legend

H	Total height of excavation (feet)
H_1	Depth to uppermost tieback (feet)
H_n	Height between tiebacks (feet)
H_{n+1}	Distance from base of excavation to lowermost tieback (feet)
Z	Embedment depth (feet)
A,B,C, ...	Earth pressure factors
--------	No-load zone

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Lateral Earth Pressures for Temporary Shoring

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Figure 5

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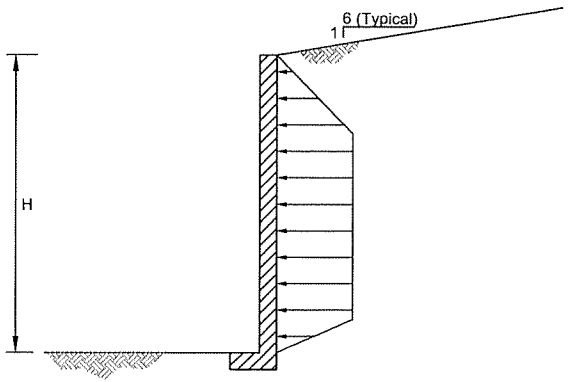
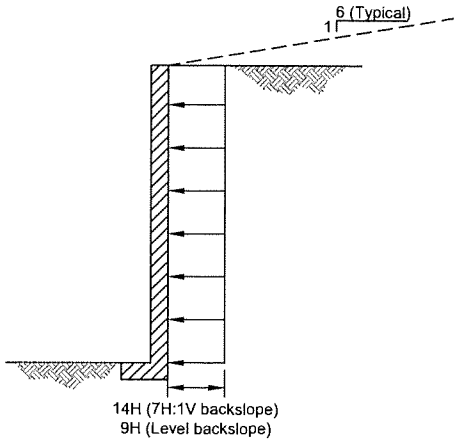


*Earth Pressure**

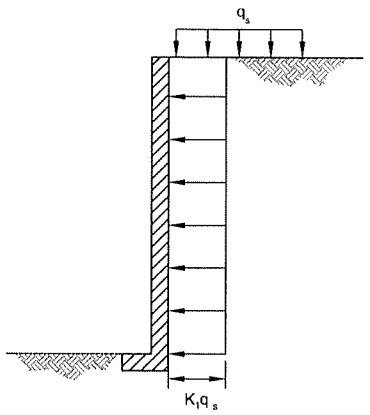
* The same earth pressure distributions determined for temporary shoring should be used for permanent walls constructed against shoring (See Figure 5).

+



Dynamic Inertial Increment

+



Uniform Surcharge

Notes

1. All pressures are in units of pounds per square foot.
2. Diagrams do not include surcharge loading due to adjacent structures; see Figure 7.
3. Diagrams not to scale.

Legend

H Height from bottom of excavation to ground surface (feet)

q_s Traffic surcharge

h_w Depth of excavation below groundwater table

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Lateral Pressures for Permanent Walls Constructed against Shoring

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Figure 6

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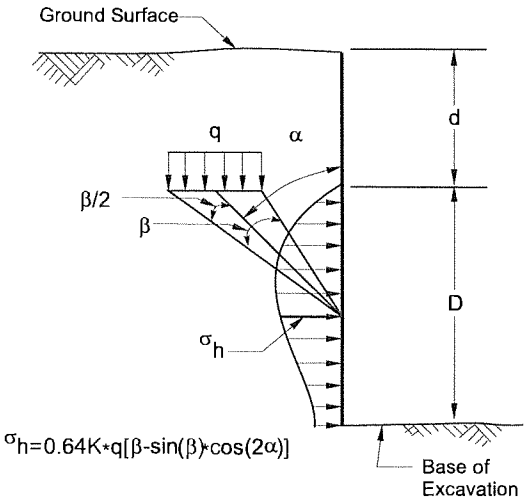
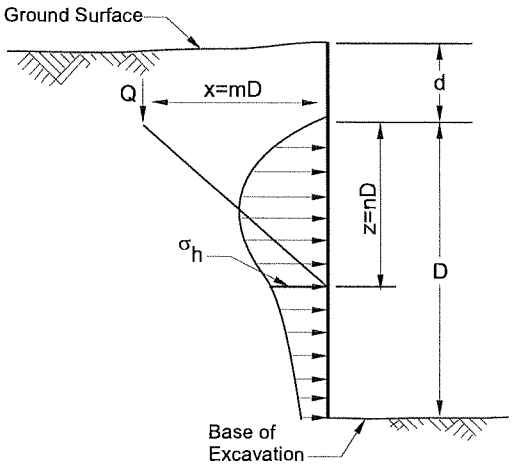
A. Strip Footing
Cross Section View



$\sigma_h = 0.64K*q[\beta - \sin(\beta)*\cos(2\alpha)]$

B(1). Small Isolated Footing
Cross Section View



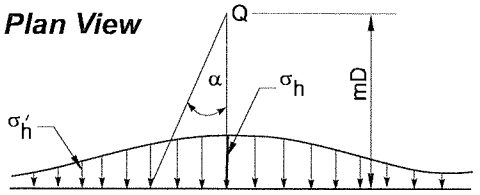
(For m> 0.4)

$$\sigma_h = K_1 \frac{1.77Q}{D^2} \frac{m^2n^2}{(m^2+n^2)^3}$$

(For m≤ 0.4)

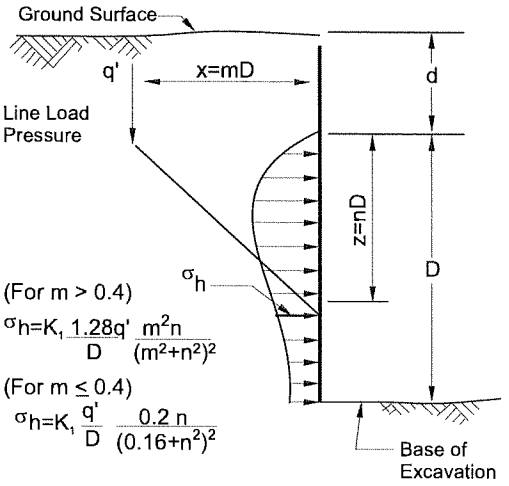
$$\sigma_h = K_1 \frac{0.28Q}{D^2} \frac{n^2}{(0.16+n^2)^3}$$

B(2). Plan View



$\sigma'_h = \sigma_h \cos^2(1.1\alpha)$

C. Continuous Wall Footing
Parallel to Excavation
Cross Section View



(For m > 0.4)

$$\sigma_h = K_1 \frac{1.28q'}{D} \frac{m^2n}{(m^2+n^2)^2}$$

(For m ≤ 0.4)

$$\sigma_h = K_1 \frac{q'}{D} \frac{0.2\,n}{(0.16+n^2)^2}$$

Definition and Units

Q	Footing Load in Pounds
D	Excavation Depth below Footing in Feet
d	Depth to Base of Footing in Feet
σ_h	Lateral Soil Pressure in PSF
q	Unit Loading Pressure in PSF
q'	Footing Load in Pounds per Foot
α, β	Radians

K_1	Conditions
0.35	Active earth pressure on a flexible wall (e.g., shoring)
0.5	At-rest conditions, where surcharge loads exist prior to excavation
1.0	At-rest conditions, where surcharge loads are applied after construction of permanent wall

Notes:
1. Lateral pressures from adjacent structures should be added to lateral pressures on Figures 5 and 6.
2. Wall footings acting other than parallel to the excavation can be treated as series of discrete point loads, using Approach B.
3. Contact Hart Crowser for surcharge recommendations, if necessary.

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Figure 7

Determination of Lateral Pressure Acting on Adjacent Shoring from Surcharge Load

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Mercer Island Center for the Arts
Mercer Island, Washington

APPENDIX A
Field Exploration Methods and Analysis

APPENDIX A

Field Exploration Methods and Analysis

This appendix documents the processes Hart Crowser used to determine the nature of the soils at the project site, and discusses:

- Explorations and their locations;
- Auger borings; and
- Standard Penetration Test procedures.

Explorations and Their Locations

The exploration logs in this appendix show our interpretation of the drilling, sampling, and testing data. These logs indicate the approximate depth where the soils change. Note that the soil changes may be gradual and may vary in depth across the site.

In the field, we classified the soil samples according to the methods shown on Figure A-1 - Key to Exploration Logs. This figure also provides a legend explaining the symbols and abbreviations used on the logs.

Figure 2 shows the explorations, located with a measuring tape from existing physical features. Elevations are referenced to the North American Vertical Datum of 1988 (NAVD88) and were estimated from the provided topographic survey.

Auger Borings

Borings were drilled with a 2.5-inch-inside-diameter, 6.5-inch-outside-diameter, hollow-stem auger and were advanced with a track-mounted drill rig subcontracted by Hart Crowser. The drilling was continuously observed by a geologist from Hart Crowser. A detailed field log was prepared for the boring. Using the Standard Penetration Test (SPT), we obtained samples at minimum 5-foot intervals.

Standard Penetration Test Procedures

The SPT is an approximate measure of soil density and consistency. To be useful, the results must be interpreted in conjunction with other tests. The SPT (as described in ASTM D 1586) was used to obtain disturbed soil samples.

This test employs a standard 2-inch-outside-diameter, split-spoon sampler. Using a 140-pound autohammer, free-falling 30 inches, the sampler is driven into the soil for 18 inches. The number of blows required to drive the sampler the last 12 inches is the Standard Penetration Resistance. This resistance, or blow count, measures the relative density of granular soils and the consistency of cohesive soils. The blow counts are plotted on the boring logs at their respective sample depths.

Soil samples were recovered from the split-spoon sampler, field classified, and placed into watertight jars. They were taken to Hart Crowser's laboratory for further testing.

In the Event of Hard Driving

Occasionally, very dense materials preclude driving the total 18-inch sample. When this happens, the penetration resistance is entered on logs as follows:

Penetration less than 6 inches. The log indicates the total number of blows over the number of inches of penetration.

Penetration greater than 6 inches. The blow count noted on the log is the sum of the total number of blows completed after the first 6 inches of penetration. This sum is expressed over the number of inches driven that exceed the first 6 inches. The number of blows needed to drive the first 6 inches are not reported. For example, a blow count series of 12 blows for 6 inches, 30 blows for 6 inches, and 50 (the maximum number of blows counted within a 6-inch increment for SPT) for 3 inches would be recorded as 80/9.

Key to Exploration Logs

Sample Description

Classification of soils in this report is based on visual field and laboratory observations which include density/consistency, moisture condition, grain size, and plasticity estimates and should not be construed to imply field nor laboratory testing unless presented herein. Visual-manual classification methods of ASTM D 2488 were used as an identification guide.

Soil descriptions consist of the following:
Density/consistency, moisture, color, minor constituents, MAJOR CONSTITUENT, additional remarks.

Density/Consistency

Soil density/consistency in borings is related primarily to the Standard Penetration Resistance. Soil density/consistency in test pits and probes is estimated based on visual observation and is presented parenthetically on the logs.

SAND or GRAVEL Density	Standard Penetration Resistance (N) in Blows/Foot	SILT or CLAY Consistency	Standard Penetration Resistance (N) in Blows/Foot	Approximate Shear Strength in TSF
Very loose	0 to 4	Very soft	0 to 2	<0.125
Loose	4 to 10	Soft	2 to 4	0.125 to 0.25
Medium dense	10 to 30	Medium stiff	4 to 8	0.25 to 0.5
Dense	30 to 50	Stiff	8 to 15	0.5 to 1.0
Very dense	>50	Very stiff	15 to 30	1.0 to 2.0
		Hard	>30	>2.0

Sampling Test Symbols

- 1.5" I.D. Split Spoon
- Grab (Jar)
- 3.0" I.D. Split Spoon
- Shelby Tube (Pushed)
- Bag
- Cuttings
- Core Run

Moisture

Dry	Little perceptible moisture
Damp	Some perceptible moisture, likely below optimum
Moist	Likely near optimum moisture content
Wet	Much perceptible moisture, likely above optimum

Minor Constituents

Minor Constituents	Estimated Percentage
Trace	<5
Slightly (clayey, silty, etc.)	5 - 12
Clayey, silty, sandy, gravelly	12 - 30
Very (clayey, silty, etc.)	30 - 50

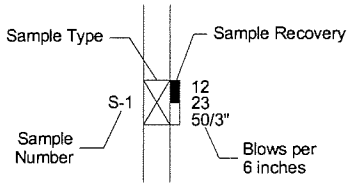
Laboratory Test Symbols

GS	Grain Size Classification
CN	Consolidation
UU	Unconsolidated Undrained Triaxial
CU	Consolidated Undrained Triaxial
CD	Consolidated Drained Triaxial
QU	Unconfined Compression
DS	Direct Shear
K	Permeability
PP	Pocket Penetrometer Approximate Compressive Strength in TSF
TV	Torvane Approximate Shear Strength in TSF
CBR	California Bearing Ratio
MD	Moisture Density Relationship
AL	Atterberg Limits
	Water Content in Percent Liquid Limit Natural Plastic Limit
PID	Photoionization Detector Reading
CA	Chemical Analysis
DT	In Situ Density in PCF
OT	Tests by Others

Groundwater Indicators

- Groundwater Level on Date or (ATD) At Time of Drilling
- Groundwater Seepage (Test Pits)

Sample Key



SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		(LITTLE OR NO FINES)		GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVELS WITH FINES		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
		(APPRECIABLE AMOUNT OF FINES)		GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	SAND AND SANDY SOILS	CLEAN SANDS		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		(LITTLE OR NO FINES)		SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SANDS WITH FINES		SM	SILTY SANDS, SAND - SILT MIXTURES
		(APPRECIABLE AMOUNT OF FINES)		SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

HARTCROWSER

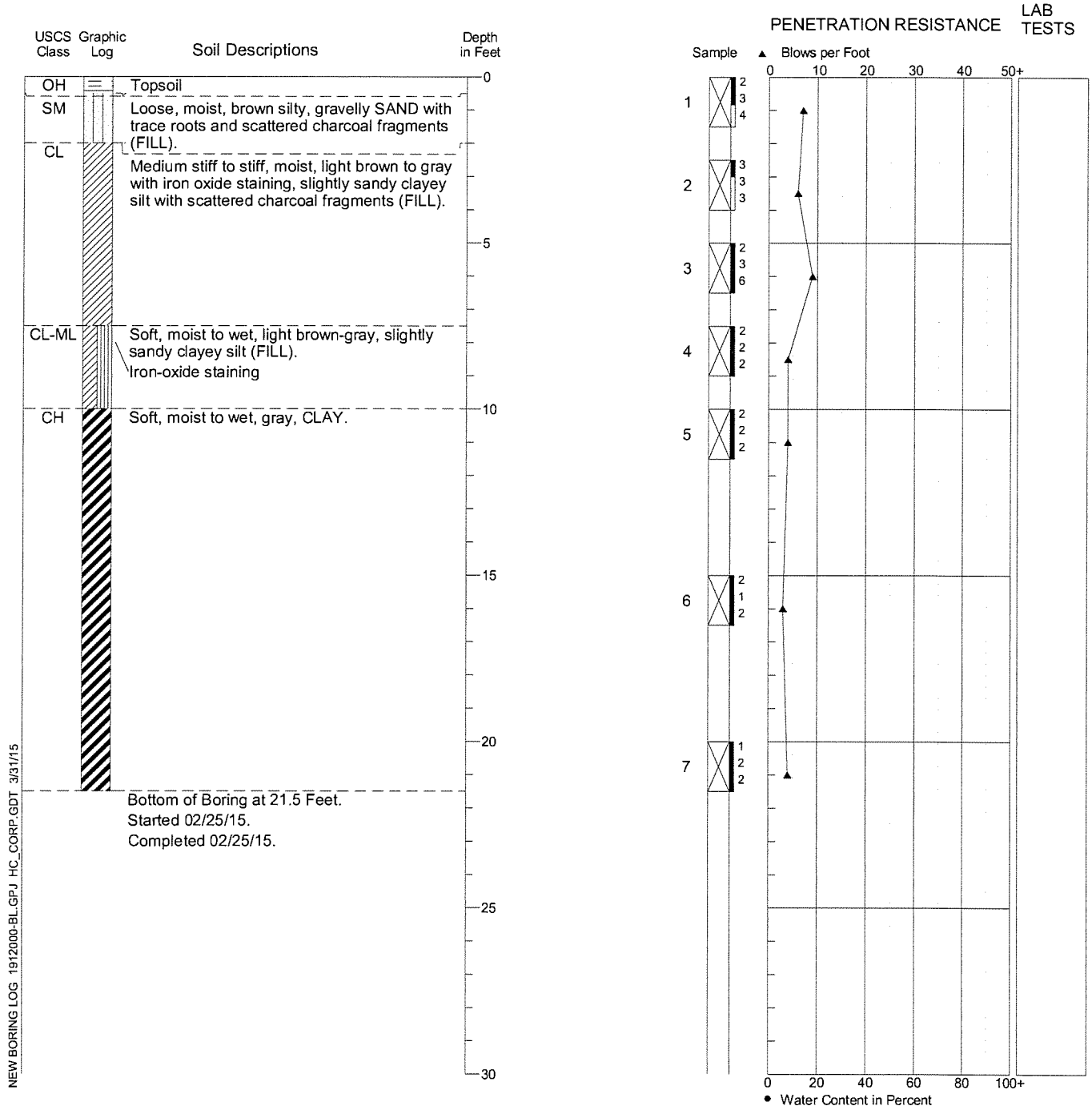
19120-00 *2/15*

Figure A-1

Boring Log HC-1

Approx. Location: 47.581844, -122.235290
Approximate Ground Surface Elevation: 87
Horizontal Datum: WGS84
Vertical Datum: NAVD88

Drill Equipment: Bobcat Minitrack (MT55)
Hammer Type: SPT
Hole Diameter: 6.5 inches
Logged By: M. Smith Reviewed By: M. Veenstra



NEW BORING LOG 1912000-BL.GPJ HC_CORP.GDT 3/31/15

1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. USCS designations are based on visual manual classification (ASTM D 2488) unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling (ATD) or for date specified. Level may vary with time.

HARTCROWSER

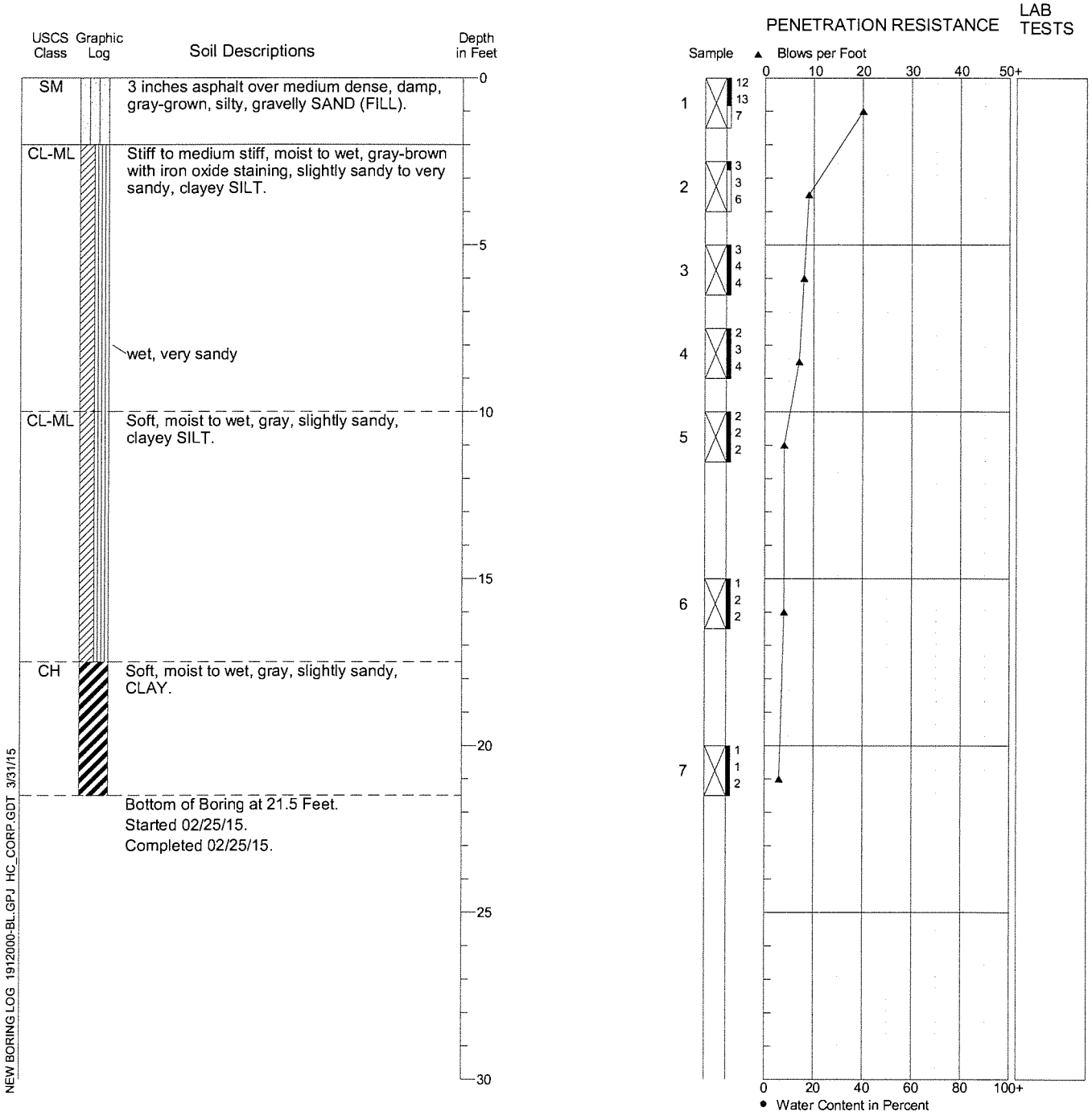
19120-00 *2/15*

Figure A-2

Boring Log HC-2

Approx. Location: 47.581633, -122.235440
Approximate Ground Surface Elevation: 89
Horizontal Datum: WGS84
Vertical Datum: NAVD88

Drill Equipment: Bobcat Minitrack (MT55)
Hammer Type: SPT
Hole Diameter: 6.5 inches
Logged By: M. Smith Reviewed By: M. Veenstra



NEW BORING LOG 1912000-BL.GPJ HC_CORP.GDT 3/31/15

1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. USCS designations are based on visual manual classification (ASTM D 2488) unless otherwise supported by laboratory testing (ASTM D 2487).
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HARTCROWSER

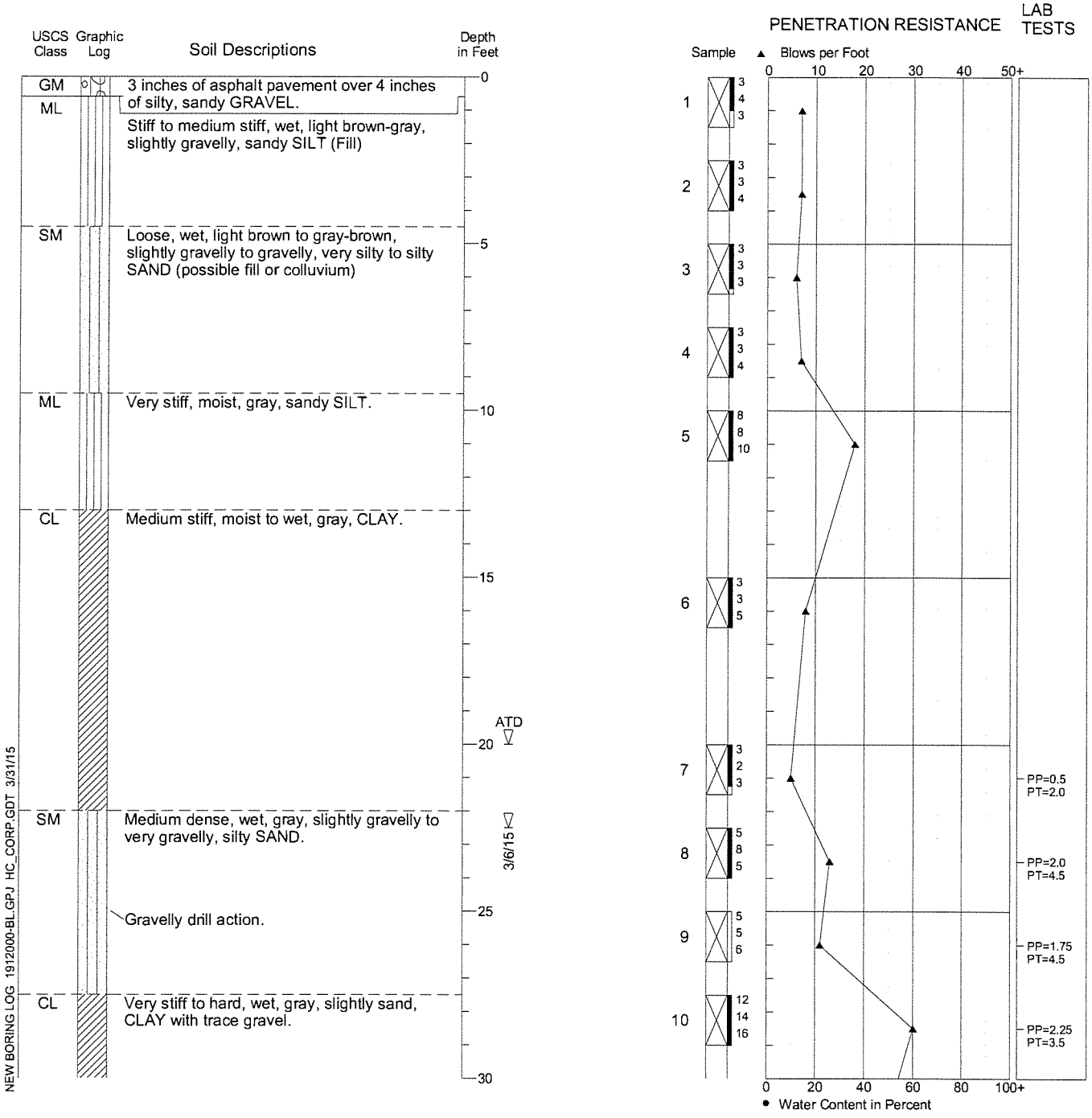
19120-00 *2/15*

Figure A-3

Boring Log HC-3

Approx. Location: 47.581493, -122.235618
Approximate Ground Surface Elevation: 90
Horizontal Datum: WGS84
Vertical Datum: NAVD88

Drill Equipment: Bobcat Minitrack (MT55)
Hammer Type: SPT
Hole Diameter: 6.5 inches
Logged By: M. Smith Reviewed By: M. Veenstra

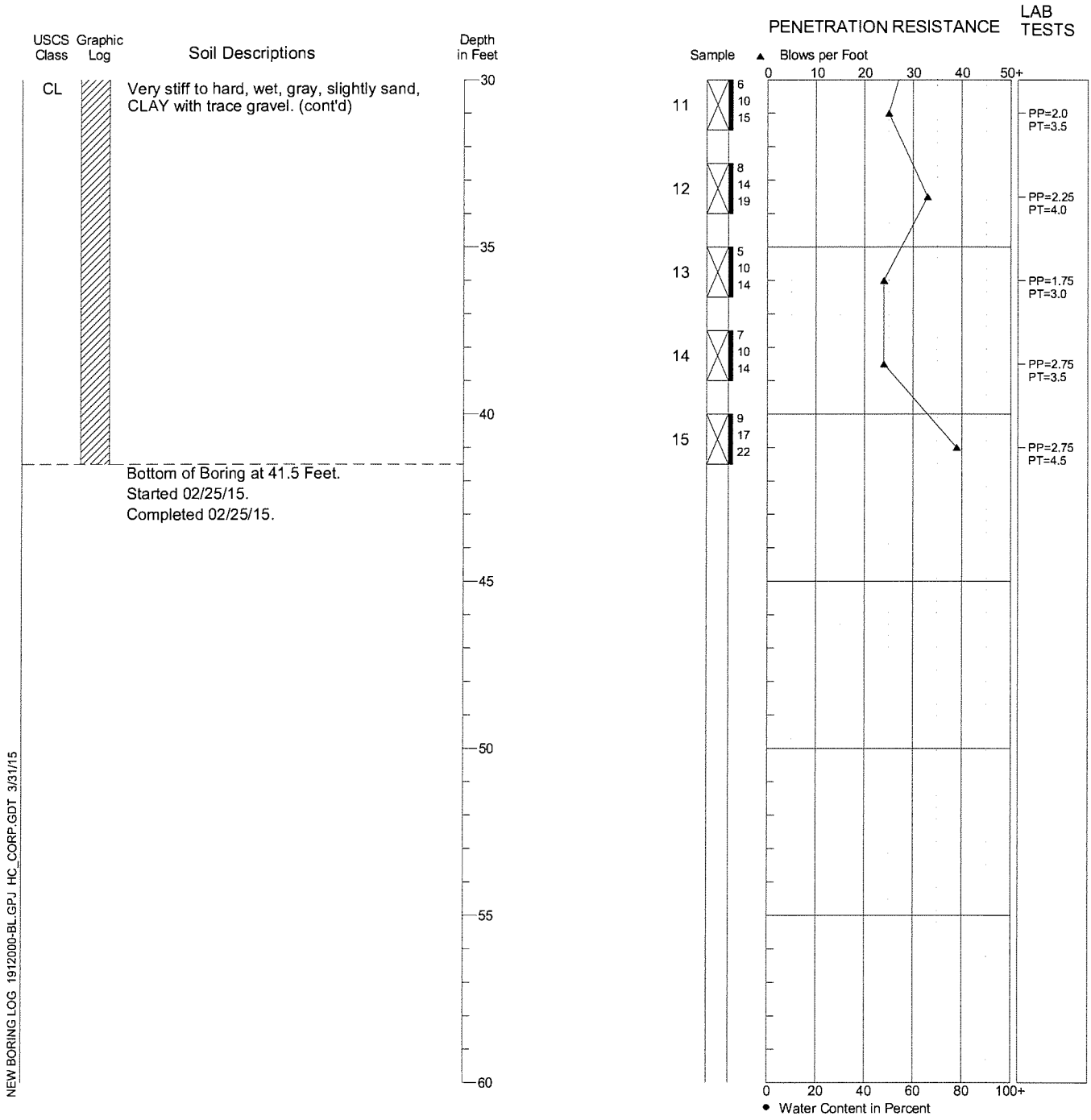


1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. USCS designations are based on visual manual classification (ASTM D 2488) unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling (ATD) or for date specified. Level may vary with time.

Boring Log HC-3

Approx. Location: 47.581493, -122.235618
Approximate Ground Surface Elevation: 90
Horizontal Datum: WGS84
Vertical Datum: NAVD88

Drill Equipment: Bobcat Minitrack (MT55)
Hammer Type: SPT
Hole Diameter: 6.5 inches
Logged By: M. Smith Reviewed By: M. Veenstra



NEW BORING LOG 1912000-BL.GPJ HC_CORP.GDT 3/31/15

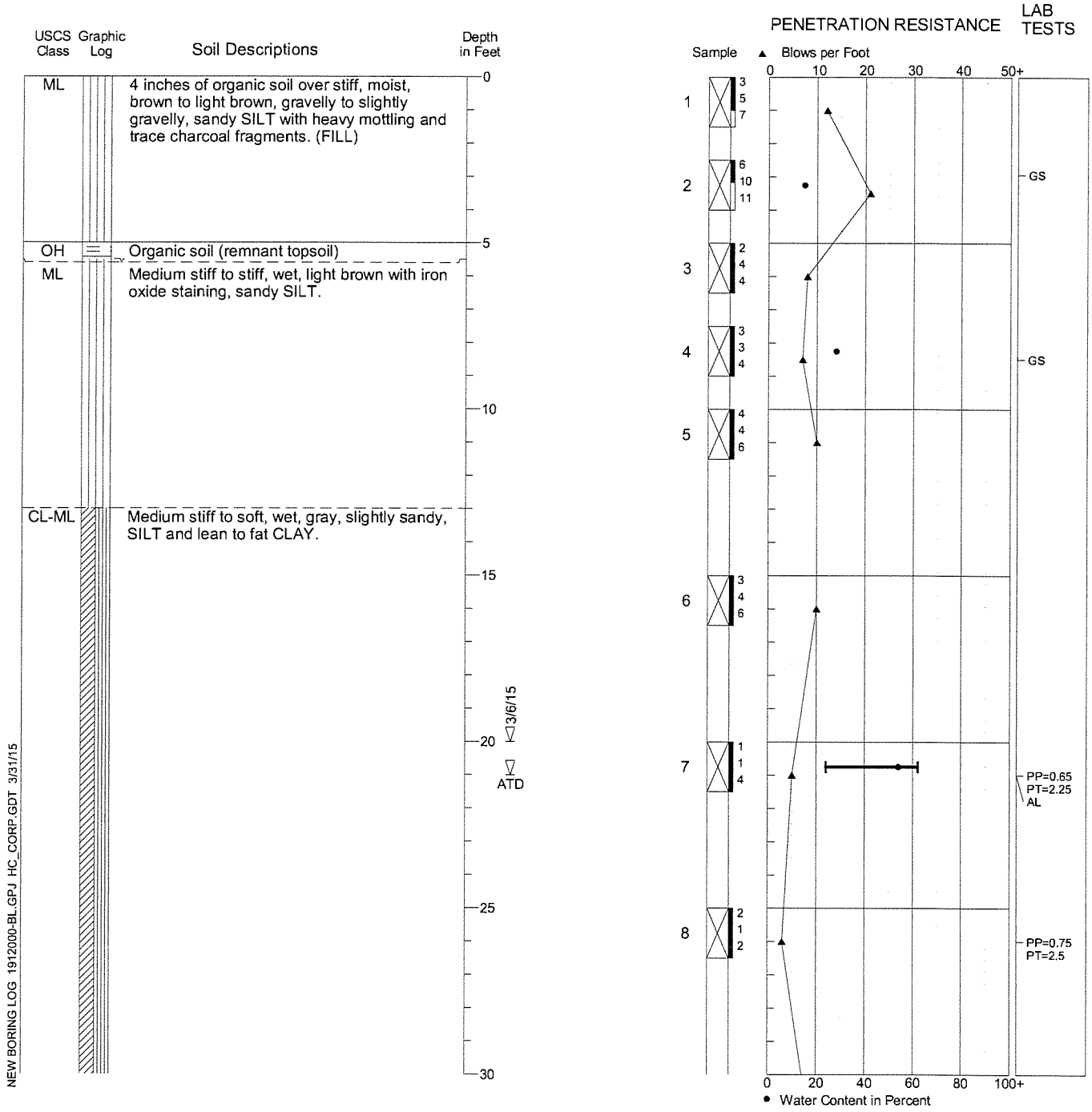
1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. USCS designations are based on visual manual classification (ASTM D 2488) unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling (ATD) or for date specified. Level may vary with time.

HARTCROWSER

Boring Log HC-4

Approx. Location: 47.581246, -122.235387
Approximate Ground Surface Elevation: 92
Horizontal Datum: WGS84
Vertical Datum: NAVD88

Drill Equipment: Bobcat Minitrack (MT55)
Hammer Type: SPT
Hole Diameter: 6.5 inches
Logged By: M. Smith Reviewed By: M. Veenstra



1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. USCS designations are based on visual manual classification (ASTM D 2488) unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling (ATD) or for date specified. Level may vary with time.

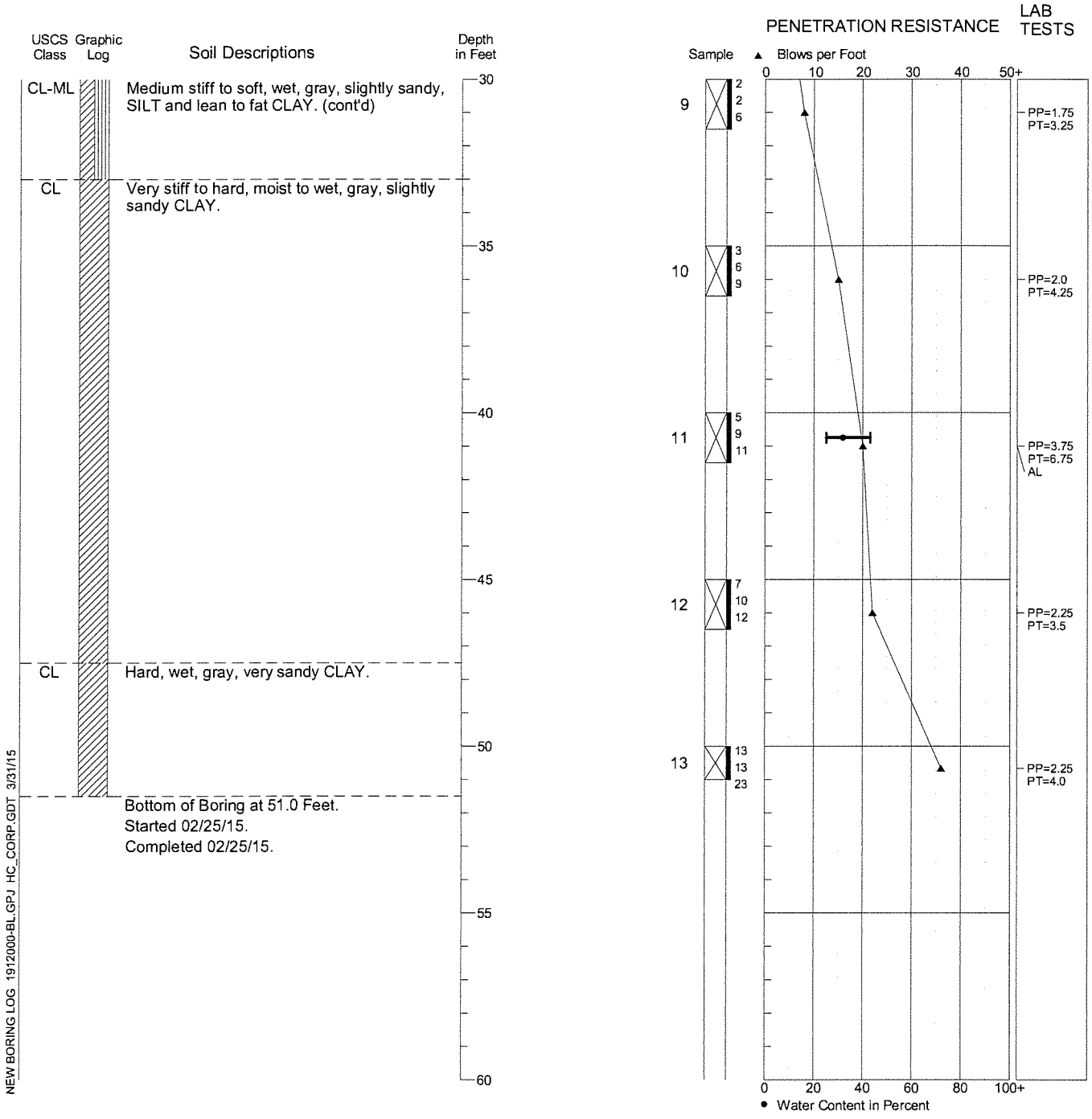
HARTCROWSER

19120-00 *2/15*
Figure A-5 *1/2*

Boring Log HC-4

Approx. Location: 47.581246, -122.235387
Approximate Ground Surface Elevation: 92
Horizontal Datum: WGS84
Vertical Datum: NAVD88

Drill Equipment: Bobcat Minitrack (MT55)
Hammer Type: SPT
Hole Diameter: 6.5 inches
Logged By: M. Smith Reviewed By: M. Veenstra



1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. USCS designations are based on visual manual classification (ASTM D 2488) unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling (ATD) or for date specified. Level may vary with time.

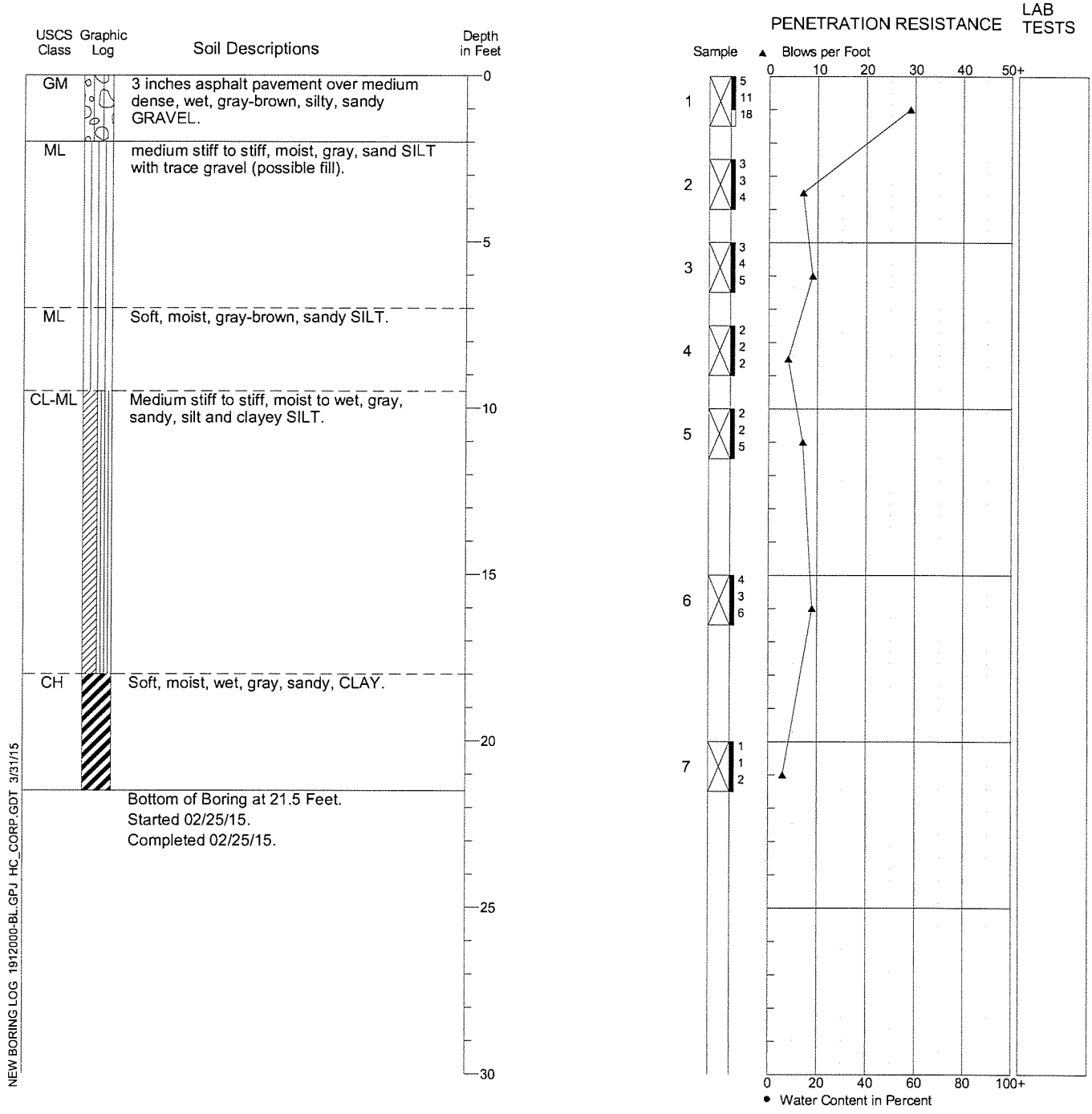
HARTCROWSER

19120-00 *2/15*
Figure A-5 *2/2*

Boring Log HC-5

Approx. Location: 47.581433, -122.235326
Approximate Ground Surface Elevation: 88
Horizontal Datum: WGS84
Vertical Datum: NAVD88

Drill Equipment: Bobcat Minitrack (MT55)
Hammer Type: SPT
Hole Diameter: 6.5 inches
Logged By: M. Smith Reviewed By: M. Veenstra



NEW BORING LOG 1912000-BL.GPJ HC_CORP.GDT 3/31/15

1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. USCS designations are based on visual manual classification (ASTM D 2488) unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling (ATD) or for date specified. Level may vary with time.

HARTCROWSER

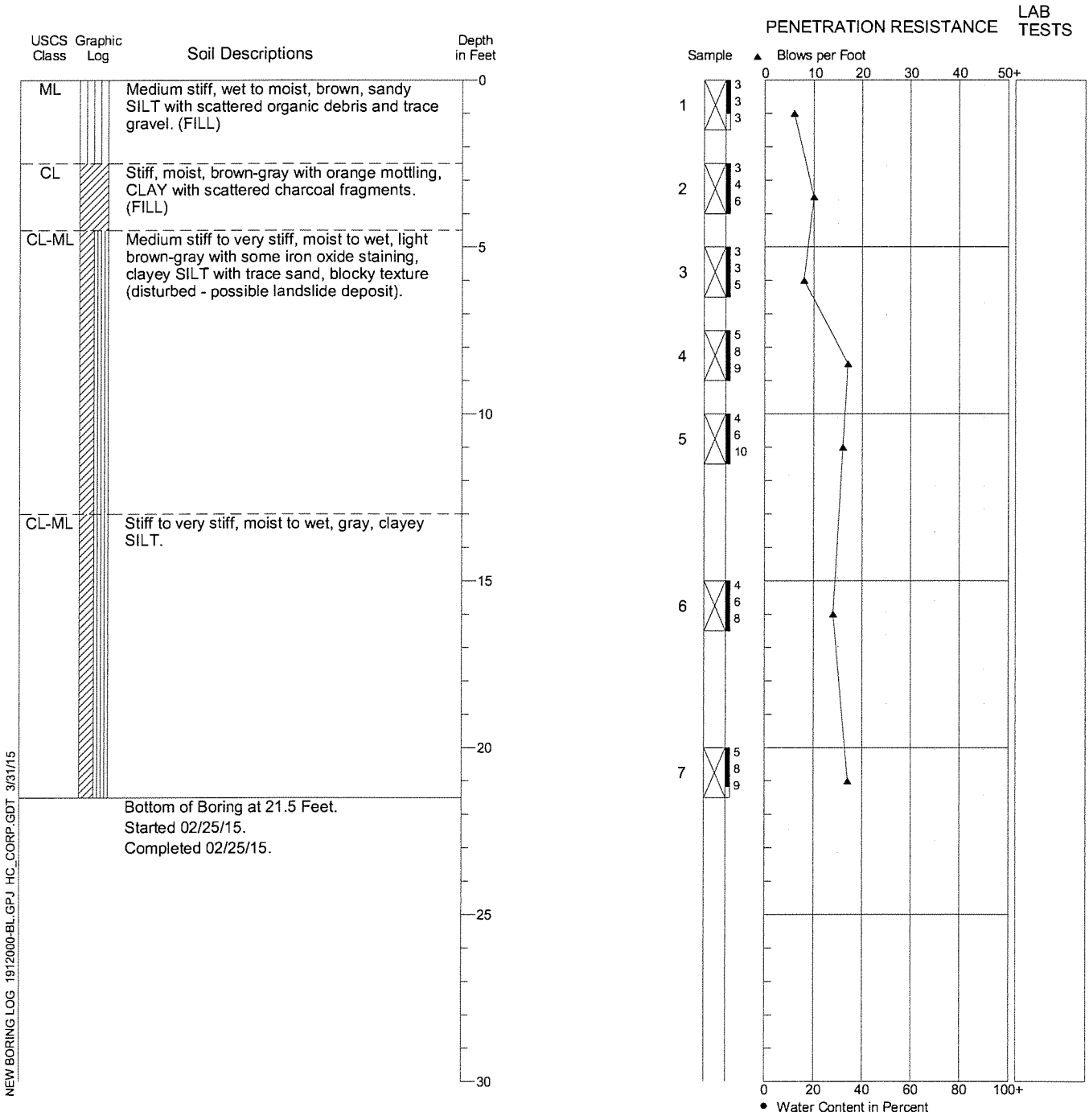
19120-00 *2/15*

Figure A-6

Boring Log HC-6

Approx. Location: 47.581256, -122.235803
Approximate Ground Surface Elevation: 99
Horizontal Datum: WGS84
Vertical Datum: NAVD88

Drill Equipment: Bobcat Minitrack (MT55)
Hammer Type: SPT
Hole Diameter: 6.5 inches
Logged By: M. Smith Reviewed By: M. Veenstra



NEW BORING LOG 1912000-BL.GPJ HC_CORP.GDT 3/31/15

1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. USCS designations are based on visual manual classification (ASTM D 2488) unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling (ATD) or for date specified. Level may vary with time.

HARTCROWSER

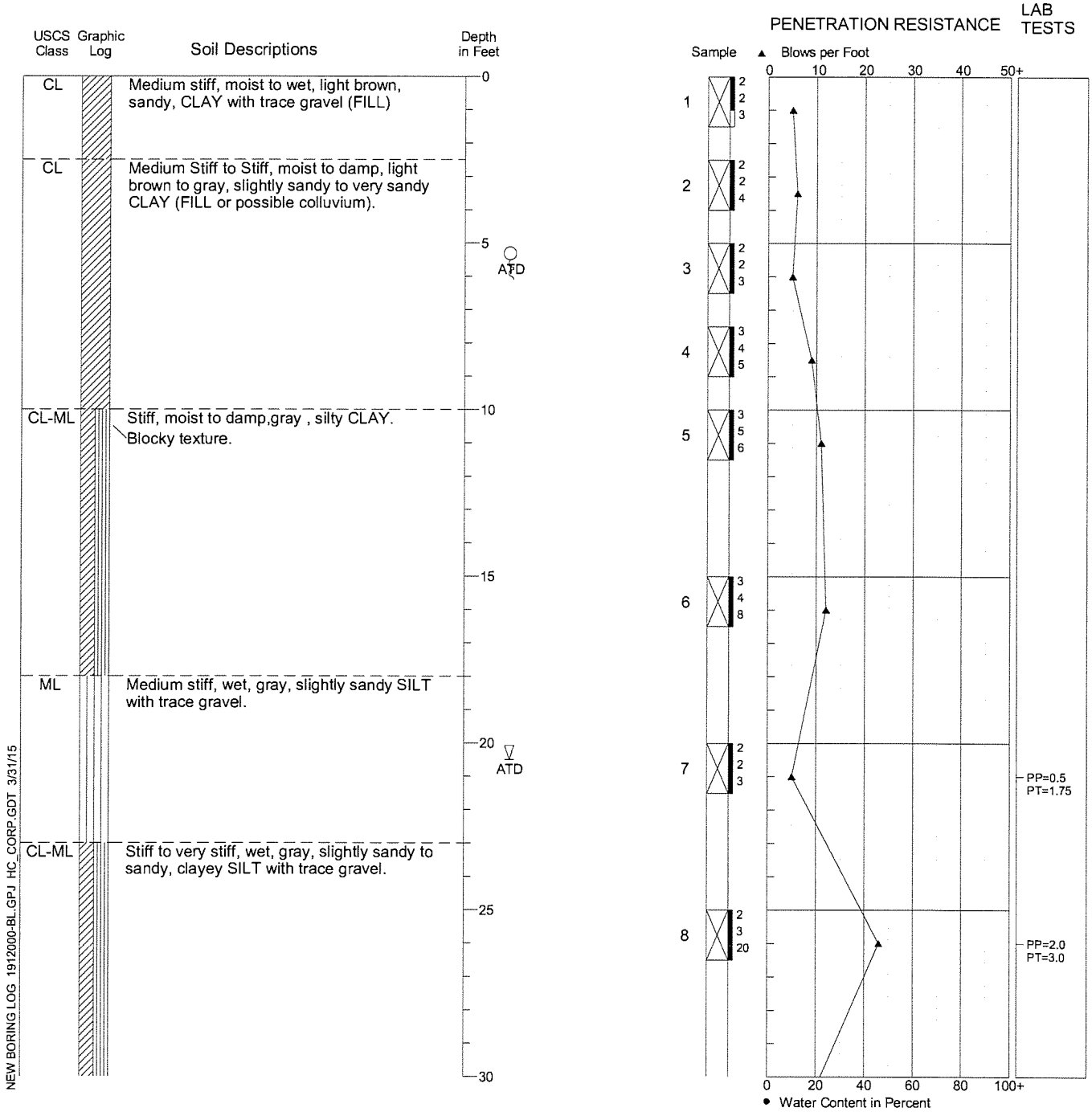
19120-00 *2/15*

Figure A-7

Boring Log HC-7

Approx. Location: 47.581010, -122.235996
Approximate Ground Surface Elevation: 93
Horizontal Datum: WGS84
Vertical Datum: NAVD88

Drill Equipment: Bobcat Minitrack (MT55)
Hammer Type: SPT
Hole Diameter: 6.5 inches
Logged By: M. Smith Reviewed By: M. Veenstra



1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. USCS designations are based on visual manual classification (ASTM D 2488) unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling (ATD) or for date specified. Level may vary with time.

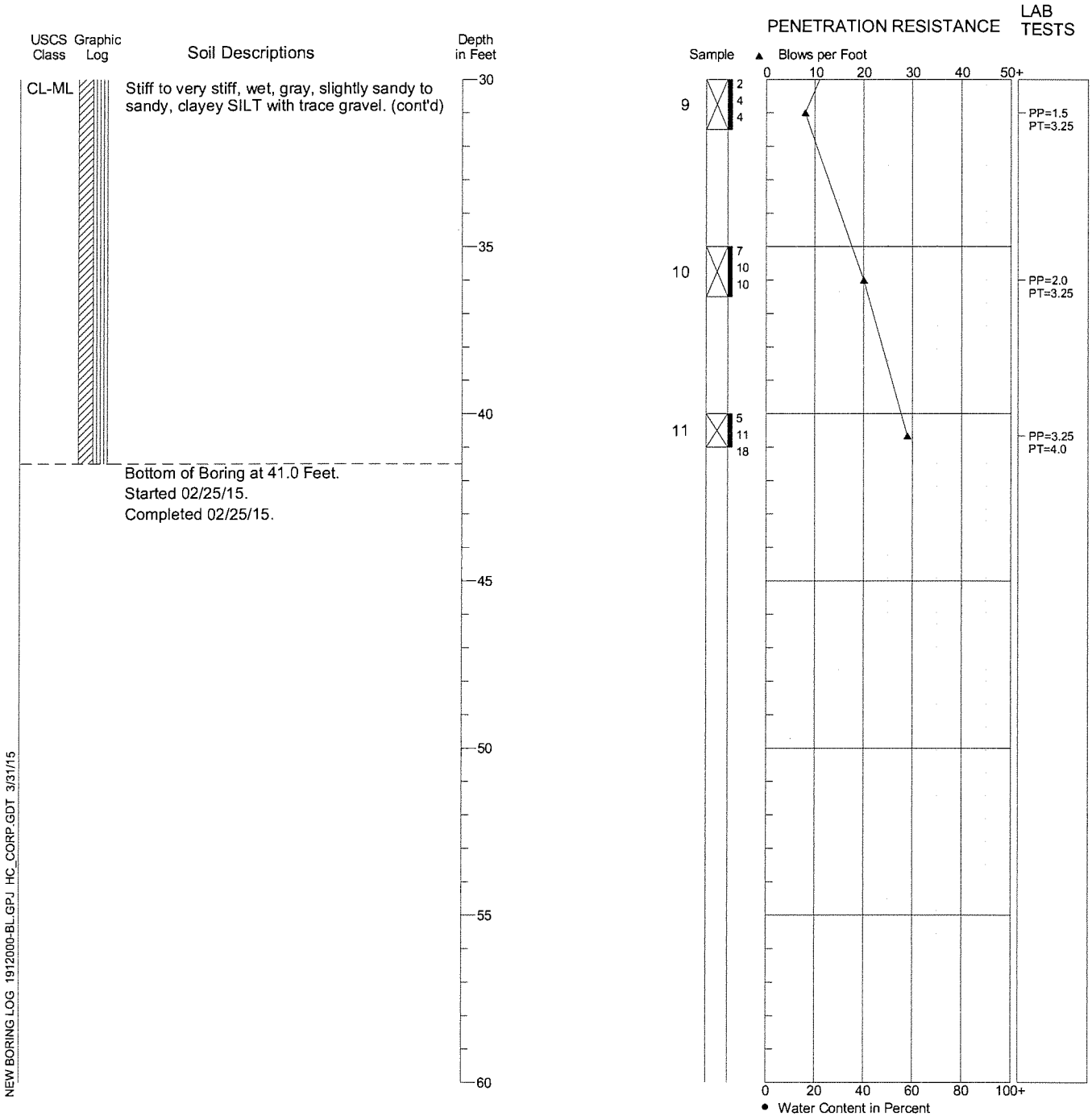
HARTCROWSER

19120-00 *2/15*
Figure A-8 *1/2*

Boring Log HC-7

Approx. Location: 47.581010, -122.235996
Approximate Ground Surface Elevation: 93
Horizontal Datum: WGS84
Vertical Datum: NAVD88

Drill Equipment: Bobcat Minitrack (MT55)
Hammer Type: SPT
Hole Diameter: 6.5 inches
Logged By: M. Smith Reviewed By: M. Veenstra



1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. USCS designations are based on visual manual classification (ASTM D 2488) unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling (ATD) or for date specified. Level may vary with time.

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APPENDIX B
Laboratory Testing Program

APPENDIX B

Laboratory Testing Program

A laboratory testing program was performed for this study to evaluate the basic index and geotechnical engineering properties of the site soils. Both disturbed and relatively undisturbed samples were tested. The tests performed and the procedures followed are outlined below.

Soil Classification

Soil samples from the explorations were visually classified in the field and then taken to our laboratory where the classifications were verified in a relatively controlled laboratory environment. Field and laboratory observations include density/consistency, moisture condition, and grain size and plasticity estimates.

The classifications of selected samples were checked by laboratory tests such as Atterberg limits determinations and grain size analysis. Classifications were made in general accordance with the Unified Soil Classification (USC) System, ASTM D 2487, as presented on Figure B-1.

Atterberg Limits

We determined Atterberg limits for selected fine-grained soil samples. The liquid limit and plastic limit were determined in general accordance with ASTM D4318-84. The results of the Atterberg limits analyses and the plasticity characteristics are summarized in the Liquid and Plastic Limits Test Report, Figures B-2 and B-3. This relates the plasticity index (liquid limit minus the plastic limit) to the liquid limit. The results of the Atterberg limits tests are shown graphically on the boring logs as well as where applicable on figures presenting various other test results.

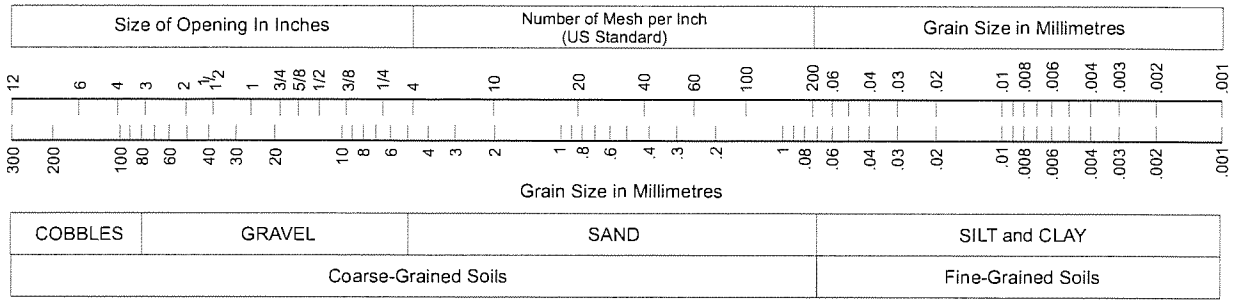
Grain Size Analysis

Grain size distribution was analyzed on representative samples in general accordance with ASTM D 422. Wet sieve analysis was used to determine the size distribution greater than the US No. 200 mesh sieve. The size distribution for particles smaller than the No. 200 mesh sieve was determined by the hydrometer method for a selected number of samples. The results of the tests are presented as curves plotting percent finer by weight versus grain size.

Water Content Determination

Water content was determined for several samples in general accordance with ASTM D 2216, as soon as possible following their arrival in our laboratory. Water content was not determined for very small samples or samples where large gravel content would result in unrepresentative values. The results of these tests are plotted at the respective sample depth on the exploration logs.

Unified Soil Classification (USC) System
Soil Grain Size



Coarse-Grained Soils

G W	G P	G M	G C	S W	S P	S M	S C
Clean GRAVEL <5% fines	*	GRAVEL with >12% fines		Clean SAND <5% fines	*	SAND with >12% fines	
GRAVEL >50% coarse fraction larger than No. 4				SAND >50% coarse fraction smaller than No. 4			
Coarse-Grained Soils >50% larger than No. 200 sieve							

G W and S W $\left(\frac{D_{60}}{D_{10}}\right)$ >4 for G W >6 for S W & $1 \leq \left(\frac{(D_{30})^2}{D_{10} \times D_{60}}\right) \leq 3$

G P and S P Clean GRAVEL or SAND not meeting requirements for G W and S W

G M and S M Atterberg limits below A line with PI <4

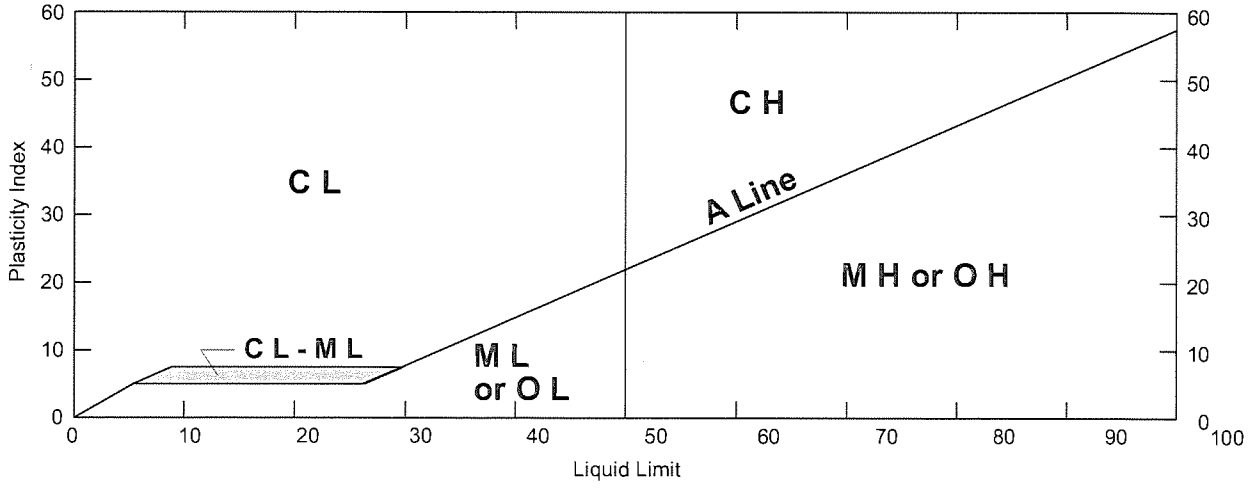
G C and S C Atterberg limits above A Line with PI >7

* Coarse-grained soils with percentage of fines between 5 and 12 are considered borderline cases requiring use of dual symbols.

D_{10}, D_{30}, and D_{60} are the particles diameter of which 10, 30, and 60 percent, respectively, of the soil weight are finer.

Fine-Grained Soils

M L	C L	O L	M H	C H	O H	Pt
SILT	CLAY	Organic	SILT	CLAY	Organic	Highly Organic Soils
Soils with Liquid Limit <50%			Soils with Liquid Limit >50%			
Fine-Grained Soils >50% smaller than No. 200 sieve						



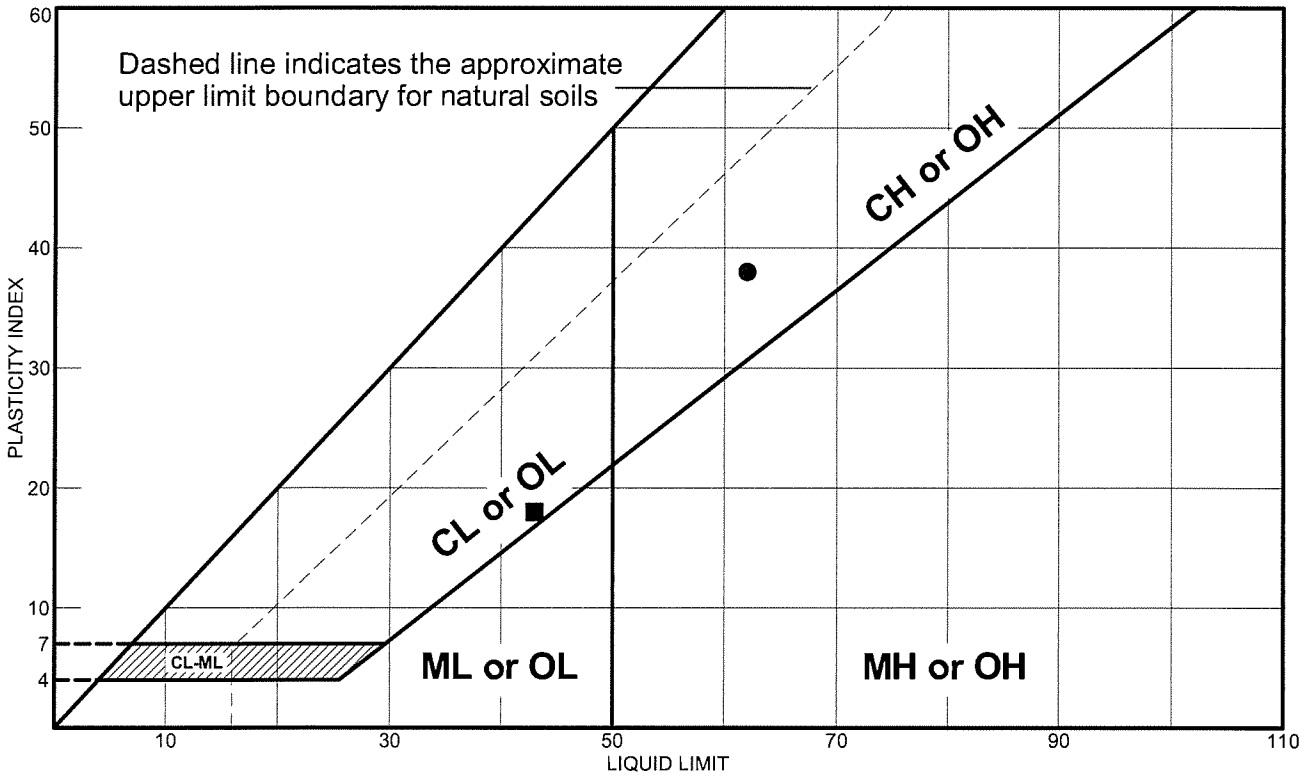
HARTCROWSER

SRF Grain Size (B-1).cdr 3/06

19122-00 2/15

Figure B-1

Liquid and Plastic Limits Test Report



Location + Description	LL	PL	PI	-200	USCS
● Source: HC-4 Sample No.: 7 Depth: 20 Clay	62	24	38		CH
■ Source: HC-4 Sample No.: 11 Depth: 40 Clay	43	25	18		CL

Remarks:

●

■

Project: Mercer Island Center for the Arts

Client: Mercer Island Center for the Arts

Location: Mercer Island, WA

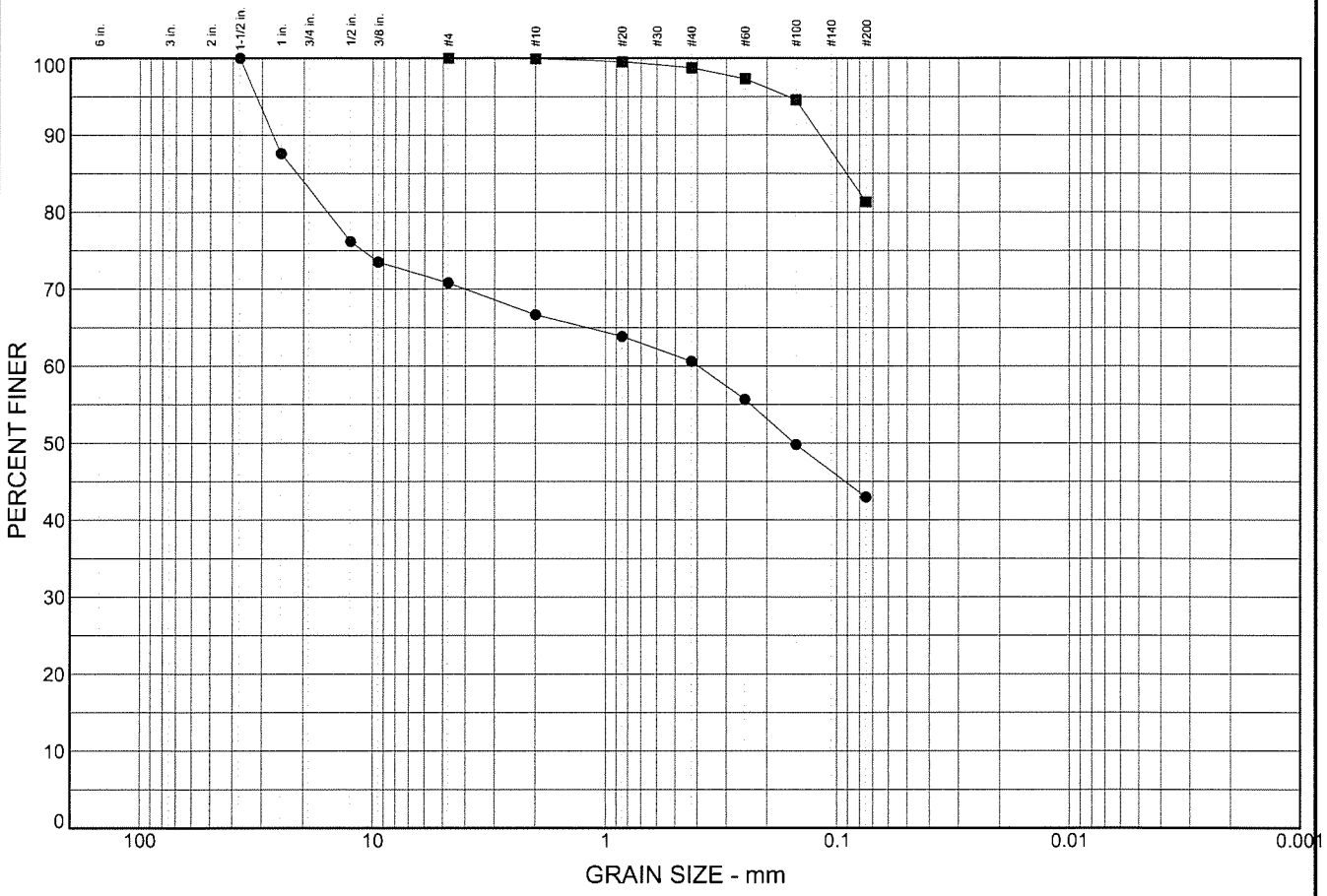
HARTCROWSER

19120-00 *2/15*

Figure B- 2

ATTERBERG LIMITS 1912000-BL.GPJ HC_CORP.GDT 3/27/15

Particle Size Distribution Test Report



	% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
●	0.0	29.2	27.8	43.0	
■	0.0	0.0	18.7	81.3	

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			21.324	0.398	0.152					
■			0.091							

MATERIAL DESCRIPTION	USCS	NAT. MOIST.
● sandy clayey GRAVEL	GC	14.8
■ sandy SILT	ML	27.9

Remarks:

●

■

Project: Mercer Island Center for the Arts

Client: Mercer Island Center for the Arts

● Source: HC 4 Sample No.: 2 Depth: 2.5 to 4.0

■ Source: HC 4 Sample No.: 4 Depth: 7.5 to 9.0

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19120-00 2/15

Figure B-3

GRAIN SIZE 1912000-BL.GPJ HC_CORP.GDT 3/27/15

APPENDIX C
Historical Explorations

Historical Explorations

Historical exploration logs are included in this appendix as follows:

Hart Crowser 1980. Design Phase Subsurface Explorations and Geotechnical Engineering Study, Proposed Office Building And Parking Structure for Farmers New World Life Insurance Company, Mercer Island, Washington. January 4, 1980. J-857-01.

Shannon & Wilson 1985. Preliminary Geotechnical Report, Mercer Island Civic Center, Mercer Island, Washington. August, 1985. Partial report accessed from the DNR Subsurface Geology Information System, Document ID 13758, https://fortress.wa.gov/dnr/geology.

Logs and test reports by others are included as they were produced by others for reference only and Hart Crowser is not responsible for the accuracy or completeness of the information presented in the logs. Approximate locations of the explorations by others are shown on Figure 2; actual locations may differ from those shown.

Area: Mercer Island

Status:

DocID 13758

Source: City of Mercer Island DSG-Archive

Local ID#: 8978

Local ID#2:

Site Address 3249 78th Ave SE

Date Copied: 11/3/04 By: PTI

- [x] **Title page with the following information:**
  - *Company (Author) name*
  - *Report date*
  - *Project Name*
  - *Company's job number*
  - *Site address*
- [x] Executive Summary / Introduction of the report
- [x] Table of contents
- [x] Project Location Map / Vicinity Map
- [x] **Site / Exploration Plans, Boring Location Plans**
- [x] Cross-sections / Subsurface profiles
- [x] **Exploration Logs**
- [ ] Monitoring Well Logs
- [ ] Cone Penetrometer Logs
- [ ] Groundwater Elevation Tables / Data

- [ ] Includes data from Previous Reports
- [ ] No new data /data review
- [ ] Missing Data / Illegible Data
  Explanation _____

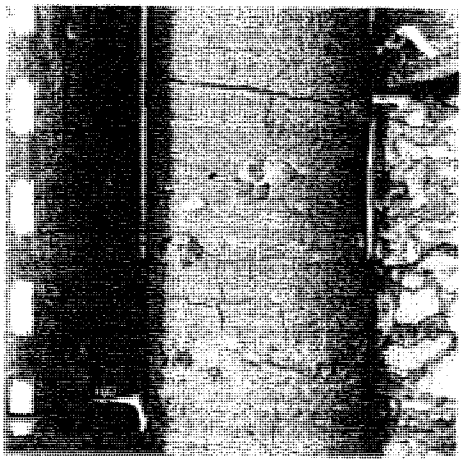
Comments: _____

City Hall construction Bot 3 of 4

ArcView RM Layers RW

Checked RW Checked AF

Preliminary Geotechnical Report
Mercer Island Civic Center
Mercer Island, Washington

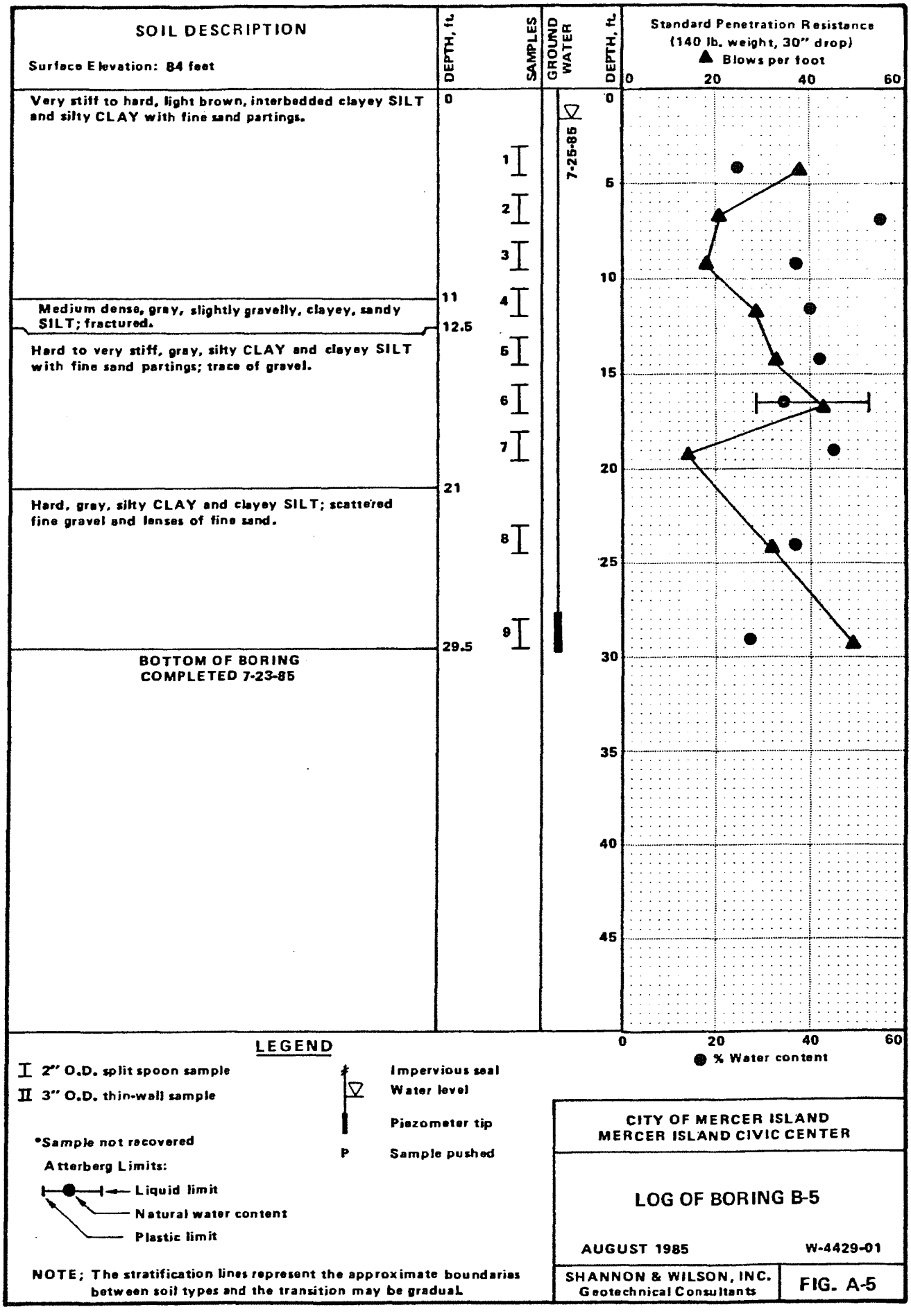


City of Mercer Island
3505 88th Avenue S.E.
Mercer Island, Washington 98040

August 1985

SHANNON & WILSON, INC.

W-4429-01


SOIL DESCRIPTION
Surface Elevation: 84 feet
DEPTH, ft.
SAMPLES
GROUND WATER
DEPTH, ft.
Standard Penetration Resistance
(140 lb. weight, 30" drop)
▲ Blows per foot
0
20
40
60
Very stiff to hard, light brown, interbedded clayey SILT and silty CLAY with fine sand partings.
0
1
2
3
7-25-85
11
Medium dense, gray, slightly gravelly, clayey, sandy SILT; fractured.
12.5
4
5
Hard to very stiff, gray, silty CLAY and clayey SILT with fine sand partings; trace of gravel.
6
7
21
Hard, gray, silty CLAY and clayey SILT; scattered fine gravel and lenses of fine sand.
8
9
29.5
BOTTOM OF BORING
COMPLETED 7-23-85
0
5
10
15
20
25
30
35
40
45
0
20
40
60
● % Water content
LEGEND
I 2" O.D. split spoon sample
II 3" O.D. thin-wall sample
*Sample not recovered
Atterberg Limits:
Liquid limit
Natural water content
Plastic limit
Impervious seal
Water level
Piezometer tip
P Sample pushed
NOTE; The stratification lines represent the approximate boundaries between soil types and the transition may be gradual.
CITY OF MERCER ISLAND
MERCER ISLAND CIVIC CENTER
LOG OF BORING B-5
AUGUST 1985
W-4429-01
SHANNON & WILSON, INC.
Geotechnical Consultants
FIG. A-5

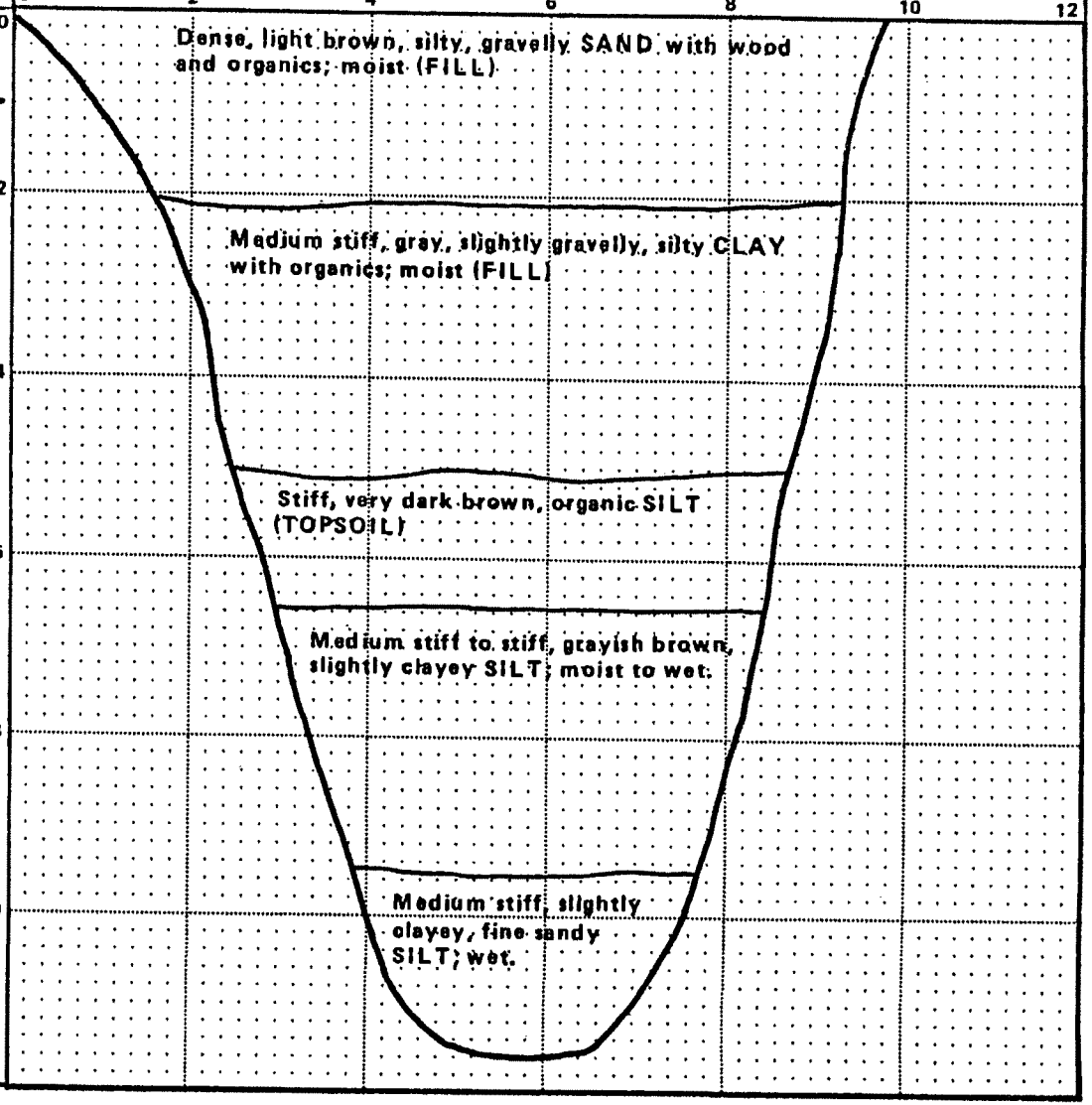
SHANNON & WILSON, INC.
Geotechnical Consultants

JOB NO. W-4429-01 DATE 7-19-85 LOCATION NW CORNER

PROJECT CITY OF MERCER ISLAND, MERCER ISLAND CIVIC CENTER

LOG OF TEST PIT TP-1

SKETCH OF SOUTH PIT SIDE SURFACE ELEVATION: 88 FEET



REMARKS	Moisture Content %	Ground Water	Samples
	8.8	NONE OBSERVED	S-1
	23.5		S-2, B-2
LIQUID LIMIT = 32 PLASTIC LIMIT = 26 PLASTICITY INDEX = 6	32.3		S-3
DILATANT	29.2		S-4

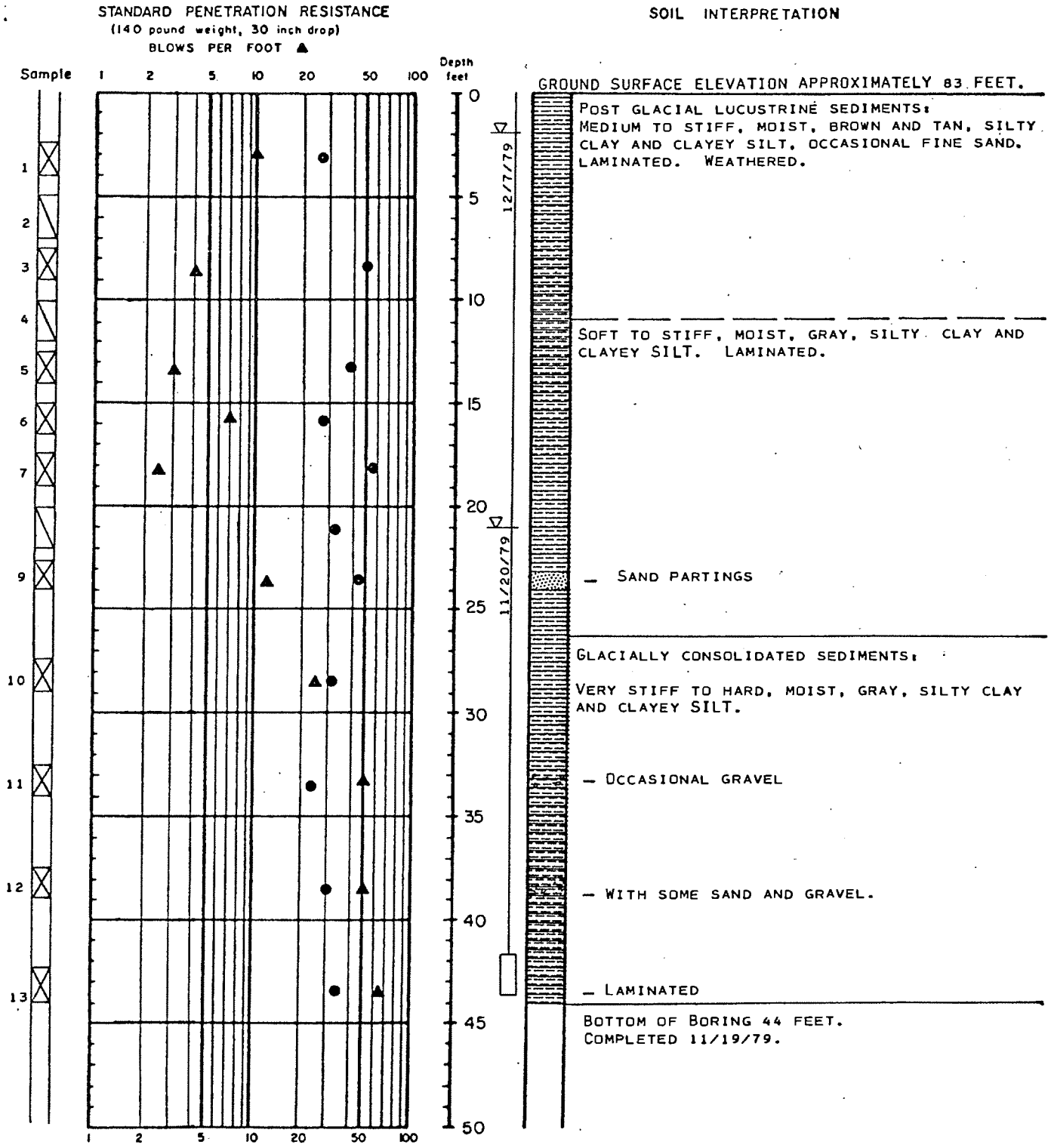
FIG. A-6

DESIGN PHASE SUBSURFACE EXPLORATIONS AND GEOTECHNICAL ENGINEERING STUDY
PROPOSED OFFICE BUILDING AND PARKING STRUCTURE FOR FARMERS NEW WORLD LIFE INSURANCE COMPANY
MERCER ISLAND, WASHINGTON

J-857-01

HART CROWSER & associates inc.
GEOTECHNICAL ENGINEERING

BORING LOG B-5



LEGEND

- ⊠ 2" O.D. Split Spoon Sample
- ▽ Water Level
- ▨ 3" O.D. Shelby Sample
- ▯ Observation Well
- ★ No Sample Recovery

NOTE: Soil descriptions are interpretive and actual changes may be gradual.

J-857-01 December 1979

HART-CROWSER & associates inc.

Figure A-9

Draft SEPA Environmental Checklist
Mercer Island Center for the Arts

Attachment D
Supplemental Memorandum,
Hart Crowser, May 6, 2015

February 2, 2016

MEMORANDUM

DATE: May 6, 2015

TO: Katie Oman, Mercer Island Center for the Arts

FROM: David Winter, PE, and Matt Veenstra, PE

RE: **Design Memorandum – Supplemental**
Mercer Island Center for the Arts
Mercer Island, Washington
19120-00

CC: Matt Jones, MKA

As the project evolves, additional geotechnical design criteria have been developed to supplement the recommendations in our March 31, 2015, report.

We understand that the current plans call for a fire lane to be built behind the back wall of the building. As a result, the shoring wall installed to allow excavation into the hillside and construction of the lowest level at elevation 90 feet will need to be designed as a permanent wall. This requires the following modifications to the design.

- Permanent tieback anchors must include corrosion protection.
- Pullout capacities for permanent anchors are estimated using a factor of safety of 2.5 (instead of 2.0 for temporary anchors). For Soil Units 1 and 2 the estimated allowable capacity is 0.8 kips per foot. For Soil Unit 3 the estimated allowable capacity is 2.4 kips per foot. The actual allowable capacity will need to be confirmed using field load testing.
- The first two permanent anchors should be tested using the supplementary extended creep tests described in section 8.3.4 of the Recommendations for Prestressed Rock and Soil Anchors (PTI 2004).
- Soil pressures on the permanent wall are the same as in Figures 5 and 6 of the geotechnical report (Hart Crowser 2015).

- In order to avoid hydrostatic pressures, we recommend installing weep holes between the soldier piles at 1 and 6 feet above the base of the wall. The weep holes should be fitted with a 3-inch-diameter slotted pipe extending into the soil. Water from the weep holes should be channeled at the base of the wall with a curb and routed to a suitable discharge point. Alternatively, waffle drain material can be installed behind the permanent facing of the wall and an outlet into a drain pipe at the base of the wall. As another alternative, if the wall facing will simply be treated lagging boards, then the wall will likely be permeable enough without the addition of drainage sheets.

Additional supplemental design recommendations include the following:

- Design the lowest level floor slab as a structural slab. All other recommendations regarding underslab drainage and construction from page 15 of the report will apply.

- According to the Mercer Island Design Code, the frost penetration depth is 12 inches. We recommend that any footings for temporary or permanent structures be embedded at least 18 inches below the adjacent site grade, or well below the frost level.

- Underslab drains are typically 3- or 4- inch-diameter slotted flexible pipe or rigid perforated pipe. The pipes may be wrapped in filter fabric or placed in a trench 12 inches wide and deep and lined with non-woven filter fabric such as Mirafi 140N or better. We have not calculated the potential flows into an underslab drainage system, but we expect the flow to be less than 30 gallons per minute.

- Shallow spread footings are not recommended for occupied building structures or other settlement sensitive structures. For support of small, lightly loaded facilities, we recommend placing footings on structural fill. The structural fill should extend 2 feet below the base of the footing and laterally 2 feet beyond the outer edges of the footing. Structural fill should be surrounded by a woven geotextile such as Mirafi HP370 or better. Structural fill should be compacted to a minimum of 95 percent of the modified Proctor maximum dry density. If compaction causes excessive subgrade disturbance, the first 1.5 feet of structural should consist of quarry spalls or similar angular rock that can be tamped into placed and will provide adequate subgrade for compaction of overlying structural fill. If constructed as described, the footing may be designed for an allowable vertical bearing capacity of 2,000 psf. Calculate the lateral sliding resistance using a coefficient of friction of 0.35 for footings bearing on granular structural fill. Lateral bearing pressure for footings bearing against Soil Units 1 and 2 may be calculated using a triangular, passive earth pressure distribution of 100 psf/foot below grade. Ignore passive earth pressure in the upper 2 feet unless the ground surface is protected by pavement or concrete floor slabs.

Subgrade Recommendations for Pre-Manufactured Permeable Pavers

- Permeable pavers are a proprietary product, follow the manufacturer's recommendations for design and installation.
- We recommend the minimum subgrade sections in Table 1 for all types of permeable pavers.

Table 1 - Subgrade Sections for Permeable Pavers

Loading Type	Sub-base Geotextile	Sub-base	Base Course
Pedestrian	Mirafi 160N or better	N/A	12 inches of COS Type 1 (3/4" Minus Crushed Gravel)
Light passenger vehicles	Mirafi HP370 or better	12 inches of COS Type 1 (3/4" Minus Crushed Gravel)	6 inches of COS Type 1 (3/4" Minus Crushed Gravel)
Heavy vehicles	Mirafi RS280i or better	18 inches of COS Type 1 (3/4" Minus Crushed Gravel)	6 inches of COS Type 1 (3/4" Minus Crushed Gravel)

- Reinforcing geotextile should be placed on relatively undisturbed native soil. Construction traffic should not be allowed on native soil subgrade beyond what is necessary for excavation prior to backfilling.
- For pedestrian areas, the gravel backfill should be placed in a single lift and compacted to at least 90 percent of maximum dry density.
- For light vehicle sections the sub-base should be placed in a single lift and compacted to at least 90 percent of maximum dry density. The base course should be compacted to 95 percent of maximum dry density.
- For heavy vehicle sections, the sub-base should be placed in a single lift and the upper 12 inches compacted to at least 92 percent of maximum dry density. The base course should be compacted to 95 percent of maximum dry density.
- Vibratory compaction should not be allowed unless it is demonstrated to not degrade the native subgrade (e.g. cause subgrade pumping).
- Note that nuclear density tests may not provide reliable results in gravelly backfill. Hart Crowser may elect to evaluate adequacy of backfill compaction by visual inspection and proof rolling.
- Just prior to placing Grasspave pavers, the prepared subgrade should be proof-rolled using a loaded dump truck or similar equipment. The proof roll must be observed by a Hart Crowser representative.

- If drain pipes are placed within the sub-base, the drain pipes should be wrapped in geotextile filter fabric such as Mirafi 160N or better and placed at least 12 inches below light wheel loads and at least 18 inches below heavy wheel loads.

Note that the native subgrade soils are silt and clay and have very low infiltration capacity such that storm water infiltration into the native soils is not practical. Any water that infiltrates the pavers will be confined within the underlying gravel backfill and will need to be drained. The choice of gravel backfill will influence how much water is stored and how quickly water reaches the drain pipes. A more poorly-graded backfill than that recommended in Table 1 may be desirable if rapid infiltration to a drain pipe is desired.

L:\Notebooks\1912000_MI Center for the Arts\Deliverables\Memos\Supplemental\MI Arts Supplemental Memo.docx

Draft SEPA Environmental Checklist
Mercer Island Center for the Arts

Attachment E
Wetland Delineation Report,
Mercer Island Center for the Arts,
The Watershed Company. May 21, 2015

and
Supplemental Regulatory Evaluation,
September 11, 2015.

February 2, 2016

THE WATERSHED COMPANY

May 21, 2015

Mercer Island Center for the Arts
Attn: Louise Kincaid
Executive Director
Via email: koman@ams-online.com

Re: Mercer Island Center for the Arts Wetland Delineation Study
The Watershed Company Reference Number: 150320

Dear Katie:

On May 7, 2015 Ecologist Ryan Kahlo and I completed a wetland delineation study at the site of the proposed Mercer Island Center for the Arts (MICA) at Mercerdale Park located at 77th SE & SE 32nd Street (parcel # 1224049068) in the City of Mercer Island. The purpose of this study is to determine the jurisdictional boundary, size, classification, and associated buffer widths of Wetland A identified in the study area during a reconnaissance-level site investigation.

This letter summarizes the findings of this study and details applicable federal, state, and local regulations. The following attachments are included:

- Wetland Delineation Sketch
- Wetland Determination Data Forms
- Wetland Rating Forms

Methods

Public-domain information on the subject property was reviewed for this delineation study. These sources include USDA Natural Resources Conservation Service Soil maps, National Wetland Inventory maps, Washington Department of Fish and Wildlife (WDFW) Priority Habitat and Species interactive mapping system (PHS on the Web), King County's GIS mapping website (iMAP), and Mercer Island's GIS mapping website (Mercer Island GIS Portal).

The study area was evaluated for wetlands using methodology from the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region Version 2.0* (Regional Supplement) (US Army Corps of Engineers [Corps] May 2010). Wetland boundaries were determined on the basis of an examination of vegetation, soils, and hydrology. Areas meeting the criteria set forth in the Regional Supplement were determined to be wetland. Soil, vegetation, and

hydrologic parameters were sampled at several locations along the wetland boundaries to make the determination. Data points on-site are marked with yellow- and black-striped flags. Data were recorded at three of these locations.

Areas meeting wetland parameters were marked with pink- and black-striped flags. The boundary of the South Wetland was marked using 33 flags. Delineated wetlands were classified using the *Western Washington Wetland Rating System* (Ecology Rating System) (Ecology, Aug 2004, version 2).

Findings

Mercerdale Park is on the north end of Mercer Island, south of the downtown area. The MICA-identified study area is located north of the Mercerdale Skate Park (Figure 1) in the Cedar-Sammamish Water Resource Inventory Area (WRIA 8); Township 24N, Range 04E, Section 12. Developed areas are present north and northwest of the study area. A forested hillside with trails is located to the west, and a maintained park lawn area is present to the east.

Figure 1. MICA study area provided by AMS Planning and Research.

The study area contains a paved parking lot and building accessed from SE 32nd Street. The rest of the study area is undeveloped. Non-wetland, undeveloped areas are dominated by forested vegetation including Douglas-fir, red alder, bigleaf maple, and Oregon ash in the canopy. One wetland, referred to here as Wetland A, is present in the study area and is described below.

Wetland A

Wetland A is narrow and located at the toe of a forested slope within the study area. Outside of the study area, the wetland unit extends to the south, and includes a relatively large forested slope to the southwest. The approximate wetland location is depicted in Figure 2, below.

Figure 2. Approximate location and extent of Wetland A (yellow) with study area shown (red).

Wetland A contains slope and depressional hydrogeomorphic (HGM) classes; the depressional class is estimated to be less than 10 percent of the wetland unit. Therefore, Wetland A is rated as a slope wetland. Cowardin vegetation classes that are present in the wetland include palustrine forested and palustrine scrub-shrub. Common plants observed during the site visit include Oregon ash, red alder, and black cottonwood in the canopy, with red-twig dogwood, Sitka willow, Dewey's sedge, creeping buttercup, soft rush, small-fruited bullrush, and giant horsetail in the shrub and herbaceous layers.

Sampled wetland soils in the study area contain a layer from 6 to 15 inches that is a dark (10 YR 3/1) clay loam with redox features present. Sampled soils meet hydric soil indicator Redox Dark Surface (F6). Soils were saturated to the surface during the field visit and a water table was observed at 6 inches below the soil surface. Several inches of standing water were present in a depressional area near the toe of the slope. The hydrology of Wetland A is provided by groundwater- and surface water-flow from the forested slope located to the west; water seasonally ponds at the toe of the slope near the extent of the maintained park area. According to the City's storm utility maps (Mercer Island GIS Portal), surface water from Wetland A flows both north and south into the City's storm-water system.

This wetland unit rates moderate for water quality functions, low for hydrologic functions, and moderate for habitat functions. The presence of dense herbaceous vegetation, and proximity to urban areas give this wetland the potential and opportunity to provide water quality functions. Hydrologic functions provided by Wetland A are low since flow from the wetland drains into the City's storm utility system; therefore the wetland does not have the opportunity to reduce flooding and erosion. Vegetative structure and diversity, and habitat features such as large woody debris and standing snags contribute to the moderate habitat functions score for this wetland unit.

Marginal Area (Non-wetland)

One marginal area is present on the western study area boundary; this area does not meet all three wetland criteria and is not considered a jurisdictional wetland. Vegetation at this location is dominated by a marginal, facultative vegetation assemblage including Oregon ash and bigleaf maple in the canopy with planted conifers in the understory and Dewey's sedge, creeping buttercup, and grass in the herbaceous layer. Sampled soils meet the conditions for hydric soil indicator Redox Dark Surface (F6). However, soils were not saturated at the time of sampling and did not meet any primary hydrology indicators. Due to the time of year and normal year-to-date precipitation, the lack of observed hydrology was judged to be reliable[1]. Furthermore, two or more secondary hydrology indicators were not met. When compared to similar forested slopes of Wetland A, this area is much dryer, and the vegetation assemblage generally reflects this observation.

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[1] Precipitation data gathered from National Oceanic and Atmospheric Administration's (NOAA's) National Weather Service Website (http://w2.weather.gov/climate/index.php?wfo=sew). On May 7, 2015, recorded precipitation for the Seattle-Tacoma area was within 0.3 inches of the normal year-to-date value.

Local Regulations

Wetlands in Mercer Island are regulated under the Mercer Island City Code (MICC) Unified Land Development Code Chapter 19.07, Environment. The Mercerdale Park parcel is zoned Public Institution (P).

Wetlands

Wetland A scored 12 points for water quality, 5 points for hydrology, and 15 points for habitat, for a total of 32 points. This score qualifies the Wetland A as a Category III wetland. Category III wetlands require a standard buffer width of 50 feet.

In general, site plans should avoid and minimize impacts to wetlands and buffers. However, the City may allow modification of the standard wetland buffer either through buffer reduction (19.07.08[C][2]) or buffer averaging (19.07.080[C][3]). The buffer reduction option would require a critical area study and mitigation, while the buffer averaging option does not require a critical area study but may require a mitigation plan.

Wetland buffers may be reduced to 25 feet via buffer reduction in accordance with an approved critical area study if the code official determines the following:

- That a smaller area is adequate to protect the wetland functions,
- Impacts will be mitigated consistent with MICC 19.07.070(B)(2), and
- The proposal will result in no net loss of wetland buffer functions.

Wetland buffers may be averaged in accordance with the following provisions outlined in MICC 19.07.070(B)(3):

- The proposal will result in a net improvement of critical area function;
- The proposal will include replanting of the averaged buffer using native vegetation;
- The total area contained in the averaged buffers on the development proposal site is not decreased below the total area that would be provided if the maximum width were not averaged;
- The standard buffer width is not reduced to a width that is less than the minimum buffer width (25 feet) at any location; and
- That portion of the buffer that has been reduced in width shall not contain a steep slope.

Direct wetland impacts are allowed for Category III wetlands less than one acre in size if proposed mitigation will result in equivalent or greater function (MICC 19.07.080(D)). Wetland A is greater than 2 acres, thereby exceeding the alteration threshold. In addition, the City's reasonable use criteria found in MICC 19.07.030(B) is not applicable since an existing use (City park) has already been established on the parcel.

State and Federal Regulations

Wetlands are also regulated by the Corps under Section 404 of the Clean Water Act. Any filling of Waters of the U.S., including wetlands (except isolated wetlands), would require notification and permits from the Corps. Wetland A would likely not be considered isolated. Federally permitted actions that could affect endangered species (i.e. salmon or bull trout) may also require a biological assessment study and consultation with the U.S. Fish and Wildlife Service and/or the National Marine Fisheries Service. Application for Corps permits may also require an individual 401 Water Quality Certification and Coastal Zone Management Consistency determination from Ecology.

In general, neither the Corps nor Ecology regulates wetland buffers, unless direct impacts are proposed. When direct impacts are proposed, mitigated wetlands may be required to employ buffers based on Corps and Ecology joint regulatory guidance.

The information contained in this letter or report is based on the application of technical guidelines currently accepted as the best available science and in conjunction with the criteria outlined in the methods section. All discussions, conclusions and recommendations reflect the best professional judgment of the author(s) and are based upon information available to us at the time the study was conducted. All work was completed within the constraints of budget, scope, and timing. The findings of this report are subject to verification and agreement by the appropriate local, State and Federal regulatory authorities. No other warranty, expressed or implied, is made.

Please call if you have any questions or if we can provide you with any additional information.

Sincerely,

Katy Crandall

Katy Crandall, WPIT
Ecologist

Enclosures

THE WATERSHED COMPANY

750 Sixth Street South | Kirkland | WA 98033
p 425.822.5242 f 425.827.8136

Note: This is a field sketch. Wetland areas not surveyed. Areas depicted are approximate and not to scale.

LEGEND:

- Wetland edge, delineated
- Wetland edge, not delineated
- Wetland area
- Data Point (DP)

Wetland Delineation Sketch
Prepared for: Katie Oman, AMS Planning and Research
Located at: Mercerdale Park
Parcel Number 1224049068
3205 77th Ave. SE
Mercer Island, WA 98040

Site Visits: April 2 and May 7, 2015
TWC Ref. No. 150320

THE WATERSHED COMPANY

WETLAND DETERMINATION DATA FORM

Western Mountains, Valleys, and Coast Supplement to the 1987 COE Wetlands Delineation Manual

DP- 1

750 Sixth Street South
Kirkland, Washington 98033
(425) 822-5242
watershedco.com

Project Site:	Mercerdale Park	Sampling Date:	4/2/2015
Applicant/Owner:	MICA	Sampling Point:	DP- 1
Investigator:	K. Crandall	City/County:	Mercer Island
Sect., Township, Range:	S 12 T 24N R 04E	State:	WA
Landform (hillslope, terrace, etc):	Toe of slope	Slope (%): 5	Local relief (concave, convex, none): Concave
Subregion (LRR):	A	Lat:	Long: Datum:
Soil Map Unit Name:	Bh – Bellingham silt loam		NWI classification: NA
Are climatic/hydrologic conditions on the site typical for this time of year?	☒ Yes ☐ No		(If no, explain in remarks.)
Are "Normal Circumstances" present on the site?	☒ Yes ☐ No		
Are Vegetation☐, Soil ☐, or Hydrology ☐ significantly disturbed?			
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 ☐				
Hydric Soils Present?	Yes ☒	No ☐	**Is the Sampling Point within a Wetland?**	Yes ☒	No ☐	
Wetland Hydrology Present?	Yes ☒	No ☐				

Remarks: **Wetland A in-pit**

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 5m diam.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Pseudotsuga menzeisii* (dying and rooted upslope)			
2. *Crataegus monogyna*	30	Y	FAC
3. *Populus balsamifera*	15	Y	FAC
4. *Fraxinus latifolia*	3	N	FACW
	48	= Total Cover	
Sapling/Shrub Stratum (Plot size: 3m diam.)			
1. *Cornus sericea*	20	Y	FACW
2.			
3.			
4.			
5.			
	20	= Total Cover	
Herb Stratum (Plot size: 1m diam.)			
1. *Ranunculus repens*	40	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	40	= Total Cover	
Woody Vine Stratum (Plot size:)			
1. *Rubus armeniacus*	20	Y	FACU
2.			
	20	= Total Cover	

% Bare Ground in Herb Stratum:

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

- ☒ Dominance test is > 50%
- ☐ Prevalence test is ≤ 3.0 *
- ☐ Morphological Adaptations * (provide supporting data in remarks or on a separate sheet)
- ☐ Wetland Non-Vascular Plants *
- ☐ Problematic Hydrophytic Vegetation * (explain)

* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks:

SOIL

Sampling Point – DP-1

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
0-6	10YR 3/2	100					Clay loam	
6-12	10YR 3/1	93	7.5YR 3/4	7	C	M	Clay loam	
12-15	10YR 3/1	80	7.5YR 3/4	20	C	M	Clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Loc: 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]

- ☐ 2cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Other (explain in remarks)
- ☐

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric soil present? Yes ☒ No ☐

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 **(except MLRA 1, 2, 4A & 4B)** (B9)
- ☐ 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 & 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

Field Observations

Surface Water Present?	Yes ☒	No ☐	Depth (in):	**~10 nearby**
Water Table Present?	Yes ☒	No ☐	Depth (in):	**6 BGS**
Saturation Present? (includes capillary fringe)	Yes ☒	No ☐	Depth (in):	**0 BGS**

Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks: **BGS = below ground surface**

WATERSHED COMPANY

750 Sixth Street South
Kirkland, Washington 98033
(425) 822-5242
watershedco.com

WETLAND DETERMINATION DATA FORM

Western Mountains, Valleys, and Coast Supplement to the 1987 COE Wetlands Delineation Manual

DP- 2

Project Site:	Mercerdale Park	Sampling Date:	4/2/2015
Applicant/Owner:	MICA	Sampling Point:	DP- 2
Investigator:	K. Crandall	City/County:	Mercer Island
Sect., Township, Range:	S 12 T 24N R 04E	State:	WA
Landform (hillslope, terrace, etc):	Terrace	Slope (%): 0	Local relief (concave, convex, none): None
Subregion (LRR):	A	Lat:	Long: Datum:
Soil Map Unit Name:	Bh – Bellingham silt loam		NWI classification: NA
Are climatic/hydrologic conditions on the site typical for this time of year?	☒ Yes ☐ No	(If no, explain in remarks.)	
Are "Normal Circumstances" present on the site?	☒ Yes ☐ No		
Are Vegetation☐, Soil ☐, or Hydrology ☐ significantly disturbed?			
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 ☒			
Hydric Soils Present?	Yes ☒	No ☐	Is the Sampling Point within a Wetland?	Yes ☐	No ☒
Wetland Hydrology Present?	Yes ☐	No ☒			

Remarks: Out-pit adjacent to Wetland A

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 5m diam.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Pseudotsuga menzeisii*	50	Y	FACU
2. *Alnus rubra*	50	Y	FAC
3. *Acer macrophyllum*	10	N	FACU
4. *Fraxinus latifolia*	10	N	FACW
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 3m diam.)			
1. *Rosa gymnocarpa*	5	Y	FACU
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 1m diam.)			
1. *Polystichum munitum*	10	Y	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	= Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= Total Cover		
% Bare Ground in Herb Stratum:			

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of Dominant Species that are OBL, FACW, or FAC:	50	(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

- ☐ Dominance test is > 50%
- ☐ Prevalence test is ≤ 3.0 *
- ☐ Morphological Adaptations * (provide supporting data in remarks or on a separate sheet)
- ☐ Wetland Non-Vascular Plants *
- ☐ Problematic Hydrophytic Vegetation * (explain)

* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? Yes ☐ No ☒

Remarks:

SOIL **Sampling Point – DP-2**

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 2/2	100					Gravelly sandy loam	
8-14	10YR 3/2	95	7.5YR 4/6	5	C	M	Gravelly sandy loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Loc: 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]

- ☐ 2cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Other (explain in remarks)
- ☐

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric soil present? Yes ☒ No ☐

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 **(except MLRA 1, 2, 4A & 4B)** (B9)
- ☐ 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 & 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

Field Observations

Surface Water Present?	Yes ☐	No ☒	Depth (in):
Water Table Present?	Yes ☐	No ☒	Depth (in):
Saturation Present? (includes capillary fringe)	Yes ☐	No ☒	Depth (in):

Wetland Hydrology Present? Yes ☐ No ☒

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

Remarks: **Damp, not saturated**

THE WATERSHED COMPANY

WETLAND DETERMINATION DATA FORM

Western Mountains, Valleys, and Coast Supplement to the 1987 COE Wetlands Delineation Manual

DP- 3

750 Sixth Street South
Kirkland, Washington 98033
(425) 822-5242
watershedco.com

Project Site:	Mercerdale Park	Sampling Date:	5/7/2015
Applicant/Owner:	MICA	Sampling Point:	DP- 3
Investigator:	K. Crandall, R. Kahlo	City/County:	Mercer Island
Sect., Township, Range:	S 12 T 24N R 04E	State:	WA
Landform (hillslope, terrace, etc):	Terrace	Slope (%): 5	Local relief (concave, convex, none): Concave
Subregion (LRR):	A	Lat:	Long: Datum:
Soil Map Unit Name:	KbP – Kitsap silt loam		NWI classification: NA
Are climatic/hydrologic conditions on the site typical for this time of year?	☒ Yes ☐ No	(If no, explain in remarks.)	
Are "Normal Circumstances" present on the site?	☒ Yes ☐ No		
Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed?			
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 ☐	Is the Sampling Point within a Wetland?	Yes ☐	No ☒	
Hydric Soils Present?	Yes ☒	No ☐				
Wetland Hydrology Present?	Yes ☐	No ☒				

Remarks: Marginal non-wetland area

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 5m diam.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer macrophyllum*	50	Y	FACU
2. *Fraxinus latifolia*	50	Y	FACW
3.			
4.			
	100	= Total Cover	
Sapling/Shrub Stratum (Plot size: 3m diam.)			
1. *Thuja plicata*	10	Y	FAC
2.			
3.			
4.			
5.			
	10	= Total Cover	
Herb Stratum (Plot size: 1m diam.)			
1. *Ranunculus repens*	70	Y	FAC
2. *Carex deweyana*	60	Y	FAC
3. *Unk. Grass*	40	Y	FAC*
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	170	= Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
		= Total Cover	
% Bare Ground in Herb Stratum:			

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC:	5	(A)
Total Number of Dominant Species Across All Strata:	6	(B)
Percent of Dominant Species that are OBL, FACW, or FAC:	83	(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

- ☒ Dominance test is > 50%
- ☐ Prevalence test is ≤ 3.0 *
- ☐ Morphological Adaptations * (provide supporting data in remarks or on a separate sheet)
- ☐ Wetland Non-Vascular Plants *
- ☐ Problematic Hydrophytic Vegetation * (explain)

* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks: *Presumed FAC

SOIL

Sampling Point – DP-3

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	2.5Y 3/1	92	7.5 YR 3/4	8	C	M	Silty clay loam	
8-14	10 YR 4/1	80	10 YR 4/6	20	C	M	Clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains

[2]Loc: 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]

- ☐ 2cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Other (explain in remarks)
- ☐

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric soil present? Yes ☒ No ☐

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 **(except MLRA 1, 2, 4A & 4B)** (B9)
- ☐ 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 & 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

Field Observations

Surface Water Present? Yes ☐ No ☒ Depth (in):

Water Table Present? Yes ☐ No ☒ Depth (in):

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (in):

Wetland Hydrology Present? Yes ☐ No ☒

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

Remarks: **Damp, not saturated**

Wetland name or number: A

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users
Updated Oct 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): Wetland A Date of site visit: 5/7/2015

Rated by: K. Crandall, R. Kahlo Trained by Ecology? Yes ☒ No ☐ Date of Training 09/2014

SEC: 12 TWNSHP: 24N RNGE: 04E Is S/T/R in Appendix D? Yes ☐ No ☒

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I ☐ II ☐ III ☒ IV ☐

Category I = Score ≥70
Category II = Score 51-69
Category III = Score 30-50
Category IV = Score < 30

Score for Water Quality Functions	12
Score for Hydrologic Functions	5
Score for Habitat Functions	15
TOTAL score for functions	**32**

Category based on SPECIAL CHARACTERISTICS of wetland

I ☐ II ☐ Does not Apply ☒

Final Category (choose the "highest" category from above) **III**

Check the appropriate type and class of wetland being rated.

Wetland Type		Wetland Class	
Estuarine	☐	**Depressional**	☐
Natural Heritage Wetland	☐	**Riverine**	☐
Bog	☐	**Lake-fringe**	☐
Mature Forest	☐	**Slope**	☒
Old Growth Forest	☐	**Flats**	☐
Coastal Lagoon	☐	**Freshwater Tidal**	☐
Interdunal	☐		
None of the above	☒	Check if unit has multiple HGM classes present	☐

Does the wetland unit being rated meet any of the criteria below?

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands That May Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered **animal** or **plant** species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X*
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered **animal** species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category I Natural Heritage Wetlands (see p. 19 of data form).		X*
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X*
SP4. *Does the wetland unit have a local significance in addition to its functions*? For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

***The study area was reviewed for the presence of endangered, threatened, and priority species using WDFW online Priority Habitat and Species Data, PHS on the Web (http://wdfw.wa.gov/mapping/phs/).**

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands into those that function in similar ways. Classifying the wetland first simplifies the questions needed to answer how it functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Classification of Wetland Units in Western Washington

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 wetland unit usually controlled by tides (i.e. except during floods)?

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

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? **YES – Freshwater Tidal Fringe NO – Saltwater Tidal Fringe (Estuarine)**

*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 rated as an **Estuarine** wetland.* Wetlands that were called estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

2. The entire wetland unit is flat and precipitation is 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 both** of the following criteria?

☐ The vegetated part of the wetland is on the shores of a body of open water (without any vegetation on the surface) at least 20 acres (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?

☒ The wetland is on a slope (*slope can be very gradual*),

☒ 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.

☒ The water leaves the wetland **without being impounded**?
NOTE: *Surface water does not pond in these types of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3ft diameter and less than a foot deep).*

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

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 two years

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

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

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 your wetland. 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 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	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

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

Wetland name or number: A

S	Slope Wetlands	Points
	WATER QUALITY FUNCTIONS - Indicators that wetland functions to improve water quality	
S	**S 1. Does the wetland have the potential to improve water quality?**	*(see p. 64)*
S	S 1.1 Characteristics of average slope of wetland: Slope is1% or less *(a 1% slope has a 1 foot vertical drop in elevation horizontal distance) for every 100 ft* ..... points = 3 Slope is 1% - 2% ..... points = 2 Slope is 2% - 5% ..... points = 1 Slope is greater than 5% ..... points = 0	0
S	S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic *(use NRCS definitions).* YES = 3 points NO = 0 points	0
S	S 1.3 Characteristics of the vegetation in the wetland that trap sediments and pollutants: *Choose the points appropriate for the description that best fits the vegetation in the wetland. Dense vegetation means you have trouble seeing the soil surface. Dense vegetation means you have trouble seeing the soil surface (>75% cover) and uncut means not grazed or mowed and plants are higher than 6 inches.* Dense, ungrazed, herbaceous vegetation > 90% of the wetland area ..... points = 6 Dense, ungrazed, herbaceous vegetation > 1/2 of area ..... points = 3 Dense, woody, vegetation > ½ of area ..... points = 2 Dense, ungrazed, herbaceous vegetation > 1/4 of area ..... points = 1 Does not meet any of the criteria above for vegetation ..... points = 0	6
S	**Total for S 1** *Add the points in the boxes above*	6
S	**S 2. Does the wetland have the opportunity to improve water quality?** *(see p. 67)* Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants.A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* ☐ Grazing in the wetland or within 150 ft ☐ Untreated stormwater discharges to wetland ☐ Tilled fields, logging or orchards within 150 ft of wetland ☐ A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging ☒ Residential, urban areas, or golf courses are within 150 ft upslope of wetland ☐ Other_____ **YES** multiplier is **2** **NO** multiplier is **1**	(see p. 67) multiplier 2
S	**TOTAL - Water Quality Functions** Multiply the score from S 1 by S 2 ***Add score to table on p. 1***	**12**

Wetland name or number: A

S	Slope Wetlands	Points
	HYDROLOGIC FUNCTIONS - Indicators that wetland functions to reduce flooding and stream erosion	
	S 3. Does the wetland have the potential to reduce flooding and erosion?	*(see p. 68)*
S	S 3.1 Characteristics of vegetation that reduce the velocity of surface flows during storms. *Choose the points appropriate for the description that best fit conditions in the wetland. (stems of plants should be thick enough (usually > 1/8in), or dense enough, to remain erect during surface flows)* Dense, uncut, **rigid** vegetation covers > 90% of the area of the wetland. ..... points = 6 Dense, uncut, **rigid** vegetation > 1/2 area of wetland ..... points = 3 Dense, uncut, **rigid** vegetation > 1/4 area ..... points = 1 More than 1/4 of area is grazed, mowed, tilled or vegetation is not rigid ..... points = 0	3
S	S 3.2 Characteristics of slope wetland that holds back small amounts of flood flows: The slope wetland has small surface depressions that can retain water over at least 10% of its area. YES points = 2 NO points = 0	2
S	**Total for S 3** *Add the points in the boxes above*	5
S	**S 4. Does the wetland have the opportunity to reduce flooding and erosion?** *(see p. 70)* Is the wetland in a landscape position where the reduction in water velocity it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows? *Note which of the following conditions apply.* ☐ Wetland has surface runoff that drains to a river or stream that has flooding problems ☐ Other_____ *(Answer NO if the major source of water to the wetland is controlled by a reservoir or the wetland is tidal fringe along the sides of a dike)* **YES** multiplier is **2** **NO** multiplier is **1**	(see p. 70) multiplier **1**
S	**TOTAL - Hydrologic Functions** Multiply the score from S 3 by S 4 ***Add score to table on p. 1***	**5**

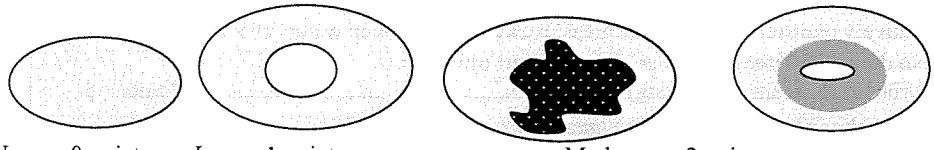
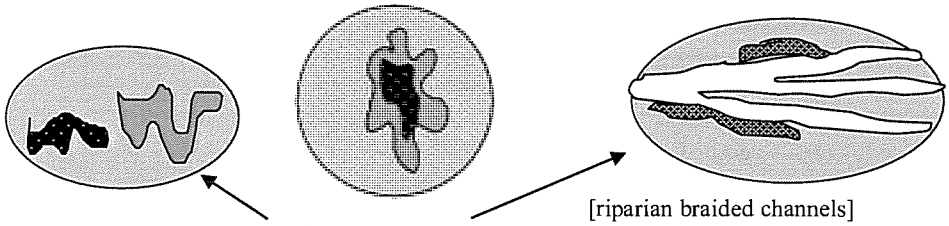
Comments

S 4 – Using the Mercer Island GIS Portal website, it appears that surface water leaving the wetland is directed into the City's storm utility system.

Wetland name or number: A

These questions apply to wetlands of all HGM classes. **HABITAT FUNCTIONS - Indicators that wetland functions to provide important habitat**	
H 1. Does the wetland have the potential to provide habitat for many species?	
H 1.1 Vegetation structure ***(see p. 72)*** *Check the types of vegetation classes present (as defined by Cowardin) if the class is ¼ acre or covers more than 10% of the area of the wetland if unit smaller than 2.5 acres.* ☐ Aquatic bed ☐ Emergent plants ☒ Scrub/shrub (areas where shrubs have >30% cover) ☒ Forested (areas where trees have >30% cover) ☒ Forested areas have 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon *Add the number of vegetation types that qualify. If you have:* 4 structures or more ..... points = 4 3 structures ..... points = 2 2 structures ..... points = 1 1 structure ..... points = 0	2
H 1.2. Hydroperiods ***(see p. 73)*** *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 acre 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 ☒ Occasionally flooded or inundated — 2 types present ..... points = 1 ☒ Saturated only — 1 types 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 ***(see p. 75)*** 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)* *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 *List species below if you want to:* 5 - 19 species ..... points = 1 < 5 species ..... points = 0 FRLA, POBA, ALRU, THPL, ACMA, SASI, SALU, COSE, RUAR, POMU, JUEF, ATFI, SCMI, CADE, RARE, EQTE, EQAR, OESA, COAR, Grass1	2

Wetland name or number: A

H 1.4. Interspersion of habitats *(see p. 76)* Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  None = 0 points Low = 1 point Moderate = 2 points  High = 3 points [riparian braided channels] NOTE: If you have four or more vegetation types or three vegetation types and open water the rating is always "high".	1
H 1.5. Special Habitat Features: *(see p. 77)* *Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.* ☒ Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long). ☒ Standing snags (diameter at the bottom > 4 inches) in the wetland ☐ Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream for at least 33 ft (10m) ☐ Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present ☐ At least ¼ acre of thin-stemmed persistent vegetation 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 each stratum of plants *Note: The 20% stated in early printings of the manual on page 78 is an error.*	3
H 1. TOTAL Score - potential for providing habitat *Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5*	9

Wetland name or number: A

H 2. Does the wetland have the opportunity to provide habitat for many species?	
H 2.1 Buffers ***(see p. 80)*** *Choose the description that best represents condition of buffer of wetland. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."* ☐ 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No developed areas within undisturbed part of buffer. (relatively undisturbed also means no-grazing) ..... Points = 5 ☐ 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference..... Points = 4 ☐ 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference..... Points = 4 ☐ 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference..... Points = 3 ☐ 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference..... Points = 3 **If buffer does not meet any of the criteria above** ☐ No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK..... Points = 2 ☒ No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK..... Points = 2 ☐ Heavy grazing in buffer. ..... Points = 1 ☐ Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland ..... Points = 0 ☐ Buffer does not meet any of the criteria above..... Points = 1	2
H 2.2 Corridors and Connections ***(see p. 81)*** H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (*dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor*). YES = **4 points** (*go to H 2.3*) **NO** = go to H 2.2.2 H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR** a **Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? YES = **2 points** (*go to H 2.3*) **NO** = H 2.2.3 H 2.2.3 Is the wetland: within 5 mi (8km) of a brackish or salt water estuary OR within 3 mi of a large field or pasture (>40 acres) OR within 1 mi of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	1

H 2.3 Near or adjacent to other priority habitats listed by WDFW ***(see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report http://wdfw.wa.gov/hab/phslist.htm)***

Which of the following priority habitats are within 330ft (100m) of the wetland?
(NOTE: the connections do not have to be relatively undisturbed)

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

☒ **Biodiversity Areas and Corridors:** Areas of habitat that are relatively important to various species of native fish and wildlife (*full description in WDFW PHS report p. 152*)

☐ **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 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. (Mature forests.) Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; crown cover may be less that 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:** Woodlands 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.)*

☐ **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*)

☐ **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; pp. 167-169 and glossary in Appendix A.)*

☐ **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 7.6 m (25 ft) high and occurring below 5000 ft.

☐ **Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), 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 >51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30cm (12 in) in diameter at the largest end, and > 6m (20 ft) long.

If wetland has **3 or more** priority habitats = **4 points**
If wetland has **2** priority habitats = **3 points**
If wetland has **1** priority habitat = **1 point**
No habitats = **0 points**

Note: All vegetated wetland are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H2.4.

3

Wetland name or number: A

H 2.4 Wetland Landscape *(choose the **one** description of the landscape around the wetland that best fits)* ***(see p. 84)*** There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. ..... points = 5 The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile ..... points = 5 There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed ..... points = 3 The wetland is Lake-fringe on a lake **with** disturbance and there are 3 other lake-fringe wetland within ½ mile ..... points = 3 There is at least 1 wetland within ½ mile. ..... points = 2 There are no wetlands within ½ mile. ..... points = 0	0
H 2. TOTAL Score - opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*	6
TOTAL for H1 from page 14	9
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	15

H 2.4 – No *known* wetlands within ½ mile

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate Category.

Wetland Type *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	**Category**
SC 1.0 Estuarine wetlands (*see p. 86*) Does the wetland unit meet the following criteria for Estuarine wetlands? ☐ The dominant water regime is tidal, ☐ Vegetated, and ☐ With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO ☒	
SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-151? ☐ YES = Category I ☒ NO = go to SC 1.2	**Cat. I**
SC 1.2 Is the wetland unit at least 1 acre in size and meets at least two of the following three conditions? ☐ YES = Category I ☐ NO = Category II ☐ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native Spartina spp. are the only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II) The are aof Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. ☐ At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed wetland. ☐ The wetland has at least 2 or the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual rating I/II**

SC 2.0 Natural Heritage Wetlands *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a Natural Heritage wetland? *(this question is used to screen out most sites before you need to contact WNHP/DNR)* S/T/R information from Appendix D ☒ or accessed from WNHP/DNR web site ☐ YES ☐ – contact WNHP/DNR (see p. 79) and go to SC 2.2 NO ☒ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as or as a site with state threatened or endangered plant species? YES = Category I NO ☐ Not a Heritage Wetland	**Cat. I**
SC 3.0 Bogs *(see p. 87)* Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? *Use the key below to identify if the wetland is a bog. If you answer yes, you will still need to rate the wetland based on its functions.* 1. Does the wetland have organic soils horizons (i.e. layers of organic soil), either peats or mucks, that compose 16" or more of the first 32 inches of the soil profile? (See Appendix B for a field key to identify organic soils.) Yes - go to Q.3 NO - go to Q.2 2. Does the wetland have organic soils, either peats or mucks, that are less than 16 inches deep over bedrock or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? Yes - go to Q.3 NO ☒ is not a bog for purpose of rating 3. Does the wetland have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists species in Table 3)? Yes – Is a bog for purpose of rating NO - go to Q.4 *NOTE: If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog.* 4. Is the wetland forested (>30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover (*>30% coverage of the total shrub/herbaceous* cover)? YES = Category I NO ☐ is not a bog for purpose of rating	**Cat. I**

SC 4.0 Forested Wetlands *(see p. 90)* Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its functions.* ☐ Old growth forests: (west of Cascade crest) Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm) or more. *Note: The criterion for dbh is based on measurements for upland forests. Two hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter.* ☐ Mature forests: (west of the Cascade crest) Stands where the largest trees are 80-200 years old OR have average diameters (dbh) exceeding 21 in (53 cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quanitity of large downed material is generally less than that found in old-growth YES = Category 1 NO ☒ not a forested wetland with special characteristics	**Cat. I**
SC 5.0 Wetlands in Coastal Lagoons (see p. 91) Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? ☐ The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks. ☐ The lagoon in which the wetland is located contains surgace water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon (*needs to be measured near the bottom*) YES – Go to SC 5.1 NO ☒ not a wetland in a coastal lagoon SC 5.1 Does the wetland meet all of the following three conditions? ☐ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of invasive plant species (see list of invasive species on p. 74). ☐ At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. ☐ The wetalnd is larger than 1/10 acre (4350 square feet) YES = Category I NO = Category II	**Cat. I** **Cat. II**

SC 6.0 Interdunal Wetlands (see p. 93) Is the wetalnd unit west of the 1889 line (also called the Westarn Boundary of Upland Ownership or WBUO)? YES – go to SC 6.1 NO ☒ not an interdunal wetland for rating *If you answer yes you will still need to rate the wetland based on its functions.* In practical terms that means the following geographic areas: – Long Beach Peninsula – lands west of SR 103 – Grayland-Westport – lands west of SR 105 – Ocean Shores-Copalis – lands west of SR 115 and SR 109 SC 6.1 Is the wetland 1 acre or larger, or is it in a mosaic of wetlands that is 1 acre or larger? YES = Category II NO – go to SC 6.2 SC 6.2 Is the unit between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
Category of wetland based on Special Characteristics *Choose the "highest" rating if wetland falls into several categorie, and record on p. 1 .* If you answered NO for all types enter "Not Applicable" on p.1.	NA

Draft SEPA Environmental Checklist
Mercer Island Center for the Arts

Attachment F
Mercer Island Center for the Arts
Conceptual Mitigation Plan
The Watershed Company, August 20, 2015

February 2, 2016

MERCER ISLAND CENTER FOR THE ARTS CONCEPTUAL MITIGATION PLAN

DRAFT IMPACTS & MITIGATION

0 10' 20' 40' 80'

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THE WATERSHED COMPANY
750 Sixth Street South
Kirkland WA 98033
425.822.5242
www.watershedco.com
Science & Design

MERCER ISLAND CENTER FOR THE ARTS
CONCEPTUAL MITIGATION PLAN
PREPARED FOR AMS PLANNING & RESEARCH
PROJECT LOCATION:
77TH SE & SE 32ND STREET (PARCEL # 1224049068)
MERCER ISLAND, WA 98040

SUBMITTALS & REVISIONS

NO.	DATE	DESCRIPTION	BY
1	09-21-15	REVIEW SET	MSF

SHEET SIZE:
ORIGINAL PLAN IS 22" x 34"
SCALE ACCORDINGLY.

PROJECT MANAGER: HM
DESIGNED: 1
DRAFTED: MSF
CHECKED: KC/KB
JOB NUMBER:
150320
SHEET NUMBER:
W1 OF 1

FILENAME: TWC-150320-MIT.DWG
PRINTED BY: MARINA FRENCH
DATE: 9/30/2015

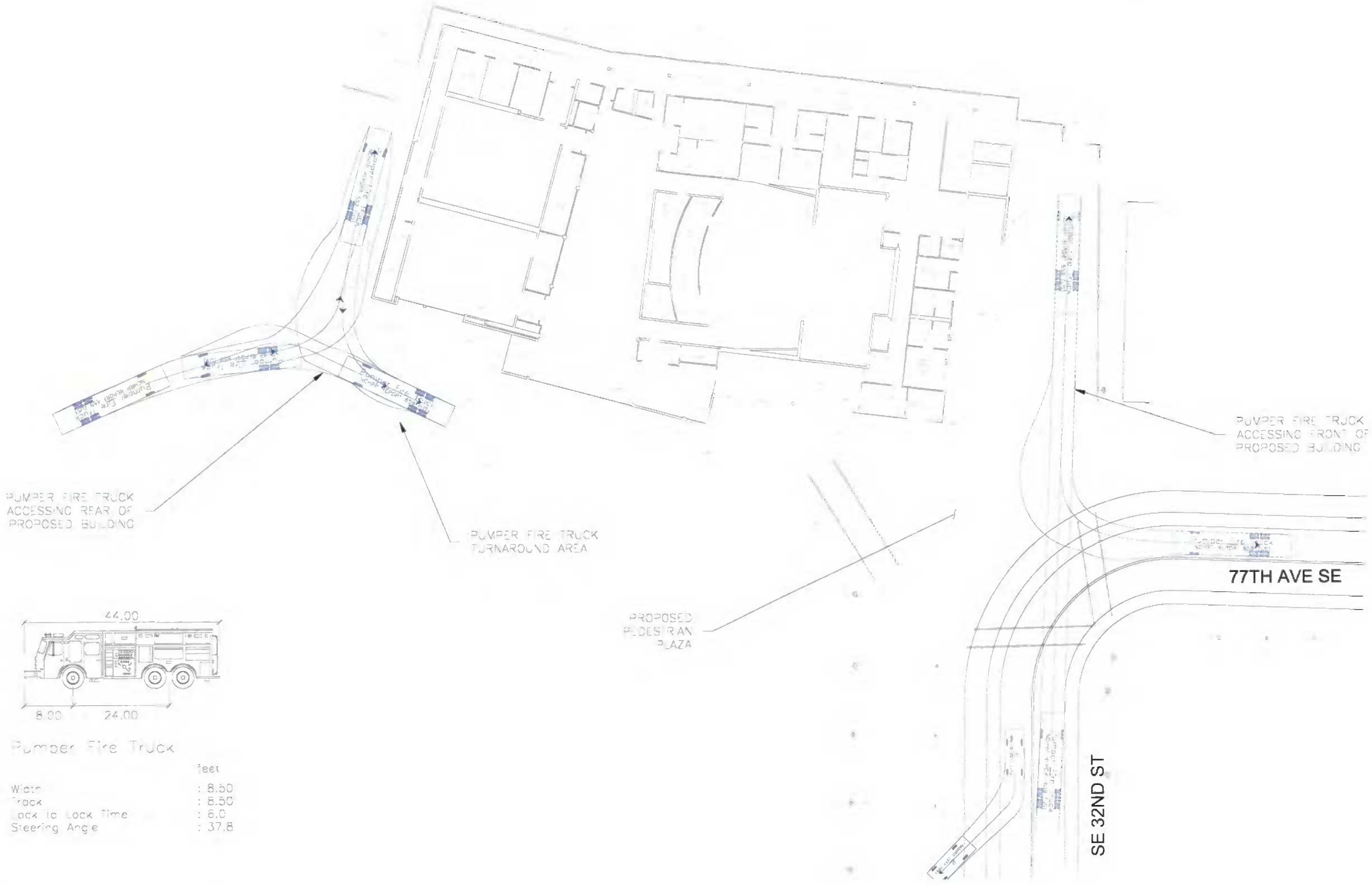
Draft SEPA Environmental Checklist
Mercer Island Center for the Arts

Attachment G
Parking and Access sketches,
Transpo. August 25, 2015

February 2, 2016

N

NOT TO SCALE



Pumper Fire Truck

	feet
Width	: 8.50
Track	: 8.50
Lock to Lock Time	: 6.0
Steering Angle	: 37.8

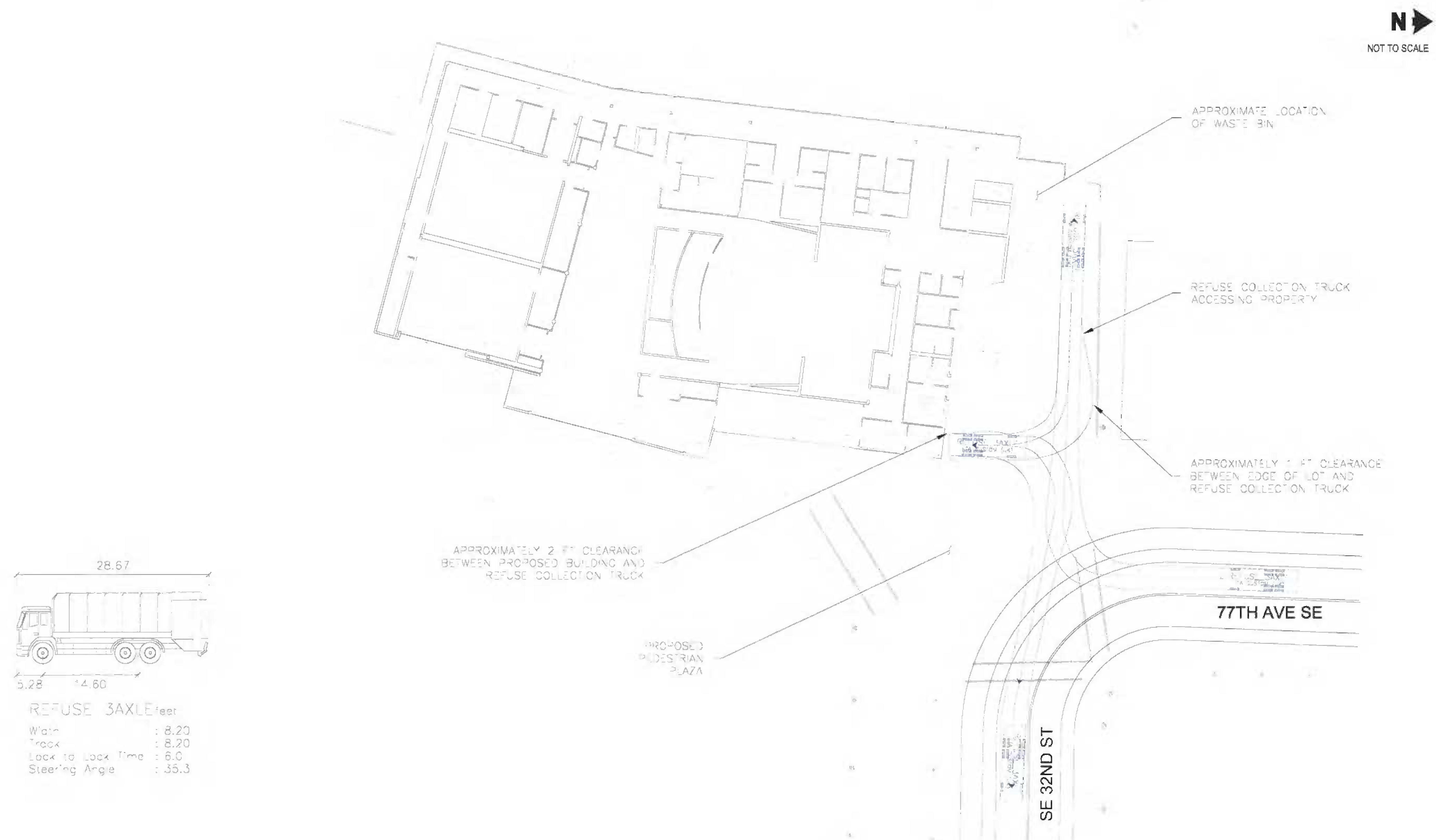
Turning Path - Fire Truck Access

Mercer Island Center for the Arts - August 20, 2015

W:\15\15349.00 - Mercer Island Center for the Arts\Engineering\CAD\Conceptual\MICA Turning Movement Concepts 2015-08-19.dwg<C>Shane Binger 8/25/2015 12:14 PM

transpogroup
WHAT TRANSPORTATION CAN BE

FIGURE
1



N
NOT TO SCALE
APPROXIMATE LOCATION OF WASTE BIN
REFUSE COLLECTION TRUCK ACCESSING PROPERTY
APPROXIMATELY 1 FT CLEARANCE BETWEEN EDGE OF LOT AND REFUSE COLLECTION TRUCK
APPROXIMATELY 2 FT CLEARANCE BETWEEN PROPOSED BUILDING AND REFUSE COLLECTION TRUCK
PROPOSED PEDESTRIAN PLAZA
77TH AVE SE
SE 32ND ST
28.67
5.28
14.60
REFUSE 3AXLE feet
Width : 8.20
Track : 8.20
Lock to Lock Time : 6.0
Steering Angle : 35.3

Turning Path - Refuse Collection Truck Access

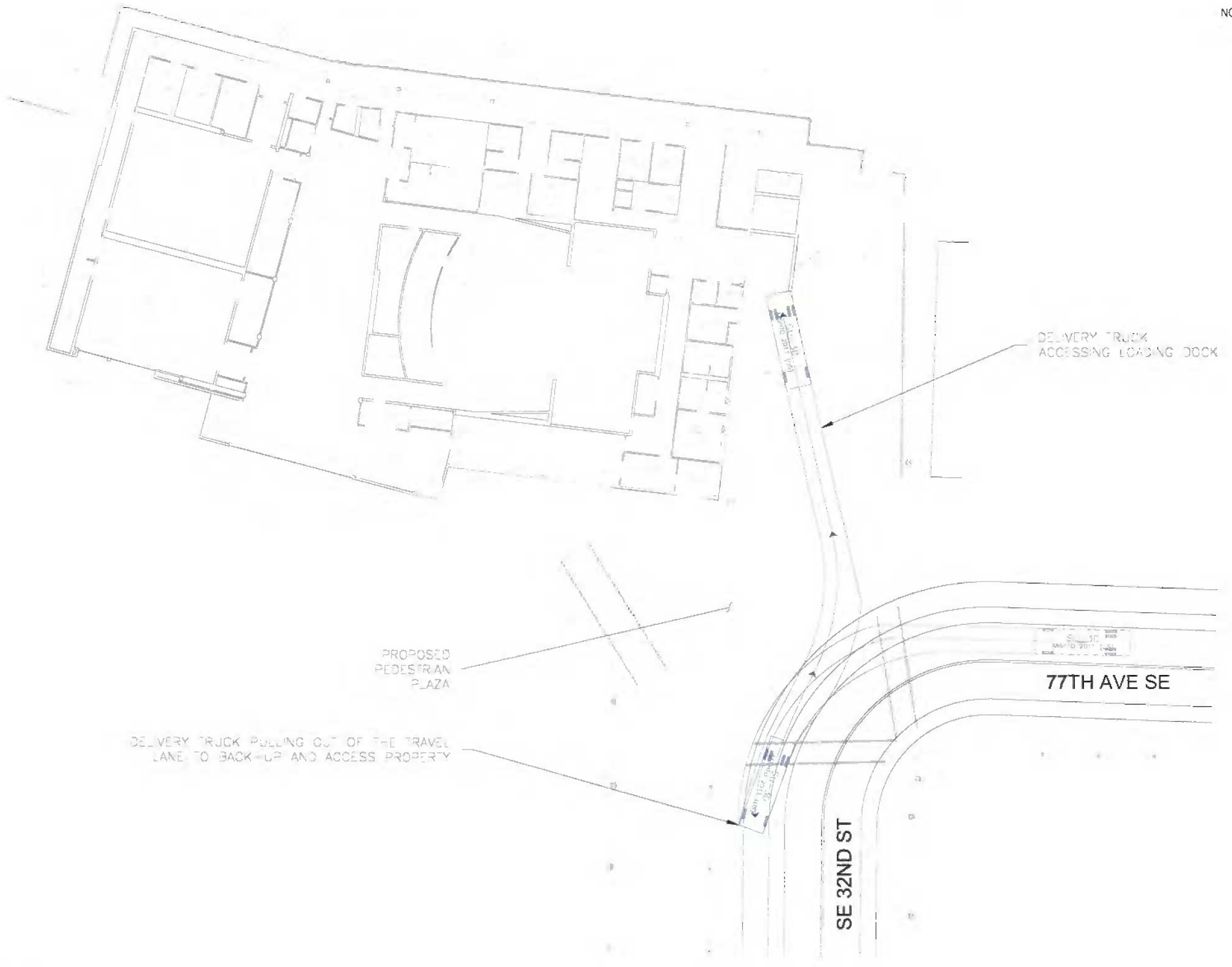
Mercer Island Center for the Arts - August 20, 2015

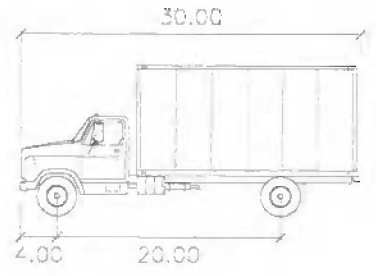
FIGURE
2

transpogroup
WHAT TRANSPORTATION CAN BE

N

NOT TO SCALE





SU - 30

	feet
Width	: 8.00
Track	: 8.00
Lock to Lock Time	: 6.0
Steering Angle	: 37.8

Turning Path - Single Unit Delivery Truck Access

Mercer Island Center for the Arts - August 20, 2015

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FIGURE
3

transpogroup
WHAT TRANSPORTATION CAN BE.

PARKING SUMMARY	
ADA	STANDARD
4	0
OR	
0	4

TURNOUT PROS:

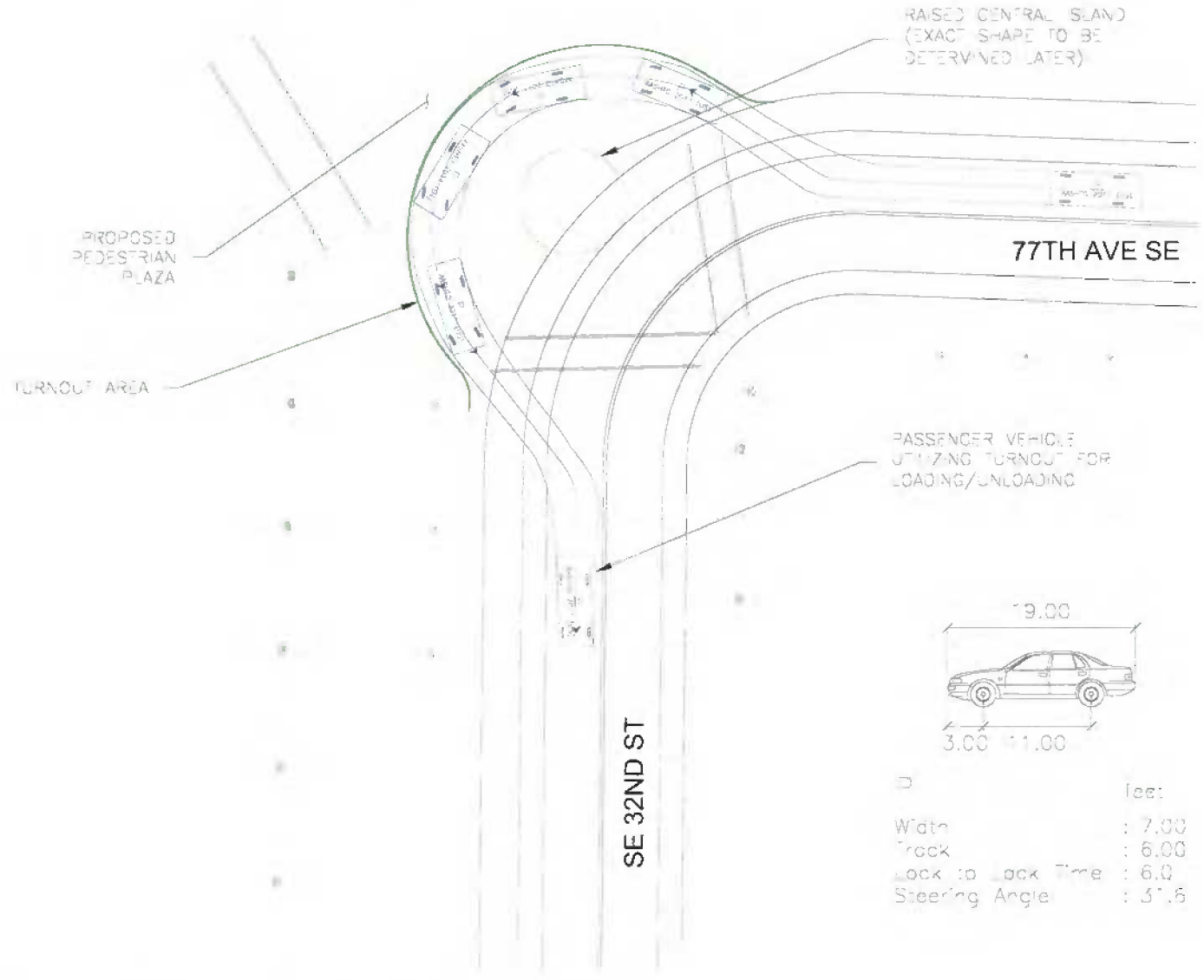
- 4 TO 5 PASSENGER VEHICLES CAN QUEUE AT A TIME
- LOADING/UNLOADING AREA IS NEAR THE PROPOSED BUILDING

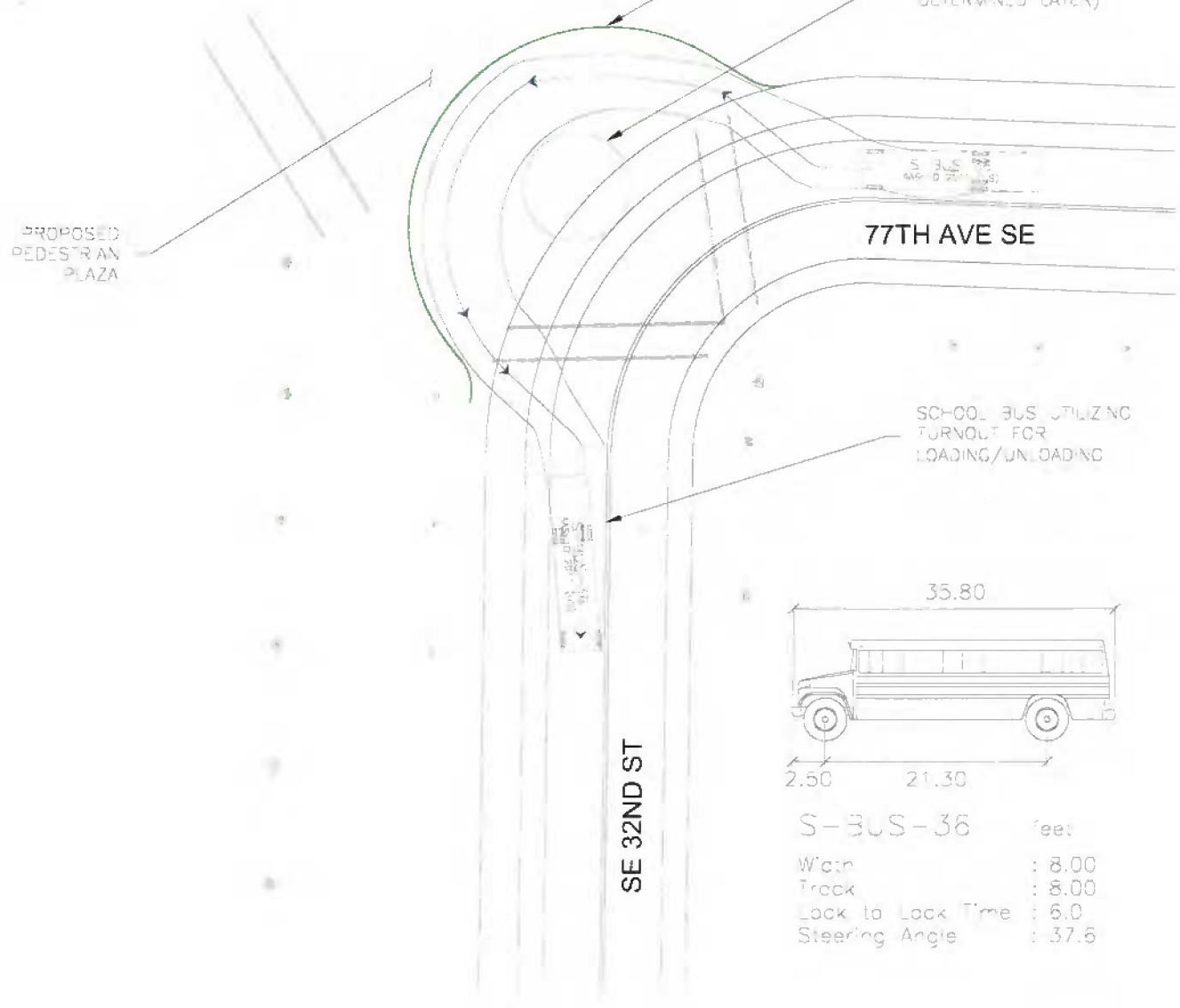
TURNOUT CONS:

- ADDITIONAL CONFLICT POINTS ARE ADDED TO AN EXISTING INTERSECTION WITH VULNERABLE USER GROUPS
- THE AWKWARD LAYOUT MAY LEAD TO CONFUSION REGARDING VEHICLE MOVEMENT PRIORITY
- SPACE FOR PEDESTRIANS AND TREES IN THE PLAZA ARE REDUCED
- CENTRAL ISLAND MAKES TRUCK ACCESS TO SITE CHALLENGING
- MAINTAINING ONE-WAY COMPLIANCE WILL BE CHALLENGING AND MAY LEAD TO ADDITIONAL CONFLICTS WITHIN THE PASSENGER LOADING/UNLOADING AREA
- PEDESTRIAN EXPOSURE IS INCREASED ON THE OUTSIDE OF A ROADWAY CURVE

N

NOT TO SCALE



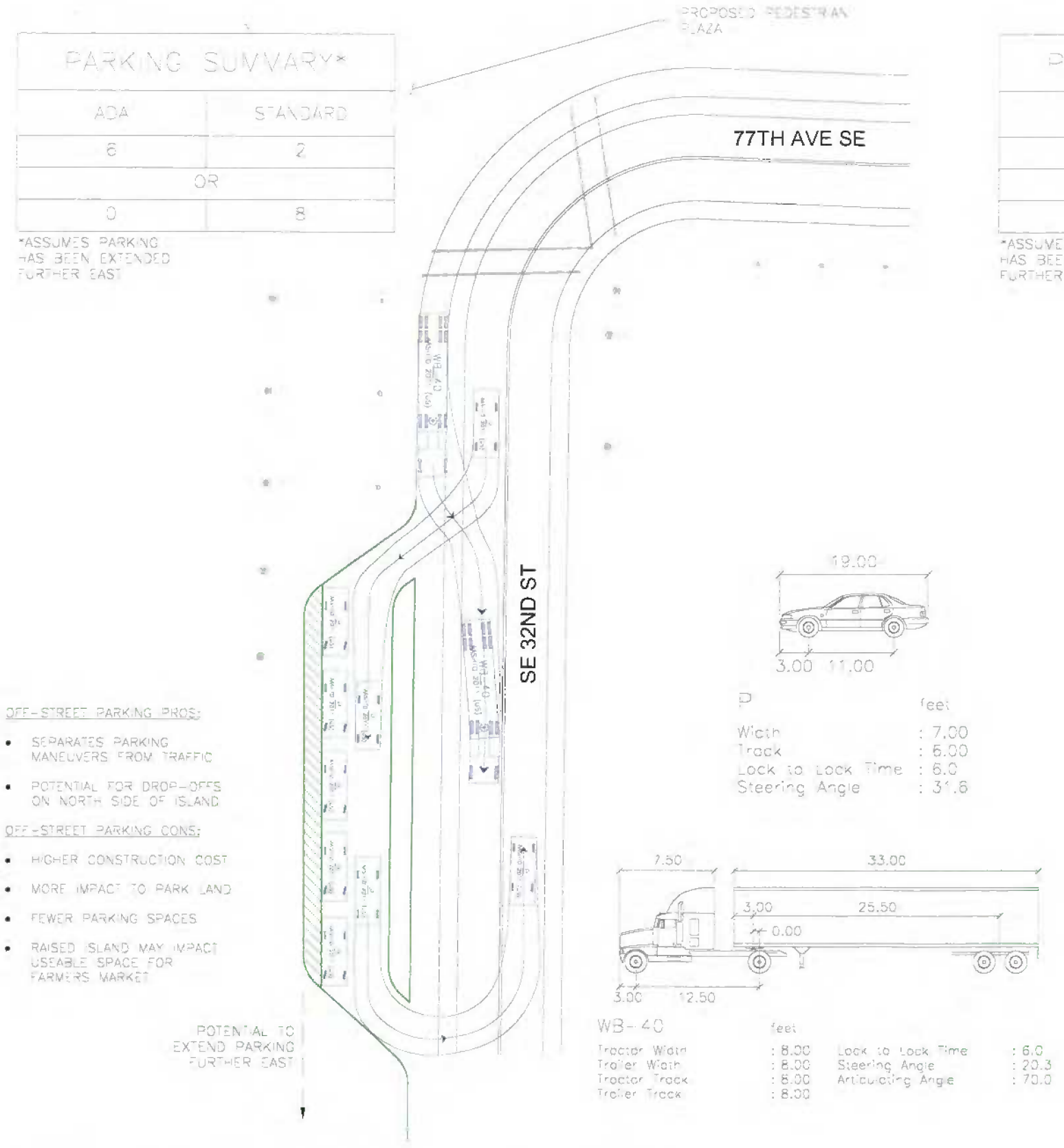


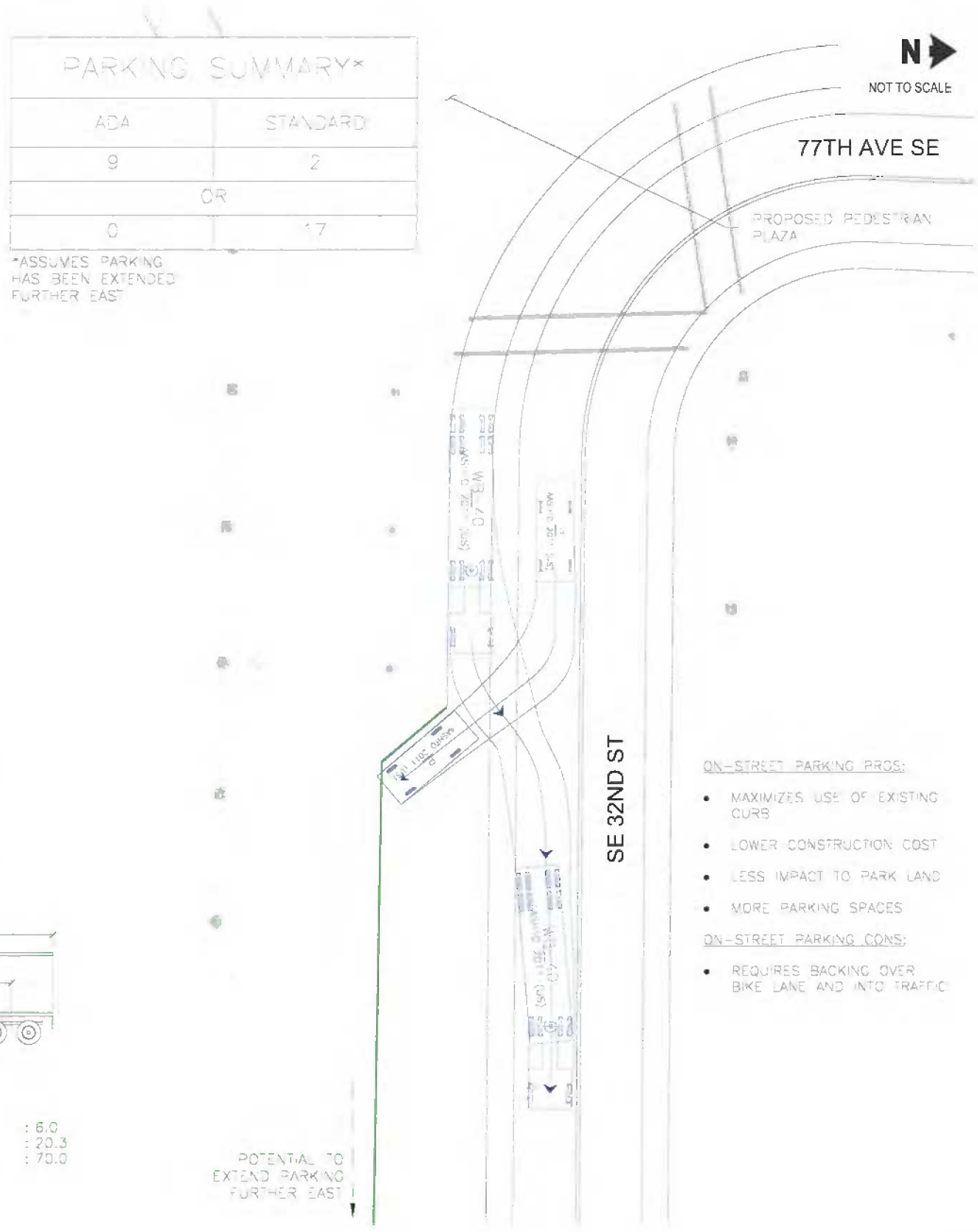
Turning Path - Plaza Turnout Options

Mercer Island Center for the Arts - August 20, 2015

FIGURE **4**

transpogroup
WHAT TRANSPORTATION CAN BE.





Turning Movement - SE 32nd Street Parking Options

Mercer Island Center for the Arts - August 20, 2015

M:\15\15249.00 - Mercer Island Center for the Arts\Engineering\CAD\Concept.ue\MICA Turning Movement Concepts 2015 08 19.dwg<C4>Shane Singer 8/25/2015 12:20 PM

FIGURE
5

transpogroup
WHAT TRANSPORTATION CAN BE

77th Ave SE Parallel Parking

Mercer Island Center for the Arts - August 20, 2015

FIGURE
6

transpogroup
WHAT TRANSPORTATION CAN BE.

Draft SEPA Environmental Checklist

Mercer Island Center for the Arts

Attachment H
Phase 1 Environmental Review

February 2, 2016

Compliant with All Appropriate Inquiry
Final Rule: 40 CFR Part 312

PHASE I
ENVIRONMENTAL
SITE ASSESSMENT

Subject Property:

MERCER ISLAND CENTER FOR THE ARTS
Southwest Corner of 78th Avenue Southeast and Southeast 32nd Street
Mercer Island, Washington 98040

Prepared for:
Mercer Island Center for the Arts
Post Office Box 1702
Mercer Island, Washington 98040

Prepared by:
AEROTECH
ENVIRONMENTAL CONSULTING, INC.
13925 Interurban Avenue South, Suite No. 210
Seattle, Washington 98168
Fax (206) 402-3872
(360) 710-5899
www.AerotechEnvironmental.com

Compliant with All Appropriate Inquiry
Final Rule: 40 CFR Part 312

PHASE I
ENVIRONMENTAL
SITE ASSESSMENT

Clients:	**MERCER ISLAND CENTER FOR THE ARTS** Post Office Box 1702 Mercer Island, Washington 98040
Point of Contact:	Mr. Benjamin S. Pariser Mercer Island Center for the Arts (206) 963-4818
Property:	**MERCER ISLAND CENTER FOR THE ARTS** Southwest Corner of 78th Avenue Southeast and Southeast 32nd Street Mercer Island, Washington 98040
County:	King County, Washington Parcel Number: 122404-9068
S.I.C. Code:	Not provided
Commercial Activity:	Recreational Park
Environmental Assessor:	Ms. Tiffany A. Chaussee
Project Number:	No. 215 - 5266
Report Date:	December 18, 2015

EXECUTIVE SUMMARY

The subject of this Phase I Environmental Site Assessment is a rectangular-shaped approximately 12.26-acre Parcel of land located on the southwest corner of the intersection of Southeast 78th Avenue and Southeast 32nd Street in Mercer Island, Washington.

The subject Property occupies *Mercerdale Park*. The majority of the land consists of a large open lawn that is bordered by a paved footpath that encircles the entire Site. Along the footpath are exercise stations. A playground is located along the southeastern side of the Site and a skatepark is located on the southwestern. On the west side of the park is an access point to trails that lead up the hillside into seven-acres of natural open space. The northeast corner of the park houses a paved picnic area with a covered pergola that faces the intersection of Southeast 32nd Street and 78th Avenue Southeast. On the northwestern side of the Property is an approximately 1,120 square foot, single story structure. This building houses two public restrooms located in the north side of the building and a separate storage room occupies the southern portion of the building. Outdoor sinks are located along the west exterior wall of the building and an attached canopy is located along the southeastern side of the building and covers a paved area.

The subject Property was originally developed in 1975 with the construction of the single story, 1,120 square foot building on the northwestern side of the Property. The building was used as a small recycling center by a "Committee To Save The Earth" and the Mercer Island High School. Around the 1970s, the Property was land was cleared as a field. The pedestrian pathways were added in the mid to late 1990s. In 2002, the present-day playground and skate park were constructed. Today, the northwest building appears to only be utilized as a maintenance storage shed for the park and the northern side of the building houses public restrooms. *The Mercer Island Center for the Arts* is anticipated to occupy the northwestern shop building in the near future.

The Property is located in downtown Mercer Island. To the north is Southeast 32nd Street followed by a retail strip building and Rite Aid. To the south is Mercer Island Thrift Shop ,a parking lot, and residences to the southwest. To the east is 78th Avenue Southeast followed by the Mercerdale Professional Center. To the west is heavily wooded land.

Upon completion of the Site investigation, historical research, document file review, and other tasks as stipulated in the Scope of Work, the following Recognized Environmental Conditions, potential environmental concerns, or recommended actions were identified:

- **Recommendation: No Further Action Indicated.** As a result of the on-site Reconnaissance, records research, historical investigation, and review of Federally reported environmental information, this Assessment has revealed no obvious evidence of potential environmental risks or Recognized Environmental Conditions indicating the presence of hazardous or other conditions. It is reasonable and prudent to believe that the risk of contamination is so minimal that no further investigation is warranted.

Upon the completion of this Assessment, no further investigation, remediation, or response actions are indicated, suggested, or recommended relative the potential environmental conditions at the subject Property other than those previously discussed. Based upon this Phase I Environmental Site Assessment, with those exceptions, it is reasonable and prudent for the Client to believe there is no other significant risk of contamination.

ASTM PROTOCOL CONCLUSION

We have performed a *Phase I Environmental Site Assessment* in conformance with the scope and limitations of ASTM Practice 1527 (Revision 2013) for Southwest Corner of 78th Avenue Southeast and Southeast 32nd Street in Mercer Island, Washington, the *property*. Any exceptions to, or deletions from, this practice are described in Possible Report Exceptions To All Appropriate Inquiry Rule Section[1] of this *report*.

This Assessment has no revealed evidence of *recognized environmental conditions*[2] in connection with the *property*.

This Assessment has no revealed evidence of an *historical recognized environmental condition* in connection with the *property*[3].

This Assessment has no revealed evidence of a *controlled recognized environmental conditions*[4] in connection with the *property*.

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[1] Refer to page 5 of this Assessment.

[2] *Recognized Environmental Condition* - the presence of likely presence of any *hazardous substances* or *petroleum products* in, on, or at a *property* under conditions that indicate an existing release, a past release, or a *material threat* of a release of any *hazardous substances* or *petroleum products* into structures on the *property* or into the ground, ground water, or surface water of the *property*. The term includes *hazardous substances* or *petroleum products* even under conditions in compliance with laws. The tern is not intended to include *de minimis conditions* that generally do not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies. Conditions determined to be de minimis are not *recognized environmental conditions*.

[3] *Historical Recognized Environmental Condition* – a past release of any hazardous substance or petroleum product that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory agency or meeting the unrestricted residential use criteria established by a regulatory authority, without subjecting the property to any required controls such as property use restrictions, activity and use limitations, institutional controls, or engineering controls – at the time of the completion of the Environmental Site Assessment.

[4] *Controlled Recognized Environmental Condition* – a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority with hazardous substances or petroleum products allowed by remain in place subject to the implementation of required controls. A condition identified as a Controlled Recognized Environmental Condition does not imply that the Assessment has evaluated or confirmed the adequacy, implementation, or continued effectiveness of the required control that has been, or is intended to be implemented.

This Phase I Environmental
Site Assessment was performed in
Compliance with the
All Appropriate Inquiry (AAI)
Final Rule: 40 CFR Part 312[5]

POTENTIAL REPORT EXCEPTIONS TO ALL APPROPRIATE INQUIRY RULE:

§ 40 CFR Part 312.25 Searches for recorded environmental cleanup liens. (a) All appropriate inquiry must include a search for the existence of environmental cleanup liens against the subject property that are filed or recorded under federal, tribal, state, or local law.

§ 40 CFR Part 312.28 Specialized knowledge or experience on the part of the defendant. (a) Persons to whom this part is applicable per § 312.1(b)[6] must take into account, their specialized knowledge of the subject property, the area surrounding the subject property, the conditions of adjoining properties, and any other experience relevant to the inquiry, for the purpose of identifying conditions indicative of releases or threatened releases at the subject property, as defined in § 312.1(c).

§ 40 CFR Part 312.29 The relationship of the purchase price to the value of the property, if the property were not contaminated. (a) Persons to whom this part is applicable per § 312.1(b) must consider whether the purchase price of the subject property reasonably reflects to fair market value of the property, if the property were not contaminated.

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[5] A copy of excerpts from the *Standards and Practices for All Appropriate Inquiries; Final Rule* U.S. EPA, 40 CFR Part 312, 70 FR 66070, November 1, 2005, in included in the Appendix of this Report, in the Section entitled Supplemental Documents.

[6] § 312.1(b). *Applicability*. The requirements of this part are applicable to: (1) Persons seeking to establish: (i) The innocent landowner defense pursuant to CERCLA sections 101(35) and 197(b)(3); (ii) The bona fide prospective purchaser liability protection pursuant to CERCLA sections 101(40) and 107(r); (iii) The contiguous property owner liability protection pursuant to CERCLA section 107(q); and (2) persons conducting site characterization and assessments with the use of a grant awarded under CERCLA section 104(k)(2)(B).

ASSESSMENT OVERVIEW

Purpose:

The purpose of this Assessment is to comply with selected sections of the standards and practices for "all appropriate inquiry" for the purposes of CERCLA sections 101(35)(B)(i)(I) and 101(35)(B)(ii) and (iii), as defined in *Standards and Practices for All Appropriate Inquiries; Final Rule*, U.S. EPA, 40 CFR Part 312 (70 FR 66070). Some of the requires contained in Part 312 are excluded from this Assessment, as delineated in the preceding Section entitled "Report Exceptions to All Appropriate Inquiry Rule."

The business purpose of this Phase I Environmental Site Assessment was to investigate, review, assess, and evaluate – through historical research, document and record review, generally available environmental data, visual or physical observations, and inspection by a trained assessor – the presence or likely existence of:

- Contamination by hazardous materials, generally recognized environmental contaminants, visible pollutants, underground contaminants, and asbestos-containing materials.
- The possibility that these materials are or may have been introduced – by internal generation, external introduction, or unknown sources – into the structure or subject Property.
- A brief overview, evaluation, and assessment of the severity of the current potential environmental risk based upon known standards or applicable regulations.

Unless specifically noted within the text of this Report, this Phase I Environmental Site Assessment does not include or address groundwater, soil, or extraneous material contamination upon or under the surface soils, with respect to testing, coring, or sampling analysis.

Protocol:

The procedure for this Environmental Site Assessment was to perform in practical and reasonable steps-- employing currently available technology, existing regulations, and generally acceptable engineering practices – an investigation to ascertain the possibility, presence, or absence of environmental releases, threatened releases, or Recognized Environmental Conditions, as limited by the Scope of Work. As such, this Assessment was performed in substantial compliance with the ASTM Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process (Designation E 1527-13).

Objectives:

- To attempt to accomplish all appropriate inquiry into ownership and uses of the Property consistent with good commercial or customary practice, in an effort to minimize liability.
- To conduct an investigation of the Property that will assist ownership's positioning within the "safe harbor" section of the Federal Superfund liability in 42 U.S.C. §9601(35), the Lender Liability Final Rule, and the CERCLA amendments enacted as part of the 2002 Brownfields Act.
- To provide environmental information that will assist in evaluating ownership's risk of potential loss or value impairment of the security interest due to environmental defects; and information for decisions and operational limitations concerning the National Pollution Contingency Plan.

While this Phase I Assessment cannot absolutely quantify and qualify every possible past and present environmental risk, the Assessment does provide a partial information basis for reasonable decision making regarding the potential for environmental liabilities and risk, based upon the current Site-specific situation, Assessment limitations, and methods of evaluation.