



CITY OF KIRKLAND
Planning and Building Department
123 5th Avenue, Kirkland, WA 98033
425.587.3600 - www.kirklandwa.gov

CITY OF KIRKLAND
NOTICE OF DECISION
REASONABLE USE EXCEPTION PERMIT

JULY 15, 2022

Permit Application: FANAIYAN GOAT HILL 2 REASONABLE USE EXCEPTION
([SAR19-00591](#))

Location: [11662 91ST PLACE NE](#) (see Attachment 1)

Applicant: Zbigniew Konofalski with ZK Architecture

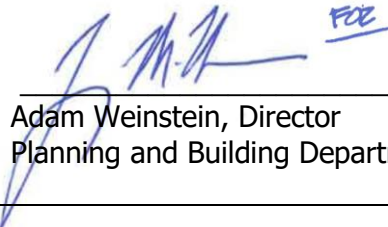
Project Description: The applicant is requesting approval of a reasonable use exception permit to allow construction of a single-family residence within a Category IV wetland buffer (see Attachment 2). With the exception of approximately 665 square feet along the west side of the property, the site is encumbered by critical area and critical area buffer. No portion of the new residence will extend into the sensitive area.

Review Process: Reasonable Use Exception Permit (Process I)

Project Planner: Jennifer Anderer, Associate Planner

SEPA Determination: Exempt

Department Decision: **Approval with Conditions**



Adam Weinstein, Director
Planning and Building Department

Decision Date:	July 13, 2022
Appeal Deadline:	July 29, 2022

Affected property owners may request a change in valuation for property tax purposes notwithstanding any program of revaluation.

How to Appeal:

Only the applicant or those persons who previously submitted written comments or information to the Planning Director are entitled to appeal this decision. A party who signed a petition may not appeal unless such a party also submitted independent written comments or information. An appeal must be

in writing and delivered, along with fees set by ordinance, to the Planning Department by 5:00 p.m., July 29, 2022. For information about how to appeal, contact the Planning Department at (425) 587-3600. An appeal of this project decision would be heard by the Hearing Examiner.

Comment to City Council: If you do not file an appeal, but would like to express concerns about policies or regulations used in making this decision or about the decision making process, you may submit comments to citycouncil@kirklandwa.gov. Expressing your concerns in this way will not affect the decision on this application, but will enable the City Council to consider changes to policies, regulations or procedures that could affect future applications.

I. CONDITIONS OF APPROVAL

- A.** This application is subject to the applicable requirements contained in the Kirkland Municipal Code, Zoning Code, and Building and Fire Code. Attachment 3, Development Standards, is provided in this report to familiarize the applicant with some of these development regulations. This attachment references current regulations and does not include all of the additional regulations. It is the responsibility of the applicant to ensure compliance with the various provisions contained in these ordinances. When a condition of approval conflicts with a development regulation in Attachment 3, the condition of approval shall be followed (see Conclusion II.H.2).
- B.** As part of the application for a Building Permit the applicant shall submit:
1. Plans consistent with the proposal shown in Attachment 2 (see Conclusions II.C.4.b, II.C.5.b, and II.C.6.b)
 2. Plans consistent with the mitigation plans in Attachment 13 and Attachment 15 (see Conclusion II.E.2.d) and including a revised revegetation plan that includes the following items (see Conclusion II.E.2.b):
 - a. A Temporary Erosion and Sediment Control (TESC) plan that complies with the City's Public Works Pre-Approved Plans.
 - b. A revised revegetation plan identifying local sourcing of all plantings and noting includes a note referencing that plant materials may be supported with material (e.g. stakes, guy wires) only when necessary.
 - c. A final watering plan specifying the planned method for watering with the revised revegetation plan.
 3. A monitoring and maintenance plan consistent with the mitigation plans in Attachment 13 and Attachment 15 (see Conclusion II.E.2.d).
 4. Construction plans that incorporate the recommendations from the geotechnical engineering study prepared by Geotech Consultants, Inc. dated June 24, 2021 and July 30, 2021 (see Attachment 8 and 9) (see Conclusion II.F.2.a).
- C.** Prior to issuance of the building permit, the applicant shall:
1. Record a Geologically Hazardous Areas Covenant on the subject property (see Conclusion II.F.2.b and Attachment 18).
 2. Dedicate a Natural Greenbelt Protective Easement encompassing the wetland and stream buffer enhancement areas on the site. The boundaries of the Natural Greenbelt Protective Easement shall be consistent with the site plan in Attachment 2 and established by survey. All surveys shall be located on KCAS or plat bearing system and tied to known monuments (see Conclusion II.G.2).
- D.** During construction the applicant shall implement the approved mitigation plan pursuant to the standards in KZC 90.145 (see Conclusion II.E.2.a).
- E.** Prior to final inspection of the building permit the applicant shall:
1. Complete on-site mitigation plantings or submit a performance financial security to the City along with a timeline commitment for planting (see Conclusion II.E.2.c).
 2. Record a Notice of Geologically Hazardous Area on the property (see Conclusion II.F.2.c and Attachment 19)

II. FINDINGS OF FACT AND CONCLUSIONS

A. SITE DESCRIPTION

1. Site Development and Zoning:

a. Facts:

- (1) Size: 5,743 square feet / 0.131 Acre
- (2) Land Use: The subject property is currently undeveloped
- (3) Zoning: RSA 4, Low Density Residential
- (4) Plat Name: The property was created as Lots 7 and 8, Plat Block 1, of the Juanita Beach Camps
- (5) Terrain: The lot slopes down from northwest to southeast at a fairly consistent grade of 20% (26' of elevation over 125 linear feet) (see Attachment 2). City maps identify the property as being completely encompassed by moderate to high landslide hazard areas (see Attachment 4). A Geotechnical Engineering Study prepared by Geotech Consultants, Inc. dated December 21, 2017 was submitted with the application (see Attachment 5) and a geotechnical analysis can be found in Section II.F of this report.
- (6) Utilities: Water and sewer service for this property are provided by Northshore Utility District (NUD) via existing infrastructure located near the north-east corner of the subject property.
- (7) Trees: Due to the proposed construction, grading requirements (see Attachment 8 and 9), and side sewer requirements there are 8 significant trees on the site that will be affected by the proposed development. Attachment 11 shows the location, tree number, and general health of the trees, as assessed by the applicant's arborist. The application is subject to review per KZC 95.30.3. See Attachment 3, Development Standards, for information on the City's review of the arborist report as well as tree preservation requirements. The City's Development Review Arborist has approved the applicant's retention proposal.
- (8) Hydrology: A Type Ns stream and Category IV wetland have been identified south-east of the subject property. A Category IV wetland has been identified in the middle of the southern half of the lot. Per Kirkland Zoning Code (KZC) Chapter 90, the Type Ns stream has a 50' buffer, and the Category IV wetlands have a buffer of 40'. These buffers encompass nearly the entire site with the exception of approximately 665 square feet along the west property line of the site (see Attachment 2).

- ##### **b. Conclusions:**
- The on-site wetland and off-site stream and wetland are constraining factors in the review of this application because their respective buffers encompass nearly the entire site outside of the required yards.

2. Neighboring Development and Zoning:

- ##### **a. Facts:**
- The properties to the north and west of the subject property are zoned for single-family residential and contain existing residences. The properties to the south and east of the subject property are zoned for multi-family residential and contain existing multi-family residences.

- b. Conclusion: The proposed single-family residence is compatible with the neighboring developments, and neighboring development and zoning are not constraining factors in the review of this application.
- 3. Reasonable Use Exception
 - a. Facts:
 - (1) The applicant's reasonable use exception application was deemed complete by City staff on January 24, 2020.
 - (2) The City of Kirkland adopted Ordinance No. 4713 on December 10, 2019. That ordinance updated the reasonable use exception code and allowed applicants to vest under the previous reasonable use regulations as long as their application was deemed complete by March 10, 2020.
 - b. Conclusions: A complete application for the proposal was submitted prior to the deadline established in Ordinance No. 4713. Therefore, this application is vested under the previous Reasonable Use Exception provisions. The previous regulations are identical to those found in KZC 90.180.B and applicable citations in this report reference that section.

B. PUBLIC COMMENT

The public comment period for this application ran from February 13, 2020 to March 4, 2020. One public comment email was received (see Attachment 12). A neighbor called the City to discuss the project and provided a follow up email discussing their concerns about site storm drainage and soil stabilization measures. The Public Works Director contacted the neighbor to confirm site storm drainage and soil stabilization will be reviewed as part of the building permit. The applicant will be required to address the slope and design the project to protect adjacent properties from drainage and stabilization impacts. Slope stability and geotechnical issues are discussed further in Section II.F, below.

C. REASONABLE USE EXCEPTION

- 1. Reasonable Use Process
 - a. Facts:
 - (1) The lot size of the subject property is 5,743 square feet, of which approximately 5,078 square feet (approximately 88%) is encumbered by a wetland, stream and/or their required buffers (see Attachment 2).
 - (2) The stream located south-east of the property has been typed as a Seasonal non-fish bearing (Ns) stream requiring a 50' buffer per KZC 90.65 (see Attachment 13). The wetland located south-east of the property has been typed as a Category IV wetland requiring a 40' buffer per KZC 90.55 (see Attachment 13). The on-site wetland has been typed as a Category IV wetland requiring a 40' buffer per KZC 90.55 (see Attachment 13). The on-site wetland buffer is the most restrictive of the three buffers covering the majority of the site (see Attachment 2).
 - (3) KZC 90.115.2 allows for buffer averaging when the following criteria are met: (a) The buffer width is not reduced below 75% of the required buffer width in any location; (b) The total area contained in the buffer area after averaging is no less than what

would be contained within the standard buffer width and is contiguous to the buffer; buffer averaging will provide additional protection to the critical area; and, (c) The critical area contains variations in sensitivity due to existing physical characteristics or the character of the buffer varies in slope, soils, or vegetation, and the wetland or stream would benefit from a wider buffer in one area and would not be adversely impacted by a narrower buffer in another area.

- (4) Averaging of the wetland and stream buffer per KZC 90.115 requires no net loss of buffer area, which would require a wider on-site buffer in some location to compensate for a smaller buffer in another location. Approximately 12% of the site is encumbered by critical area or buffer, and the majority of that area is in the required front yard.
- (5) KZC 90.180.B.3 states that if strict application of the City's Critical Area Ordinance (KZC 90) would preclude all reasonable use of the subject property, an owner of the subject property may apply for a reasonable use exception.
- (6) KZC 90.180.B.4 requires that the applicant submit a critical area report pursuant to KZC 90.110 and including the items set forth in KZC 90.180.B.4.a-j, prepared by a qualified critical area professional, and peer reviewed by the City's consulting qualified critical area professional.
- (7) The applicant has submitted a final critical area report responding to the reasonable use exception decisional criteria prepared by Confluence Environmental Company and dated February 17, 2022 (see Attachment 13).
- (8) The applicant's critical area report has been peer reviewed by the City's consulting qualified critical area professionals, The Watershed Company, and they have submitted a final peer review letter and recommendations to the City dated April 6, 2018 (see Attachment 14).
- (9) The applicant has submitted a response to The Watershed Company's recommendations prepared by Confluence Environmental Company dated April 27, 2022 (see Attachment 15) satisfying City requirements.
- (10) KZC 90.180.B.5.a-j establishes ten (10) decisional criteria for the approval of a reasonable use application.

b. Conclusions:

- (1) A buffer modification approval would not increase the buildable area on the subject property due to 88% of the property being encumbered by critical area or critical area buffer.
- (2) The applicant is eligible to apply for a reasonable use exception per KZC 90.180.B.3.
- (3) The applicant has submitted the required documents set forth in KZC 90.180.B.4.
- (4) Based on the following analysis in Subsections C.2-11 and with the recommended Conditions of Approval in Section I, the application meets the established decisional criteria for approving

a reasonable use application under a Process I.

2. Decisional Criterion KZC 90.180.B.5.a: The City may approve reasonable use exceptions in residential zones for one (1) single-family dwelling.
 - a. Fact: The applicant has proposed to construct one (1) single-family dwelling on the subject property.
 - b. Conclusion: The proposed use can be approved through a reasonable use exception.
3. Decisional Criterion KZC 90.180.B.5.b: There is no feasible alternative to the proposed activities and uses on the subject property, including reduction in size, density or intensity, 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 economic use with less adverse impacts to the critical area and buffer.
 - a. Facts:
 - (1) Per Section II.C.1 above, approximately 88% of the subject property is encumbered by the on-site wetland and wetland and stream buffers, and a modification to the wetland buffer through buffer averaging would not decrease the lot area encumbered by the buffer, nor would it increase the buildable area on the lot.
 - (2) The applicant has proposed to construct a single-family dwelling on the subject property consisting of a 1,330 square feet building footprint, and a total of 2,860 square feet of floor area.
 - (3) The proposed project is smaller in footprint and square footage than other existing single-family dwellings in the vicinity which have an average of 3,200 square foot building footprints and 4,100 square feet of floor area.
 - (4) The proposal for the single-family dwelling includes an 18' wide by 19.75' long driveway leading to a two-car garage.
 - (5) The applicant has proposed a modification to the front setback from 91st PL NE (see Section II.D below) in order to locate the building further west and as far away from the critical area as possible.
 - b. Conclusion: The applicant has limited the size of the proposed structure and access pavement and located the proposed improvements on the portion of the property furthest from the critical areas in order to limit the impact to the adjacent stream and wetland. There are no further feasible alternatives to the proposed single-family dwelling on the subject property that would allow a reasonable economic use with less adverse impacts to the critical area and buffer.
4. Decisional Criterion KZC 90.180.B.5.c: Unless the applicant can demonstrate unique circumstances related to the subject property, the amount of site area that will be disturbed by structure placement and all land alteration associated with the proposed development activity, including but not limited to land surface modification, utility installation, decks, driveways, paved areas, and landscaping, shall not exceed the following limits:
 - KZC 90.180.B.5.c.1: if the subject property contains 6,000 square feet of area or less, no more than 50% of the site may be disturbed;
 - KZC 90.180.B.5.c.2-3 do not apply;

- KZC 90.180.B.5.c.4: the amount of allowable disturbance shall be that which will have the least impact on the critical area and the critical area buffer given the characteristics and context of the subject property, critical area, and buffer;
- KZC 90.180.B.5.c.5: public improvements within the right-of-way required by Chapter 110 KZC (for example required curb, gutter and sidewalk improvements) are not counted in the maximum allowable area of site disturbance. The City shall allow or require modifications to the public improvement standards that minimize the impact to the critical area and buffer and any impacts associated with required public improvements shall be mitigated by the applicant;
- KZC 90.180.B.5.c.6: the portion of a driveway located within an improved right-of-way is not counted in the maximum allowable area of site disturbance. However, a driveway or any other private improvement located in an unimproved right-of-way shall be counted in the maximum allowable area of site disturbance.

a. Facts:

- (1) The subject property contains 5,743 square feet of area, and the maximum allowed disturbance is 2,871.5 square feet (50%). The applicant is proposing 2,868 square feet of disturbance, including the building and surrounding yard area, driveway, and sewer trench to connect to the public sewer to the east of the subject property (see Attachment 2).
- (2) The off-site stream is located south-east of the property and the stream buffer covers approximately 680 square feet of the south-east corner of the property (see Attachment 2).
- (3) The off-site wetland is located south-east of the property, and the wetland buffer covers approximately 1,836 square feet of the east side of the property (see Attachment 2).
- (4) The on-site wetland is located in the center of the property near the south property line, and the wetland buffer encompasses 4,728 square feet or 82% of the property (see Attachment 2).
- (5) The applicant has proposed to locate the disturbed area on the western portion of the property, as far away as possible from the on-site wetland. (see Attachment 2).
- (6) The proposed driveway is located on the subject property providing access to 91st PL NE, which is an improved right-of-way.

b. Conclusions:

- (1) The proposal complies with the maximum allowed disturbance area of 2,871.5 square feet; 50% of the lot size (see Attachment 2).
- (2) The disturbed area is located as far away as possible from the on-site wetland and off-site stream and wetland in order to have the least impact on the critical area and the critical area buffers.
- (3) The proposed driveway located on-site to access 91st PL NE right-of-way is contained within the maximum allowable area of site disturbance (see Attachment 2).

5. Decisional Criterion KZC 90.180.B.5.d: The proposal is compatible in design, scale and use with other legally established development in the immediate vicinity of

the subject property in the same zone and with similar critical area site constraints.

a. Facts:

- (1) The properties to the north and west of the subject property are within the same RSA 4 (Low Density Residential) zone as the subject property and contain single-family dwellings. The properties to the south and east of the subject property are zoned RMA 3.6 and RM 2.4 (Medium Density Residential) respectively and contain multi-family dwellings.
- (2) The applicant's proposal does not exceed the maximum lot coverage, floor area ratio, nor height requirements allowed for a property zoned RSA 4 located within the Juanita Beach Camps subdivision.
- (3) The applicant's proposal is comparable in scale and floor area to other City approved reasonable use exception projects within the RSA 4 zone including the following projects:
 - Address: 8800 NE 117th PL
Permit Number: SAR14-01596
Property Size: 7,288 square feet
Building Footprint: 1,357 square feet
Floor Area: 2,942 square feet
 - Address: 11718 90th Ave NE
Permit Number: SAR17-00156
Property Size: 5,260 square feet
Building Footprint: 1,339 square feet
Floor Area: 2,628 square feet
 - Address: 11807 89th Ave NE
Permit Number: SAR17-00627
Property Size: 6,140 square feet
Building Footprint: 1,400 square feet
Floor Area: 3,727 square feet
 - Address: 8802 NE 117th PL
Permit Number: SAR19-00213
Property Size: 9,269 square feet
Building Footprint: 929 square feet
Floor Area: 2,777 square feet
 - Address: 13841 62nd Ave NE
Permit Number: SAR19-00521
Property Size: 7,200 square feet
Building Footprint: 1,040 square feet
Floor Area: 2,789 square feet
- (4) The applicant has requested a front setback reduction of 50% per the provisions in KZC 90.180.B.6.a.1 (see Section II.D below) consistent with modifications allowed for other properties with similar critical area site constraints.
- (5) The applicant has requested a buffer setback reduction from 10 feet to 5 feet per the provisions in KZC 90.180.B.6.a.3 (see Section

II.D below) consistent with modifications allowed for other properties with similar critical area site constraints.

- b. Conclusion: The proposal is compatible in design, scale and use with other properties within the same zone and with similar critical area site constraints (see Attachment 2).
6. Decisional Criterion KZC 90.180.B.5.e: The proposal utilizes to the maximum extent possible innovative construction, design, and development techniques that minimize to the greatest extent possible net loss of critical area functions and values, including pin construction, and vegetated roofs.
- a. Facts:
 - (1) The applicant has proposed the new house footprint and the area to be disturbed as far away as possible from the critical areas (see subsection 4 above, and Attachment 2).
 - (2) The applicant is proposing to disturb no more than 2,868 square feet of the subject property.
 - (3) The proposed single-family dwelling will utilize innovative construction including a green roof and pin construction to minimize grading of the steep slope (see Attachment 2).
 - (4) The applicant has submitted an analysis of current buffer conditions (see Attachment 13) that has been reviewed and approved by the City's qualified critical area professionals (see Attachment 14). Per the approved analysis of current buffer conditions, the existing buffer provides limited function, is lacking any native shrubs or groundcover, and contains invasive species.
 - (5) The applicant has submitted a plan for enhancement of the 2,875 square feet of the stream and/or wetland buffers (see Attachment 13) that has been reviewed and approved by the City's qualified critical area professional (see Attachment 14, and mitigation analysis in Section II.E below). Per the approved enhancement plan, the enhancement plan will increase buffer function.
 - (6) The applicant has requested a front setback reduction of 50% per the provisions in KZC 90.180.B.6.a (see Section II.D below) in order to locate the building footprint as far away from the off-site wetland as possible.
 - b. Conclusion: The proposal has utilized design and development techniques that minimize possible net loss of critical area function and values (see Attachment 2).
7. Decisional Criterion KZC 90.180.B.5.f: The proposed development does not pose an unacceptable threat to the public health, safety, or welfare on or off the subject property.
- a. Facts:
 - (1) The applicant's proposal includes a mitigation plan for impacts to the stream and wetland buffer (see mitigation analysis in Section II.E below). The proposed impacts are to the critical buffers only, not the critical areas themselves.
 - (2) The applicant's proposed buffer enhancement plan includes measures to: remove invasive species; install native trees and shrubs; and, install plantings to provide more erosion control for

the hillside.

- (3) The City's GIS maps show moderate and high landslide hazards over the subject property (see Attachment 4). Staff has analyzed the geologically hazardous areas in Section II.F below.
 - (4) The City's Building Division will review the building permit application for compliance with building and life/safety codes.
 - b. Conclusion: The proposed development does not pose an unacceptable threat to the public health, safety, or welfare on or off the subject property.
8. Decisional Criterion KZC 90.180.B.5.g: The proposal meets the mitigation, maintenance, and monitoring requirements of this chapter.
 - a. Fact: An analysis of the mitigation, maintenance, and monitoring compliance is provided in Section II.D, below.
 - b. Conclusion: Per the analysis and conclusions in Section II.D below, the proposal meets the mitigation, maintenance, and monitoring requirements of KZC Chapter 90.
9. Decisional Criterion KZC 90.180.B.5.h: The proposed development is on a lot meeting the criteria of KZC 115.80, Legal Building Site.
 - a. Facts:
 - (1) Per KZC 115.80, a lot or parcel is a legal building site if it meets all of the following criteria:
 - It was created or segregated pursuant to all applicable laws, ordinances, and regulations (KZC 115.80.1.a).
 - Except as specified in subsection (2) of KZC 115.80, it meets the allowable minimum lot size established by this code (KZC 115.80.1.b).
 - Subsection 2 sets forth that an applicant may build one (1) detached dwelling unit on a lot or parcel regardless of the size of the lot or parcel if:
 - a) the applicant applies for necessary permits to construct the unit within five (5) years of the date the lot or parcel is annexed into the City and the lot or parcel was a lawfully created lot under King County subdivision and zoning laws;
 - b) there is or ever has been a residence on the subject property. At any time, the applicant may remodel, rebuild, or enlarge that one (1) residence; provided, that all other Zoning Code requirements are met;
 - c) the lot size was approved pursuant to all applicable laws, ordinances and regulations; or,
 - d) the lot lines defining the lot or parcel were recorded in the King County Assessor's Office prior to May 17, 1972, and the lot or parcel has not simultaneously been owned by the owner of a contiguous lot or parcel which fronts on the same right-of-way subsequent to May 17, 1972
 - It is either adjacent to, or has a legally created means of access to, a street providing access to the lot or parcel

(KZC 115.80.1.c).

- (2) Pursuant to KZC 115.80.1.a, the subject property was created pursuant to all applicable laws, ordinances, and regulations as Lots 7 and 8, Plat Block 1, of the Juanita Beach Camps subdivision, recorded with King County on October 9, 1928.
 - (3) Pursuant to KZC 115.80.1.b, the subject property does not meet the minimum lot size of 7,600 square feet in the RSA 4 zone; however, the lot size was approved pursuant to all applicable laws, ordinances, and regulations in effect at the time it was annexed by the City of Kirkland pursuant to KZC 115.80.2.c (see Attachment 16 and 17).
 - (4) Pursuant to KZC 115.80.1.c the subject property is adjacent to and has access from the existing 91st PL NE right-of-way.
 - b. Conclusion: The subject property is a legal building site per the criteria of KZC 115.80.
10. Decisional Criterion KZC 90.180.B.5.i: The inability to derive reasonable use is not the result of the applicant's actions or that of previous property owners, such as by altering lot lines pursuant to Chapter 22 KMC that results in an undevelopable condition.
 - a. Facts:
 - (1) The subject property was created as Lots 7 and 8, Plat Block 1, of the Juanita Beach Camps subdivision, recorded with King County on October 9, 1928.
 - (2) The City has no record of Lots 7 nor 8 being altered through a lot line alteration since their creation.
 - (3) Per King County Assessor records, the property has remained vacant since the Juanita Beach Camps subdivision was recorded with King County on October 9, 1928.
 - b. Conclusion: The inability to derive reasonable use is not the result of the applicant's actions or that of previous property owners because the lot has not been altered and has existed as Lots 7 and 8, Plat Block 1, of the Juanita Beach Camps subdivision since 1928.
11. Decisional Criterion KZC 90.180.B.5.j: The granting of the exception will not confer on the applicant any special privilege that is denied by this chapter to other lands, buildings, or structures under similar circumstances.
 - a. Facts:
 - (1) Per Subsection II.C.1 above, the applicant is eligible to apply for a Reasonable Use Exception per KZC 90.180.B.3.
 - (2) The subject property is similar in character to properties elsewhere in the City similarly encumbered by critical areas and/or critical area buffers, and which have been issued reasonable use exceptions.
 - (3) Per Subsections C.1-10 above, the subject proposal complies with the other reasonable use exception decisional criteria, as set forth in KZC 90.180.B.5.
 - (4) The applicant proposes to construct a single-family dwelling on the subject property consisting of a 1,330 square feet building

footprint, and a total of 2,860 square feet of floor area, and complies with the RSA 4 zone standards for lot coverage, floor area ratio, and height for properties located within the Juanita Beach Camps subdivision.

- b. Conclusion: The granting of the exception will not confer on the applicant any special privilege that is denied by KZC Chapter 90 to other lands, buildings, or structures under similar circumstances.

D. MODIFICATIONS AND CONDITIONS: REASONABLE USE EXCEPTION

1. Facts:

- a. To provide reasonable use of the subject property and reduce the impact on the critical area and critical area buffer, the Planning Director pursuant to a Process I under Chapter 145 KZC is authorized to approve the following modifications:
- (1) KZC 90.180.B.6.a.1.a: Where the applicant demonstrates that the residential development cannot meet the City's code requirements without encroaching into the critical area or critical area buffer: the required front yard may be reduced by up to 50%; provided, that a minimum of 18.5' long parking pad between the structure and the lot line is provided.
 - (2) KZC 90.180.B.6.a.3: The structure setback from a critical area buffer pursuant to KZC 90.140 may be reduced to five (5) feet in width; provided, that those improvements allowed in this area are limited to:
 - Chimneys, bay windows, greenhouse windows, eaves, cornices, awnings and canopies, and decks above the ground floor extending no more than 18 inches into the structure setback;
 - Benches, walkways, paths and pedestrian bridges extending no more than four (4) feet into the structure setback;
 - Garden sculpture, light fixtures, trellises and similar decorative structures extending no more than four (4) feet in width into structure setback; and
 - Nonnative and native landscaping.
 - (3) The applicant has requested the above-detailed modifications to reduce the required front yard by 50%, to a minimum of 10' (KZC 90.180.B.6.a.1.a), and to reduce the structure setback from the critical area buffer to 5' in width.
 - (4) The subject property is almost entirely encumbered by a wetland buffer, with the wetland itself being located in the middle of the southern half of the property. The building footprint is located on the western portion of the site.
 - (5) While the building footprint cannot be located entirely outside of the wetland buffer, the reduction of the required front yard to a minimum of 10' allows the building footprint to be located farther away from the wetland than the standard 20' front yard minimum setback would allow.
 - (6) The applicant's proposal shows that a 19.75' long parking pad

between the structure and the property line adjacent to 91st PL NE is provided (see Attachment 2).

- (7) The applicant's proposal shows a 5' structure setback from the critical area buffer provided along the east boundary of the house.
- (8) Per the allowances in KZC 90.180.B.6.a.3.a, the applicant's proposal shows a chimney extending 18" into the structure setback on the east façade.

2. Conclusions:

- a. The applicant has met the provisions of KZC 90.180.B.6.a.1.a to reduce the required front yard to a minimum of 10' because the reduction allows the structure to be located farther from the wetland and a 19.75' long parking pad between the structure and property line is provided.
- b. The applicant has met the provisions of KZC 90.180.B.6.a.3 to reduce the structure setback to 5' from the critical area buffer because they have limited the improvements within that area to those items shown in KZC 90.180.B.6.a.3.a.

E. MITIGATION

1. Facts: Modifications to a critical area and/or buffer must be evaluated using mitigation sequencing as required in KZC 90.145.
 - a. Order of Preference: KZC 90.145.1 states that the intent of mitigation sequencing is to evaluate and implement opportunities to avoid, minimize, eliminate or compensate for impacts to critical areas while still meeting the objectives of the project. When a modification to a critical area and buffer is proposed, the modification shall be avoided, minimized, or compensated for, as outlined by WAC 197-11-768, in the following order of preference:
 - Avoiding the impact altogether by not taking a certain action or parts of actions;
 - Minimizing impacts by limiting the degree or magnitude of the action and its implementation;
 - Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;
 - Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action;
 - Compensating for the impact by replacing or providing substitute resources or environments; and/or
 - Monitoring the impacts and compensation projects and taking appropriate corrective measures.
 - b. A mitigation sequencing evaluation for the proposed reasonable use exception was prepared by Confluence Environmental Company, dated February 17, 2022 (see Attachment 13).
 - c. The City's consulting qualified professional, The Watershed Company (TWC), reviewed the applicant's mitigation sequencing evaluation and provided a final peer review letter and recommendations to the City dated April 6, 2022 (see Attachment 14).
 - d. The applicant has submitted a response to The Watershed Company's recommendations dated April 27, 2022 (see Attachment 15). Staff concluded that the proposal and revision response complied with mitigation requirements provided TWC's recommendations are followed.

- e. Mitigation Requirements: Requirements for mitigation are found in KZC 90.145.3-6. The following is a review, in checklist format, of compliance with these requirements.

Complies as proposed	Complies as conditioned	Code Section
Location of Mitigation		
☒	☐	KZC 90.145.3.a Preference shall be given to the location of the mitigation in the following order unless it can be demonstrated that off-site in-kind mitigation is ecologically preferable: 1) On-site in-kind; 2) Off-site in City in-kind; 3) Off-site in-kind within the Lake Washington/Cedar/Sammamish Watershed. <u>Staff Comment/Analysis:</u> The applicant is proposing to complete all mitigation for on-site buffer impacts on the subject property. There is no proposed direct wetland impact.
On-Site versus Off-Site Mitigation		
☒	☐	KZC 90.145.3.b(1) – Mitigation shall occur on-site except when the City determines that the following criteria have been met as part of a proposal under this chapter: a) There is no opportunity for on-site mitigation or on-site opportunities do not have a high likelihood of success due to the size of the property, site constraints, or size and quality of the wetland or location and quality of the stream; b) Off-site mitigation has a greater likelihood of providing equal or improved critical area functions than the impacted critical area; c) Off-site locations shall be in the same Water Resource Inventory Area (WRIA) 8 Lake Washington/Cedar/Sammamish Watershed as the impacted critical area; and d) The off-site critical area mitigation will best meet formally established watershed goals for water quality, flood or conveyance, habitat, or other wetland functions

		that have been established and strongly justify location of mitigation at another site. <u>Staff Comment/Analysis:</u> The applicant is proposing to complete all mitigation for on-site impacts on site per the proposed buffer enhancement plan shown in Attachment 13 and Attachment 15.
Responsible Party for Mitigation Site Mitigation for lost or diminished critical area functions and values for either wetlands or streams shall use the following options:		
☒	☐	KZC 90.145.4.a - Applicant-Responsible Mitigation The applicant is responsible for the implementation, monitoring and success of the mitigation pursuant to this chapter. <u>Staff Comment/Analysis:</u> The applicant is proposing to be responsible for the implementation, monitoring, and success of the mitigation plan on site.
☒	☐	KZC 90.145.4.b – Non-Applicant Responsible Mitigation – Mitigation Bank and In-Lieu Fee Mitigation Credits purchased by an applicant from a mitigation bank or in-lieu program that is certified under federal and state rules may be used as a method of mitigation if approved by the City to compensate for impacts when all of the following apply: a) The City determines as part of the critical area approval that it would provide appropriate compensation for the proposed impacts; b) Projects shall have debits associated with the proposed impacts calculated by the applicant's qualified critical area professional using the credit assessment method or appropriate method for the impact as specified in the approved instrument for the program. The assessment shall be reviewed and approved by the City; c) The proposed use of credits is consistent with the terms and conditions of the certified mitigation bank or in-lieu fee program instrument; and d) The record of payment for credits shall be provided to the City in advance of the authorized impacts but no later than issuance of the building or land surface modification permit. <u>Staff Comment/Analysis:</u> The applicant is proposing to complete all mitigation for on-site impacts on site per the

		proposed buffer enhancement plan shown in Attachment 13 and will not require utilization of mitigation bank credits or in-lieu fee mitigation.
Timing of Mitigation		
☐	☒	KZC 90.145.5.a – On-Site Mitigation 1) On-site mitigation shall be completed immediately before or following disturbance and prior to use or final inspection of the activity or development. Construction of mitigation projects shall be timed to reduce impacts to existing fisheries, wildlife and flora; and 2) The Planning Official may allow flexibility with respect to seasonal timing of excavation or planting for mitigation. If on-site mitigation must be completed after final inspection of a building or land surface modification permit or commencement of an activity, a performance financial security shall be required pursuant to KZC 90.165 along with a timeline commitment for completion. <u>Staff Comment/Analysis:</u> The applicant should complete on-site mitigation plantings prior to the final inspection of the single-family dwelling construction, or submit a performance financial security to the City along with a timeline commitment for planting.
Mitigation Plan Standards: All critical area mitigation plans, except mitigation met through mitigation bank or an in-lieu fee program, shall meet the following standards.		
☒	☐	For proposals involving wetlands, the standards for wetland compensatory mitigation pursuant to KZC 90.150 shall be followed. <u>Staff Analysis:</u> Per KZC 90.150, compensatory mitigation is required for modifications to wetlands and related impacts to buffers. The proposal does not include modification of the on-site or off-site wetlands, therefore, the proposal is not subject to wetland compensatory mitigation.
☒	☐	KZC 90.145.6.a – A mitigation plan must be prepared by a qualified professional and approved by the City. The mitigation plan must: • Address the impacts to a critical area and buffer based on best available science;

		• Be designed to maintain and enhance ecological functions and values, and to prevent risk from hazards posed to the critical area; and • Provide a description of the mitigation site, including location and vicinity map, and rationale for selection of the mitigation site. <u>Staff Analysis:</u> The applicant has submitted a final mitigation plan addressing the above criteria prepared by Confluence Environmental Company dated February 17, 2022 (see Attachment 13). The applicant's mitigation plan has been peer reviewed by the City's consulting qualified critical area professional, The Watershed Company (TWC) (see Attachment 14), who then submitted a final peer review letter and recommendations to the City dated April 27, 2022 (see Attachment 15).
☐	☒	KZC 90.145.6.b(1) – The vegetative buffer standards and requirements in KZC 90.130 must be met. If the buffer does not currently meet the vegetative buffer standards, a detailed final revegetation plan shall be submitted including specification on size and type of each native species of plants, and number and spacing of the plants meeting the City of Kirkland's Critical Area Plant List and standards. <u>Staff Comment/Analysis:</u> The buffer does not currently meet the vegetative buffer standards. The applicant has submitted a mitigation plan with a revegetation plan prepared by Confluence Environmental Company dated February 17, 2022 (see Attachment 13). The Watershed Company provided a final review and recommendations for the revegetation plan on April 6, 2022 (see Attachment 14) which were addressed and satisfied by the applicant in a response prepared by Confluence Environmental Company dated April 27, 2022 (see Attachment 15).
☐	☒	KZC 90.145.6.b(2) - Seed source must be as local as possible, and plants must be nursery propagated unless transplanted from on-site areas approved for disturbance. These requirements must be included in the mitigation plan specifications. <u>Staff Comment/Analysis:</u> The applicant should submit a revised revegetation plan with the building permit identifying local sourcing of all plantings.
☐	☒	KZC 90.145.6.b(3) - Plant materials may be supported with material (e.g., stakes, guy wires) only when necessary. Staking and ties shall follow the International Society of Arboriculture standards. Where support is

		necessary, stakes, guy wires, or other measures must be removed as soon as the plant can support itself, usually after the first growing season. <u>Staff Comment/Analysis:</u> The applicant should submit a revised revegetation plan with the building permit application that includes a note referencing that plant materials may be supported with material (e.g. stakes, guy wires) only when necessary.
☐	☒	KZC 90.145.6.b(5) - Proposed erosion control measures comply with the City's Public Works Pre-Approved Plans. <u>Staff Comment/Analysis:</u> The applicant should submit a Temporary Erosion and Sediment Control (TESC) plan with the building permit that complies with the City's Public Works Pre-Approved Plans.
☒	☐	KZC 90.145.6.b(6) - Mitigation is consistent with other requirements in this code. <u>Staff Comment/Analysis:</u> The mitigation plan is consistent with other requirements in the Kirkland Zoning Code.
☐	☒	KZC 90.145.6.b(7) - All planted areas of the mitigation project have a temporary, above ground sprinkler system set to automatic timers. Temporary sprinkler systems shall be removed in the final year of monitoring once vegetation is well established. When public or private water is not available, a plan for reliable watering by truck or hand shall be included. <u>Staff Comment/Analysis:</u> The applicant has stated that all plant zones will be watered as needed by either water truck or the installation of an irrigation system. The applicant should submit a final watering plan specifying the planned method for watering with the revised revegetation plan as part of the building permit application.

2. Conclusion: Based on the mitigation sequencing analysis in Section II.E.1 above, and the review by The Watershed Company of the project plans, mitigation plan, and monitoring and maintenance plans (see Attachment 13 and Attachment 15) the proposal is consistent with the mitigation sequencing and general mitigation requirements of KZC 90.145, provided that:

- a. The applicant should implement the approved mitigation plan shown in Attachment 13 and Attachment 15, and pursuant to the standards in KZC 90.145.
- b. In addition to the approved mitigation plan in Attachment 13 and Attachment 15 a revised revegetation plan should be submitted with the building permit application that includes the following items:
 - (1) A Temporary Erosion and Sediment Control (TESC) plan that complies with the City's Public Works Pre-Approved Plans; and
 - (2) A revised revegetation plan identifying local sourcing of all plantings and noting includes a note referencing that plant materials may be supported with material (e.g. stakes, guy wires) only when necessary.
 - (3) A final watering plan specifying the planned method for watering with the revised revegetation plan.
- c. The applicant should complete on-site mitigation plantings prior to the final inspection of the single-family dwelling construction or submit a performance financial security to the City along with a timeline commitment for planting.
- d. The applicant should implement and comply with the approved monitoring and maintenance plan in Attachment 13 and Attachment 15 and shall submit a monitoring report to the Planning Official at required scheduled intervals.

F. 90.210 DEDICATION AND MAINTENANCE OF CRITICAL AREA AND BUFFER

1. Fact: KZC 90.210 requires that the applicant to dedicate development rights, air space, or grant a greenbelt protection or open space easement to the City to protect sensitive areas and their buffers. The applicant should record an agreement with the King County Recorder's Office in a form acceptable to the City of Kirkland (see Attachment 20).
2. Conclusion: Prior to final inspection of the building permit, the applicant should dedicate a natural greenbelt protective easement encompassing the wetland and stream buffer enhancement areas on the site. The boundaries of the Natural Greenbelt Protective Easement should be consistent with the site plan in Attachment 2 and established by survey. All surveys shall be located on KCAS or plat bearing system and tied to known monuments.

F. GEOLOGICALLY HAZARDOUS AREAS

1. Facts:

Zoning Code regulations on geologically hazardous areas address slope stability, run-off, structural concerns, and liability issues. The Planning Department evaluates proposals located on hazardous slopes based on the criteria in KZC Chapter 85. The evaluation is based on a geotechnical report prepared by a qualified geotechnical engineer.

 - a. City critical area maps show moderate and high landslide hazard areas over the entirety of the site (see Attachment 4). A geotechnical engineering study prepared by Geotech Consultants, Inc. dated December 21, 2017 was submitted with the reasonable use exception application (see Attachment 5).
 - b. In order to address KZC 85.15 standards a geotechnical addendum was prepared by Geotech Consultants, Inc. dated January 6, 2021 and submitted for City review (see Attachment 6).

- c. The City's consulting qualified professional, Associated Earth Sciences, Inc. (AESI), reviewed the applicant's geotechnical report and provided recommendations to the City dated April 12, 2021 (see Attachment 7).
 - d. A geotechnical response to AESI's geotechnical peer review letter was prepared by Geotech Consultants, Inc. dated June 24, 2021 and July 30, 2021 which was reviewed and approved by AESI and City staff (see Attachment 8, 9, 10).
 - e. Pursuant to KZC Section 85.45, the City can require the applicant to enter into an agreement with the City, which runs with the property, in a form acceptable to the City Attorney, indemnifying the City for any damage resulting from the development activity on the subject property which is related to the physical condition of the property (see Attachment 18).
 - f. Pursuant to KZC Section 85.50, the City can require the applicant to record, on the title of the property, a notice stating that the property is potentially located in a geologically hazardous area to inform future owners that, at the time of the building permit's issuance, the property was potentially located in a geologically hazardous area (see Attachment 19).
2. Conclusions:
- a. There are constraining factors in regard to steep slopes that affect the applicant's proposal. The applicant should submit construction plans with the building permit application that incorporate the recommendations from the submitted geotechnical engineering study prepared by Geotech Consultants, Inc. dated June 24, 2021 and July 30, 2021 (see Attachment 8 and 9).
 - b. Due to the presence of steep slopes on the subject property, the applicant should submit a Geologically Hazardous Areas Covenant (see Attachment 18) and record it prior to the issuance of a building permit.
 - c. Due to the presence of steep slopes on the subject property, the applicant should submit a Notice of Geologically Hazardous Area (see Attachment 19) and record it prior to the issuance of the building permit.

G. PROCESS I APPROVAL CRITERIA

1. Facts:
 - a. KZC 145.45.2 states that a Process I application may be approved if it is consistent with all applicable development regulations and, to the extent there is no applicable development regulation, the Comprehensive Plan; and it is consistent with the public health, safety, and welfare.
 - b. This application is subject to the development regulations administered through the Kirkland Zoning Code. The proposal is subject to the regulations discussed in sections II.D through G and is subject to the development standards found in Attachment 3.
2. Conclusion: With the recommended conditions of approval, the proposal complies with the criteria in KZC 145.45. It is consistent with all applicable development regulations (see Sections II.D through G). In addition, it is consistent with the public health, safety, and welfare because it will allow reasonable use of a property while improving the quality and function of the sensitive area buffer.

H. DEVELOPMENT STANDARDS

1. Fact: Additional comments and requirements placed on the project, including critical area markers, fencing and signage, are found on the Development Standards, Attachment 3.

2. Conclusion: The applicant should follow the requirements set forth in Attachment 3.

III. SUBSEQUENT MODIFICATIONS

Per KZC 90.180.8, the Planning Official may approve a subsequent modification to a specific use and site plan that has been approved through the reasonable use exception, provided the change meets the standards of this chapter. Otherwise, the applicant is required to apply for and obtain approval through a Process I pursuant to Chapter 145 KZC for a new reasonable use exception.

IV. APPEALS

The following is a summary of the deadlines and procedures for appeals. Any person wishing to file or respond to an appeal should contact the Planning Department for further procedural information.

Appeal to the Hearing Examiner:

Section 145.60 of the Zoning Code allows the Planning Director's decision to be appealed by the applicant or any person who submitted written comments or information to the Planning Director. A party who signed a petition may not appeal unless such party also submitted independent written comments or information. The appeal must be in writing and must be delivered, along with any fees set by ordinance, to the Planning Department by 5:00 p.m., July 29, 2022, fourteen (14) calendar days following the postmarked date of distribution of the Director's decision.

V. LAPSE OF APPROVAL

The applicant must begin construction or submit to the City a complete building permit application for the development activity, use of land or other actions approved under this chapter within five (5) years after the final approval of the City of Kirkland on the matter, or the decision becomes void; provided, however, that in the event judicial review is initiated per KZC 145.110, the running of the five (5) years is tolled for any period of time during which a court order in said judicial review proceeding prohibits the required development activity, use of land, or other actions.

The applicant must substantially complete construction for the development activity, use of land, or other actions approved under this chapter and complete the applicable conditions listed on the notice of decision within seven (7) years after the final approval on the matter, or the decision becomes void.

VI. APPENDICES

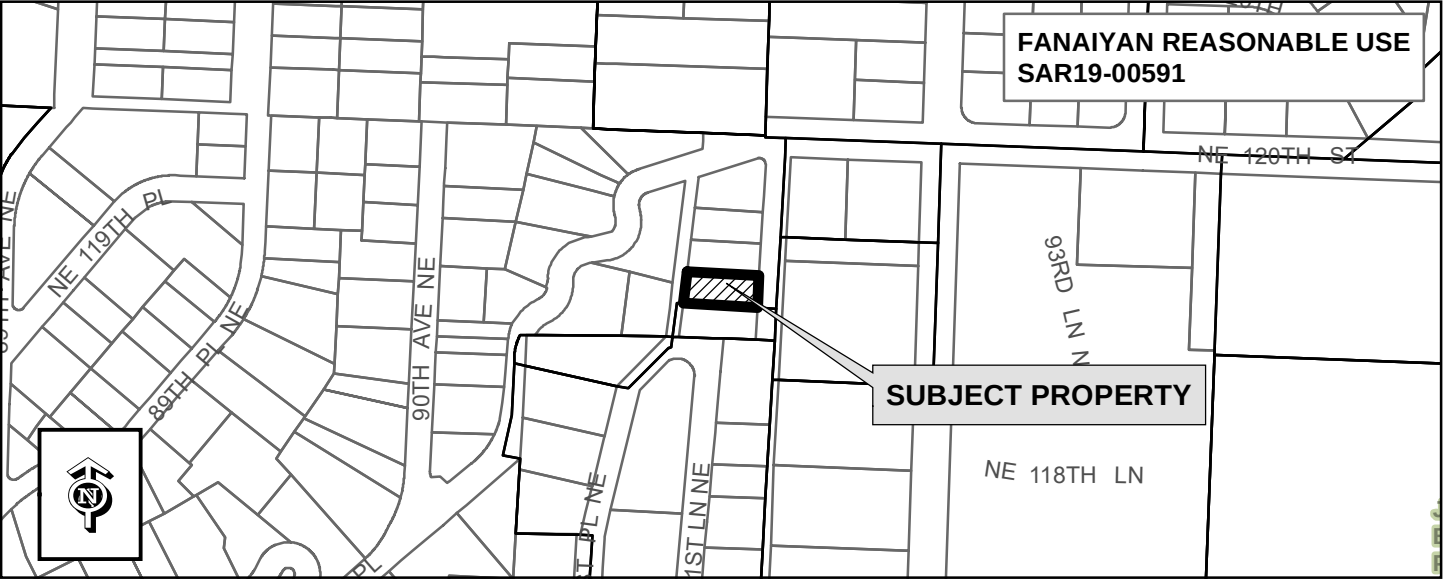
Attachments 1 through 20 are attached.

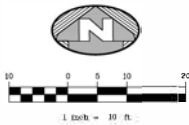
1. Vicinity Map
2. Proposed Plans
3. Development Standards
4. Landslide Hazard Map
5. Geotechnical Report prepared by Geotech Consultants Inc., dated 12/21/2017
6. Geotechnical Addendum prepared by Geotech Consultants Inc., dated 01/06/2021
7. Geotechnical Peer Review prepared by AESI, dated 04/12/2021

8. Geotechnical Response prepared by Geotech Consultants, Inc., dated 06/24/2021
9. Geotechnical Response prepared by Geotech Consultants, Inc., dated 07/30/2021
10. Email from AESI to Jennifer Anderer, dated 01/12/2022
11. Arborist Report prepared by Tree Solutions Inc., dated 01/15/2018
12. Public Comment
13. Final Reasonable Use and Mitigation Plan prepared by Confluence Environmental Company, dated February 17, 2022
14. Reasonable Use Exception and Buffer Mitigation Plan Peer Review prepared by The Watershed Company, dated April 6, 2022
15. Critical Area Review Response prepared by Confluence Environmental Company, dated April 27, 2022
16. Email from Jennifer Anderer to Zbig Konofalski, dated 05/08/2018
17. Juanita Beach Camp Plat and Property Cards
18. Geologically Hazardous Areas Covenant Template
19. Notice of Geologically Hazardous Area Template
20. Natural Greenbelt Protective Easement Template

VII. PARTIES OF RECORD

Applicant: Zbigniew Konofalski
Artoush Fanaian
Planning and Building Department
Department of Public Works
Parties of Record





LEGAL DESCRIPTION:

(PER STATUTORY WARRANTY DEED RECORDING NO. 1999,28000,609.
LOT 7 & 8, BLOCK 1, AS PER PLAT RECORDED IN VOLUME 32 OF PLATS, PAGE 25 INCLUSIVE, RECORDS OF KING COUNTY, WA.

BASIS OF BEARING:

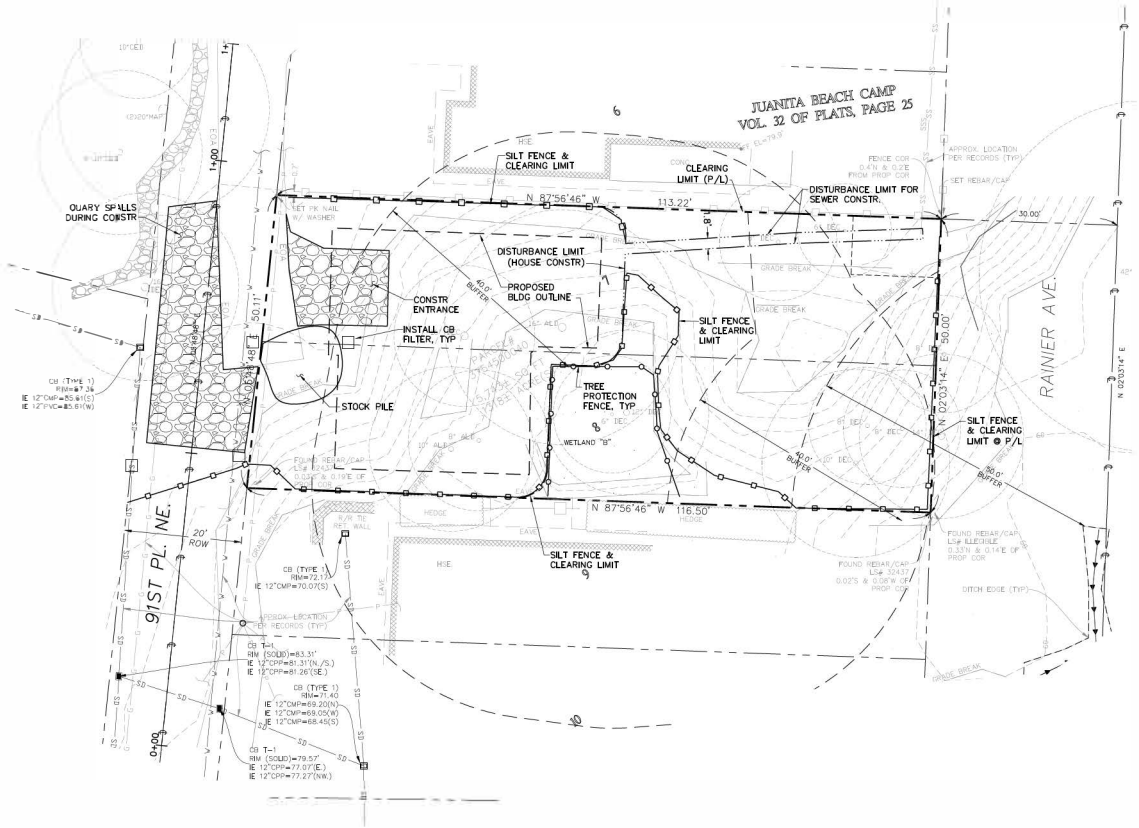
N71°22'43"E BETWEEN SURVEY MONUMENTS FOUND ON THE CENTERLINE OF N.E. 117TH PL./N.E. 120TH ST., SHOWN HEREON, PER PLAT OF JUANITA BEACH CAMPS.

VERTICAL DATUM:

NAVD(88) PER GPS OBSERVATIONS.

LEGEND:

- AREA DRAIN
- ASPHALT SURFACE
- BUILDING
- BUFFER/SETBACK
- CENTERLINE ROW
- CONCRETE SURFACE
- FENCE LINE (CHAIN LINK)
- FIRE HYDRANT
- NAIL AS NOTED
- POWER POLE
- REBAR AS NOTED (FOUND)
- REBAR & CAP (SET)
- ROCKERY
- SEWER LINE
- SEWER MAINTENANCE
- STORM CATCH BASIN
- STORM DRAIN LINE
- TREE (AS NOTED)
- WATER METER
- WATER VALVE
- MONUMENT IN CASE (FOUND)
- PROPOSED RETAINING WALL



VICINITY MAP

SPECIAL NOTES:

1. VERIFY EXISTING TOPOGRAPHY IN AREA OF PROPOSED CONSTRUCTION PRIOR TO ANY WORK. NOTIFY ENGINEER IF CONFLICTS ARE IDENTIFIED.
2. VERIFY DEPTH AND LOCATION OF ALL EXISTING UTILITIES (WHETHER OR NOT SHOWN) IN POTENTIAL CONFLICT W/ PROPOSED CONSTRUCTION PRIOR TO ANY WORK.

TOPSOIL NOTE:

STOCKPILE TOPSOIL FROM GRADED AREAS. AREAS TO BE LANDSCAPED OR RESTORED TO NATURAL CONDITIONS SHALL BE COVERED WITH SITE TOPSOIL TO A MINIMUM DEPTH OF 8 INCHES. TOPSOIL SHALL MEET THE COMPOST REQUIREMENTS OF WAC 173-350-100. THE COMPOST SHALL HAVE AN ORGANIC MATTER CONTENT OF 40% TO 65%, AND A CARBON TO NITROGEN RATIO BELOW 25:1. TOPSOIL NOT MEETING THIS REQUIREMENT SHALL BE AMENDED WITH COMPOST TO THE EXTENT NECESSARY TO MEET THE REQUIREMENT.

SHEET INDEX:

- 1 ***** TESC PLAN
- 2 ***** CIVIL PLAN
- 3 ***** DRAINAGE & TESC DETAILS
- 4 ***** NOTES



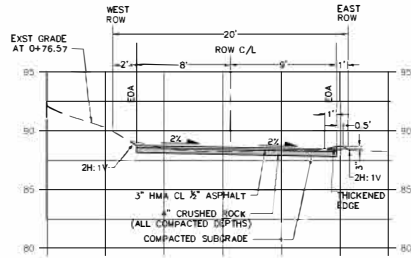
Know what's below.
Call before you dig.



SDS
SITE DEVELOPMENT SERVICES
3011 RAVEN CREST
BELLINGHAM, WA 98226
(425) 481-9967
DAVID@SDS49@GMAIL.COM

2/16/22 ADDED FILL FILE GRADING	
11/29/21 REVISED CLEARING LIMITS PER SITE PLAN	
8/3/21 GRADED EXISTING FILL ON EAST PORTION OF SITE	
6/9/21 PLAN SET REVISED PER CITY COMMENTS	
11662 91ST PINE	
DATE: 11/20/20	DES: DCD
SCALE: 1"=10'	DWNN: DCD
OWNER/APPLICANT:	
ARTOUSH FANAIAHAN	
11407 NE 103RD ST	
KIRKLAND, WA 98033	
PHONE: 425-890-9995	

AP NO	STA	FG
AP-1	0+77.84, LT 8.00'	89.75
AP-2	0+94.46, LT 7.16'	89.94
AP-3	0+98.98, LT 4.22'	90.45



HOR: 1"=5'
VERT: 1"=5'

- ① 18LF 12"SD @ 0.89%
- ② 19LF 12"SD @ 0.53%
- ③ 17LF 6"SD @ 1.0%

```

① 0+47.0, ON EXST 12"SD
CB#3(TYPE 1)
1E=-87.5
IE=-84.07(EXST 12"-VERIFY)
IE=-84.07(12"E)

② 0+50.4, RT 7.33'
CB#2(TYPE 1)
1E=-86.75
IE=84.23(12"-ALL)

③ 0+69.8, RT 7.33'
CB#3(TYPE 1)
1E=-88.67
IE=84.83(6"S)
IE=-84.33(12"S)

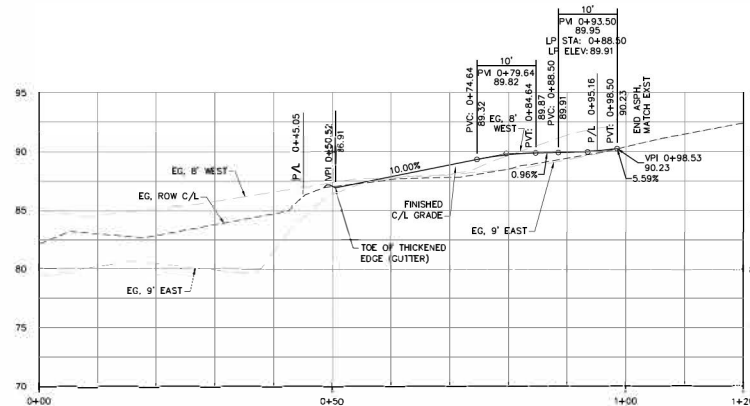
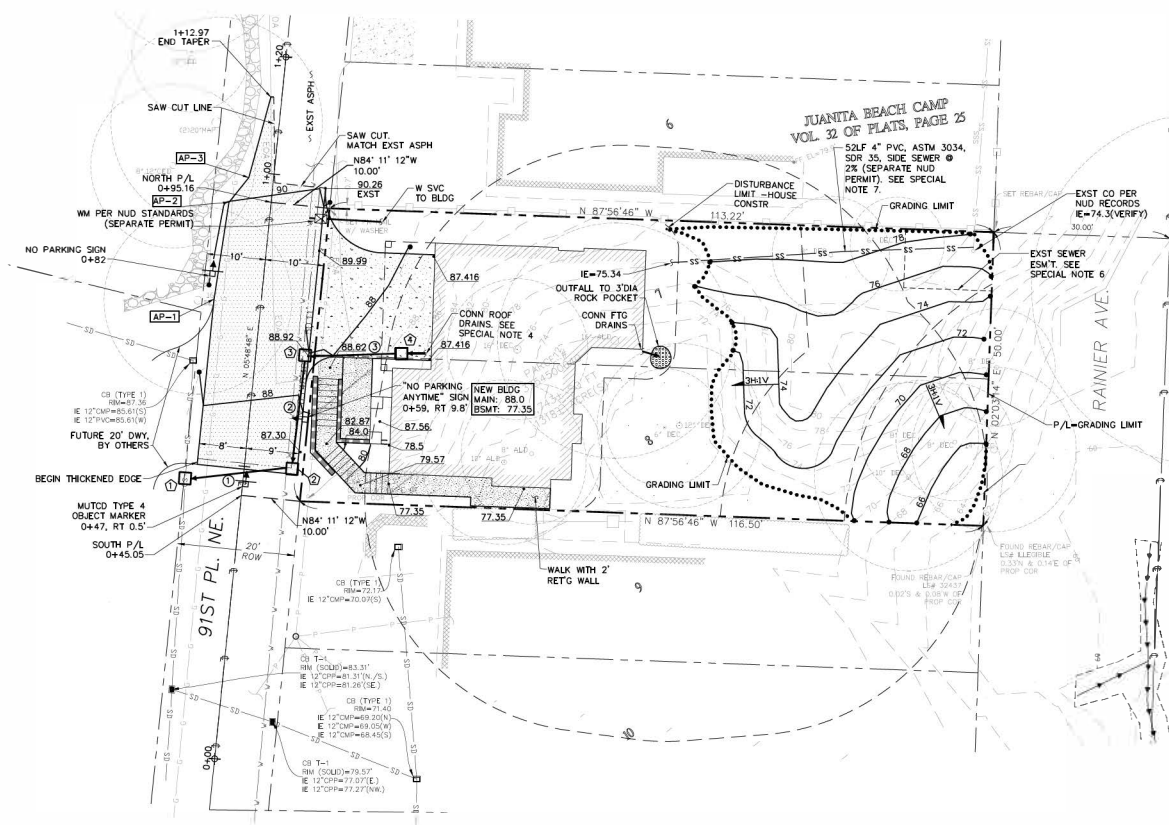
④ INLET
1E=-87.14
IE=85.0

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1. UNLESS NOTED OTHERWISE, ALL CATCH BASINS SHALL HAVE LOCKING VANG GRATES FOR COK STD PLAN COK-10.14
2. STORM DRAIN PIPE CALLED OUT AS "SD" SHALL BE ANY TYPE APPROVED IN THE COK 2014 PRE-APPROVED PLAN MANUAL
3. SOIL ON ALL DISTURBED SITE AREAS NOT COVERED WITH STRUCTURE ROOFS OR OTHER IMPROVED SURFACES SHALL BE AMENDED BY RE-USE OF SITE TOPSOIL OR BY AMENDING SITE SOILS. ALL WORK SHALL CONFORM TO STD DETAIL 504-12.2 ON
4. ROOF DRAIN PIPING SHALL BE ATTACHED TO THE BUILDING WALL AS REQUIRED TO DRAIN TO THE CATCH BASIN. MIN. SLOPE: 1/8"
5. DURING UTILITIES LOCATED BY AVAILABLE RECORDS, VERIFY LOCATIONS PRIOR TO CONSTRUCTION
6. BEFORE SURVEY CONSTRUCTION STAKE THE EASEMENT WITH CARBONITE MARKERS. MARKERS TO REMAIN IN PLACE UNTIL SURFACE RESTORATION IS COMPLETE.
7. IN UNSTABLE SOILS (AS DETERMINED BY THE NCD INSPECTOR) THE SEWER PIPE SHALL BE DI, CL52, CEMENT-INTENT, RJ.

CUT = 417 C.Y.
FILL = 19 C.Y.

QUANTITIES ARE APPROXIMATE. CONTRACTOR TO
PERFORM WORK AS REQUIRED TO BRING SITE TO
FINISHED GRADES AS SHOWN



HOR: 1"=10'
VERT: 1"=5'



Know what's below.
Call before you dig.

SDS
SITE DEVELOPMENT SERVICES
3011 RAVEN CREST
BELLINGHAM, WA 98226
(425) 481-9687
DAVID@SDS49@GMAIL.COM

2/16/22	ADDED FILL PILE GRADING
11/29/21	REVISED SSS ALIGNMENT AND EASEMENT
8/3/21	GRADED EXISTING FILL ON EAST PORTION OF SITE
6/9/21	REVISED PER CITY COMMENTS

11662 91ST PI NE

DATE: 11/20/20	DES: DCD
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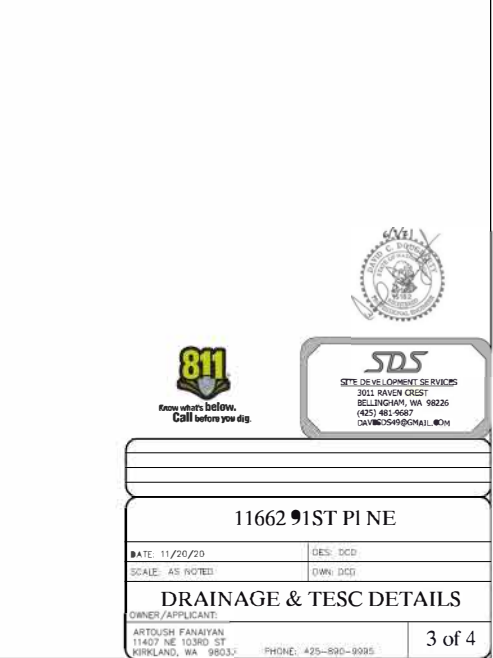
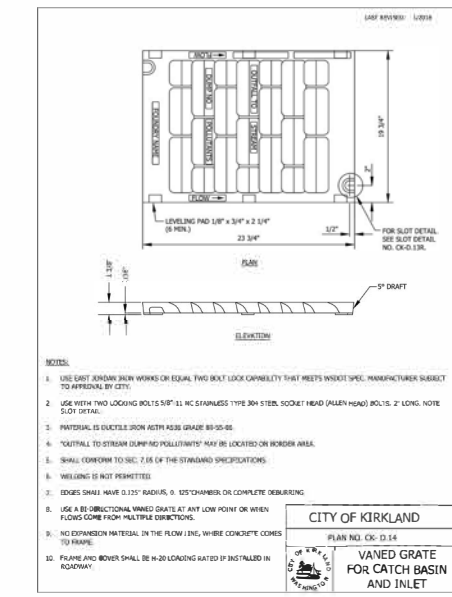
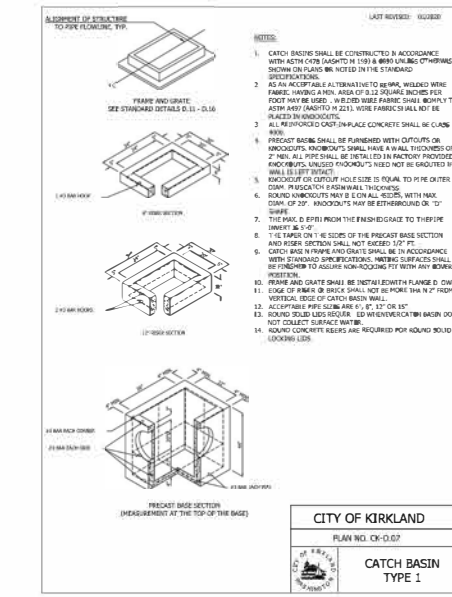
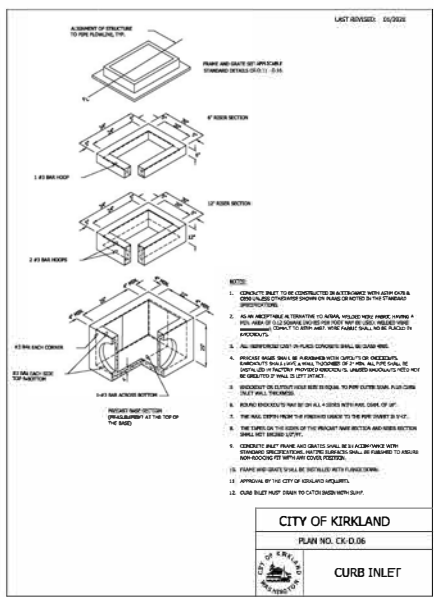
SCALE: 1"=10'	OWN: DCD
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CIVIL PLAN

CIVIL PLAN

OWNER/APPLICANT:
ARTOUSH FANAIAN
11407 NE 103RD ST
KIRKLAND, WA 98033
PHONE: 425-890-9995

2 of 4



EROSION /SEDIMENTATION CONTROL NOTES:

- The approved Construction Sequence shall be as follows:
 - Conduct pre-construction meeting.
 - Flag or fence clearing and grading areas.
 - Post sign with name and phone number of TESC supervisor.
 - Install catch basin protection downstream and as determined by the City Inspector.
 - Grade final initial construction area(s).
 - Install perimeter protection (silt fence, brush barrier, etc.).
 - Construct sediment ponds and traps.
 - Grade final stabilize construction roads.
 - Construct surface water controls (inlet/outlet, ditches, pipe, culverts, drains, etc.) simultaneously with clearing and grading.
 - Maintain erosion control measures in accordance with City of Kirkland Standards and manufacturer's recommendations.
 - Re-evaluate erosion control measures or install new measures to take as site conditions change, the erosion and sediment control is always in accordance with the City TESC minimum requirements.
 - Cover all areas within the specified time frame with straw, wood fiber mulch, compost, plastic sheeting, crushed rock or equivalent.
 - Stabilize all areas that reach final grade within 7 days.
 - Seed or sod any areas to remain unvegetated for more than 30 days.
 - Upon completion of the project, all disturbed areas must be stabilized and best management practices removed or appropriate.

- Contractor is responsible for keeping streets clean and free of contaminants at all times and/or preventing an illicit discharge (RCW 15.52.2) into the municipal storm drain system. If your construction project causes an illicit discharge to the municipal storm drain system, the City of Kirkland Storm Maintenance Division will be notified to clean the public storm system, and other affected public infrastructure. The contractor(s), property owner, and any other persons liable may be charged all costs associated with the cleanup and may also be assessed monetary penalties (KMC 15.2.200). The minimum penalty is \$500. A fine for a repeat violation shall be a multiple by the number of violations. A fine may be reduced or waived for persons who immediately self-report violation to the city at 425-527-3900. A final inspection of your project will not be granted until all costs associated with the clean-up, and penalties, are paid to the City of Kirkland.

- Construction of waterlines and discharges shall always meet water quality guidelines listed in COK Policy E-1. Specifically, discharges to the public stormwater drainage system must be below 25 ntu, and not considered an illicit discharge (per KMC 15.52.100). Temporary discharges to sanitary sewer require prior authorization and permit from King County Industrial Waste Program (206-263-3000) and notification to the Public Works Construction Inspector.

- All work and materials shall be in accordance with City of Kirkland standards and specifications.

- The boundaries of the clearing limit shown on this plan shall be set by survey and clearly flagged in the field by a clearing control person prior to construction of the construction period, no disturbance or removal of any ground cover and the flagged clearing limit shall be maintained. The flagging shall be maintained by the Permittee/Contractor for the duration of construction.

- Approval of this erosion/sedimentation control (ESC) plan does not constitute an approval of permanent road or drainage design (e.g., site and/or catchment roads, pipes, restrictors, channels, retention facilities, utilities, etc.).

- The implementation of this ESC plan and the construction, maintenance, replacement, and upgrading of these ESC facilities is the responsibility of the Permittee/Contractor until construction is approved.

- A copy of the approved ESC plans must be on the job site whenever construction is in progress.

- The ESC facilities shown on this plan must be constructed prior to or in conjunction with all clearing and grading activities in such a manner as to ensure that sediment-laden water does not enter the street or violate applicable water standards. Wherever possible, maintain natural vegetation for silt control.

- The ESC facilities shall be constructed in accordance with the details on the approved plans. Locations may be moved to suit field conditions, subject to approval by the Engineer and the City of Kirkland Inspector.

- The ESC facilities shown on this plan are the minimum requirements for anticipated site conditions. During the construction period, these ESC facilities shall be upgraded (e.g., additional sumps, relocation of ditches and silt fences, etc.) as needed for unexpected storm events. Additionally, more ESC facilities may be required to ensure complete site control. Therefore, during the course of construction it shall be the obligation and responsibility of the Contractor to address any new conditions that may be created by its activities and to provide additional facilities over and above the minimum requirements as may be needed.

- The ESC facilities shall be inspected by the Permittee/Contractor daily during non-rainfall periods, every hour (daylight) during a rainfall event, and at the end of every rainfall, and maintenance is necessary to ensure their continued functioning. In addition, temporary siltation ponds and/or temporary siltation controls shall be maintained in a satisfactory condition until such time that clearing and/or construction is completed, permanent drainage facilities are operational, and the potential for erosion has passed. Written records shall be kept documenting the reviews of the ESC facilities.

- The ESC facilities on inactive sites shall be inspected and maintained a minimum of once a month or within 48 hours following a storm event.

- Stabilized construction entrances shall be installed at the beginning of construction and maintained for the duration of the project. Additional measures, such as wash pads, may be required to ensure that all paved areas are kept clean for the duration of the project.

- All disturbed soils must be stabilized with an approved TESC method (e.g., seeding, mulching, plastic covering, crushed rock) within the following timelines:
 - May 1 to September 30 – soils must be stabilized within 7 days of grading.
 - October 1 to April 30 – soils must be stabilized within 2 days of grading.
 - Stabilize soils at the end of the workday prior to a weekend, holiday, or predicted rain event.

- Where seeding for temporary erosion control is required, fast germinating grasses shall be applied at a appropriate rate (example: annual or perennial ryegrass applied at approximately 30 pounds per acre).

- Where straw mulch is required for temporary erosion control, it shall be applied at a minimum thickness of 2".

- All lots adjoining or having any native growth protection easements (NGPE) shall have a 6' high temporary construction fence (chain-link with pier bolls) separating the lot or buildable portions of the lot from the area restricted by the NGPE and shall be installed prior to any grading or clearing and remain in place until the Planning Department authorizes removal.

EROSION /SEDIMENTATION CONTROL NOTES, CONT'D:

- Clearing limit shall be delineated with a clearing control fence. The clearing control fence shall consist of a 6-ft. high chain-link fence adjacent to the drip-roof treesto be saved, wetland or stream buffers, and sensitive slopes. Clearing contractors along wetland or stream buffers or up slope of sensitive slopes shall be accompanied by an erosion control fence. If approved by the City, a four-foot high orange mesh clearing control fence may be used to delineate clearing limits in all other areas.
- Off-site streets must be kept clean at all times. If dirt is deposited on the public street system, the street shall be immediately cleaned with power sweeper or other equipment. All vehicles shall leave the site by the way of the construction entrance and shall be cleaned off all dirt that would be deposited on the public streets.

- Rock for erosion protection of roadway ditches, where required, must be of sound quarry rock, placed to a depth of 1' and must meet the following specifications: 4"-8" rock/40%/70% passing; 2"-4" rock/20%/40% passing; and 1"-2" rock/10%/20% passing. Recycled concrete shall not be used for erosion protection, including construction entrance or temporary stabilization elsewhere on site.

- If any part (s) of the clearing limit boundary or temporary erosion/sedimentation control plan is damaged, it should be replaced immediately.

- All properties adjacent to the project site shall be protected from sediment deposition and runoff.

- At no time shall more than 1" of sediment be allowed to accumulate within a catch basin. All catch basins and conveyance lines shall be cleaned immediately following removal of erosion control (RMF). The cleaning operation shall not flush sediment-laden water into the downstream system.

- Any permanent retention/detention facility used as a temporary settling basin shall be modified with the necessary erosion control measures and shall provide adequate storage capacity. If the permanent facility is used as a temporary settling basin or as an infiltration or dispersion system, the facility shall not be used as a temporary settling basin. No underground detention tank, collection vault, or infiltration vault back into the pond shall be used as a temporary settling basin.

- All erosion/sedimentation control ponds with a dead storage depth exceeding 6" must have a perimeter fence with a minimum height of 3'.

- The washed gravel backfill adjacent to the filter fabric fence shall be replaced and the filter fabric cleaned if it is nonfunctional by excessive silt accumulation as determined by the City of Kirkland. Also, all intercepter sumps shall be cleaned if silt accumulation exceeds one-quarter depth.

- Prior to the October 1 of each year (the beginning of the wet season), all disturbed areas shall be reviewed to identify what areas can be seeded and prepared for the winter rains. The identified disturbed areas shall be seeded within one week after October 1. A stippled depicting the areas to be seeded and the area to be seeded and the filter fabric cleaned if it is nonfunctional by excessive silt accumulation as determined by the City of Kirkland. Also, all intercepter sumps shall be cleaned if silt accumulation exceeds one-quarter depth.

- Any area to be used for infiltration or previous pavement (including a 5-foot buffer) must be surrounded by silt fence prior to construction and until final stabilization of the site to prevent soil compaction and sedimentation by construction activities.

- If the temporary construction entrance or any other area with heavy vehicle loadings is located in the same area to be used for infiltration or previous pavement, 5' of sediment below the gravel shall be removed prior to installation of the infiltration facility or previous pavement (to remove fines accumulated during construction).

- Any catch basins collecting runoff from the site, whether they are on or off the site, shall have adequate protection from sediment. Catch basins directly downstream of the construction entrance or any other catch basin as determined by the City Inspector shall be protected with a "storm drain protection insert" or equivalent.

- If a sediment pond is not proposed, a baffle tank or other temporary ground and/or surface water storage tank may be required during construction, depending on weather conditions.

- Don't flush concrete by products or truck near or into the storm drainage system. If exposed aggregate is flushed into the storm system, it could mean re-cleaning the entire downstream storm system, or possibly re-tying the storm line.

- Recycled concrete shall not be stockpiled on site, unless fully covered with no potential for release or runoff.

STORM DRAINAGE NOTES:

- A pre-construction conference shall be held prior to the start of construction. The Contractor shall be responsible for securing all necessary permits prior to construction.

- Before any construction may occur, the contractor shall have plans which have been signed and approved by the City of Kirkland Public Works Department, obtained all City, county, state, federal and other required permits, and have posted all required bonds.

- All storm drainage improvements shall be designed and constructed in accordance with the latest edition of the City of Kirkland Public Works Pre-Approved Plans and Policies and the Standard Specifications for Road, Proposed Municipal Construction prepared by KCMUT and the American Public Works Association (APWA).

- Any deviation from the approved plans will require written approval, all changes shall be submitted to the City.

- A copy of the approved storm water plans must be on the job site whenever construction is in progress.

- All disturbed areas shall be seeded and mulched or similarly stabilized to the satisfaction of the City of Kirkland Department of Public Works for the prevention of on-site erosion after the completion of construction.

- Minimum cover over storm drainage pipes in ROW or vehicular path shall be 18 inches, unless other design is approved.

- Steel pipe shall have Asphalt Treatment #1 or better inside and outside.

- All catch basins shall be Type I unless otherwise noted. Catch basins with a depth of over five feet (5') to the pipe invert shall be Type II catch basins. Type II catch basins exceeding five feet (5') in depth shall have a standard ladder installed.

STORM DRAINAGE NOTES, CONT'D:

- All storm drainage main extensions within the public right-of-way or in easements must be staked for line and grade prior to starting construction.

- Rock for erosion protection of roadway ditches, where required, must be of sound quarry rock, placed to a depth of one foot (1') and must meet the following specifications: 4"-8" rock/40%/70% passing; 2"-4" rock/20%/40% passing; 2"-min rock/10%/20% passing. Recycled concrete shall not be used for erosion protection, including for construction entrance or temporary stabilization elsewhere on site.

- All pipe, manholes, catch basins, and appurtenances shall be laid on a properly prepared foundation in accordance with the current State of Washington Standard Specifications for road and bridge construction (WSDOT). This shall include necessary leveling of the trench bottom or the top of the foundation material as well as placement and placement of required bedding material to uniform grade so that the entire length of the pipe will be supported on a uniform dense, unyielding base. If the native material at the bottom of the trench meets the requirements for "grave bedding" for pipe bedding, the first six feet of pipe bedding may be omitted provided the material in the bottom of the trench is loosened, repacked, and compacted to form a dense unyielding base. All pipe bedding shall be APWA Class #1, or better. Pipe shall not be installed on sand, frozen earth, large boulders, or rock. Pipe bedding for flexible pipe shall be pea gravel to the springline of the pipe.

- Construction of dewatering discharges shall always meet water quality guidelines listed in COK Policy E-1. Specifically, discharges to the public stormwater drainage system must be below 25 ntu, and not considered a prohibited discharge (per KMC 15.52.100). Temporary discharges to sanitary sewer require prior authorization and permit from King County Industrial Waste Program (206-263-3000) and notification to the Public Works Construction Inspector.

- Issuance of a Building or Land Surface Modification permit by the City of Kirkland does not relieve the contractor of the continuing legal obligation and/or liability connected with storm surface water disposition. Further, the City of Kirkland does not accept any obligation for the proper functioning of the stormwater drainage system following construction except as outlined in the City of Kirkland Public Works Standards.

- All trench backfill shall be compacted to 95 percent density in roadways, roadways, shoulders, roadway main and driveways, and 85 percent density in unimproved areas. All pipe zone compaction shall be 95 percent.

- The Contractor shall be responsible for providing adequate safeguards, safety devices, protective equipment, confined space protection, flaggers, and any other needed actions to protect the life, health, and safety of the public, and all other property in connection with the performance of work covered by the contract. Any work within the traveled right-of-way that may interrupt normal traffic flow shall require a Traffic Control Plan approved by the City of Kirkland. All sections of the WSDOT Standard Specifications, Traffic Control, and the Manual of Uniform Traffic Control Devices (MUTCD) shall apply.

- No final cut or fill slopes shall exceed slopes of two (2) horizontal to one (1) vertical without stabilization by rockery or by a structural retaining wall.

- All manhole ladders shall be firmly attached and extend to within the 1' of the bottom of the structure.

- Approximate locations of existing utilities have been obtained from available records and are shown for convenience. The Contractor shall be responsible for verification of existing utility locations whether or not these utilities are shown on the plans. The Contractor shall exercise all care to avoid damage to any utility. If conflicts with existing utilities are discovered during construction, the contractor shall notify the City Construction Inspector and any changes required shall be approved by the Development Engineer prior to commencement of related construction on the project.

- The underground utility location service shall be contacted for field location of existing utilities prior to any construction. The owner or its representative shall be contacted if a utility conflict exists. For utility locations in King County, call 1-800-424-5555. The Contractor is responsible to ensure that utility locations are maintained throughout the life of the project.

- The Contractor shall verify the locations, widths, thicknesses, and elevations of all existing pavements and structures that are to interface with new work. Provide all trimming, cutting, saw cutting, grading, leveling, sloping, cutting, and other work, including materials as necessary, to create the interface with existing work to be proper, acceptable to the Engineer and the City of Kirkland, complete in place and ready to use.

- All inlet, manhole, and catch basin frames and grates shall be adjusted to grade until immediately prior to final paving. All catch basin grates shall be 0.10 below pavement level.

- Open cut road crossings for utility trenches on existing traveled roadway shall be backfilled only with 3/8" minus crushed rock and mechanically compacted (unless otherwise approved by the City). For street crossings, use a metal collector, backfill for crossings shall be CDF. Cuts into the existing asphalt shall be neat cut with saw or jackhammer in a continuous line. A temporary cold mix patch must be placed immediately after backfill and compaction. A permanent hot mix patch shall be placed within 30 days and shall be a minimum of 1" thicker than the original asphalt with a minimum thickness of 2". See Standard D.02.

- All damage caused to public and/or private property by the contractor during the course of construction shall be promptly repaired to the satisfaction of the City Construction Inspector before project approval and/or the release of the project's performance bond.

- Grout all seams and openings in all inlets, catch basins, and manholes. Jetted grouts NOT allowed.

- When widening an existing roadway where an existing Type I catch basin will remain in the travel lane, the existing frame and cover shall be replaced with a round, locking frame and cover.

- For other than single family dwellings, all exposed or readily exposed indoor storm drainage piping shall be labeled with the words "STORM DRAIN" with minimum 2 inch letters.

- Recycled concrete shall not be used around stormwater facilities.

- All fasteners (bolts, nuts, washers, etc.) on manhole and catch basin lids shall be standard size. No metric fasteners allowed.

ROADWAY NOTES:

- A pre-construction conference shall be held prior to the start of construction. The Contractor shall be responsible for securing all necessary permits prior to construction.

- All roadway work and material shall be in accordance with the current APWA and City of Kirkland standards and specifications.

- All public roadways shall be constructed of 2" Class "B" AC paving on 4" asphalt-treated base (ATB), unless otherwise approved by the Public Works Department.

- A copy of the approved roadway plans must be on the job site whenever construction is in progress.

- Density test reports will be required for all public roadways and all private roadways within plans. All trench backfill shall be compacted to 95 percent density in roadways, roadway shoulders, roadway main and driveways, and 85 percent density in unimproved areas. All pipe zone compaction shall be 95 percent.

- All commercial and residential driveway's must conform to the City of Kirkland Department of Public Works Driveway Policy.

- All concrete for sidewalks and curb and gutter must be 4,000 psi minimum. (5-3/4" max.)

- In the case of new road construction or reconstruction requiring materials to be moved or rearranged, the Developer/Contractor shall coordinate with the U.S. Postal Service for the new location of the mailbox structure.

- All roadway signage or striping removed or temporarily moved by the Contractor shall be restored to meet the current City of Kirkland standards.

- It is the responsibility of the Contractor to provide adequate temporary traffic control to ensure traffic safety during construction activities. Therefore, the Contractor shall submit a traffic control plan to the Public Works Department at least 48 hours prior to starting any work in the right-of-way. All traffic control devices shall conform to the Manual on Uniform Traffic Control Devices (MUTCD) as modified by the Traffic Engineer.

- Where a sidewalk is to be constructed above a slope or adjacent to a rocky or retaining wall where the lowest finished elevation of the slope, roadway, or retaining wall is to be thirty inches (30") or more below the finished elevation of the sidewalk, a safety railing shall be required where: (a) The plane of the wall face is less than 1' horizontal distance from the outside edge of the sidewalk; (b) The slopes adjacent to the sidewalk average greater than two to one.

- The maximum grade for private roadways shall be twenty percent (20%), or fifteen percent (15%) for fire lanes. For public roadways, the maximum grade shall be fifteen percent (15%).

- Dead end streets shall be appropriately signed and barricaded 5 feet maximum continuation of the MUT CD.

- Sidewalk and curb and gutter cannot be poured monolithically. There must be a cold joint or full-depth expansion joint between them.

- Measurements shall be taken by the developer to provide ground cover in areas within the right-of-way which have been unimproved, natural vegetation or have a potential for erosion.

- The developer shall coordinate with the Public Power for the design and installation of street lights on all newly created public roadways and existing roadways.

- When an existing roadway is to be widened, the existing roadway must be cold jointed at the edge of the gutter and centerline. When the existing roadway is to be widened, a full-depth overlay, a must be cold jointed at the edge of both shoulders. See City of Kirkland Standard Detail No. R.13.

- All new signs required in the public right-of-way must be purchased from, and installed by, the City of Kirkland Public Works Department.

- When installing new sidewalk, the area between the sidewalk must be graded so that the yard drainage does not drain over the sidewalk.

- Any existing public improvements damaged during construction shall be replaced prior to final inspection.

- The Contractor is responsible for keeping all public streets free from mud and debris at all times. The Contractor shall be prepared to use power sweepers or other means of equipment necessary to keep the roadways clean.

- Backfill in all street outcrops shall be compacted density fill (CDF). Contractor must provide steeping necessary to allow the CDF to cure.

- When constructing new curb and gutter which does not align with the existing edge of pavement, the roadway must be tapered from the ends of the new curb and gutter to match the existing pavement. The entry taper into the new improvements shall be 5:1 and leaving the new improvements shall be 10:1.

- When an existing roadway is to be widened, the existing pavement must be saw cut at least one foot from the edge to provide a proper match between new and existing asphalt. However, when the existing pavement contains alligatored areas, those areas must be removed prior to widening. All saw cuts shall be parallel or perpendicular to the right-of-way centerline.

- All rockeries must be constructed in accordance with the most current guidelines of the Association.



11662 1ST PINE

DATE: 11/20/20 DES: DCD
SCALE: NONE DWN: DCD

OWNER/APPLICANT:
ARTOUSH FANAIYAN
11407 NE 103RD ST
KIRKLAND, WA 98033 PHONE: 425-890-0985

NOTES

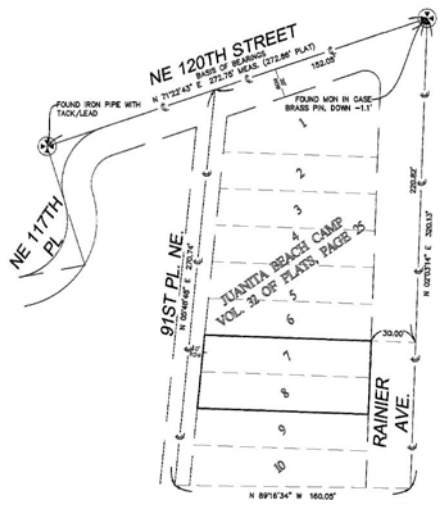
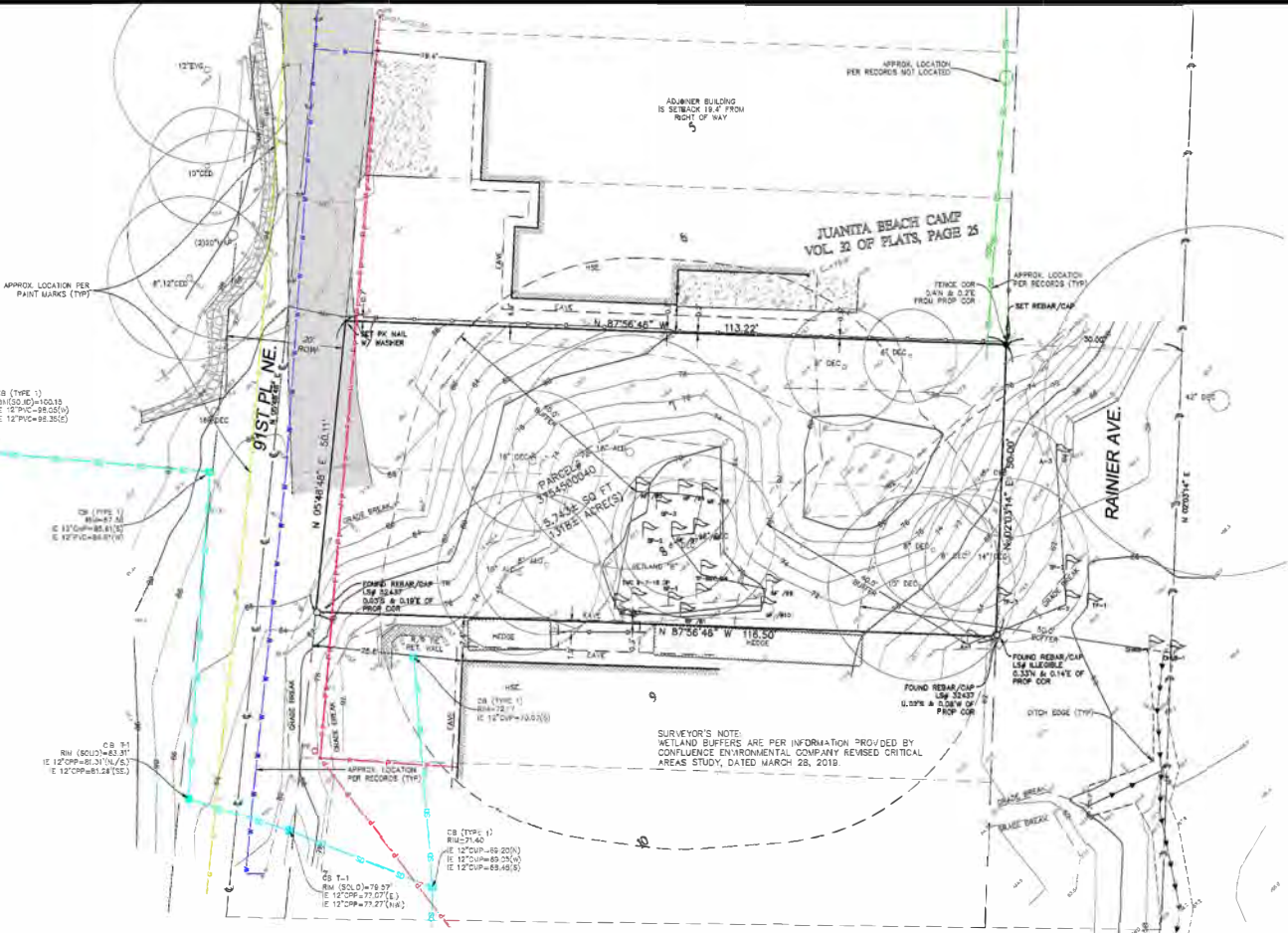


(PER STATUTORY WARRANTY DEED RECORDING NO 19991200010009
LOT 7 & 8, BLOCK 1, AS PER PLAT RECORDED IN VOLUME 32 OF
PLATS, PAGE 25 INCLUSIVE, RECORDS OF KING COUNTY, WA

A 00

LEGAL DESCRIPTION
(PER STATUTORY WARRANTY DEED RECORDING NO. 1999120001609 LOT 7 & B. BLOCK 1, AS PER PLAT RECORDED IN VOLUME 32 OF PLATS, PAGE 25 INCLUSIVE, RECORDS OF KING COUNTY, WA.
BASIS OF BEARINGS
N71°22'43"E BETWEEN SURVEY MONUMENTS FOUND ON THE CENTERLINE OF N.E. 117TH PL./A.E. 128TH ST., SHOWN HEREON, PER PLAT OF JUANITA BEACH CAMPS.
REFERENCES
R1 JUANITA BEACH CAMPS, RECORDED IN VOLUME 32 OF PLATS, PAGE 25, RECORDS OF KING COUNTY, WASHINGTON.
VERTICAL DATUM
NAVD(83) PER GPS OBSERVATIONS
SURVEYOR'S NOTES
1. THE TOPOGRAPHIC SURVEY SHOWN HEREON WAS PERFORMED IN AUGUST OF 2017 & NOVEMBER OF 2020. THE FIELD DATA WAS COLLECTED AND RECORDED ON MAGNETIC MEDIA THROUGH AN ELECTRONIC THEODOLITE. THE DATA FILE IS ARCHIVED ON DISC OR CD. WRITTEN FIELD NOTES MAY NOT EXIST. CONTOURS ARE SHOWN FOR CONVENIENCE ONLY. DESIGN SHOULD RELY ON SPOT ELEVATIONS. 2. ALL MONUMENTS SHOWN HEREON WERE LOCATED DURING THE COURSE OF THIS SURVEY UNLESS OTHERWISE NOTED. 3. BURIED UTILITIES SHOWN BASED ON RECORDS FURNISHED BY OTHERS AND VERIFIED WHERE POSSIBLE IN THE FIELD. TERRANE ASSUMES NO LIABILITY FOR THE ACCURACY OF THOSE RECORDS OR ACCEPT RESPONSIBILITY FOR UNDERGROUND LINES WHICH ARE NOT MADE PUBLIC RECORD. FOR THE FINAL LOCATION OF EXISTING UTILITIES IN AREAS CRITICAL TO DESIGN CONTACT THE UTILITY OWNER/AGENCY AS ALWAYS, CALL 1-800-424-5555 BEFORE CONSTRUCTION. 4. SUBJECT PROPERTY TAX PARCEL NO. 375450-0040 5. SUBJECT PROPERTY AREA PER THIS SURVEY IS 5.743± S.F. (0.1318± ACRES) 6. THIS SURVEY WAS PERFORMED WITHOUT THE BENEFIT OF A TITLE REPORT. EASEMENTS AND OTHER ENCUMBRANCES MAY EXIST THAT ARE NOT SHOWN HEREON. 7. FIELD DATA FOR THIS SURVEY WAS OBTAINED BY DIRECT FIELD MEASUREMENTS WITH A CALIBRATED ELECTRONIC 5-SECOND TOTAL STATION AND/OR SURVEY GRADE GPS OBSERVATIONS. ALL ANGULAR AND LINEAR RELATIONSHIPS ARE ACCURATE AND MEET THE STANDARDS SET BY WAC 332-130-090.

TOPOGRAPHIC & BOUNDARY SURVEY



LEGEND
BRASS DISC (FOUND)
ASPHALT SURFACE
BUILDING
CENTERLINE ROW
RETAINING WALL
FENCE LINE (WOOD)
EDGE FOLIAGE LINE
NAIL (TYPE 1)
NAIL AS NOTED
MONUMENT IN GROUND (FOUND)
REBAR & CAP (SET)
SEWER LINE
SEWER MANHOLE
STRAIN POLE
STORM DRAIN LINE
WATER LINE
WELL (AS NOTED)
DEC ALD
DEC CONTOUR
POWER LINE
GAS LINE
CONCRETE SURFACE
TINNY FLOOR
WETLAND FLAG
ROCKERY



SITE SURVEY
1"=10'-0"

measure success

TOPOGRAPHIC & BOUNDARY SURVEY
DE 1A OF 2014 REG. 30, TYP. 2614, REG. 8 E, W.M.



Terrane
10801 Main Street, Suite 102, Bellevue, WA 98004
phone 425.458.4488
support@terrane.net
www.terrane.net

JOB NUMBER:	171182
DATE:	09/05/17
DRAFTED BY:	LCN
CHECKED BY:	EJO
SCALE:	1"= 10'
REVISION HISTORY:	
02/12/18	ADJACENT TYP
08/12/18	OFFSITE TOPO
05/12/18	WETLAND FLAG
11/05/18	ADJUT. TOPO
SHEET NUMBER	1 OF 1

REVISIONS	BY
August 25, 2020	

SITE SURVEY

FANAIYAN GOAT HILL 2 HOUSE
NEW CONSTRUCTION
11662 91ST PL NE
KIRKLAND, WA 98034

ARTOUSH FANAIYAN
116XX 91ST PL NE
SEATTLE, WA 98134

ZK ARCHITECTURE
11025 NE 90TH STREET, KIRKLAND, WA 98033
PHONE (206) 230-0383

11662 91ST PL NE
KIRKLAND, WA 98034

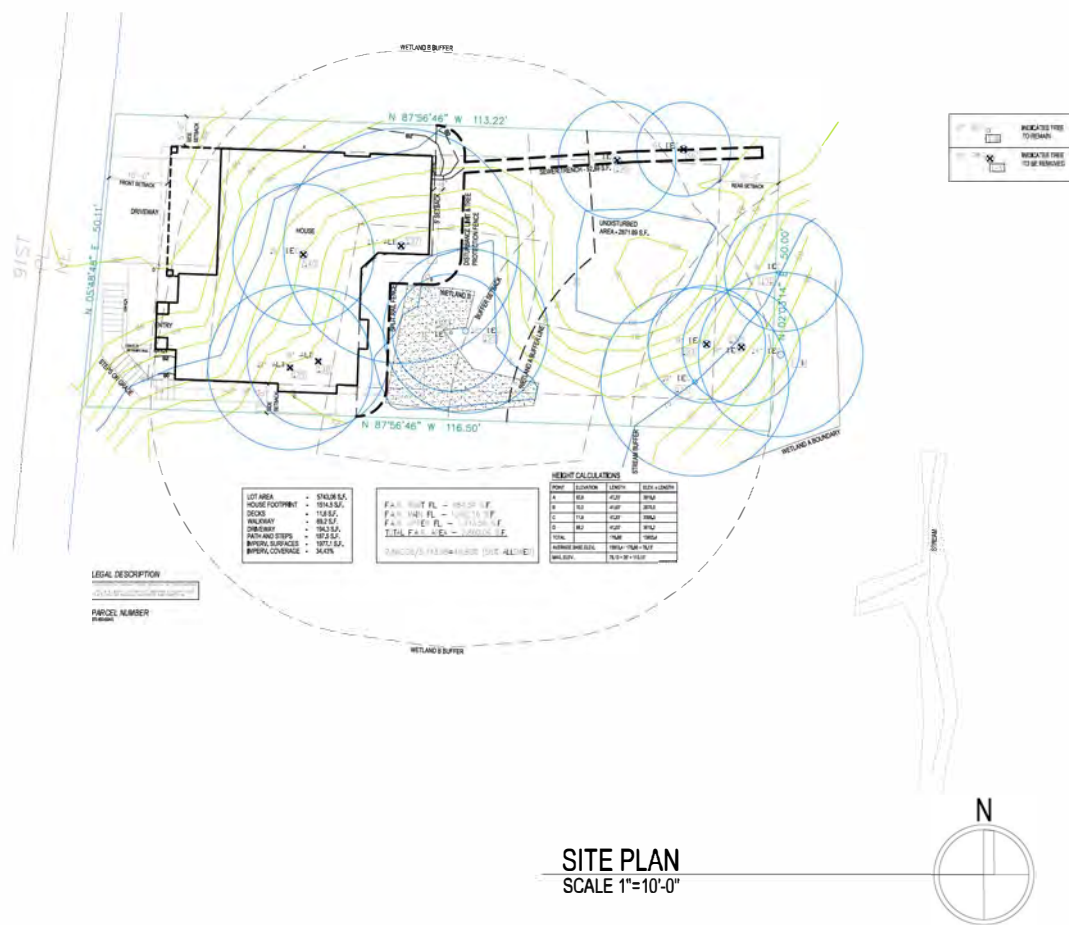
11662 91ST PL NE
KIRKLAND, WA 98034

11662 91ST PL NE
KIRKLAND, WA 98034

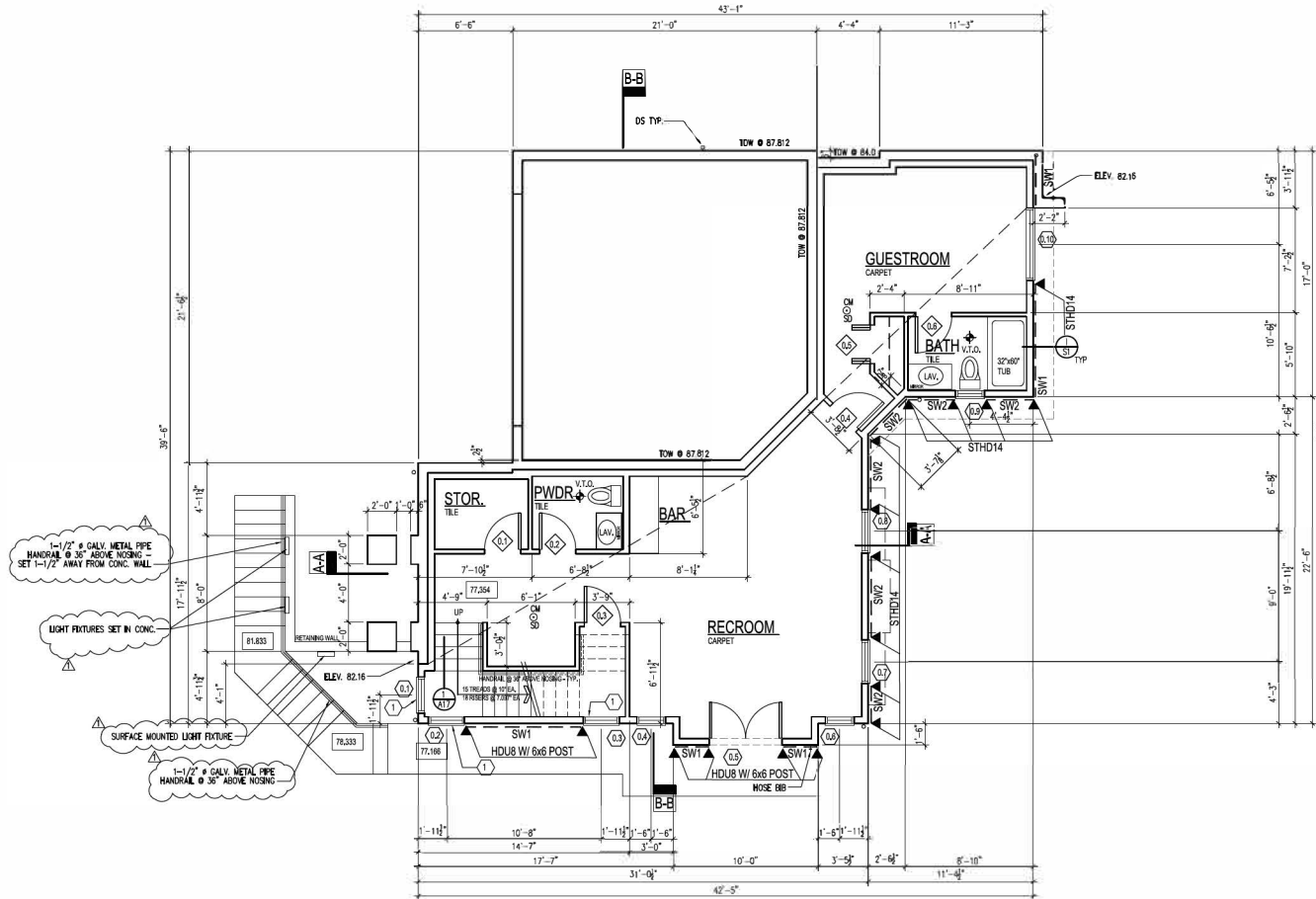
11662 91ST PL NE
KIRKLAND, WA 98034

11662 91ST PL NE
KIRKLAND, WA 98034

11662 91ST PL NE
KIRKLAND, WA 98034



	REVISIONS	BY
	January 20, 2020	
	SITE PLAN	
FANAIYAN GOAT HILL 2 HOUSE NEW CONSTRUCTION	11662 91ST PL NE KIRKLAND, WA 98034	
ZK ARCHITECTURE 11025 NE 96TH STREET, KIRKLAND, WA 98033 PHONE: (206) 235-0383		
		
DRAWN: ZK JOB: AF 00218 SHEET # A 03		



BSMT FLOOR AREA
822.64 S.F.

FAR - 484.34 S.F.

BSMT FLOOR PLAN
SCALE 1/4"=1'-0"



VENTILATION

THE WHOLE HOUSE VENTILATION SHALL BE INTEGRATED WITH A FORCED AIR SYSTEM FOR M500.3.5 IRC AND SHALL PROVIDE MIN. OF 150 CFM OF FRESH AIR AND SHALL OPERATE INTERMITTENTLY FOR NOT LESS THAN 50 PERCENT OF EACH 4-HOUR SCHEDULE. ALL SUPPLY DUCTS IN THE CONDITIONED SPACE SHALL BE INSULATED TO A MIN. OF R-4. THE WHOLE HOUSE VENTILATION SYSTEM SHALL BE PROVIDED WITH CONTROLS THAT HAVE MANUAL OVERRIDE. M507.3 IRC.

THE KITCHEN FAN SHALL BE MIN. 100 CFM INTERMITTENT OR 25 CFM CONTINUOUS. THE BATHROOM FANS SHALL BE MIN. 50 CFM INTERMITTENT OR 20 CFM CONTINUOUS. M507.4 IRC.

VAPOR RETARDERS

ALL INSULATION TO BE KRAFT-FACED FIBROGLASS BATT, R19.2 IRC.

SHEET NOTES

1. #24 TOP OF HDR TO BALCONY FRAM (2 PLACES)

MAIN FLOOR SHEAR WALL NOTES

1. --- DENOTES EXISTENT OF SHEAR WALL.
2. SWI DENOTES SHEAR WALL MARK. MARKS ON SIDE OF WALL TO BE SHEARED IF ONE SIDE IS INDICATED.
3. ▽ DENOTES LOCATION OF HOLODOWN.
4. ALL EXTERIOR WALLS TO BE SWI UNO.
5. SEE SHEETS S-1, S-2 & S-3 FOR TYPICAL NOTING, SCHEDULES & DETAILS.

SEE STRUCTURAL DRAWINGS FOR ADDITIONAL STRUCTURAL INFO.

CONTRACTOR TO VERIFY ALL CONDITIONS & DIMS. ANY DISCREPANCY HAS TO BE REPORTED TO THE ARCHITECT PRIOR TO BEGINNING OF WORK.

REVISIONS	BY
January 20, 2020	
April 9, 2021	City

BSMT FLOOR PLAN

FANAIYAN GOAT HILL 2 HOUSE
NEW CONSTRUCTION

11662 91ST PL NE
KIRKLAND, WA 98034

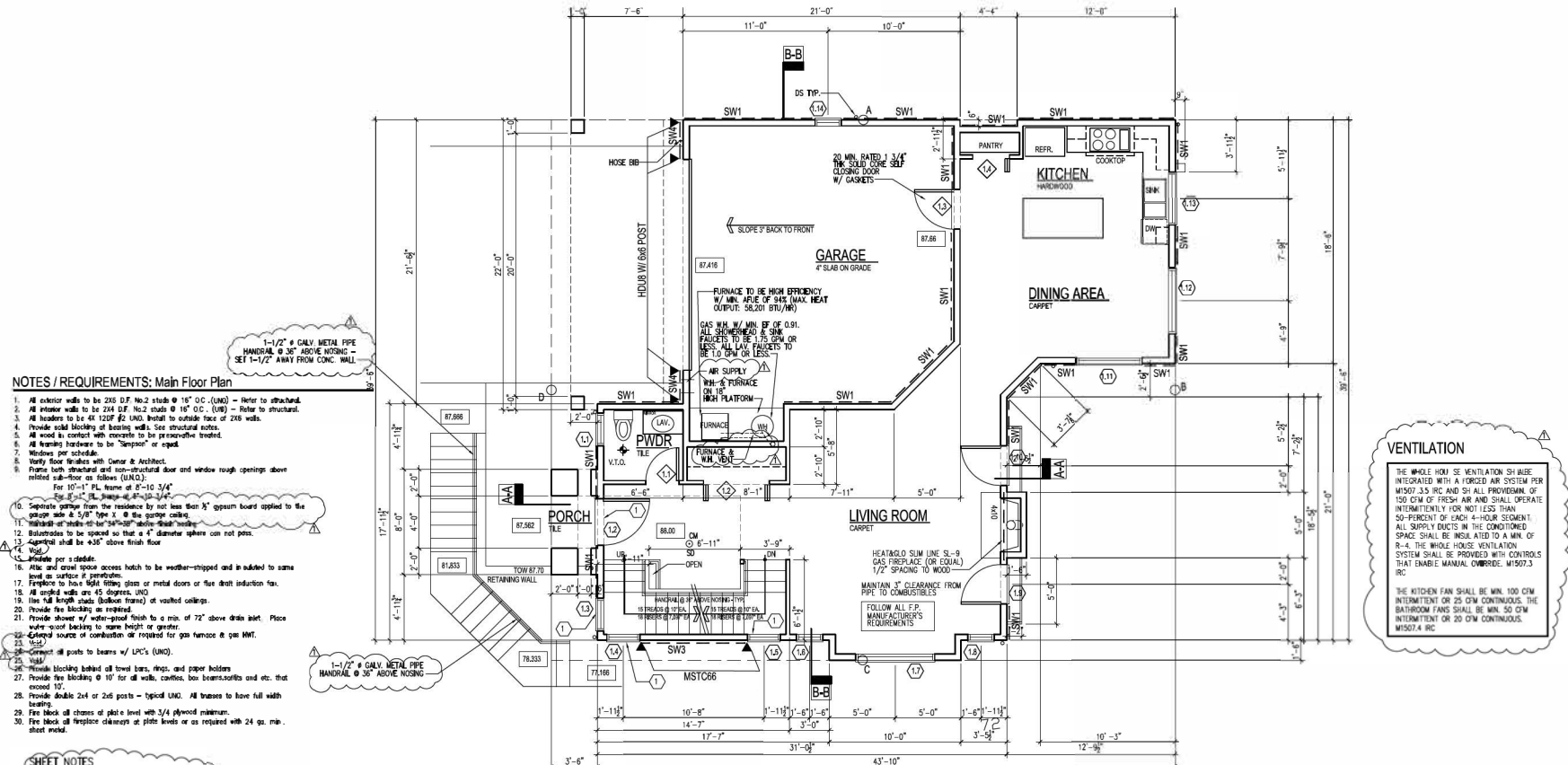
ZK ARCHITECTURE

11025 NE 90TH STREET, KIRKLAND, WA 98033
PHONE (206) 235-0383



DRAWN: ZK
JOB# AF 002/19

SHEET #:
A 05



SHEET NOTES

1. AREA TOP OF MEIR TO BALCONY FRING (2 PLACES)

MAIN FLOOR AREA

894.54 S.F.

TOTAL FLOOR AREA

2867.91 S.F.

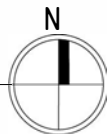
FAR - 1262.16 S.F.

TOTAL FAR

2860.06 S.F.

MAX. FAR

2871.5 S.F.

MAIN FLOOR PLAN
SCALE 1/4"=1'-0"

HEIGHT CALCULATIONS

POINT	ELEVATION	LENGTH	ELEV. x LENGTH
A	82.8	47.33'	3918.9
B	70.0	41.00'	2870.0
C	71.8	47.33'	3398.3
D	88.2	41.00'	3616.2
TOTAL		176.66'	13803.4
AVERAGE BASE ELEV.		13803.4 / 176.66 =	78.13'
MAX. ELEV.		78.13 + 35' =	113.13'

MAIN FLOOR SHEAR WALL NOTES

1. ——— DENOTES EXTENT OF SHEAR WALL.
2. SW1 DENOTES SHEAR WALL MARK. MARKS ON SIDE OF WALL TO BE SHEARED IF ONE TIME IS INDICATED.
3. ▼ DENOTES LOCATION OF HOLDOWN.
4. ALL EXTERIOR WALLS TO BE SW1 UNO.
5. SEE SHEETS S-1, S-2 & S-3 FOR TYPICAL NOTES, SCHEDULES, & DETAILS.

SEE STRUCTURAL DRAWINGS FOR ADDITIONAL STRUCTURAL INFO.

CONTRACTOR TO VERIFY ALL CONDITIONS & DIMS. ANY DISCREPANCY HAS TO BE REPORTED TO THE ARCHITECT PRIOR TO BEGINNING OF WORK.

REVISIONS	BY
August 25, 2020	
April 9, 2021	City

MAIN FLOOR PLAN

FANAIYAN GOAT HILL 2 HOUSE
NEW CONSTRUCTION

11662 91ST PL NE
KIRKLAND, WA 98034

ZK ARCHITECTURE

11022 NE 96TH STREET, KIRKLAND, WA 98033
PHONE (206) 235-0393



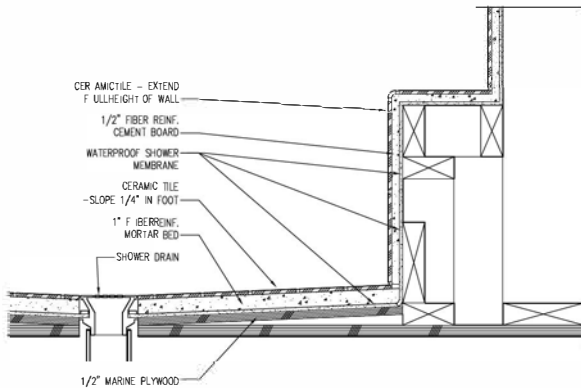
DRAWN: ZK
JOB: AF 002116
SHEET #:
A 07

NOTES / REQUIREMENTS: Main Floor Plan

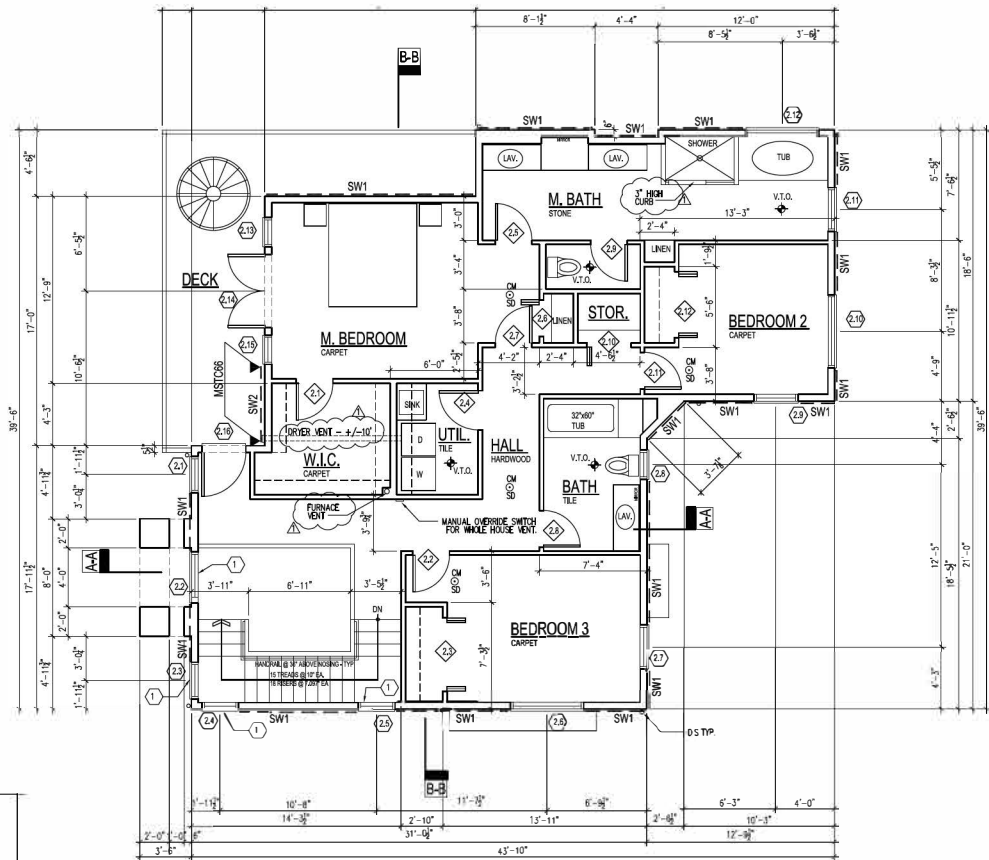
1. All exterior walls to be 2x6 S.F. No. 2 studs @ 16" O.C. (UNO) - Refer to structural.
2. All interior walls to be 2x4 S.F. No. 2 studs @ 16" O.C. (UNO) - Refer to structural.
3. All headers to be 4x12 S.F. No. 2 studs @ 16" O.C. (UNO) - Refer to structural.
4. Provide solid blocking at bearing walls. See structural notes.
5. All framing hardware to be "Simpson" or equal.
6. Windows per schedule.
7. Verify floor flatness with Owner & Architect.
8. Frame both structural and non-structural door and window rough openings above related sub-floor as follows (U.N.O.):
For 8'-1" PL frame at 8'-10 3/4" *
F or 10'-1" PL frame at 8'-10 3/4" *
For 8'-1" PL frame at 8'-10 3/4" *
9. Separate garage with the residence by not less than 5" gypsum board applied to the garage side at 5/8" type X @ garage ceiling.
10. "Handed" in-shower to be 4'-0" wide shower stall.
11. Bathroom to be opened so that a 6" diameter sphere can not pass.
12. Campfire shall be 4'-0" above finish floor.
13. Vents per schedule.
14. Antic and crowd space access hatch to be weather-stripped and insulated to same level as surface it penetrates.
15. Fireplaces to have tight fitting glass or metal doors or flue draft induction fan.
16. All angled walls are 4-5 degrees UNO.
17. Use full length studs (bottom frame) at vaulted ceilings.
18. Provide fire blocking as required.
19. Provide shower w/ water-proof finish to a min. of 72" above drain flt. Place water-proof backing to same height or greater.
20. Furnace source of combustion air required for gas furnace & gas HWHT.
21. Vents.
22. Connect all ports to beams w/ LFC's (UNO).
23. Vents.
24. Provide blocking behind all towel bars, rings, and paper holders.
25. Provide fire blocking @ 10' for all walls, ceilings, box beams, vaults and etc. that exceed 10'.
26. Provide double 2x4 or 2x6 posts - typical UNO. All trusses to have full width bracing.
27. Fire block all chimneys at plate level with 3/4 plywood minimum.
28. Fire block all fireplace chimneys at plate level or as required with 2x4 ply. min. sheet metal.

SHEET NOTES

1. 1/4" TOP OF HDR TO BALCONY FRAM (2 PLACES)



SHOWER DETAIL
SCALE 3"=1'-0"



UPPER FLOOR AREA
1150.73 S.F.

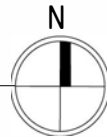
FAR - 1213.56 S.F.

MAIN FLOOR SHEAR WALL NOTES

1. D ENOTE 3 EXTEND SHEAR WALL
2. SW1 DENOTES SHEAR WALL MARK MAKE ON S. CBP WALL. O IS SHEARWALL OR EXTENDING SCATED
3. ▽ ENOTE IS LOCATION OF HOLDOWN
4. ALL EXTERIOR WALLS TO BE SW1 U. N. O
5. SEE SHEETS S-1, S-2 & S-3 FOR TYP. RCALNOTING. SCHED. U.S.E. DE MARK

SEE STRUCTURAL DRAWINGS FOR
ADDITIONAL STRUCTURAL INFO.
CONTRACTOR TO VERIFY ALL
CONDITIONS & B. U.S. ANY
DISCREPANCY HAS TO BE
REF. ORIED TO THE ARCH. TEXT
PRIOR TO BEGINNING OF WORK.

UPPER FLOOR PLAN
SCALE 1/4"=1'-0"



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January 20, 2020	
April 9, 2021	City

UPPER FLOOR PLAN

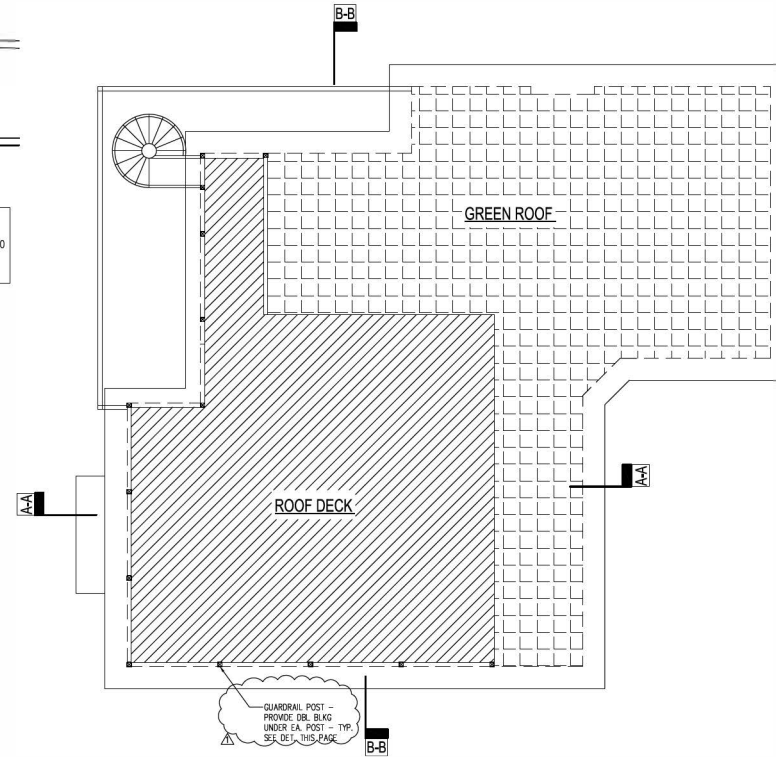
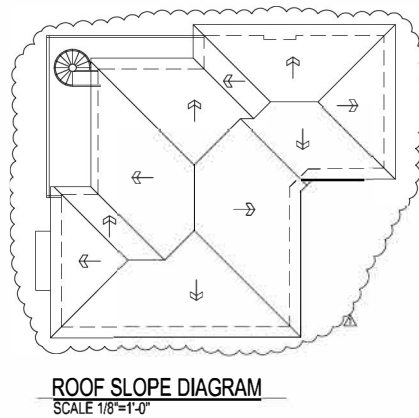
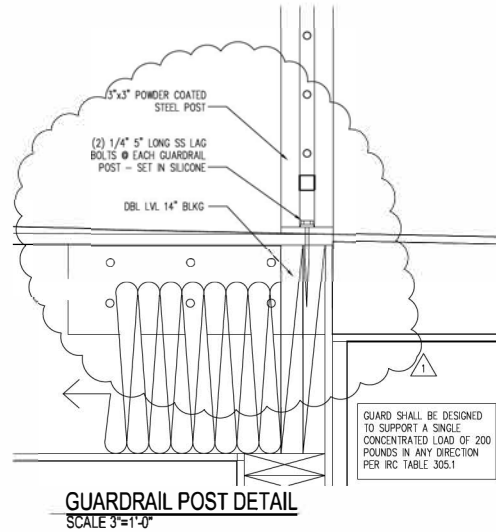
FANAIYAN GOAT HILL 2 HOUSE
NEW CONSTRUCTION
11662 91ST PL. NE
KIRKLAND, WA 98034

ZK ARCHITECTURE

11028 NE 96TH STREET, KIRKLAND, WA 98033
PHONE (206) 235-0383



DRAWN: ZK
JOB: AF 00218
SHEET #:
A 09



REVISIONS	BY
January 20, 2020	
April 9, 2021	City

ROOF PLAN

FANAIYAN GOAT HILL 2 HOUSE
NEW CONSTRUCTION

11662 91ST PL NE
KIRKLAND, WA 98034

ZK ARCHITECTURE

11023 NE 96TH STREET, KIRKLAND, WA 98033
PHONE (206) 235-2383



DRAWN: ZK
JOB-AF 00216

SHEET #:
A 10A



ELEVATION SOUTH
SCALE 1/4"=1'-0"

REVISIONS	BY
August 25, 2020	

ELEVATIONS

FANAIYAN GOAT HILL 2 HOUSE
NEW CONSTRUCTION
11662 91ST PL NE
KIRKLAND, WA 98034

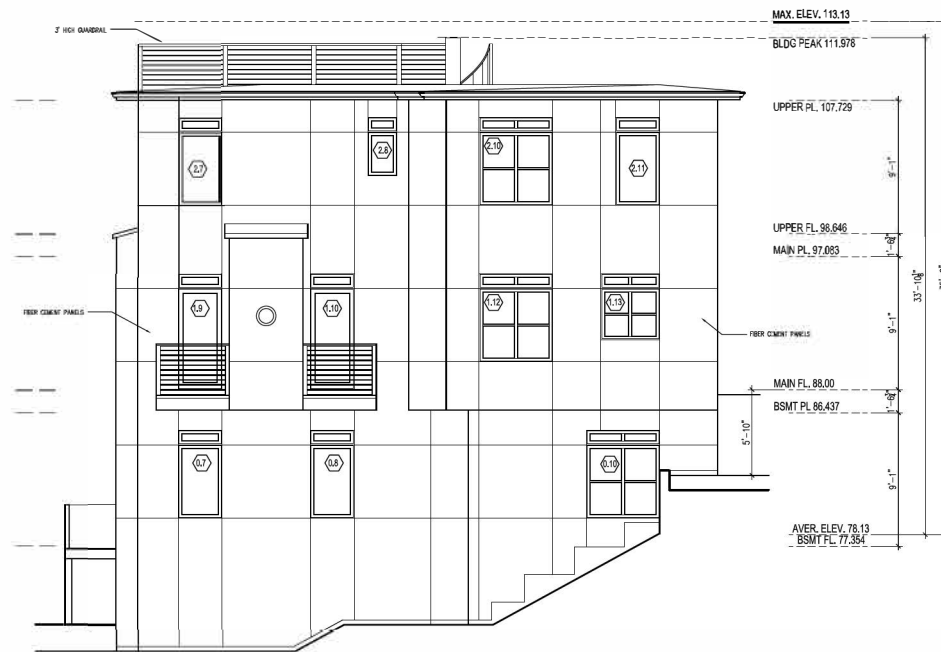
ZK ARCHITECTURE

11025 NE 86TH STREET, KIRKLAND WA 98033
PHONE (206) 236-0383



DRAWN: ZK
JOB: AF 002/18

SHEET 表
A 11



ELEVATION EAST
SCALE 1/4"=1'-0"

REVISIONS	BY
January 20, 2020	

ELEVATIONS

FANAIYAN GOAT HILL 2 HOUSE
NEW CONSTRUCTION

11662 91ST PL NE
KIRKLAND, WA 98034

ZK ARCHITECTURE

11022 NE 96TH STREET, KIRKLAND, WA 98033
PHONE (206) 235-0383

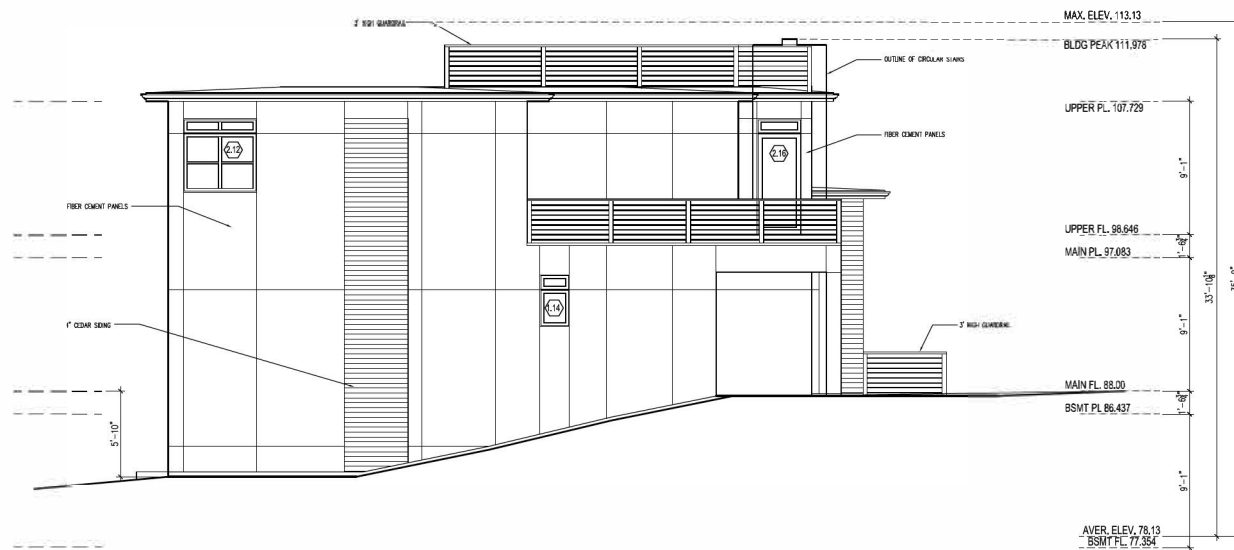


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JOB: AF 00216

SHEET #:

A 12



ELEVATION NORTH
SCALE 1/4"=1'-0"

REVISIONS	BY
January 20, 2020	

ELEVATIONS NW

FANAIYAN GOAT HILL 2 HOUSE
NEW CONSTRUCTION

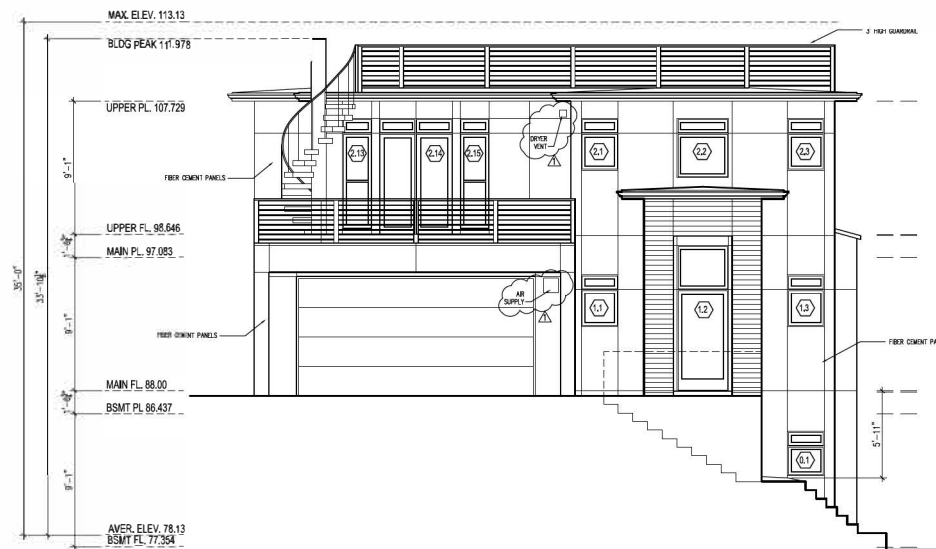
ZK ARCHITECTURE

11025 NE 86TH STREET, KIRKLAND, WA 98033
PHONE (206) 235-0060



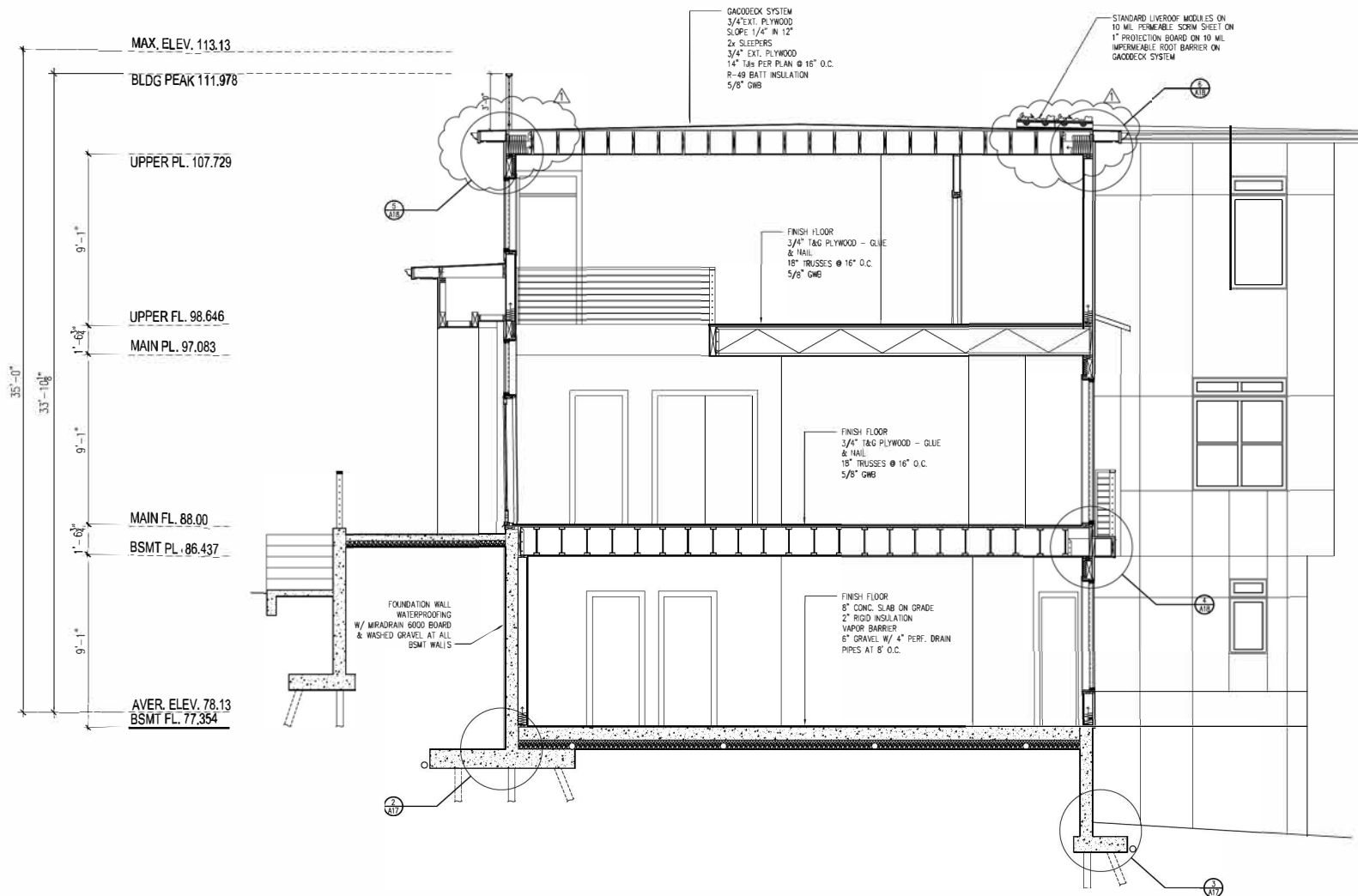
DRAWN: ZK

SHEET #:
A 13



ELEVATION WEST
SCALE 1/4"=1'-0"

REVISIONS	BY
January 20, 2020	
April 9, 2021	City
ELEVATIONS W	
FANAIYAN GOAT HILL 2 HOUSE NEW CONSTRUCTION 11662 91ST PL NE KIRKLAND, WA 98034	
ZK ARCHITECTURE 11022 NE 96TH STREET, KIRKLAND, WA 98033 PHONE (206) 235-0353	
DRAWN: ZK	
JOB: AF 002116	
SHEET #:	
A 14	



SECTION A-A
 SCALE 3/8"=1'-0"

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August 25, 2020	
April 9, 2021	City

SECTIONS

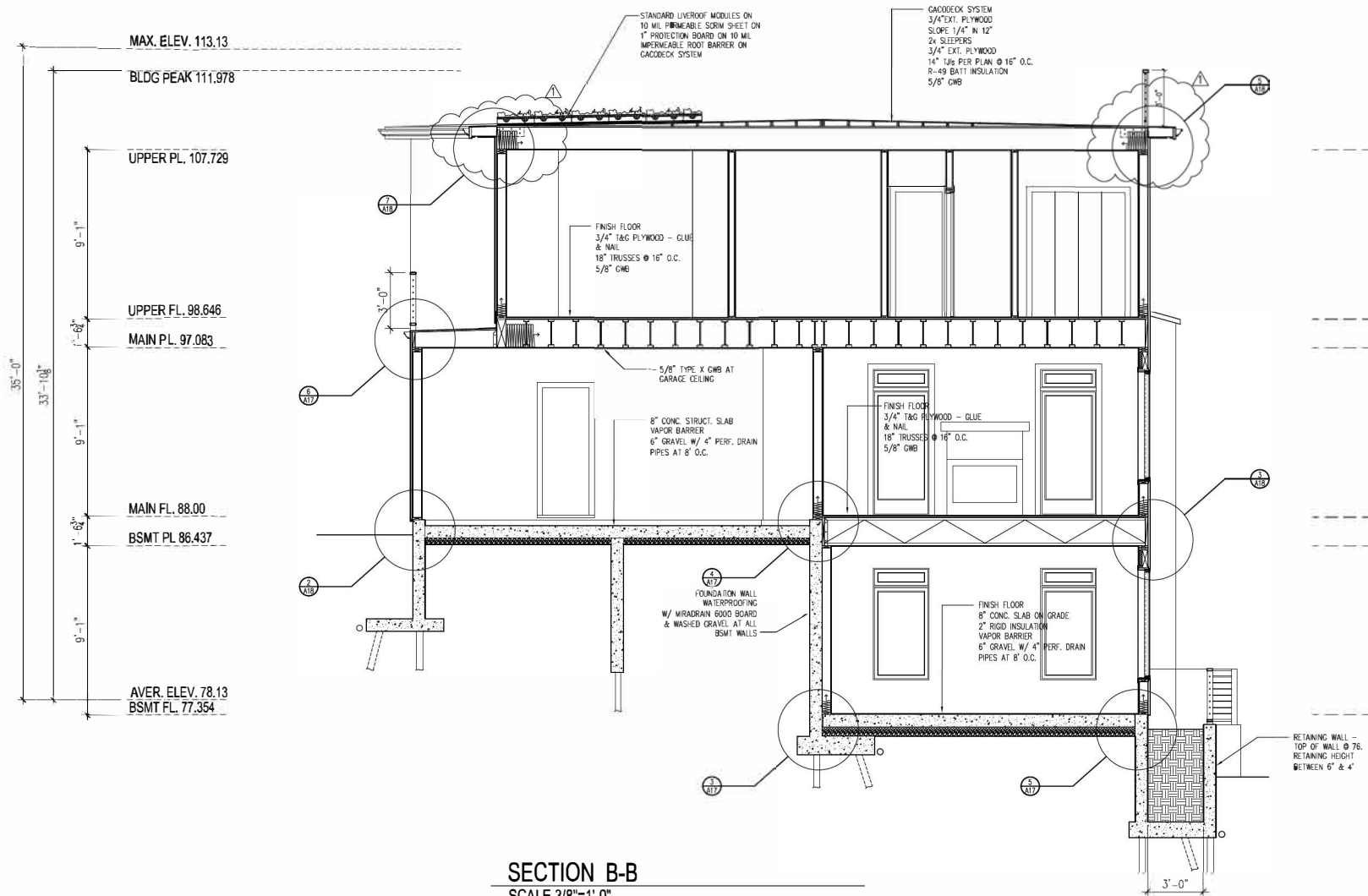
FANAIYAN GOAT HILL 2 HOUSE
NEW CONSTRUCTION
 11662 91ST PL NE
 KIRKLAND, WA 98034

ZK ARCHITECTURE
 11025 NE 85TH STREET, KIRKLAND, WA 98033
 PHONE (206) 235-0383



DRAWN: ZK
 JOB#AF 002/18
 SHEET #:

A 15



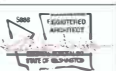
REVISIONS	BY
August 25, 2020	
April 9, 2021	City

SECTIONS

FANAIYAN GOAT HILL 2 HOUSE NEW CONSTRUCTION

11662 91ST PL NE
KIRKLAND, WA 98034

ZK ARCHITECTURE
11025 NE 95TH STREET, KIRKLAND, WA 98033
PHONE (206) 235-0383



DRAWN: ZK
JOB#AF 002/18

SHEET #:
A 16



City of Kirkland
 Planning and Building Department
 123 5th Avenue, Kirkland, WA 98033
 425-587-3600 ~ www.kirklandwa.gov

Development Standards List

File: SAR19-00591

CRITICAL AREAS & REASONABLE USE STANDARDS

90.55 Activities Improvements and Uses in Wetlands. Activities, improvements and uses are prohibited within wetlands and associated buffers, except those exempted or permitted subject to development standards in KZC 90.35 and 90.40, or those approved under a City review process in this chapter.

90.65 Activities Improvements and Uses in Streams. Activities, improvements and uses shall be prohibited within streams and associated buffers, except those exempted or permitted subject to development standards in KZC 90.35 and 90.40, or those approved under another City review process in this chapter.

90.130.2 Vegetated Buffer Standards. Within critical area buffers, the following vegetative standards shall be met:

- a) Native cover of at least 80 percent on average throughout the buffer area. Additionally, the first two of the following strata of native plant species each must compose at least 20 percent areal cover, and the third may compose no more than 20 percent areal cover:
 - 1) Multi-age forest canopy (combination of existing and new vegetation);
 - 2) Shrubs; and
 - 3) Woody groundcover (such as kinnikinnick, salal and sword fern) or unmowed herbaceous groundcover;
- b) At least three (3) native species each making up a minimum of 10 percent coverage (for diversity);
- c) Less than 10 percent noxious weeds cover using King County weed list and permanent removal of all knotweed; and
- d) Removal of lawn and any illegal fill as determined by the City.

90.130.4 Additional Vegetated Buffer Standards.

- a) All existing improvements and structures in a buffer must be removed when the vegetative buffer installation is required pursuant to subsection (3)(a) of this section;
- b) All activities in the buffer must cease, except those permitted under KZC 90.35(12) and (13);
- c) Native vegetation appropriate for wetlands and streams shall be used based on the City's Critical Areas Plant List. Other vegetation may be proposed if appropriate for the site and approved by the City;
- d) Trees and shrubs in the buffer shall be located along the bank of streams to provide effective shading of the stream to lower water temperature;
- e) Existing healthy native vegetation may count towards meeting the requirements if the overall standard is met;
- f) The City may require amended soil if needed to provide a well-functioning buffer;

- g) The City may require supplemental mulch to meet the Planning and Building Department standards;
- h) A reliable temporary irrigation source must be available while the vegetation is being established and the source must be indicated on the planting plan;
- i) Installation shall be done by hand unless use of mechanical equipment is specifically authorized due to site conditions. By hand includes any handheld equipment that is gas or electric powered;
- j) A perpetual landscape maintenance agreement, in a form approved by the City, shall be recorded over the vegetated buffer prior to final inspection; and
- k) Buffers shall not be mowed and animals may not be used to remove weeds, except goats may be used to remove invasive species only for public restoration projects pursuant to KZC 90.35 and 90.40.

90.130.8 Protection and Maintenance of Vegetative Buffer. Critical areas and buffers shall be placed in recorded critical area easements or tracts pursuant to KZC 90.210 and shall be maintained in perpetuity.

90.135.1 Removal of trees in Critical Areas and Critical Area Buffers. Other than as specifically approved as part of a critical area approval under KZC 90, no trees shall be removed from a critical area or critical area buffer unless determined to be nuisance or hazard trees. Any removal shall be authorized in advance through a tree removal permit pursuant to KZC 95 unless tree removal is an emergency to prevent immediate damage to a structure. In case of an emergency, documentation to the City must be provided within seven (7) days of removal that supports that the tree was a nuisance or hazardous.

90.135.1 Pruning or Trees in Critical Areas and Critical Area Buffers. Pruning or topping of trees in critical areas or buffers is prohibited other than City approved creation of snags for nuisance or hazard trees.

90.140 Structure Setback from Critical Area Buffer. Other than as specifically approved as part of a critical area approval under KZC 90, buildings and other structures shall be set back at least 10 feet from the edge of the wetland or stream buffer to ensure adequate width for construction staging, maintenance and repair of primary buildings and accessory structures, and use of improvements without disturbing the critical area buffer or critical area. Allowed items within the structure setback are set forth in ZKC 90.140.2, Table 90.140.1.

90.145.6 Mitigation Plan Standards. A mitigation plan shall be prepared by a qualified critical area professional and show that:

KZC 90.145.6.b

- 1) The vegetative buffer standards and requirements in KZC 90.130 are met. If the buffer does not currently meet the vegetative buffer standards, a detailed final revegetation plan shall be submitted including specification on size and type of each native species of plants, and number and spacing of the plants meeting the City of Kirkland's Critical Area Plant List and standards;
- 2) Seed source must be as local as possible, and plants must be nursery propagated unless transplanted from on-site areas approved for disturbance. These requirements must be included in the mitigation plan specifications;
- 3) Plant materials may be supported with material (e.g., stakes, guy wires) only when necessary. Staking and ties shall follow the International Society of Arboriculture standards. Where support is necessary, stakes, guy wires, or other measures must be removed as soon as the plant can support itself, usually after the first growing season;

- 4) The stream buffer mitigation area replacement at a minimum ratio of 1:1 pursuant to KZC 90.65 is met;
- 5) Proposed erosion control measures comply with the City's Public Works Pre-Approved Plans;
- 6) Mitigation is consistent with other requirements in this code, including sight distance requirements at intersections pursuant to Chapter 115 KZC; and
- 7) All planted areas of the mitigation project have a temporary, above ground sprinkler system set to automatic timers. Temporary sprinkler systems shall be removed in the final year of monitoring once vegetation is well established. When public or private water is not available, a plan for reliable watering by truck or hand shall be included.

90.155 Measures to Minimize Impacts to Wetlands. KZC Table 90.155.1 lists required measures to minimize impacts to wetlands and associated buffers for disturbances including: lights, noise, toxic runoff, storm water runoff, and human disturbance, and dust.

90.160.1 Mitigation Monitoring and Maintenance: Timing. After mitigation installation and acceptance by the Planning Official of the mitigation, the monitoring and maintenance program shall commence. A monitoring report shall be submitted to the Planning Official after each site visit, pursuant to KZC 90.155.3.

90.160.4 Mitigation Monitoring and Maintenance: Duration and Schedule. Unless otherwise required by the Planning Official, the minimum duration of the program shall be as follows:

90.160.4.b. Five (5) growing seasons for mitigation projects and revegetating a buffer to meet the buffer standards in KZC 90.130, except for forested and scrub-shrub wetlands.

90.160.4.d. The required schedule for site visits and reporting for monitoring and maintenance is as follows:

90.160.4.d(2) For five-year program: two (2) site visits for each of the first two (2) years and one (1) site inspection every 12 months for subsequent years; and

90.160.4.e. The Planning Official may extend the duration of the program and the number of visits at the end of the established monitoring and maintenance period if the program requirements have not been met.

90.160.5 Mitigation Monitoring and Maintenance: Maintenance Work: Prior to final inspection of the vegetation and any other mitigating measures required in this chapter, the applicant shall submit a signed contract with a landscape maintenance company to be maintain the installed improvements over the period of the monitoring program that includes the required maintenance tasks and schedule, except for the following:

90.165.5.b. For single-family residential uses, homeowners may maintain the installed improvements if they sign an agreement that runs with the property to maintain the improvements over the period of the monitoring program. The agreement must be recorded with the King County Recorder's Office with the recording fee paid by the homeowner.

If the improvements are not satisfactorily maintained based on the monitoring report at the end of the growing seasons, then the homeowner shall submit a copy of a contract with the landscape maintenance company

to have the company maintain the improvements. This option is not available to developers and builders where the property will be sold on completion of the construction.

90.165 Financial Security for Performance, Maintenance and Monitoring. A security is required in the amount and form as the Planning Official deems necessary to assure that all work or actions are satisfactorily completed and maintained in accordance with the approved plans, specifications, and permit or approval requirements. The security shall be conditioned on the work being completed or maintained in accordance with requirements, approvals, or permits for the site being left or maintained in a safe condition, and on the site and adjacent or surrounding areas being restored in the event of damages or other environmental degradation from development or maintenance activities conducted pursuant to the permit or approval.

- KZC 90.165.2 sets forth required documents to be submitted for the performance security
- The security amount is determined per the standards in KZC 90.165.4
- A cash deposit is required per KZC 90.165.5
- KZC 90.165.6 sets forth the duration of the security
- The security is subject to corrective measures listed in KZC 90.165.7

90.165.3 Financial Security for Performance, Maintenance and Monitoring: When Submitted. A financial security for performance, monitoring and maintenance shall be submitted prior to issuance of a land surface modification or building permit for plantings, improvements and other mitigation measures required in this chapter. The performance portion of the security will be released upon City approval of the installed mitigation.

90.190.1 Critical Area Markers, Fencing and Signage: Survey Stakes. Permanent survey stakes delineating the boundary of the critical area buffer shall be set, using iron or concrete markers as established by current survey standards. For public projects, alternative survey stakes may be approved by the Planning Official, such as flexible delineator posts.

90.190.2 Critical Area Markers, Fencing and Signage: Construction Fencing. Prior to commencement of any grading or other development activities on the subject property, a six-foot-high construction chain link fence with silt fencing must be installed along the entire edge of the buffer. The fence must remain in place until completion of the project and not removed at any time other than as authorized by the Planning Official.

90.190.3 Critical Area Markers, Fencing and Signage: Permanent Signage. Upon completion of the project and prior to the final inspection, permanent signage shall be attached to the fence stating that the protected critical area and buffer must not be disturbed other than necessary for maintenance of vegetation. Signage shall meet the administrative standards of the Planning and Building Department for design, number and location.

90.195 Pesticides and Herbicide Use. Application of pesticides, herbicides, or fertilizers and irrigation practices for residential, commercial and institutional uses shall follow the best management practices (BMP) for landscaping activities and vegetation management in the King County Stormwater Pollution Prevention Manual, as amended.

90.210 Dedication of Critical Area and Buffer. Consistent with law, the applicant shall dedicate development rights, air space, or grant a greenbelt protection or open space easement to the City to protect sensitive areas and their buffers per the requirements in KZC 90.210.1.

ZONING CODE STANDARDS

KMC 22.28.210 & KZC 95.30 Significant Trees.

A Tree Retention Plan was submitted with the reasonable use exception application. KZC Section 95.3 applies in regards to tree retention. There are 11 significant trees on the site, of which 4 are viable. These trees have been assessed by staff and the City's Arborist. They are identified by number in the following chart.

On-site Significant Tree Typing						
Tree #	DBH	High Retention Value	Moderate Retention Value	Low Retention Value (NV) – not viable	Proposed for Retention	Tree Density Credit
130	8	X			No	
131	7	X			Yes	1
132	8	X			No	
133	7			X - NV	No	
134	9		X		Yes	1
135	10		X		Yes	1
136	6		X		Yes	1
137	14		X		No	
138	6			X - NV	No	
139	8		X		No	
140	14		X		No	

Based on the approved Tree Retention Plan, the applicant shall retain and protect all viable trees throughout the development of each single-family lot except for those trees allowed to be removed for the installation of the project infrastructure improvements with an approved Land Surface Modification permit. Subsequent approval for tree removal is granted for the construction of the house and other associated site improvements with a required Building Permit. The Planning Official is authorized to require site plan alterations to retain High Retention value trees at each stage of the project. In addition to retaining viable trees, new trees may be required to meet the minimum tree density per KZC 95.33.

85.25.1 Geotechnical Report Recommendations. The geotechnical recommendations contained in the report by Geotech Consultants, Inc. dated June 24, 2021 shall be implemented.

85.25.3 Geotechnical Professional On-Site. A qualified geotechnical professional shall be present on-site during land surface modification and foundation installation activities.

85.25.8 and 85.40 Dedication. The City may require that the applicant dedicate development rights, air space, or an open space easement to the City to avoid impacts associated with a landslide hazard area or seismic hazard area on the subject property.

85.35 Bonds. The City may require a [bond](#) under Chapter [175](#) KZC and/or a perpetual landscape maintenance agreement to ensure compliance with any aspect of this chapter or any decision or determination made under this chapter.

85.45 Liability. Prior to issuance of any development permit, the applicant shall enter into an agreement with the City, which runs with the property, in a form acceptable to the City Attorney, indemnifying the City for any damage resulting from development activity on the subject property

which is related to the physical condition of the property. The applicant shall record this agreement with the King County Recorder's Office and provide evidence to the City that the agreement has been recorded.

85.50 Notice of Geologic Hazard. Prior to final inspection of any development permit, the applicant shall record (unless legally prohibited from doing so), on the title of the property, a notice stating that the property is potentially located in a geologically hazardous area. This notice will inform future owners that, at the time of the permit's issuance, the property was potentially located in a geologically hazardous area.

90.210 Natural Greenbelt Protective Easement. The applicant shall submit for recording a natural greenbelt protective easement, in a form acceptable to the City Attorney, for recording with King County (see Attachment 16).

95.50 Tree Installation Standards. Installation of supplemental trees to be planted shall conform to Kirkland Zoning Code.

95.52 Prohibited Vegetation. Plants listed as prohibited in the Kirkland Plant List shall not be planted in the City. These plants include Himalayan and Evergreen Blackberry, English Holly, Fragrant water lily; Bindweed or Morning Glory, Bird Cherry, English and Atlantic Ivy; Herb Robert; Bohemian, Giant, Himalayan, and Japanese Knotweed; Old man's beard, Poison hemlock, Reed canary grass, Scotch broom, Spurge laurel, Yellow archangel, and Yellow flag iris. Other plants, while not prohibited, are discouraged, including Butterfly bush, Black Locust, European Mountain Ash, Tree-of-Heaven, Common Hawthorn, and English laurel.

110.60.5 Street Trees. All trees planted in the right-of-way must be approved as to species by the City. All trees must be two inches in diameter at the time of planting as measured using the standards of the American Association of Nurserymen with a canopy that starts at least six feet above finished grade and does not obstruct any adjoining sidewalks or driving lanes.

115.25 Work Hours. It is a violation of this Code to engage in any development activity or to operate any heavy equipment before 7:00 am. or after 8:00 pm Monday through Friday, or before 9:00 am or after 6:00 pm Saturday. No development activity or use of heavy equipment may occur on Sundays or on the following holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving, and Christmas Day. The applicant will be required to comply with these regulations and any violation of this section will result in enforcement action, unless written permission is obtained from the Planning official.

115.40 Fence Location. Fences over 6 feet in height may not be located in a required setback yard. A detached dwelling unit abutting a neighborhood access or collector street may not have a fence over 3.5 feet in height within the required front yard. No fence may be placed within a high waterline setback yard or within any portion of a north or south property line yard, which is coincident with the high waterline setback yard.

A detached dwelling unit may not have a fence over 3.5 feet in height within 3 feet of the property line abutting a principal or minor arterial except where the abutting arterial contains an improved landscape strip between the street and sidewalk. The area between the fence and property line shall be planted with vegetation and maintained by the property owner.

115.42 Floor Area Ratio (F.A.R.) Limits. Floor area for detached dwelling units is limited to a maximum floor area ratio in low density residential zones. See Use Zone charts for the maximum percentages allowed. This regulation does not apply within the disapproval jurisdiction of the Houghton Community Council.

115.43 Garage Requirements for Detached Dwelling Units in Low Density Zones. Detached dwelling units served by an open public alley, or an easement or tract serving as an alley, shall enter all garages from that alley. Whenever practicable, garage doors shall not be placed on the front façade of the house. Side-entry garages shall minimize blank walls. For garages with garage doors on the front façade, increased setbacks apply, and the garage width shall not exceed 50% of the total width of the front façade. These regulations do not apply within the disapproval jurisdiction of the Houghton Community Council. Section 115.43 lists other exceptions to these requirements.

115.45 Garbage and Recycling Placement and Screening. For uses other than detached dwelling units, duplexes, moorage facilities, parks, and construction sites, all garbage receptacles and dumpsters must be setback from property lines, located outside landscape buffers, and screened from view from the street, adjacent properties and pedestrian walkways or parks by a solid sight-obscuring enclosure.

115.75.2 Fill Material. All materials used as fill must be non-dissolving and non-decomposing. Fill material must not contain organic or inorganic material that would be detrimental to the water quality, or existing habitat, or create any other significant adverse impacts to the environment.

115.90 Calculating Lot Coverage. The total area of all structures and pavement and any other impervious surface on the subject property is limited to a maximum percentage of total lot area. See the Use Zone charts for maximum lot coverage percentages allowed. Section 115.90 lists exceptions to total lot coverage calculations. See Section 115.90 for a more detailed explanation of these exceptions.

115.95 Noise Standards. The City of Kirkland adopts by reference the Maximum Environmental Noise Levels established pursuant to the Noise Control Act of 1974, RCW 70.107. See Chapter 173-60 WAC. Any noise, which injures, endangers the comfort, repose, health or safety of persons, or in any way renders persons insecure in life, or in the use of property is a violation of this Code.

115.115 Required Setback Yards. This section establishes what structures, improvements and activities may be within required setback yards as established for each use in each zone.

115.115.3.g Rockeries and Retaining Walls. Rockeries and retaining walls are limited to a maximum height of four feet in a required yard unless certain modification criteria in this section are met. The combined height of fences and retaining walls within five feet of each other in a required yard is limited to a maximum height of 6 feet, unless certain modification criteria in this section are met.

115.115.3.n Covered Entry Porches. In residential zones, covered entry porches on dwelling units may be located within 13 feet of the front property line if certain criteria in this section are met. This incentive is not effective within the disapproval jurisdiction of the Houghton Community Council.

115.115.3.o Garage Setbacks. In low density residential zones, garages meeting certain criteria in this section can be placed closer to the rear property line than is normally allowed in those zones.

115.115.3.p HVAC and Similar Equipment: These may be placed no closer than five feet to a front, side, or rear property line, and may only be located in a required front yard for single-family residential uses pursuant to subsection (3)(p)(2) of this section; provided, that HVAC equipment may be located in a storage shed approved pursuant to subsection (3)(m) of this section or a garage approved pursuant to subsection (3)(o)(2) of this section. All HVAC equipment shall be baffled, shielded, enclosed, or placed on the property in a manner that will ensure compliance with the noise provisions of KZC 115.95.

115.115.5.a Driveway Width and Setbacks. For a detached dwelling unit, a driveway and/or parking area shall not exceed 20 feet in width in any required front yard, and shall be separated from other hard surfaced areas located in the front yard by a 18-inch wide landscape strip. Driveways shall not be closer than 5 feet to any side property line unless certain standards are met.

115.115.5.b Driveway Setbacks. For attached and stacked dwelling units in residential zones, driveways shall have a minimum 5' setback from all property lines except for the portion of any driveway, which connects with an adjacent street. Vehicle parking areas shall have a minimum 20-foot setback from all front property lines and meet the minimum required setbacks from all other property lines for the use.

115.115.5.c Driveway Setbacks. Vehicle parking areas for schools and day-care centers greater than 12 students shall have a minimum 20-foot setback from all property lines.

115.115.d Driveway Setbacks. Parking areas and driveways for uses other than detached

dwelling units, attached and stacked dwelling units in residential zones, or schools and day-cares with more than 12 students, may be located within required setback yards, but, except for the portion of any driveway which connects with an adjacent street, not closer than 5 feet to any property line.

115.120 Rooftop Appurtenance Screening. New or replacement appurtenances on existing buildings shall be surrounded by a solid screening enclosure equal in height to the appurtenance. New construction shall screen rooftop appurtenances by incorporating them in to the roof form.

115.135 Sight Distance at Intersection. Areas around all intersections, including the entrance of driveways onto streets, must be kept clear of sight obstruction as described in this section.

Prior to issuance of a grading or building permit:

85.25.2 Geotechnical Acknowledgement. Written acknowledgment from the licensed in Washington State geotechnical engineer or licensed in Washington State engineering geologist who prepared the report required by KZC 85.15 that they have reviewed the project plans and that they conform to their recommendations.

85.45 Liability. The applicant shall enter into an agreement with the City, which runs with the property, in a form acceptable to the City Attorney, indemnifying the City for any damage resulting from development activity on the subject property which is related to the physical condition of the property (see Attachment 14).

90.165 Financial Security for Performance, Maintenance and Monitoring. A financial security for performance, monitoring and maintenance shall be submitted prior to issuance of a land surface modification or building permit for plantings, improvements and other mitigation measures required in this chapter. The performance portion of the security will be released upon City approval of the installed mitigation.

90.190 Wetland Buffer Fence. Prior to development, the applicant shall install a six-foot high construction phase fence along the upland boundary of the wetland buffer with silt screen fabric installed per City standard. The fence shall remain upright in the approved location for the duration of development activities. Upon project completion, the applicant shall install between the upland boundary of all wetland buffers and the developed portion of the site, a permanent split rail, open slatted with at least 18 inches between each slat, wrought iron, chain link, or similar nonsolid fence between three (3) and six (6) feet in height must be installed along the entire edge of the buffer.

90.190 Stream Buffer Fence. Prior to development, the applicant shall install a six-foot high construction phase fence along the upland boundary of the entire stream buffer with silt screen fabric installed per City standard. The fence shall remain upright in the approved location for the duration of development activities. Upon project completion, the applicant shall install between the upland boundary of all stream buffers and the developed portion of the site, a permanent split rail, open slatted with at least 18 inches between each slat, wrought iron, chain link, or similar nonsolid fence between three (3) and six (6) feet in height must be installed along the entire edge of the buffer.

90.210 Natural Greenbelt Protective Easement. The applicant shall submit for recording a natural greenbelt protective easement, in a form acceptable to the City Attorney, for recording with King County (see Attachment 16).

95.32 Tree Protection. Prior to development activity or initiating tree removal on the site, vegetated areas and individual trees to be preserved shall be protected from potentially damaging activities. Protection measures for trees to be retained shall include (1) placing no construction material or equipment within the protected area of any tree to be retained; (2) providing a visible temporary protective chain link fence at least 6 feet in height around the protected area of retained trees or groups of trees until the Planning Official authorizes their removal; (3) installing visible signs spaced no further apart than 15 feet along the protective fence stating "Tree

Protection Area, Entrance Prohibited” with the City code enforcement phone number; (4) prohibiting excavation or compaction of earth or other damaging activities within the barriers unless approved by the Planning Official and supervised by a qualified professional; and (5) ensuring that approved landscaping in a protected zone shall be done with light machinery or by hand.

27.06.030 Park Impact Fees. New residential units are required to pay park impact fees prior to issuance of a building permit. Please see KMC 27.06 for the current rate. Exemptions and/or credits may apply pursuant to KMC 27.06.050 and KMC 27.06.060. If a property contains an existing unit to be removed, a “credit” for that unit shall apply to the first building permit of the subdivision.

Prior to occupancy:

85.25.3 Geotechnical Professional On-Site. The geotechnical engineer shall submit a final report certifying substantial compliance with the geotechnical recommendations and geotechnical related permit requirements.

85.35 Bonds. The City may require a bond under Chapter 175 KZC and/or a perpetual landscape maintenance agreement to ensure compliance with any aspect of this chapter or any decision or determination made under this chapter.

85.50 Notice of Geologic Hazard. Prior to final inspection of any development permit, the applicant shall record (unless legally prohibited from doing so), on the title of the property, a notice stating that the property is potentially located in a geologically hazardous area. This notice will inform future owners that, at the time of the permit’s issuance, the property was potentially located in a geologically hazardous area.

95.51.2 Tree Maintenance. For detached dwelling units, the applicant shall submit a 5-year tree maintenance agreement to the Planning and Building Department to maintain all pre-existing trees designated for preservation and any supplemental trees required to be planted.

110.60.5 Landscape Maintenance Agreement. The owner of the subject property shall sign a landscape maintenance agreement, in a form acceptable to the City Attorney, to run with the subject property to maintain landscaping within the landscape strip and landscape island portions of the right-of-way. It is a violation to pave or cover the landscape strip with impervious material or to park motor vehicles on this strip.

110.60.6 Mailboxes. Mailboxes shall be installed in the development in a location approved by the Postal Service and the Planning Official. The applicant shall, to the maximum extent possible, group mailboxes for units or uses in the development.

110.75 Bonds. The City may require or permit a bond to ensure compliance with any of the requirements of the Required Public Improvements chapter.



DEVELOPMENT STANDARDS

SAR19-00591

PUBLIC WORKS DEPARTMENT

PUBLIC WORKS CONDITIONS

Permit #: SAR19-00591

Project Name: Fanaiyan Goat Hill 2 House

Project Address: 11025 NE 96th St. Kirkland WA 98033

Date: 6/25/2020

Public Works Staff Contacts

John Burkhalter, Development Engineering Manager

Phone: 425-587-3846 / E-mail: jburkhalter@kirklandwa.gov

Daniel Hartzell, Associate Development Engineer

Phone: 425-587-3853 / E-mail: dhartzell@kirklandwa.gov

General Conditions:

1. All public improvements associated with this project including street and utility improvements, must meet the City of Kirkland Public Works Pre-Approved Plans and Policies Manual. A Public Works Pre-Approved Plans and Policies manual can be purchased from the Public Works Department, or it may be retrieved from the Public Works Department's page at the City of Kirkland's web site.
 2. This project will be subject to Public Works Permit and Connection Fees. It is the applicant's responsibility to contact the Public Works Department by phone or in person to determine the fees. The applicant should anticipate the following fees:
 - o Surface Water Connection Fees *
 - o Side Sewer Inspection Fee *
 - o Right-of-way Fee
 - o Review and Inspection Fee
 - o Building Permits associated with this proposed project will be subject to the traffic, park, and school impact fees per Chapter 27 of the Kirkland Municipal Code. The impact fees shall be paid prior to issuance of the Building Permit(s). Any existing buildings within this project which are demolished will receive a Traffic Impact Fee credit, Park Impact Fee Credit and School Impact Fee Credit. This credit will be applied to the first Building Permits that are applied for within the project. The credit amount for each demolished building will be equal to the most currently adopted Fee schedule.
- * Fee to be paid with the issuance of a Building Permit.
3. All street and utility improvements shall be permitted by obtaining a Land Surface Modification (LSM) Permit, including the required LSM Checklist.
 4. Performance and Maintenance Securities:
 - Standard right of way restoration security ranging from \$10,000.00 to 30,000.00 (value determined based on amount of ROW disruption) shall be posted with Public Works Department. This security will be held until the project has been completed.
 - Prior to Final Inspection of the Building permit improvements, there will be a condition of the permit to establish a two year Maintenance security.
 5. All civil engineering plans which are submitted in conjunction with a building, grading, or right-of-way permit must conform to the Public Works Policy G-7, Engineering Plan Requirements. This policy is contained in the Public Works Pre-Approved Plans and Policies manual.

SAR19-00591

Page 2 of 4

6. All street improvements and underground utility improvements (storm, sewer, and water) must be designed by a Washington State Licensed Engineer; all drawings shall bear the engineers stamp.
7. All plans submitted in conjunction with a building, grading or right-of-way permit must have elevations which are based on the King County datum only (NAVD 88).
8. A completeness check meeting is required prior to submittal of any Building Permit applications.
9. The required tree plan shall include any significant tree in the public right-of-way along the property frontage.

Sanitary Sewer Conditions:

1. Northshore Utility District (NUD) approval required for sanitary sewer and water service. A letter of sewer/water availability is required. Contact NUD at 425-398-4400.

Water System Conditions:

1. See Fire Department conditions for fire flow requirements.

Surface Water Conditions:

1. Provide temporary and permanent storm water control in accordance with the 2016 King County Surface Water Design Manual (KCSWDM) and the City of Kirkland Addendum (Policy D-10).

2. To determine the drainage review level required, the target impervious surface area is the maximum allowable lot coverage area for the project, plus any offsite improved impervious areas. See Policies D-2 and D-3 in the Public Works Pre-Approved Plans for drainage review information, or contact Kirkland Surface Water staff at (425) 587-3800 for assistance. The Kirkland Drainage Review Flow Chart is a helpful tool to determine a project's drainage review level. Drainage review levels are summarized below:

- Targeted Drainage Review
 - o Threshold: Any project (size does not matter) will trigger a targeted drainage review if the project:
 - Contains or is adjacent to a flood, erosion, steep slope hazard area, or landslide hazard area, or
 - Proposes to construct or modify a drainage pipe /ditch that is 12" or larger or receives runoff from a 12" or larger drainage pipe /ditch, or
 - Redevelopment projects proposing >\$100,000 in improvements to an existing high use site.
 - o The KCSWDM core requirements included in a targeted drainage review are in addition to either basic or simplified drainage review

3. A preliminary drainage report (Technical Information Report) must be submitted with the subdivision application. This must include a downstream analysis for all projects (except for Basic and Simplified Drainage Review projects). Provide a level one off-site analysis per Core Requirement #2 of the KCSWDM.

4. This project is in a Level 2 Flow Control Area, and is required to comply with core drainage requirements in the KCSWDM. Historic (forested) conditions shall be used as the pre-developed modeling condition for design of the stormwater detention system.

5. The project may qualify for an exception to detention if the target surfaces will generate no more than a 0.15 cfs increase in the historic (forested) conditions 100-year peak flow. The 15-minute time step must be used to perform the flow control analysis. Do not use the 1-hour time step. Approved hydrologic modeling programs are MGS Flood and WWHM 2012.

6. Evaluate the feasibility and applicability of dispersion, infiltration, and other stormwater Low Impact Development (LID) Best Management Practices (BMPs) per the KCSWDM. If feasible, stormwater LID BMPs are required to the maximum extent

feasible. If LID BMPs are infeasible, pervious pavement cannot be used to reduce overall impervious lot coverage. The Private Maintenance Agreement will be recorded on all projects that construct a stormwater LID BMP or facility, per Policy D-7.

7. Soil information may be necessary for designing LID BMPs per the KCSWDM, and there are other reasons a soil report is necessary for a project (e.g., steep slopes, sensitive areas, etc.). Refer to Policy D-8 for details.

8. Special inspections may be required for LID BMPs on this project. Provide documentation of inspections by a licensed geotechnical professional that the BMP will function as designed.

9. Soil Amendment per Pre-Approved Plan E.12 is required for all landscaped areas.

10. All roof and driveway drainage must be tight-lined to the storm drain system or utilize low impact development techniques on-site.

11. A Hydraulic Project Approval (HPA) from WA State Department of Fish and Wildlife (WDFW) may be required for this project. Contact Stewart Reinbold at WDFW at 425-313-5660 or stewart.reinbold@dfw.wa.gov for determination, obtain an HPA if required, and submit a copy to COK. If an HPA is not required, the applicant will be required to provide written documentation from WDFW as verification. More information on HPAs can be found at the following website: <http://wdfw.wa.gov/licensing/hpa/>

12. Construction Stormwater Pollution Prevention Plan (CSWPPP):

- All proposed projects that will conduct construction activities onsite, or offsite must provide stormwater pollution prevention and spill controls to prevent, reduce, or eliminate the discharge of pollutants (including sediment) to onsite or adjacent stormwater systems or watercourses.
- Refer to Core Requirement No. 5 in the KCSWDM and Policy D-12.
- Provide an erosion control report and plan with the Building or Land Surface Modification Permit application. The plan shall be in accordance with the KCSWDM.
- Construction drainage control shall be maintained by the developer and will be subject to periodic inspections. During the period from May 1 and September 30, all denuded soils must be covered within 7 days; between October 1 and April 30, all denuded soils must be covered within 12 hours. Additional erosion control measures may be required based on site and weather conditions. Exposed soils shall be stabilized at the end of the workday prior to a weekend, holiday, or predicted rain event.

Street and Pedestrian Improvement Conditions:

1. The subject property abuts 91st PL NE. This street is a Neighborhood Access type street. Zoning Code sections 110.10 and 110.25 require the applicant to make half-street improvements in rights-of-way abutting the subject property. Section 110.30-110.50 establishes that this street must be improved with the following:

- A. Pave the road 20 feet wide along the property frontage, provide taper as needed. Pavement to end at the west property line.
- B. Provide thickened edge and surface water collection
- C. Identify and protect trees with retention value in the right-of-way.

2. Public Improvements Modification (KZC 110.70): The City may require or grant a modification to the nature or extent of any required improvement for any of the following reasons:

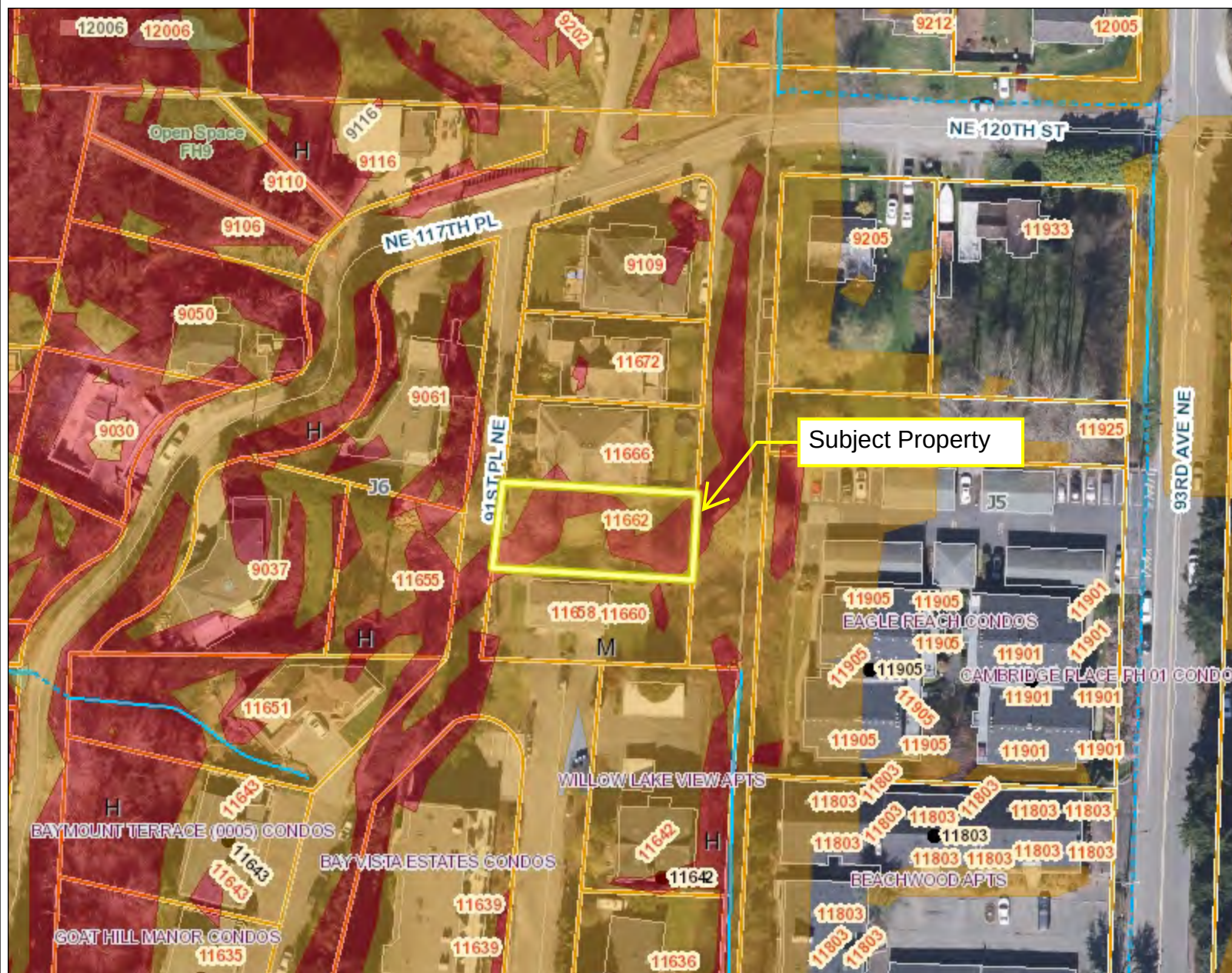
- A. If the improvement as required would not match the existing improvements.
- B. If unusual topographic or physical conditions preclude the construction of the improvements as required.
- C. If other unusual circumstances preclude the construction of the improvements as required.
- D. If the City and a neighborhood has agreed upon a modified standard for a particular street (see the Public Works Pre-Approved Plans and Policies Notebook for a description of the Neighborhood Access Street Improvement Modification and Waiver Process).

Review KZC 110.70 for additional details on the Modifications process, and for provisions regarding Deferments and Waivers, and Construction-in-Lieu.

3. Access Requirements (KZC Chapter 105.10): The driveway for each lot shall be long enough so that parked cars do not extend into any easement, tract, or right-of-way (20' minimum). The parking pad shall measure 20' by 20'.
4. When three or more utility trench crossings occur within 150 lineal ft. of street length or where utility trenches parallel the street centerline, the street shall be overlaid with new asphalt or the existing asphalt shall be removed and replaced per the City of Kirkland Street Asphalt Overlay Policy R-7.
 - Existing streets with 4-inches or more of existing asphalt shall receive a 2-inch (minimum thickness) asphalt overlay. Grinding of the existing asphalt to blend in the overlay will be required along all match lines.
 - Existing streets with 3-inches or less of existing asphalt shall have the existing asphalt removed and replaced with an asphalt thickness equal or greater than the existing asphalt provided however that no asphalt shall be less than 2-inches thick and the subgrade shall be compacted to 95% density.
4. Install "NO PARKING ANYTIME" signs along 91st PL NE frontage, one side.
5. It shall be the responsibility of the applicant to relocate any above-ground or below-ground utilities which conflict with the project, associated street, or utility improvements.
6. Underground all new and existing on-site utility lines and overhead transmission lines. Underground any new off-site transmission lines.
7. Zoning Code Section 110.60.7.b establishes the requirement that existing utility and transmission (power, telephone, etc.) lines on-site and in rights-of-way adjacent to the site must be underground. The Public Works Director may determine if undergrounding transmission lines in the adjacent right-of-way is not feasible and defer the undergrounding by signing an agreement to participate in an undergrounding project, if one is ever proposed. In this case, the Public Works Director has determined that undergrounding of existing overhead utility on 91st PL NE is not feasible at this time and the undergrounding of off-site/frontage transmission lines should be deferred with a Local Improvement District (LID) No Protest Agreement.



City of Kirkland GIS



Legend

Streams

- Open
- Pipe

Eagle Nest Buffer

- Bald Eagle Nest Location WDFW D
- 330 Ft Bald Eagle Nest Buffer
- 660 Ft Bald Eagle Nest Buffer

Landslide

- Deposit Areas
- Head Scarps
- High Susceptibility
- Moderate Susceptibility

Wetlands

Address

- Other Address
- Current Address
- Current ADU
- Pending Address

City Limits

- Grid
- QQ Grid
- Cross Kirkland Corridor
- Regional Rail Corridor
- Streets
- Parcels
- Buildings

1: 1,026



Notes

171.0 0 85.51 171.0 Feet

NAD_1983_StatePlane_Washington_North_FIPS_4601_Feet

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GEOTECH
CONSULTANTS, INC.2401 10th Ave E
Seattle, Washington 98102
(425) 747-5618 FAX (425) 747-8561

December 21, 2017

JN 17652

Artoush Fanaiyan
P.O. Box 133
Bellevue, Washington 98009
via email: artoush76@yahoo.com

Subject: **Geotechnical Engineering Study**
Proposed New Residence
Vacant Lot
116xx – 91st Place Northeast
Parcel #3754500040
Kirkland, Washington

Dear Mr. Fanaiyan:

We are pleased to present this geotechnical engineering report for the residence to be constructed on the vacant lot in Kirkland. The scope of our services consisted of exploring site surface and subsurface conditions, and then developing this report to provide recommendations for general earthwork and design criteria for foundations, retaining walls, and temporary excavations. This work was authorized by your acceptance of our **Contract for Professional Services**.

We were provided with a Topographic Survey prepared by Terrane and dated September 5, 2017. The site development plans were in the initial conceptual stages. Based on our discussions, we expect that a new home extending approximately as far to the east and west as the adjacent northern home will be built on the lot. The garage, which will be located on the main floor, will be accessed from 91st Place Northeast on the west side of the lot. A basement will likely be included under the southeastern portion of the house, and will be configured to avoid excavation into the existing sloping ground located along the north and west sides of the lot.

If the scope of the project changes from what we have described above, we should be provided with revised plans in order to determine if modifications to the recommendations and conclusions of this report are warranted.

SITE CONDITIONS

The Vicinity Map, Plate 1, illustrates the general location of the site on the east side of the Goat Hill area of Kirkland. The lot is rectangular in shape, and extends between 91th Place Northeast (west) and the right-of-way for Rainier Avenue, which is undeveloped and overgrown. The paved portion of 91st Place Northeast that extends south from Northeast 120th Street terminates approximately halfway along the western property line. The southern developed portion of the 91st Place Northeast ends to the south of the site.

The subject lot is undeveloped and is covered mostly with brush, blackberry vines, and weeds. There is a pile of soil in the eastern side of the lot that likely originated from excavation for development of the lot to the north (#11666). The natural ground surface in the area surrounding the site slopes moderately downward to the southeast. There are steep slopes along the west and north sides of the lot that are not consistent with the surrounding topography. These steep slopes have obviously been created by filling for the development of the adjacent northern lot and the southern end of 91st Place Northeast. The sideslopes of the fill pile in the east portion of the lot are steep, but are also manmade. The ground to the south of the site is relatively flat. To the east of the lot the ground slopes moderately through the undeveloped Rainier Avenue right-of-way to an adjacent apartment complex.

We did not observe any indications of recent instability on or around the site during our field work. The steep natural slopes around Goat Hill are underlain by glacially-compressed soils that are not prone to deep-seated landslides. Shallow slides within the looser, near-surface soils have occurred in the surrounding area, typically following extended wet weather.

The house on the lot to the north (#11666) is newer. Considering the fill and loose soils observed close to this neighboring lot, we expect that this adjacent home residence is likely supported on piles. There is an older small apartment building on the lot to the south of the site.

Subsurface Conditions

The subsurface conditions on the site were explored by excavating two test pits at the approximate locations shown on the Site Exploration Plan, Plate 2. The test pits were excavated on December 7, 2017 using a rubber-tracked backhoe. A geotechnical engineer from our staff observed the excavation process and logged the test pit. The Test Pit Logs are attached as Plate 3. Beneath the sparse surface vegetation, Test Pit 1 exposed approximately 2 feet of loose, gravelly, silty sand fill. Beneath this fill was loose, gravelly, silty sand that extended to a depth of 9 feet. The underlying soil that was encountered to the bottom of the test pit consisted of dense, gravelly, silty sand that has been glacially-compressed. This soil is referred to as glacial till. In Test Pit 2 the upper one foot of soil consisted of fill from the pile in the east side of the lot. A layer of topsoil was encountered below the fill. Beneath the topsoil, the test pit found loose to medium-dense, gravelly, silty sand. This test pit reached a depth of 9 feet without encountering dense or glacially-compressed soil.

No groundwater was encountered in the test pits. However, it is relatively common to encounter seepage perched above and within glacial till soils. The moisture content in the lower soils in Test Pit 2 had an elevated moisture content, potentially indicative of a shallow seasonal water table, which may become evident after extended wet weather.

The *Geologic Information System* maintained by the Department of Natural Resources contains the logs of the explorations conducted for the lot (9037 Northeast 117th Place) immediately to the west, upslope of the site, when this adjacent property was to be short-platted. These test pits found several feet of loose, weathered soil overlying glacial till.

CONCLUSIONS AND RECOMMENDATIONS

GENERAL

THIS SECTION CONTAINS A SUMMARY OF OUR STUDY AND FINDINGS FOR THE PURPOSES OF A GENERAL OVERVIEW ONLY. MORE SPECIFIC RECOMMENDATIONS AND CONCLUSIONS ARE CONTAINED IN THE REMAINDER OF THIS REPORT. ANY PARTY RELYING ON THIS REPORT SHOULD READ THE ENTIRE DOCUMENT.

Competent glacial till underlies the site and the surrounding area. This soil is suitable to support foundations and is not prone to instability. However, the test pits conducted on the site indicate that there is a substantial thickness of fill and loose, unconsolidated soil overlying the glacial till. The loose soils are not suitable to support foundations. We recommend that deep foundations embedded into dense glacial till be used to support the new house. Driven, small-diameter pipe piles are suitable for this purpose and are commonly used for residential construction. These piles are installed using a hydraulic impact hammer that is typically mounted on a small excavator or crane.

The planned construction will step with the existing grade, and the basement walls will retain the steep fill slopes located along the north and west sides of the site. Considering this, the planned development will provide long-term stability for the steep slopes. This will be beneficial to the adjacent northern property and the right-of-way for 91st Place Northeast. Prior to beginning installation of the foundations, the fill pile in the eastern portion of the site should be spread so that it buttresses the base of the steep slopes. The inclination in the regraded areas should be no steeper than 3:1 (Horizontal:Vertical). Fill should not be placed to the east of the house. Any load added to the sloping ground in this area would increase the likelihood of future slope instability.

The site is underlain by fill and silty, fine-grained sand. These soils had an elevated moisture content in the test pits, indicating a potential seasonal high groundwater table within the depth of the test pits. The underlying glacial till soils are essentially impervious. Any water infiltrated or dispersed on the site will percolate only into the near-surface few feet of looser soil and will migrate downslope. This will adversely impact the stability of the looser, near-surface soils, increasing the potential for future slope instability on the sloped ground to the east of the site. This will also increase the potential for drainage problems on the properties to the east and south of the site. For these reasons, it is our professional opinion that the site conditions are not feasible for infiltration or dispersion of runoff from impervious surfaces.

Considering the soil and topographic conditions, we recommend that temporary cuts be not steeper than 1.5:1 (Horizontal:Vertical) extending continuously from top to bottom, with no vertical cuts. The cut slopes should be covered with plastic in both wet and dry weather. If these cut slope inclinations cannot be maintained, shoring will be necessary. Shoring should be planned for any cuts of more than 2 feet that are necessary into the faces of the steep north and south slopes, as they are already at their maximum angle of repose. For short cuts, this shoring could be driven pipe piles, and soldier piles would be needed for cuts of more than 4 to 5 feet.

It is likely that some settlement of the ground surrounding the pile-supported house will occur over time. In order to reduce the potential problems associated with this, we recommend the following:

- Fill to the desired site grades several months prior to constructing on-grade slabs, walkways, and pavements around the buildings. This allows the underlying soils to

undergo some consolidation under the new soil loads before final grading is accomplished.

- Connect all utilities beneath the house slabs to the pile-supported floors or grade beams. This is intended to prevent utilities, such as sewers, from being pulled out of the floor as the underlying soils settle away from the slab. Hangers or straps can be poured into the floors and grade beams to carry the piping. The spacing of these supporting elements will depend on the distance that the pipe material can span unsupported.
- Construct all entrance walkways as reinforced slabs that are doweled into the grade beam at the door thresholds. This will allow the walkways to ramp down and away from the building as they settle, without causing a downset at the threshold.
- Isolate on-grade elements, such as walkways or pavements, from pile-supported foundations and columns to allow differential movement.

The excavated soil will be silty and fine-grained, and cannot be adequately compacted to be reused as wall backfill. The silty soil also has poor drainage characteristics. Considering these limitations, and the likelihood that there will be very limited space to stockpile excavated soil, we recommend that the construction budget accounts for the likelihood that most or all of the excavated soil will have to be hauled away. Imported granular fill would then be needed.

The erosion control measures needed during the site development will depend heavily on the weather conditions that are encountered during the site work. One of the most important considerations, particularly during wet weather, is to immediately cover any bare soil to prevent accumulated water or runoff from the work area from becoming silty in the first place. A wire-backed silt fence bedded in compost, not native soil or sand, should be erected as close as possible to the planned work area, and the existing vegetation between the silt fence and the lake left in place. Rocked construction access and staging areas should be established wherever trucks will have to drive off of pavement, in order to reduce the amount of soil or mud carried off the property by trucks and equipment. Covering the base of the excavation with a layer of clean gravel or rock is also prudent to reduce the amount of mud and silty water generated. Cut slopes and soil stockpiles should be covered with plastic during wet weather. Soil stockpiles should be minimized. Following rough grading, it may be necessary to mulch or hydroseed bare areas that will not be immediately covered with landscaping or an impervious surface. As with any construction site, maintenance and upgrades are typically necessary to address weather and site conditions encountered during construction.

It is imperative that unshored excavations do not extend below a 2.5:1 (Horizontal:Vertical) imaginary bearing zone sloping downward from existing footings. Contractors working on the excavation and construction for the new home must be cautioned to avoid strong ground vibrations, which could cause additional settlement in neighboring foundations. During demolition, strong pounding on the ground with the excavator, which is often used to break up debris and concrete, should not occur. Large equipment and vibratory compactors should not be used close to the south property line. Driving of pipe piles is a loud process, but it does not cause ground vibrations strong enough to cause settlement in neighboring structures. As with any project that involves pile driving and significant site work there is a potential risk of movement on surrounding properties. This can potentially translate into noticeable damage of surrounding on-grade elements, such as foundations and slabs. However, the demolition, pile driving, and/or excavation work could just translate into *perceived* damage on adjacent properties. Unfortunately, it is becoming more and more common for adjacent property owners to make unsubstantiated damage claims on new

projects that occur close to their developed lots. Therefore, we recommend making an extensive photographic and visual survey of the project vicinity, prior to demolition activities, installing shoring, and/or commencing with the excavation. This documents the condition of buildings, pavements, and utilities in the immediate vicinity of the site in order to avoid, and protect the owner from, unsubstantiated damage claims by surrounding property owners. Additionally, any adjacent structures should be monitored during construction to detect soil movements. To monitor their performance, we recommend establishing a series of survey reference points to measure any horizontal deflections of the shoring system. Control points should be established at a distance well away from the walls and slopes, and deflections from the reference points should be measured throughout construction by survey methods.

The drainage and/or waterproofing recommendations presented in this report are intended only to prevent active seepage from flowing through concrete walls or slabs. Even in the absence of active seepage into and beneath structures, water vapor can migrate through walls, slabs, and floors from the surrounding soil, and can even be transmitted from slabs and foundation walls due to the concrete curing process. Water vapor also results from occupant uses, such as cooking and bathing. Excessive water vapor trapped within structures can result in a variety of undesirable conditions, including, but not limited to, moisture problems with flooring systems, excessively moist air within occupied areas, and the growth of molds, fungi, and other biological organisms that may be harmful to the health of the occupants. The designer or architect must consider the potential vapor sources and likely occupant uses, and provide sufficient ventilation, either passive or mechanical, to prevent a build up of excessive water vapor within the planned structure.

Geotech Consultants, Inc. should be allowed to review the final development plans to verify that the recommendations presented in this report are adequately addressed in the design. Such a plan review would be additional work beyond the current scope of work for this study, and it may include revisions to our recommendations to accommodate site, development, and geotechnical constraints that become more evident during the review process.

We recommend including this report, in its entirety, in the project contract documents. This report should also be provided to any future property owners so they will be aware of our findings and recommendations.

SEISMIC CONSIDERATIONS

In accordance with the International Building Code (IBC), the site soil profile within 100 feet of the ground surface is best represented by Site Class Type C (Very Dense Soil). As noted in the USGS website, the mapped spectral acceleration value for a 0.2 second (S_s) and 1.0 second period (S_1) equals 1.25g and 0.48g, respectively.

The site soils that will support the foundations are not susceptible to seismic liquefaction under the Maximum Considered Earthquake (MCE) because of their glacially-compressed nature and the absence of near-surface groundwater. The MCE has a probability of occurring once in 2,475 years (2 percent probability of occurring in 50 years).

PIPE PILES

Three- or 4-inch-diameter pipe piles driven with a 650- or 800- or 1,100-pound hydraulic jackhammer to the following final penetration rates may be assigned the following compressive capacities.

INSIDE PILE DIAMETER	FINAL DRIVING RATE (650-pound hammer)	FINAL DRIVING RATE (800-pound hammer)	FINAL DRIVING RATE (1,100-pound hammer)	ALLOWABLE COMPRESSIVE CAPACITY
3 inches	12 sec/inch	10 sec/inch	6 sec/inch	6 tons
4 inches	20 sec/inch	15 sec/inch	10 sec/inch	10 tons

Note: The refusal criteria indicated in the above table are valid only for pipe piles that are installed using a hydraulic impact hammer carried on leads that allow the hammer to sit on the top of the pile during driving. If the piles are installed by alternative methods, such as a vibratory hammer or a hammer that is hard-mounted to the installation machine, numerous load tests to 200 percent of the design capacity would be necessary to substantiate the allowable pile load. The appropriate number of load tests would need to be determined at the time the contractor and installation method are chosen.

As a minimum, Schedule 40 pipe should be used. The site soils should not be highly corrosive. Considering this, it is our opinion that standard "black" pipe can be used, and corrosion protection, such as galvanizing, is not necessary for the pipe piles.

Pile caps and grade beams should be used to transmit loads to the piles. Isolated pile caps should include a minimum of two piles to reduce the potential for eccentric loads being applied to the piles. Subsequent sections of pipe can be connected with slip or threaded couplers, or they can be welded together. If slip couplers are used, they should fit snugly into the pipe sections. This may require that shims be used or that beads of welding flux be applied to the outside of the coupler.

The lateral load resistance of pipe piles, even battered ones, is very low. Typically, lateral loads due to wind or seismic forces are resisted by passive earth pressure acting on the vertical, embedded portions of the foundation. For this condition, the foundation must be either poured directly against relatively level, undisturbed soil or be surrounded by level compacted fill. We recommend using a passive earth pressure of 250 pounds per cubic foot (pcf) for this resistance. If the ground in front of a foundation is loose or sloping, the passive earth pressure given above will not be appropriate. The recommended passive pressure is an ultimate value. It does not include a safety factor.

FOUNDATION AND RETAINING WALLS

Retaining walls backfilled on only one side should be designed to resist the lateral earth pressures imposed by the soil they retain. The following recommended parameters are for walls that restrain backfill:

PARAMETER	VALUE
Active Earth Pressure *	40 pcf (level backslope) 55 pcf (sloped backfill)
Passive Earth Pressure	250 pcf
Soil Unit Weight	130 pcf

Where: pcf is Pounds per Cubic Foot, and Active and Passive Earth Pressures are computed using the equivalent fluid pressures.

* For a restrained wall that cannot deflect at least 0.002 times its height, a uniform lateral pressure equal to 10 psf times the height of the wall should be added to the above active equivalent fluid pressure.

The design values given above do not include the effects of any hydrostatic pressures behind the walls and assume that no surcharges, such as those caused by slopes, vehicles, or adjacent foundations will be exerted on the walls. If these conditions exist, those pressures should be added to the above lateral soil pressures. The surcharge due to traffic loads behind a wall can typically be accounted for by adding a uniform pressure equal to 2 feet multiplied by the above active fluid density. Heavy construction equipment, including concrete trucks, should not be operated behind retaining and foundation walls within a distance equal to the height of a wall, unless the walls are designed for the additional lateral pressures resulting from the equipment.

The values given above are to be used to design only permanent foundation and retaining walls that are to be backfilled, such as conventional walls constructed of reinforced concrete or masonry. It is not appropriate to use the above earth pressures and soil unit weight to back-calculate soil strength parameters for design of other types of retaining walls, such as soldier pile, reinforced earth, modular or soil nail walls. We can assist with design of these types of walls, if desired. The passive pressure given is appropriate only for a shear key poured directly against undisturbed native soil, or for the depth of level, well-compacted fill placed in front of a retaining or foundation wall. The values for friction and passive resistance are ultimate values and do not include a safety factor. Restrained wall soil parameters should be utilized for a distance of 1.5 times the wall height from corners or bends in the walls. This is intended to reduce the amount of cracking that can occur where a wall is restrained by a corner.

Wall Pressures Due to Seismic Forces

The surcharge wall loads that could be imposed by the design earthquake can be modeled by adding a uniform lateral pressure to the above-recommended active pressure. The recommended surcharge pressure is $8H$ pounds per square foot (psf), where H is the design retention height of the wall. Using this increased pressure, the safety factor against sliding and overturning can be reduced to 1.2 for the seismic analysis.

Retaining Wall Backfill and Waterproofing

Backfill placed behind retaining or foundation walls should be coarse, free-draining structural fill containing no organics. This backfill should contain no more than 5 percent silt or clay particles and have no gravel greater than 4 inches in diameter. The percentage of particles passing the No. 4 sieve should be between 25 and 70 percent. The onsite soils are not free-draining and will have a low recomacted strength.

The purpose of these backfill requirements is to ensure that the design criteria for a retaining wall are not exceeded because of a build-up of hydrostatic pressure behind the wall. Also, subsurface drainage systems are not intended to handle large volumes of water from surface runoff. The top 12 to 18 inches of the backfill should consist of a compacted, relatively impermeable soil or topsoil, or the surface should be paved. The ground surface must also slope away from backfilled walls to reduce the potential for surface water to percolate into the backfill. Water percolating through pervious surfaces (pavers, gravel, permeable pavement, etc.) must also be prevented from flowing toward walls or into the backfill zone. The compacted subgrade below pervious surfaces and any associated drainage layer should therefore be sloped away. Alternatively, a membrane and subsurface collection system could be provided below a pervious surface.

It is critical that the wall backfill be placed in lifts and be properly compacted, in order for the above-recommended design earth pressures to be appropriate. The wall design criteria assume that the backfill will be well-compacted in lifts no thicker than 12 inches. The compaction of backfill near the walls should be accomplished with hand-operated equipment to prevent the walls from being overloaded by the higher soil forces that occur during compaction. The section entitled **General Earthwork and Structural Fill** contains additional recommendations regarding the placement and compaction of structural fill behind retaining and foundation walls.

The above recommendations are not intended to waterproof below-grade walls, or to prevent the formation of mold, mildew or fungi in interior spaces. Over time, the performance of subsurface drainage systems can degrade, subsurface groundwater flow patterns can change, and utilities can break or develop leaks. Therefore, waterproofing should be provided where future seepage through the walls is not acceptable. This typically includes limiting cold-joints and wall penetrations, and using bentonite panels or membranes on the outside of the walls. There are a variety of different waterproofing materials and systems, which should be installed by an experienced contractor familiar with the anticipated construction and subsurface conditions. Applying a thin coat of asphalt emulsion to the outside face of a wall is not considered waterproofing, and will only help to reduce moisture generated from water vapor or capillary action from seeping through the concrete. As with any project, adequate ventilation of basement and crawl space areas is important to prevent a build up of water vapor that is commonly transmitted through concrete walls from the surrounding soil, even when seepage is not present. This is appropriate even when waterproofing is applied to the outside of foundation and retaining walls. We recommend that you contact an experienced envelope consultant if detailed recommendations or specifications related to waterproofing design, or minimizing the potential for infestations of mold and mildew are desired.

The **General**, **Slabs-On-Grade**, and **Drainage Considerations** sections should be reviewed for additional recommendations related to the control of groundwater and excess water vapor for the anticipated construction.

FLOOR SLABS

Even where the exposed soils appear dry, water vapor will tend to naturally migrate upward through the soil to the new constructed space above it. This can affect moisture-sensitive flooring, cause imperfections or damage to the slab, or simply allow excessive water vapor into the space above the slab. All interior slabs-on-grade should be underlain by a capillary break drainage layer consisting of a minimum 4-inch thickness of clean gravel or crushed rock that has a fines content (percent passing the No. 200 sieve) of less than 3 percent and a sand content (percent passing the No. 4 sieve) of no more than 10 percent. Pea gravel or crushed rock are typically used for this layer. This capillary break/drainage layer is not necessary if an underslab drainage system is installed, such as we have recommended below the basement slab.

As noted by the American Concrete Institute (ACI) in the *Guides for Concrete Floor and Slab Structures*, proper moisture protection is desirable immediately below any on-grade slab that will be covered by tile, wood, carpet, impermeable floor coverings, or any moisture-sensitive equipment or products. ACI also notes that vapor *retarders* such as 6-mil plastic sheeting have been used in the past, but are now recommending a minimum 10-mil thickness for better durability and long term performance. A vapor retarder is defined as a material with a permeance of less than 0.3 perms, as determined by ASTM E 96. It is possible that concrete admixtures may meet this specification, although the manufacturers of the admixtures should be consulted. Where vapor retarders are used under slabs, their edges should overlap by at least 6 inches and be sealed with adhesive tape. The sheeting should extend to the foundation walls for maximum vapor protection. If no potential for vapor passage through the slab is desired, a vapor *barrier* should be used. A vapor barrier, as defined by ACI, is a product with a water transmission rate of 0.01 perms when tested in accordance with ASTM E 96. Reinforced membranes having sealed overlaps can meet this requirement.

We recommend that the contractor, the project materials engineer, and the owner discuss these issues and review recent ACI literature and ASTM E-1643 for installation guidelines and guidance on the use of the protection/blotter material.

EXCAVATIONS AND SLOPES

Excavation slopes should not exceed the limits specified in local, state, and national government safety regulations. Temporary cuts to a depth of about 4 feet may be attempted vertically in unsaturated soil, if there are no indications of slope instability. However, vertical cuts should not be made near property boundaries, or existing utilities and structures. Based upon Washington Administrative Code (WAC) 296, Part N, the near-surface soil at the subject site would generally be classified as Type B. Temporary cuts can be made at a 1.5:1 (Horizontal:Vertical) inclination extending continuously between the top and the bottom of a cut. Unshored cuts should not extend below a 2.5:1 (H:V) zone sloping downward from the edge of existing foundations. The **General** section contains additional considerations for temporary cuts.

The above-recommended temporary slope inclination is based on the conditions exposed in our explorations, and on what has been successful at other sites with similar soil conditions. It is possible that variations in soil and groundwater conditions will require modifications to the inclination at which temporary slopes can stand. Temporary cuts are those that will remain unsupported for a relatively short duration to allow for the construction of foundations, retaining

walls, or utilities. Temporary cut slopes should be protected with plastic sheeting during wet weather. It is also important that surface runoff be directed away from the top of temporary slope cuts. Cut slopes should also be backfilled or retained as soon as possible to reduce the potential for instability. Please note that sand or loose soil can cave suddenly and without warning. Excavation, foundation, and utility contractors should be made especially aware of this potential danger. These recommendations may need to be modified if the area near the potential cuts has been disturbed in the past by utility installation, or if settlement-sensitive utilities are located nearby.

All permanent cuts into onsite soil should be inclined no steeper than 3:1 (H:V). Water should not be allowed to flow uncontrolled over the top of any temporary or permanent slope. All permanently exposed slopes should be seeded with an appropriate species of vegetation to reduce erosion and improve the stability of the surficial layer of soil.

DRAINAGE CONSIDERATIONS

Footing drains placed inside the building or behind backfilled walls should consist of 4-inch, perforated PVC pipe surrounded by at least 6 inches of 1-inch-minus, washed rock wrapped in a non-woven, geotextile filter fabric (Mirafi 140N, Supac 4NP, or similar material). At its highest point, a perforated pipe invert should be at least 6 inches below the level of a crawl space or the bottom of a floor slab, and it should be sloped slightly for drainage. Plate 4 presents typical considerations for footing drains. All roof and surface water drains must be kept separate from the foundation drain system.

As a minimum, a vapor retarder, as defined in the ***Floor Slabs*** section, should be provided in any crawl space area to limit the transmission of water vapor from the underlying soils. Crawl space grades are sometimes left near the elevation of the bottom of the footings. As a result, an outlet drain is recommended for all crawl spaces to prevent an accumulation of any water that may bypass the footing drains. Providing even a few inches of free draining gravel underneath the vapor retarder limits the potential for seepage to build up on top of the vapor retarder.

If seepage is encountered in an excavation, it should be drained from the site by directing it through drainage ditches, perforated pipe, or French drains, or by pumping it from sumps interconnected by shallow connector trenches at the bottom of the excavation.

The excavation and site should be graded so that surface water is directed off the site and away from the tops of slopes. Water should not be allowed to stand in any area where foundations, slabs, or pavements are to be constructed. Final site grading in areas adjacent to a building should slope away at least 2 percent, except where the area is paved. Surface drains should be provided where necessary to prevent ponding of water behind foundation or retaining walls. A discussion of grading and drainage related to pervious surfaces near walls and structures is contained in the ***Foundation and Retaining Walls*** section. Water from roof, storm water, and foundation drains should not be discharged onto slopes; it should be tightlined to a suitable outfall located away from any slopes.

LIMITATIONS

The conclusions and recommendations contained in this report are based on site conditions as they existed at the time of our exploration and assume that the soil and groundwater conditions encountered in the test pits are representative of subsurface conditions on the site. If the

subsurface conditions encountered during construction are significantly different from those observed in our explorations, we should be advised at once so that we can review these conditions and reconsider our recommendations where necessary. Unanticipated conditions are commonly encountered on construction sites and cannot be fully anticipated by merely taking samples in test pits. Subsurface conditions can also vary between exploration locations. Such unexpected conditions frequently require making additional expenditures to attain a properly constructed project. It is recommended that the owner consider providing a contingency fund to accommodate such potential extra costs and risks. This is a standard recommendation for all projects.

This report has been prepared for the exclusive use of Artoush Fanaiyan, and his representatives for specific application to this project and site. Our conclusions and recommendations are professional opinions derived in accordance with our understanding of current local standards of practice, and within the scope of our services. No warranty is expressed or implied. The scope of our services does not include services related to construction safety precautions, and our recommendations are not intended to direct the contractor's methods, techniques, sequences, or procedures, except as specifically described in our report for consideration in design. Our services also do not include assessing or minimizing the potential for biological hazards, such as mold, bacteria, mildew and fungi in either the existing or proposed site development.

ADDITIONAL SERVICES

Geotech Consultants, Inc. should be retained to provide geotechnical consultation, testing, and observation services during construction. This is to confirm that subsurface conditions are consistent with those indicated by our exploration, to evaluate whether earthwork and foundation construction activities comply with the general intent of the recommendations presented in this report, and to provide suggestions for design changes in the event subsurface conditions differ from those anticipated prior to the start of construction. However, our work would not include the supervision or direction of the actual work of the contractor and its employees or agents. Also, job and site safety, and dimensional measurements, will be the responsibility of the contractor.

During the construction phase, we will provide geotechnical observation and testing services when requested by you or your representatives. Please be aware that we can only document site work we actually observe. It is still the responsibility of your contractor or on-site construction team to verify that our recommendations are being followed, whether we are present at the site or not.

The following plates are attached to complete this report:

Plate 1	Vicinity Map
Plate 2	Site Exploration Plan
Plate 3	Test Pit Logs
Plate 4	Typical Footing Drain Detail

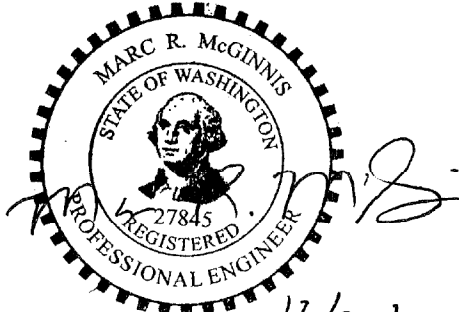
Artoush Fanaiyan
December 21, 2017

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We appreciate the opportunity to be of service on this project. Please contact us if you have any questions, or if we can be of further assistance.

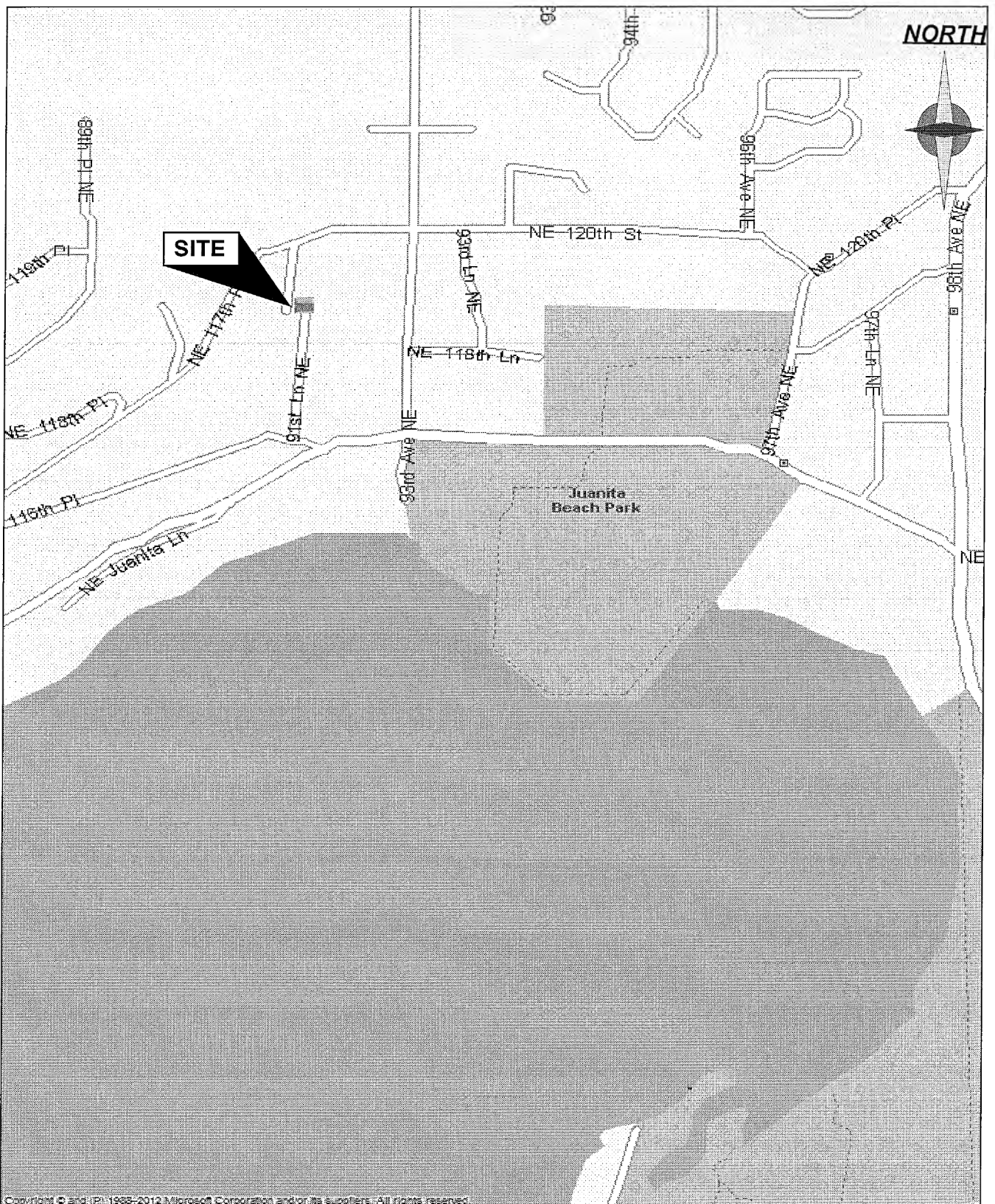
Respectfully submitted,

GEOTECH CONSULTANTS, INC.



Marc R. McGinnis, P.E.
Principal

MRM:mrn



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(Source: Microsoft MapPoint, 2013)



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VICINITY MAP

116xx - 91st Place N.E.
(Parcel 3754500040)
Kirkland, Washington

Job No:
17652

Date:
Dec. 2017

Plate:

1

TEST PIT 1

Depth (feet)	Soil Description
0 – 2.0	Brown, gravelly, silty SAND with organics, very moist, loose (FILL)
2.0 – 8.5	Brown, then gray, silty, gravelly SAND, fine-grained, very moist, loose -orangish-brown and wet below 8 feet
8.5 – 9.5	Gray, gravelly, silty SAND, fine-grained, moist, dense (Glacial Till)

Test Pit was terminated at a depth of 9.5 feet on December 7, 2017.

No groundwater seepage was observed in the test pit, but the moisture content was elevated at a depth of 8.0 feet.

TEST PIT 2

Depth (feet)	Soil Description
0 – 1.0	Brown, gravelly, silty SAND with organics and some chunks of asphalt, very moist, loose (FILL)
1.0 – 3.0	Dark brown, very silty SAND with organics, very moist, loose (Old Topsoil)
3.0 – 9.0	Gray, gravelly, silty SAND with occasional organics, fine- to medium-grained, very moist to wet, loose to medium-dense

Test Pit was terminated at a depth of 9.0 feet on December 7, 2017.

No groundwater seepage was observed in the test pit, but the moisture content was elevated below a depth of 5.0 feet.

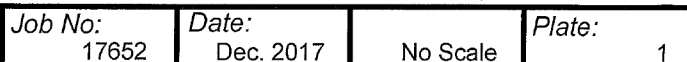


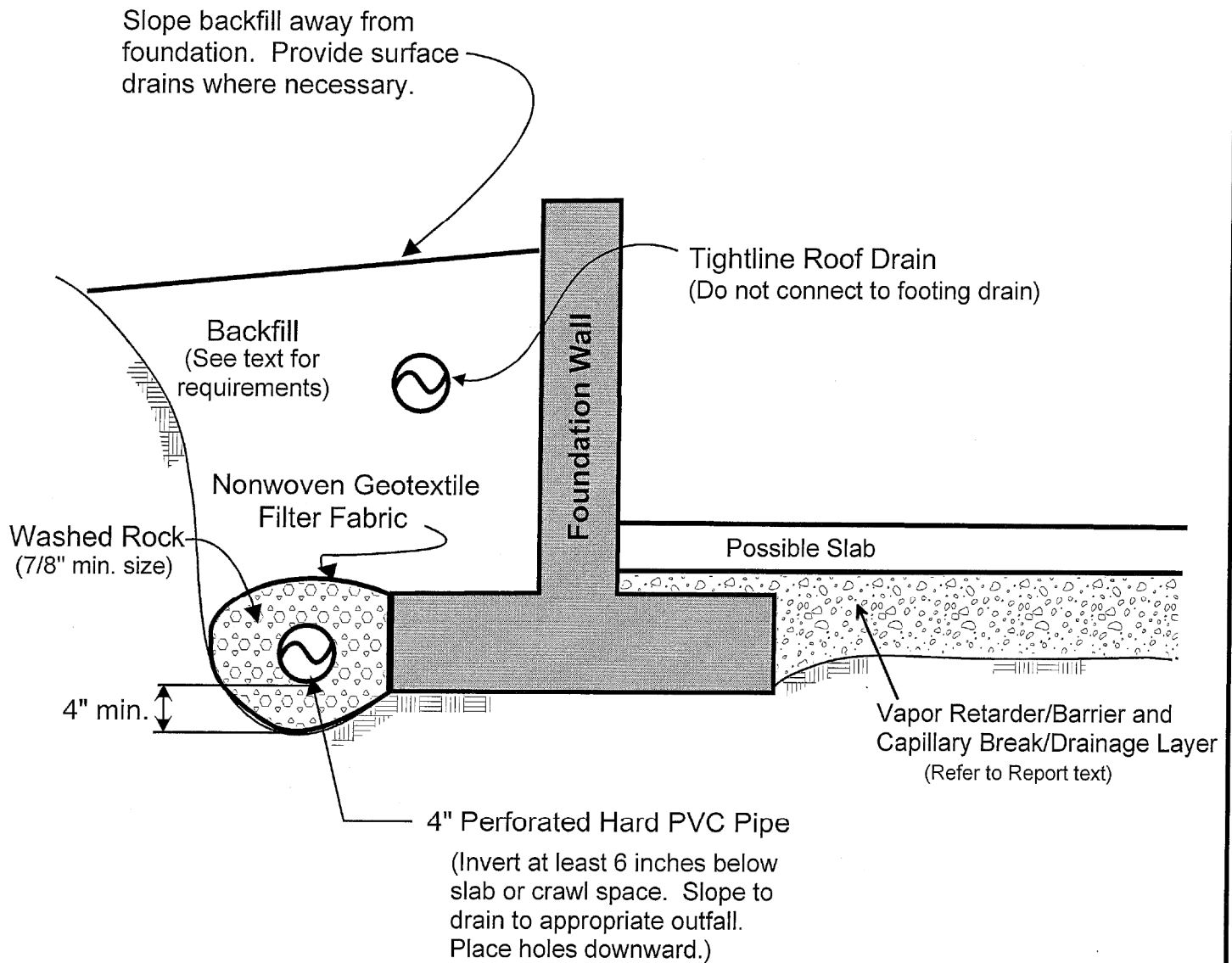
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TEST PIT LOGS

116xx - 91st Place N.E.
(Parcel 3754500040)
Kirkland, Washington

Job No: 17652	Date: Dec. 2017	Plate: 2
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**NOTES:**

- (1) In crawl spaces, provide an outlet drain to prevent buildup of water that bypasses the perimeter footing drains.
- (2) Refer to report text for additional drainage, waterproofing, and slab considerations.

**FOOTING DRAIN DETAIL**

116xx - 91st Place N.E.
(Parcel 3754500040)
Kirkland, Washington

Job No: 17652	Date: Dec. 2017	Plate: 4
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GEOTECH
CONSULTANTS, INC.2401 10th Ave E
Seattle, Washington 98102
(425) 747-5618

January 6, 2021

JN 17652

Artoush Fanaiyan
P.O. Box 133
Bellevue, Washington 98009
via email: artoush76@yahoo.com

Subject: **Geotechnical Addendum to Address Kirkland Zoning Code Chapter 85.15**
Proposed New Residence
Vacant Lot
116xx – 91st Place Northeast
Parcel #375450040
Kirkland, Washington

References: *Geotechnical Engineering Study*, same site and project; Geotech Consultants, Inc.;
December 21, 2017.

Addendum to Geotechnical Engineering Study – Temporary Shoring Considerations,
same site and project; Geotech Consultants, Inc.; February 15, 2018.

Dear Mr. Fanaiyan:

The intent of this letter is to provide supplemental information to the above-referenced geotechnical study, in order to satisfy the requirements of chapter 85.15 of the revision to the Kirkland Zoning Code (KZC) related to geologically hazardous areas.

The City of Kirkland GIS Tool maps the site within a High Liquefaction Potential Area. In addition, the entire site is mapped as a Moderate Landslide Hazard Area (MLHA), and two High Landslide Hazard Areas (HLHA) are mapped on the property. Under the criteria of the KZC, the site would also be classified as an Erosion Hazard Area. This is due primarily to the steep inclination of the manmade slope located on the western perimeter of the site along 91st Place Northeast. This oversteepened slope was created by the placement of fill soil for the upslope 91st Place Northeast right-of-way. The other HLHA located on the eastern portion of the site consists of a temporary fill pile that was stockpiled on the property likely following previous grading for one of the adjacent developed lots.

As noted in the above-referenced geotechnical report, the test pits excavated for our study generally encountered dense, glacially compressed soil below a depth of 8.5 feet. No groundwater seepage was observed in the test pits.

Seismic Hazard Considerations: As stated above, the site and surrounding downslope vicinity is mapped within a High Liquefaction Potential Area. The Washington Department of Natural Resources maps the lot as being underlain by Glacial Till and Advance Outwash. The site is located near the seam between these two geologic units and may be the reason why the mapping is present. The test pits conducted for our Geotechnical Study encountered native, dense glacial till beneath loose fill and weathered soil. This dense soil was glacially compressed, and groundwater

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was not observed in our explorations. The dense soil that will support the house's foundations are not susceptible to seismic liquefaction under the ground motions of the Maximum Considered Earthquake (MCE), and no additional mitigation measures are required beyond what we have recommended in our Geotechnical Study.

Landslide Hazard Considerations: As noted above, the site contains two High Landslide Hazard Areas (HLHAs), which are situated on the eastern and western portions of the site. The western steep slope is inclined at close to a 1:1 (H:V) and is 14 feet tall. This manmade slope has been created by the placement of fill to level out the 91st Place Northeast right-of-way extending southward from the adjacent north residence. This is evidenced by surficial soil conditions, the presence of fill in our test pit excavated near the toe of this slope well onto the property, and the large grade drop between the dead-end of 91st Place Northeast due south of the property, and where the road alignments starts again to the south (91st Lane Northeast). This steep slope will be retained by the foundations of the planned new residence. The steep slope on the eastern side of the site is comprised of a temporary fill stockpile. This pile of soil may have been dumped at the site following the construction of one of the adjacent developed properties and is inclined at an approximate 1:1 (H:V) over a 10- to 16-foot grade change. This steep slope continues past the eastern property line, into the undeveloped Rainier Avenue right-of-way before the slope flattens. This fill stockpile will likely need to be re-graded as part of the sitework during construction of the new residence.

The site is located at the base of Goat Hill, which contains many residential lots entirely comprised of steep slopes, most of which meet the City of Kirkland Criteria for High Landslide Hazard Areas (HLHAs). These steep slope areas continue all the way to the top of Goat Hill, and most of the hillside is mapped as an Erosion Hazard Area. As is such, HLHAs are mapped within a 50-foot radius of the project site.

To the east of the site, a steep slope continues in a band running north along the vacant Rainier Avenue right-of-way. This slope is initially in excess of 10 feet in height but thins out several lots to the north. To the east and south of the site, some shorter-than-10-foot steep slopes are mapped as landslide hazards, but they do not meet the City of Kirkland minimum height criteria. These slopes coincide with onsite grading features for the adjacent eastern condo complex, and residential lot to the south. An approximate 6-foot-tall slope is located off the southwestern corner of the adjacent southern lot and does not meet the City of Kirkland criteria for a HLHA within the nominal 50-foot radius from the subject site. To the west of the site, two HLHAs ranging in height from 14 to 30 feet in height exist. The steep slope area to the northwest of the site contains an approximately 8-foot-tall rockery at its toe along 91st Place Northeast, and both slopes are at least partially man-made.

It is well known that the core of Goat Hill is comprised of dense, glacially compressed soils that are not susceptible to deep-seated instability. The looser soil deposits situated atop the underlying dense soils, however, are prone to shallow slides, typically following extended periods of wet weather.

Erosion Hazard Considerations: We expect that a formal Temporary Erosion and Sedimentation Control (TESC) plan will be prepared as a part of the permit submittal. The erosion control measures needed during the site development will depend heavily on the weather conditions that are encountered. We anticipate that a wire-backed silt fence will be needed around the downslope sides of any cleared areas. Existing pavements, ground cover, and landscaping should be left in place wherever possible to minimize the amount of exposed soil. If trucks will drive off paved areas, rocked staging areas and construction access roads should be provided to reduce the amount of soil or mud carried off the property by trucks and equipment. Cut slopes and soil stockpiles should

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be covered with plastic during wet weather. Following clearing or rough grading, it may be necessary to mulch or hydroseed bare areas that will not be immediately covered with landscaping or an impervious surface. On most construction projects, it is necessary to periodically maintain or modify temporary erosion control measures to address specific site and weather conditions.

The following are responses to the specific geotechnical items contained in KZC chapter 85.15:

3a. See the **Conclusions** section on page 3 of the December 21, 2017 *Geotechnical Engineering Study*.

3b. No indications of slope instability, such as downsets or tension cracks, have been observed on the oversteepened fill slopes along the eastern and western boundaries of the site, or on the neighboring properties.

3c. See the description of groundwater conditions on the top of page 2 of the *Study*.

3d. As stated in the *Study*, fill ranging in thickness from 2 to 3 feet was encountered in our test pits. Based on our observations, the eastern and western steep slopes appear to be mostly comprised of loosely placed fill similar to the soil conditions encountered in the test pits.

3e. See the description of subsurface conditions contained on page 2 of the *Study* and the appended Test Pit Logs.

3f. See the description of groundwater conditions on the top of page 2 of the *Study* and the attached Test Pit Logs.

3g. See the description of subsurface conditions, the above discussions, and the appended test pit logs appended to the end of the *Study*.

3h. Attached to this addendum as Plate A is a copy of the Lidar information contained on the City of Kirkland's GIS website. The approximate location of the site is indicated on the Lidar map. The Lidar information shows the general steeply-sloped ground extending downward from the western hillside (Goat Hill), with terraces shown in the areas of the roadways and developed areas. The Lidar imagery also shows the steeply sloped ground on the western portion of the subject property, resulting from fill placed during the construction of 91st Place Northeast. The slope created by the large fill pile on the eastern portion of the lot is also shown. This steep slope continues to just past the eastern property line, where the slope becomes more moderately inclined continuing to the east. There are no features in the direct vicinity showing potential large-scale historic landslides. This is consistent with our knowledge of the site vicinity.

3i. As required by KZC 85.15, a static and seismic slope stability analysis was completed. The most critical slope in a post-construction condition will be the eastern slope extending into the Rainier Avenue right-of-way. While a steep slope currently exists to the west of the proposed residence location, it will be backfilled and retained by the new residence. This will stabilize the loose fill soils upslope of the residence, and no steep slope will exist within the site bounds in this area after construction has been completed. The eastern fill pile will also be spread out across the site to lessen the surcharge load it is currently placing on the eastern slope, and to buttress the slope leading up to the northern adjacent parcel. As noted in the *Study*, dense glacial till comprises the core of the site, and is overlain by a layer of loose fill and weathered soils. The recommendations in our *Study and Addendum* are intended to protect the planned development from damage due to any such future shallow slope movement within the looser, near-surface soils. Temporary soldier pile shoring will be used to facilitate the basement excavation where the cut slopes cannot be adequately laid back, and a deep foundation system consisting of pipe piles will support the new residence. The implementation of a deep foundation system for the new residence will remove the potential surcharge load of the new house from the slope, and extend it downward to very dense, glacially compressed soils that are not susceptible to deep-seated instability.

The slope stability analyses confirmed that the factor of safety against a slope failure that could reach the house that is planned closest to the eastern steep slope is in excess of 1.5 for static

Artoush Fanaiyan
January 6, 2021

JN 17652
Page 4

conditions. Also, the safety factor for seismic conditions is in excess of 1.1. No additional mitigation measures are necessary to protect the planned development, such as buffers, beyond what is addressed above and in our *Study*. The results of our slope stability analyses can be found attached to this letter as Appendix A. A typical cross section is also included to illustrate the existing topography.

3j. This is addressed in the *Study* and above in item 3b, we did not see any indications of recent or incipient slope instability on the site.

3k. The dense soils underlying the site are not susceptible to seismic liquefaction under the Maximum Considered Earthquake (MCE), which has a 2 percent probability of occurring in 50 years.

3l. Refer to the *Study* and the above discussions.

3m. In our professional opinion, the proposed project can be undertaken safely if the recommendations of the *Study*, *Addendum* and this letter are into the project plans, and are followed during the construction and use of the project.

4a. Refer to the *Study* and the above discussions.

4b. Refer to page 1 of the *Study*.

4c. Permanent cut and fill slopes should generally not be inclined steeper than 3:1 (Horizontal:Vertical). All permanent slopes should be landscaped or vegetated for erosion protection. Temporary erosion control recommendations are presented above.

Backfill placed behind retaining or foundation walls should be coarse, free-draining structural fill containing no organics. This backfill should contain no more than 5 percent silt or clay particles and have no gravel greater than 4 inches in diameter. The percentage of particles passing the No. 4 sieve should be between 25 and 70 percent. If the native soils are reused as wall backfill, a minimum 12-inch width of free-draining gravel should be placed against the walls to allow rapid drainage down to the footing drains. The top 12 to 18 inches of the backfill should consist of a compacted, relatively impermeable soil or topsoil, or the surface should be paved. The ground surface must also slope away from backfilled walls to reduce the potential for surface water to percolate into the backfill. Water percolating through pervious surfaces (pavers, gravel, permeable pavement, etc.) must also be prevented from flowing toward walls or into the backfill zone. The compacted subgrade below pervious surfaces and any associated drainage layer should therefore be sloped away. Alternatively, a membrane and subsurface collection system could be provided below a pervious surface.

It is critical that the wall backfill be placed in lifts and be properly compacted, in order for the above-recommended design earth pressures to be appropriate. The wall design criteria assume that the backfill will be well-compacted in lifts no thicker than 12 inches. The compaction of backfill near the walls should be accomplished with hand-operated equipment to prevent the walls from being overloaded by the higher soil forces that occur during compaction.

4d. Addressed on Pages 3 through 8 of the *Study*.

4e. Addressed on Page 10 of the *Study*. Footing drains should be used where: (1) Crawl spaces or basements will be below a structure; (2) A slab is below the outside grade; or, (3) The outside grade does not slope downward from a building. Drains should also be placed at the base of all earth-retaining walls. These drains should be surrounded by at least 6 inches of 1-inch-minus, washed rock that is encircled with non-woven, geotextile filter fabric (Mirafi 140N, Supac 4NP, or similar material). At its highest point, a perforated pipe invert should be at least 6 inches below the bottom of a slab floor or the level of a crawl space. The discharge pipe for subsurface drains should be sloped for flow to the outlet point. Roof and surface water drains must not discharge into the foundation drain system. A typical footing drain detail consists of a 4-inch-diameter perforated pipe

Artoush Fanaiyan
January 6, 2021

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Page 5

surrounded with washed rock that is encircled with non-woven filter cloth. For the best long-term performance, perforated PVC pipe is recommended for all subsurface drains.

4f. In accordance with the International Building Code (IBC), the site class within 100 feet of the ground surface is best represented by Site Class Type D (Stiff Soil). As noted in the USGS website, the mapped spectral acceleration value for a 0.2 second (S_s) and 1.0 second period (S_1) equals 1.25g and 0.48g, respectively. As discussed above the dense soils underlying the site are not susceptible to seismic liquefaction under the ground motions of the MCE.

4g. No additional measures beyond what are already recommended in the *Study*, *Addendum*, and what is referenced above are necessary to reduce the risk of slope instability.

4h. No additional measures beyond what are already recommended in the *Study* and *Addendum* and what is referenced above are necessary to reduce the risk of slope instability or the hazard to surrounding properties.

Please contact us if you have any questions regarding this letter, or if we can be of further assistance.

Respectfully submitted,

GEOTECH CONSULTANTS, INC.

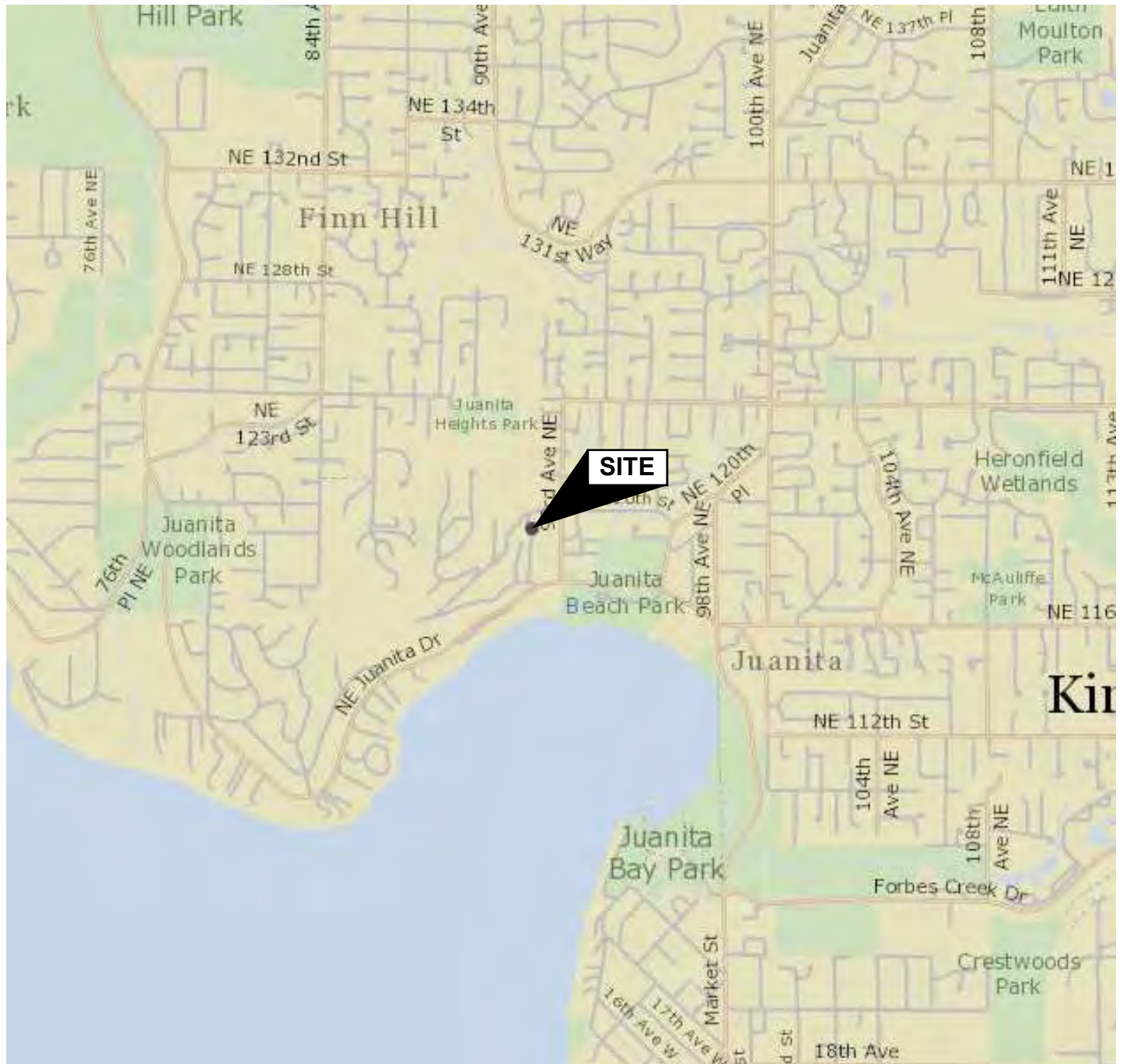
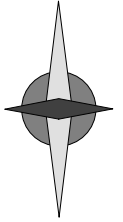


01/06/21

Marc R. McGinnis, P.E.
Principal

Attachments: Vicinity Map, Site Plan, Test Pit Logs, Footing Drain Detail, Kirkland GIS map, Lidar Map, Slope Stability Analyses

MKM/MRM:kg

NORTH

(Source: King County iMap)



GEOTECH
CONSULTANTS, INC.

VICINITY MAP

116xx - 91st Place Northeast
(Parcel 3754500040)
Kirkland, Washington

Job No:

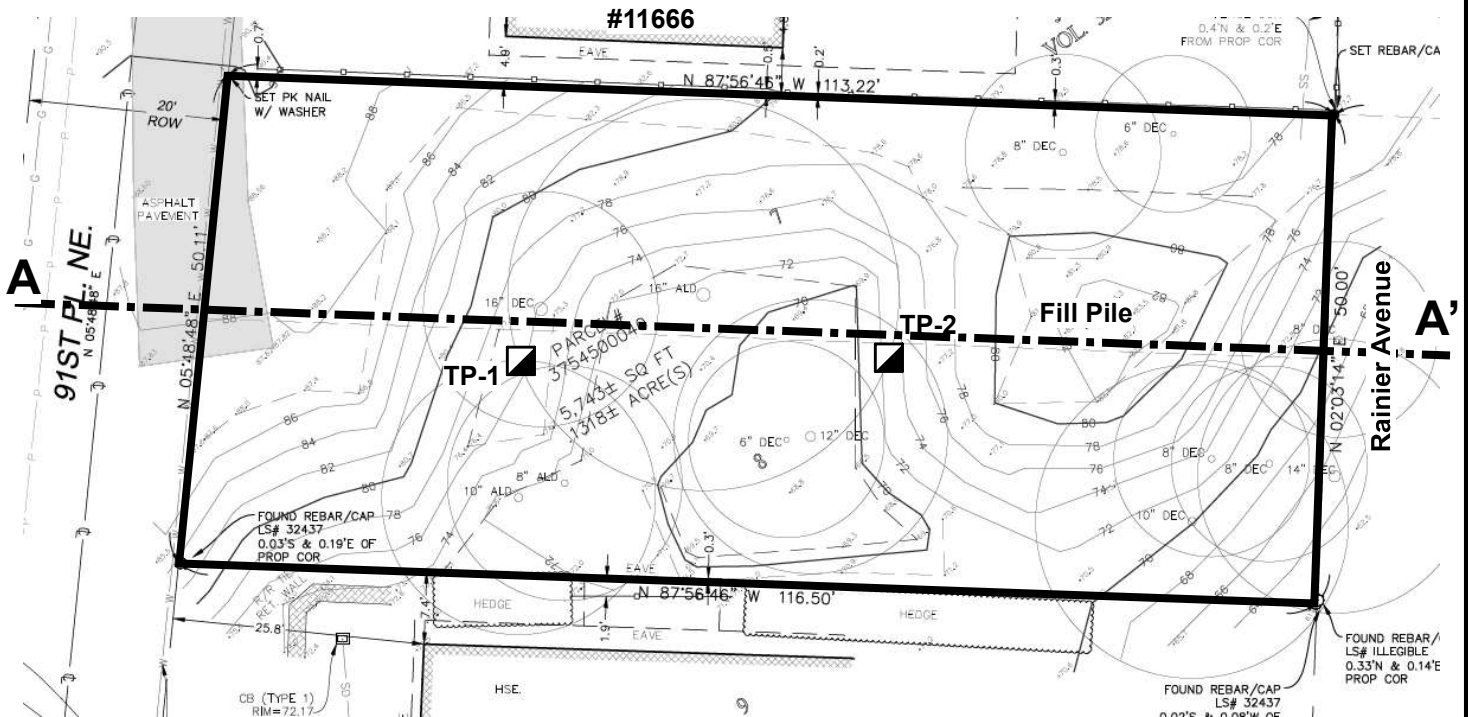
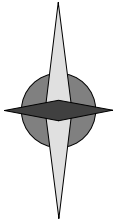
17652

Date:

Dec. 2020

Plate:

1

NORTH**Legend:**

- Test Pit Location
- Slope Stability Cross Section



GEOTECH
CONSULTANTS, INC.

SITE EXPLORATION PLAN

116xx - 91st Place Northeast
(Parcel 3754500040)
Kirkland, Washington

Job No:	Date:	No Scale	Plate:
17652	Dec. 2020		2

TEST PIT 1

Depth (feet)	Soil Description
0 – 2.0	Brown, gravelly, silty SAND with organics, very moist, loose (FILL)
2.0 – 8.5	Brown, then gray, silty, gravelly SAND, fine-grained, very moist, loose -orangish-brown and wet below 8 feet
8.5 – 9.5	Gray, gravelly, silty SAND, fine-grained, moist, dense (Glacial Till)

Test Pit was terminated at a depth of 9.5 feet on December 7, 2017.

No groundwater seepage was observed in the test pit, but the moisture content was elevated at a depth of 8.0 feet.

TEST PIT 2

Depth (feet)	Soil Description
0 – 1.0	Brown, gravelly, silty SAND with organics and some chunks of asphalt, very moist, loose (FILL)
1.0 – 3.0	Dark brown, very silty SAND with organics, very moist, loose (Old Topsoil)
3.0 – 9.0	Gray, gravelly, silty SAND with occasional organics, fine- to medium-grained, very moist to wet, loose to medium-dense

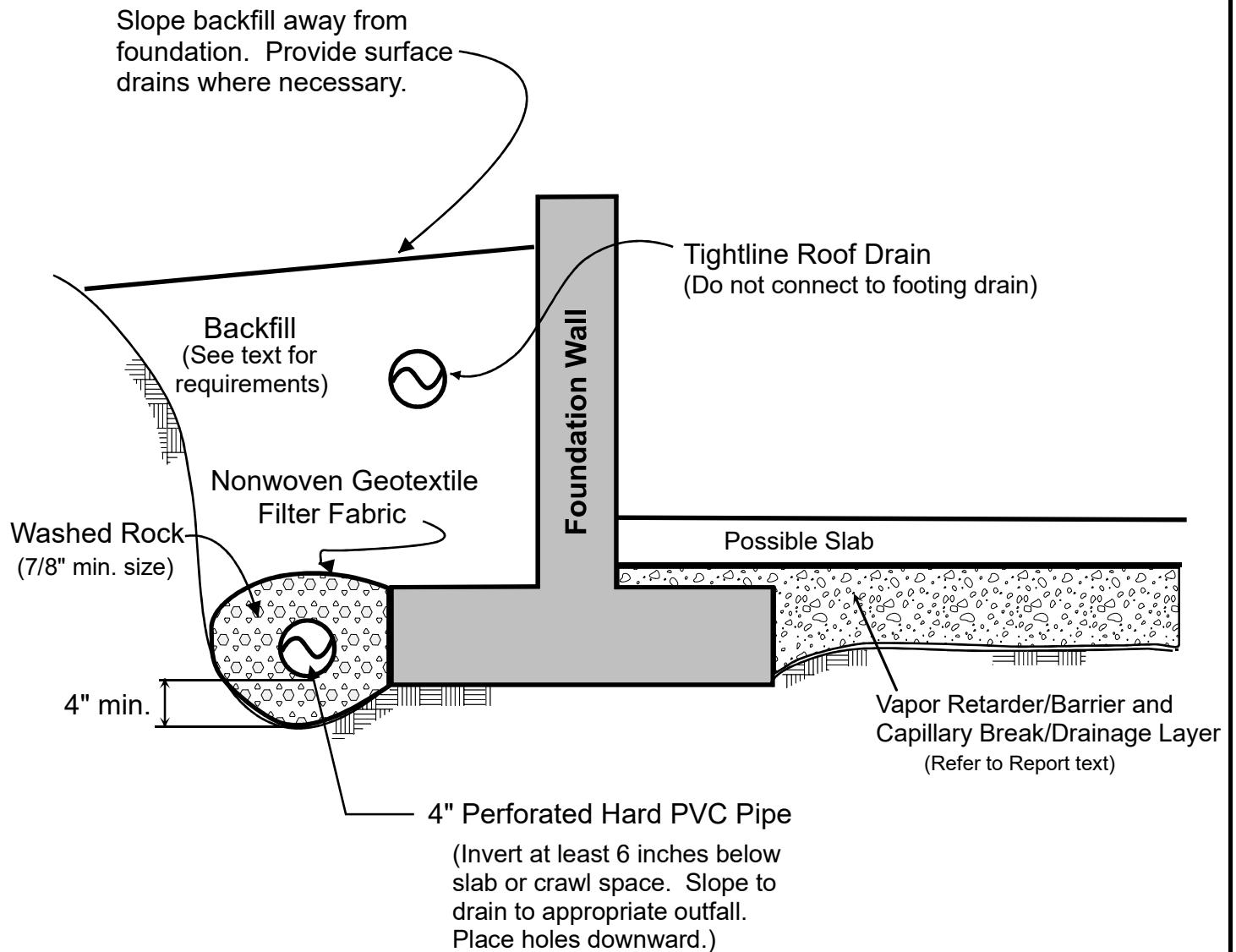
Test Pit was terminated at a depth of 9.0 feet on December 7, 2017.

No groundwater seepage was observed in the test pit, but the moisture content was elevated below a depth of 5.0 feet.

**TEST PIT LOGS**

116xx - 91st Place Northeast
(Parcel 3754500040)
Kirkland, Washington

Job No: 17652	Date: Dec. 2020	Plate: 3
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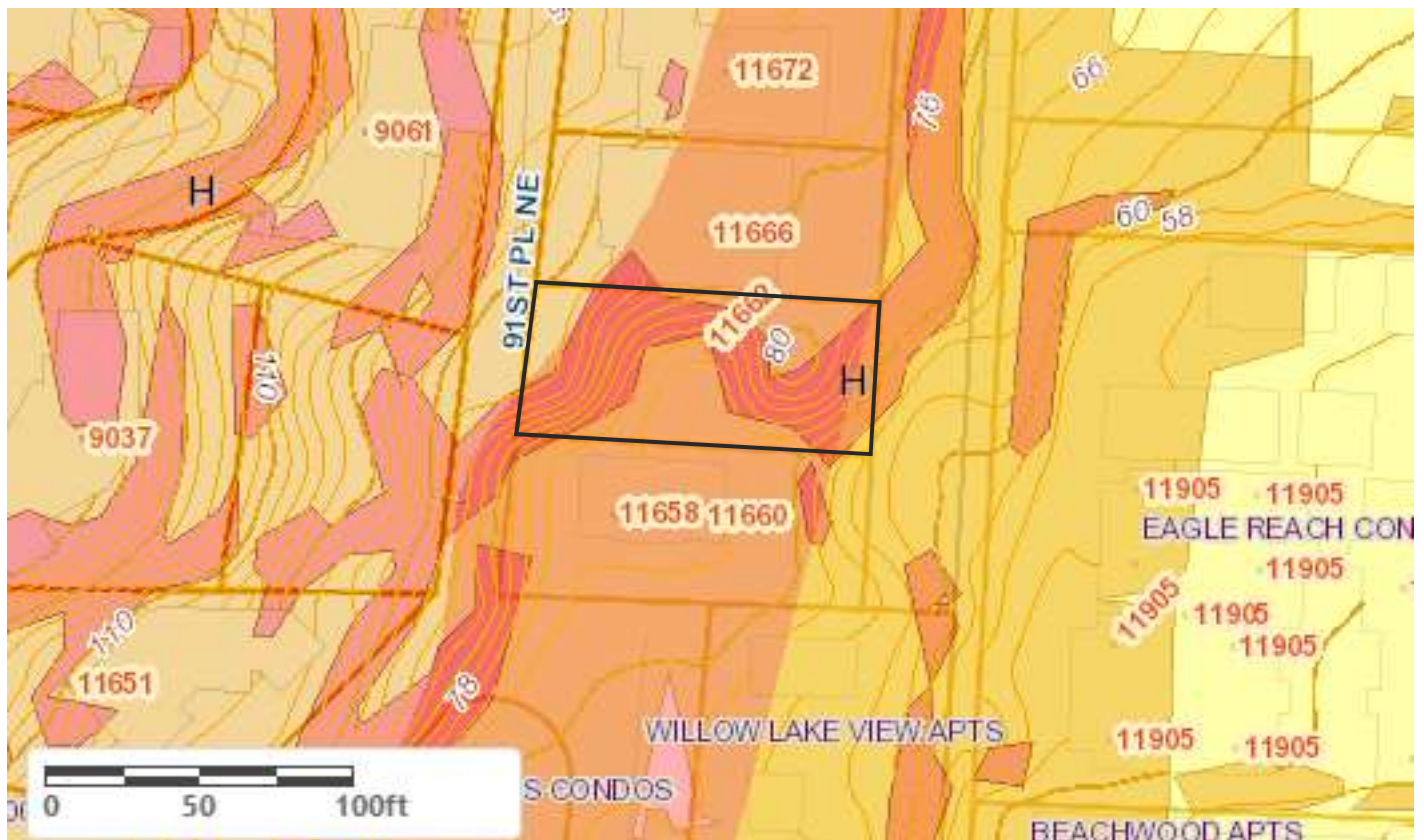
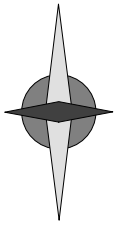
**NOTES:**

- (1) In crawl spaces, provide an outlet drain to prevent buildup of water that bypasses the perimeter footing drains.
- (2) Refer to report text for additional drainage, waterproofing, and slab considerations.

**FOOTING DRAIN DETAIL**

116xx - 91st Place Northeast
(Parcel 3754500040)
Kirkland, Washington

Job No: 17652	Date: Dec. 2020	Plate: 4
-------------------------	---------------------------	--------------------

NORTH

GEOTECH
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KIRKLAND GIS MAP

116xx - 91st Place Northeast
(Parcel 3754500040)
Kirkland, Washington

Job No: 17652	Date: Dec. 2020	Plate: A
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NORTH

GEOTECH
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KIRKLAND LIDAR MAP

116xx - 91st Place Northeast
(Parcel 3754500040)
Kirkland, Washington

Job No:

17652

Date:

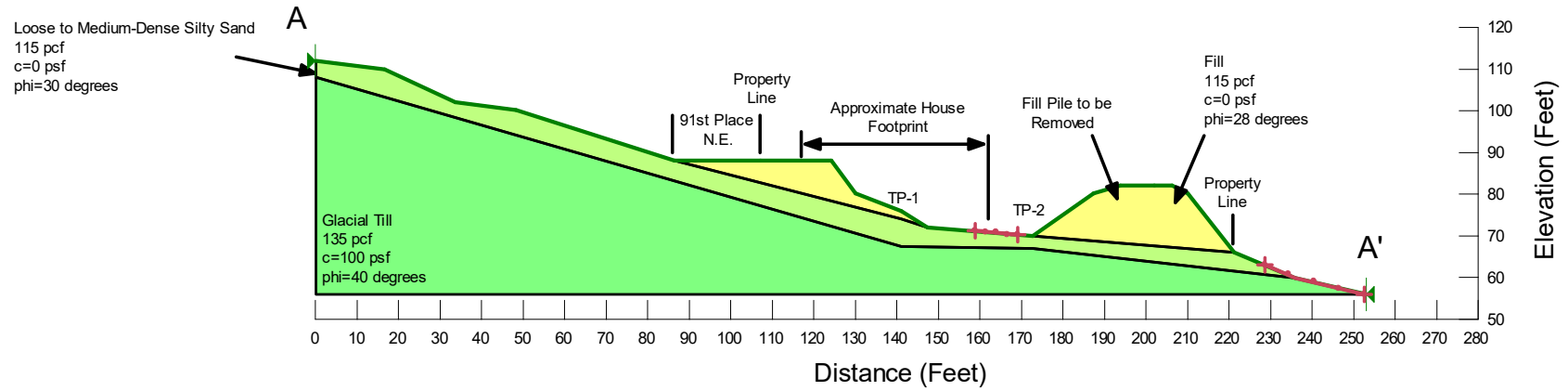
Dec. 2020

Plate:

B

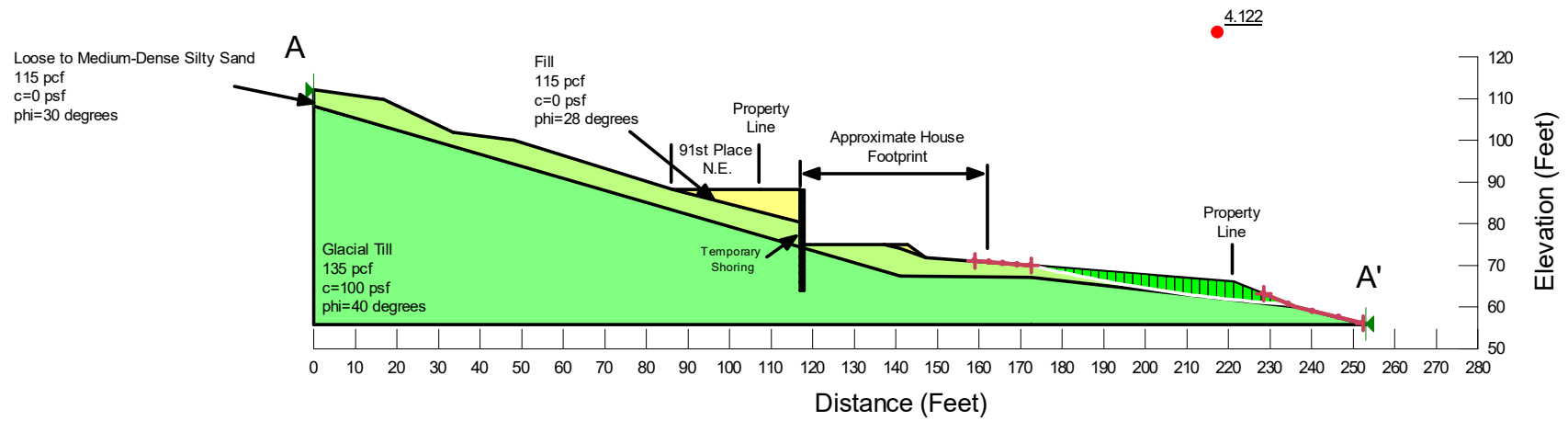
Appendix A
Slope Stability Analyses
JN 17652

17652 - Artoush Fanaiyan
Existing Topography



17652 - Artoush Fanaiyan

Static



Static

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File Information

File Version: 8.15
 Title: 17652 - Fanaiyan
 Created By: Ma. McGinnis
 Last Edited By: Matt McGinnis
 Revision Number: 11
 Date: 1/4/2021
 Time: 11:35:01 AM
 Tool Version: 8.15.6.13446
 File Name: 17652 Slope Stability - Post Construction.gsz
 Directory: C:\Users\MattM\OneDrive - Geotech Consultants\Slope Stability Analysis\17652 Fanaiyan\
 Last Solved Date: 1/5/2021
 Last Solved Time: 7:44:16 AM

Project Settings

Length(L) Units: Feet
 Time(t) Units: Seconds
 Force(F) Units: Pounds
 Pressure(p) Units: psf
 Strength Units: psf
 Unit Weight of Water: 62.4 pcf
 View: 2D
 Element Thickness: 1

Analysis Settings

Static

Kind: SLOPE/W
 Method: Morgenstern-Price
 Settings
 Side Function
 Interslice force function option: Half-Sine
 PWP Conditions Source: (none)
 Slip Surface
 Direction of movement: Left to Right
 Use Passive Mode: No
 Slip Surface Option: Entry and Exit
 Critical slip surfaces saved: 1
 Resisting Side Maximum Convex Angle: 1 °
 Driving Side Maximum Convex Angle: 5 °
 Optimize Critical Slip Surface Location: No
 Tension Crack
 Tension Crack Option: (none)
 F of S Distribution
 F of S Calculation Option: Constant

Advanced

Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Search Method: Root Finder
Tolerable difference between starting and converged F of S: 3
Maximum iterations to calculate converged lambda: 20
Max Absolute Lambda: 2

Materials

Fill

Model: Mohr-Coulomb
Unit Weight: 115 pcf
Cohesion': 0 psf
Phi': 28 °
Phi-B: 0 °

Loose SM

Model: Mohr-Coulomb
Unit Weight: 115 pcf
Cohesion': 0 psf
Phi': 30 °
Phi-B: 0 °

Glacial Till

Model: Mohr-Coulomb
Unit Weight: 135 pcf
Cohesion': 100 psf
Phi': 40 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (159, 71.083) ft
Left-Zone Right Coordinate: (172.7, 70) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (228.6, 63) ft
Right-Zone Right Coordinate: (252.5541, 56.10492) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 112) ft
Right Coordinate: (253, 56) ft

Seismic Coefficients

Horz Seismic Coef.: 0

Points

	X (ft)	Y (ft)
Point 1	0	112
Point 2	16.9	110
Point 3	33.7	102
Point 4	48.4	100
Point 5	86.4	88
Point 6	107.4	88
Point 7	124.3	88
Point 8	130	80
Point 9	141.1	76
Point 10	147.4	72
Point 11	172.7	70
Point 12	187.5	80
Point 13	193.8	82
Point 14	202.2	82
Point 15	206.4	82
Point 16	221.2	66
Point 17	236	60
Point 18	253	56
Point 19	141.1	74
Point 20	141.1	67.5
Point 21	141.1	66.5
Point 22	172.7	67
Point 23	172.7	56
Point 24	0	108
Point 25	0	107
Point 26	0	56
Point 27	210	80
Point 28	117	88
Point 29	117	75
Point 30	117	80.16819
Point 31	137.19286	75
Point 32	142.675	75

Regions

	Material	Points	Area (ft ²)
Region 1	Fill	5,30,28,6	119.83
Region 2	Loose SM	1,24,20,22,17,16,11,10,19,31,29,30,5,4,3,2	1,052.3
Region 3	Glacial Till	24,25,26,23,18,17,22,20	5,344.2
Region 4	Fill	19,10,32,31	7.4661

Current Slip Surface

Slip Surface: 106

F of S: 4.122

Volume: 159.04415 ft³

Weight: 18,290.077 lbs

Resisting Moment: 3,803,857.6 lbs-ft

Acting Moment: 922,841.82 lbs-ft

Resisting Force: 10,356.592 lbs

Acting Force: 2,512.5808 lbs

F of S Rank (Analysis): 1 of 125 slip surfaces

F of S Rank (Query): 1 of 125 slip surfaces

Exit: (234.39007, 60.652674) ft

Entry: (172.7, 70) ft

Radius: 363.47267 ft

Center: (257.79622, 423.37093) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	173.71042	69.759731	0	17.436125	10.066751	0
Slice 2	175.73125	69.285282	0	51.568515	29.773096	0
Slice 3	177.75208	68.822987	0	84.277495	48.657635	0
Slice 4	179.77292	68.372797	0	115.60841	66.746548	0
Slice 5	181.79375	67.934666	0	145.60565	84.065464	0
Slice 6	183.81458	67.50855	0	174.31107	100.63854	0
Slice 7	185.83542	67.094407	0	201.76257	116.48767	0
Slice 8	187.85625	66.692193	0	227.99297	131.6318	0
Slice 9	189.87708	66.30187	0	253.02906	146.0864	0
Slice 10	191.89792	65.923397	0	276.89083	159.863	0
Slice 11	193.91875	65.556738	0	299.59103	172.96896	0
Slice 12	195.93958	65.201855	0	321.13492	185.40733	0
Slice 13	197.96042	64.858715	0	341.52028	197.17683	0
Slice 14	199.98125	64.527283	0	360.73767	208.27199	0
Slice 15	202.00208	64.207527	0	378.77088	218.68347	0
Slice 16	204.02292	63.899416	0	395.5977	228.39844	0
Slice 17	206.04375	63.60292	0	411.19081	237.40112	0
Slice 18	208.06458	63.31801	0	425.51891	245.67345	0
Slice 19	210.08542	63.044659	0	438.548	253.1958	0
Slice 20	212.10625	62.78284	0	450.24277	259.94779	0
Slice 21	214.12708	62.532529	0	460.56811	265.90912	0
Slice 22	216.14792	62.293701	0	469.49056	271.0605	0
Slice 23	218.16875	62.066333	0	476.97982	275.38443	0
Slice 24	220.18958	61.850405	0	483.01015	278.86604	0

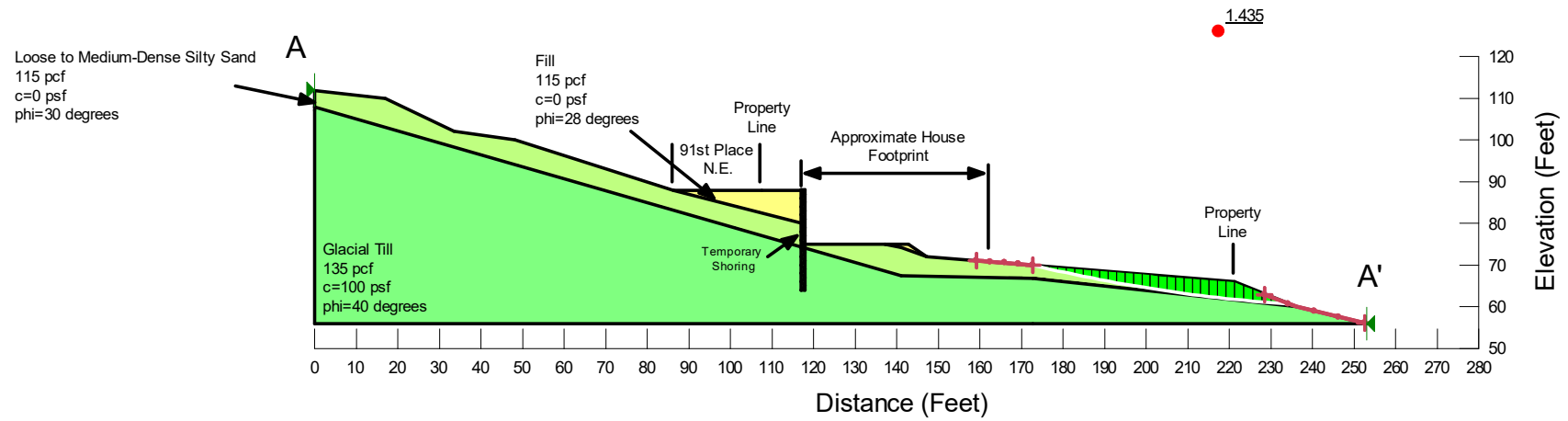
1/5/2021

Static

Slice 25	222.29917	61.637436	0	447.27358	258.23352	0
Slice 26	224.49752	61.428449	0	369.5703	213.37151	0
Slice 27	226.69586	61.232929	0	290.12889	167.506	0
Slice 28	228.89421	61.050852	0	209.04549	120.69247	0
Slice 29	231.09255	60.882198	0	126.42247	72.990048	0
Slice 30	233.2909	60.726949	0	42.362792	24.458169	0

17652 - Artoush Fanaiyan

Seismic



Seismic

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File Information

File Version: 8.15
 Title: 17652 - Fanaiyan
 Created By: Ma. McGinnis
 Last Edited By: Matt McGinnis
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Length(L) Units: Feet
 Time(t) Units: Seconds
 Force(F) Units: Pounds
 Pressure(p) Units: psf
 Strength Units: psf
 Unit Weight of Water: 62.4 pcf
 View: 2D
 Element Thickness: 1

Analysis Settings

Seismic

Kind: SLOPE/W
 Method: Morgenstern-Price
 Settings
 Side Function
 Interslice force function option: Half-Sine
 PWP Conditions Source:(none)
 Slip Surface
 Direction of movement: Left to Right
 Use Passive Mode: No
 Slip Surface Option: Entry and Exit
 Critical slip surfaces saved: 1
 Resisting Side Maximum Convex Angle: 1 °
 Driving Side Maximum Convex Angle: 5 °
 Optimize Critical Slip Surface Location: No
 Tension Crack
 Tension Crack Option: (none)
 F of S Distribution
 F of S Calculation Option: Constant

Advanced

Number of Slices: 30

F of S Tolerance: 0.001

Minimum Slip Surface Depth: 0.1 ft

Search Method: Root Finder

Tolerable difference between starting and converged F of S: 3

Maximum iterations to calculate converged lambda: 20

Max Absolute Lambda: 2

Materials

Fill

Model: Mohr-Coulomb

Unit Weight: 115 pcf

Cohesion': 0 psf

Phi': 28 °

Phi-B: 0 °

Loose SM

Model: Mohr-Coulomb

Unit Weight: 115 pcf

Cohesion': 0 psf

Phi': 30 °

Phi-B: 0 °

Glacial Till

Model: Mohr-Coulomb

Unit Weight: 135 pcf

Cohesion': 100 psf

Phi': 40 °

Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range

Left-Zone Left Coordinate: (159, 71.083) ft

Left-Zone Right Coordinate: (172.7, 70) ft

Left-Zone Increment: 4

Right Projection: Range

Right-Zone Left Coordinate: (228.6, 63) ft

Right-Zone Right Coordinate: (252.5541, 56.10492) ft

Right-Zone Increment: 4

Radius Increments: 4

Slip Surface Limits

Left Coordinate: (0, 112) ft

Right Coordinate: (253, 56) ft

Seismic Coefficients

Horz Seismic Coef.: 0.25

Points

	X (ft)	Y (ft)
Point 1	0	112
Point 2	16.9	110
Point 3	33.7	102
Point 4	48.4	100
Point 5	86.4	88
Point 6	107.4	88
Point 7	124.3	88
Point 8	130	80
Point 9	141.1	76
Point 10	147.4	72
Point 11	172.7	70
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Point 15	206.4	82
Point 16	221.2	66
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Point 21	141.1	66.5
Point 22	172.7	67
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Point 24	0	108
Point 25	0	107
Point 26	0	56
Point 27	210	80
Point 28	117	88
Point 29	117	75
Point 30	117	80.16819
Point 31	137.19286	75
Point 32	142.675	75

Regions

	Material	Points	Area (ft²)
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Region 2	Loose SM	1,24,20,22,17,16,11,10,19,31,29,30,5,4,3,2	1,052.3
Region 3	Glacial Till	24,25,26,23,18,17,22,20	5,344.2
Region 4	Fill	19,10,32,31	7.4661

Current Slip Surface

Slip Surface: 106

F of S: 1.435

Volume: 159.04415 ft³

Weight: 18,290.077 lbs

Resisting Moment: 3,673,005 lbs-ft

Acting Moment: 2,560,196.8 lbs-ft

Resisting Force: 10,002.651 lbs

Acting Force: 6,971.1576 lbs

F of S Rank (Analysis): 1 of 125 slip surfaces

F of S Rank (Query): 1 of 125 slip surfaces

Exit: (234.39007, 60.652674) ft

Entry: (172.7, 70) ft

Radius: 363.47267 ft

Center: (257.79622, 423.37093) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	173.71042	69.759731	0	16.317513	9.4209205	0
Slice 2	175.73125	69.285282	0	47.85611	27.629738	0
Slice 3	177.75208	68.822987	0	77.531579	44.762878	0
Slice 4	179.77292	68.372797	0	105.52097	60.922562	0
Slice 5	181.79375	67.934666	0	132.01826	76.22078	0
Slice 6	183.81458	67.50855	0	157.2296	90.776552	0
Slice 7	185.83542	67.094407	0	181.36751	104.71258	0
Slice 8	187.85625	66.692193	0	204.64368	118.15109	0
Slice 9	189.87708	66.30187	0	227.26012	131.20869	0
Slice 10	191.89792	65.923397	0	249.39853	143.99031	0
Slice 11	193.91875	65.556738	0	271.20831	156.58219	0
Slice 12	195.93958	65.201855	0	292.79372	169.04454	0
Slice 13	197.96042	64.858715	0	314.20162	181.40439	0
Slice 14	199.98125	64.527283	0	335.411	193.64963	0
Slice 15	202.00208	64.207527	0	356.32653	205.72522	0
Slice 16	204.02292	63.899416	0	376.77756	217.53263	0
Slice 17	206.04375	63.60292	0	396.52403	228.93326	0
Slice 18	208.06458	63.31801	0	415.26988	239.75618	0
Slice 19	210.08542	63.044659	0	432.68348	249.80992	0
Slice 20	212.10625	62.78284	0	448.42346	258.89741	0
Slice 21	214.12708	62.532529	0	462.1673	266.83242	0
Slice 22	216.14792	62.293701	0	473.63924	273.45574	0
Slice 23	218.16875	62.066333	0	482.63395	278.64884	0
Slice 24	220.18958	61.850405	0	489.03272	282.34317	0

1/5/2021

Seismic

Slice 25	222.29917	61.637436	0	452.68067	261.35531	0
Slice 26	224.49752	61.428449	0	373.511	215.64667	0
Slice 27	226.69586	61.232929	0	292.21271	168.70909	0
Slice 28	228.89421	61.050852	0	209.46421	120.93422	0
Slice 29	231.09255	60.882198	0	125.86688	72.669277	0
Slice 30	233.2909	60.726949	0	41.902919	24.192662	0



April 12, 2021
Project No. 20210084E001

City of Kirkland
123 Fifth Avenue
Kirkland, Washington 98033

Attention: Ms. Jennifer Anderer, Planner

Subject: Geotechnical Peer Review
Fanaiyan Goat Hill House 2 (SAR19-00591)
11662 91st Place NE
Parcel No. 3754500040
Kirkland, Washington

Dear Ms. Anderer:

At your request, Associated Earth Sciences, Inc. (AESI) recently reviewed geotechnical documents, prepared by Geotech Consultants, Inc. (GCI), for the proposed new residence. Specifically, we reviewed the following:

- GCI, "Geotechnical Engineering Study, Proposed New Residence, Vacant Lot, 116xx - 91st Place Northeast, Parcel #375450040, Kirkland, Washington," dated December 21, 2017.
- GCI, "Addendum to Geotechnical Engineering Study - Temporary Shoring Considerations, Proposed New Residence, Vacant Lot, 116xx – 91st Place Northeast, Parcel #375450040, Kirkland, Washington," dated February 15, 2018.
- GCI, "Geotechnical Addendum to Address Kirkland Zoning Code Chapter 85.15, Proposed New Residence, Vacant Lot, 116xx - 91st Place Northeast, Parcel #375450040, Kirkland, Washington," dated January 6, 2021.
- Project plans, including:
 - Architectural Sheets A 00 through A 10, A 10A, and A 11 through A 19, ZK Architecture, dated August 25, 2020 (Sheet A 02 dated December 19, 2019, and Sheets A 03, A 05, A 09, A 10A, and A 12 through A 14 dated January 20, 2020).
 - Civil Sheets 1 through 4, Site Development Services, dated November 20, 2020.
 - Structural Sheets S-1 through S-3, Pitzer and Associates, PLLC, dated October 20, 2020.
- City of Kirkland GIS map showing geologically critical areas for the site and vicinity.

AESI was requested to provide third-party peer review of the project as detailed in Chapter 85 - "Critical Areas: Geologically Hazardous Areas," Subsection 85.20.2 of the *Kirkland Zoning Code* (KZC). The review was requested due to the location of the subject site containing moderate and high landslide hazard areas, as well as the subject site lying chiefly within a high liquefaction hazard area, as defined by Chapter 5 of the KZC.

The scope of our review was limited to an evaluation of the report with respect to compliance with Subsections 85.15 and 85.22 of the KZC and our proposal, dated February 26, 2021.

SITE AND PROJECT DESCRIPTION

The site consists of a 0.13-acre residential property located at 11662 91st Place NE in Kirkland, Washington. The site is currently a vacant lot bounded to the north and south by developed single-family residential properties, to the west by the right-of-way for 91st Place NE, and to the east by the right-of-way for Rainier Avenue (per site survey). Site grades, in general, slope downward to the east, with steeply sloping, undulating terrain across the site and western and eastern high points surrounding a centrally located low. Total elevation change across the site is roughly 28 feet.

GCI advanced two test pit explorations, designated TP-1 and TP-2, to respective depths of 9.5 feet and 9.0 feet below the ground surface. GCI encountered 2 feet of fill in test pit TP-1 and 1 foot of fill in test pit TP-2. Test pit TP-1 was terminated in dense glacial till soils, encountered at a depth of 8.5 feet below the ground surface, while TP-2 did not encounter dense soils to the depth explored. Groundwater seepage was not encountered, but elevated moisture content of the soil was noted at 8 feet below the ground surface in TP-1 and below 5 feet below the ground surface in TP-2. GCI stated that the steeply sloping ground leading up the high points at the west and east sides of the site is composed of fill, and concluded that the areas of the site greater than 40 percent in slope qualify as a "high landslide hazard." GCI also concluded that the dense soil underlying the site (as encountered in TP-1) is *"not susceptible to seismic liquefaction under the ground motions of the Maximum Considered Earthquake (MCE)."*

REVIEW COMMENTS

AESI reviewed the aforementioned geotechnical engineering documents to determine if they meet the criteria specified within KZC Subsections 85.15.2, 85.15.3, and 85.15.4. These subsections detail the requirements for a geotechnical report to be submitted for proposed development in Geologically Hazardous Areas. In our opinion, the submitted geotechnical report and associated addenda generally meet the requirements of the KZC with a few exceptions.

Report Requirements

The GCI report or associated addenda do not fully comply with the report requirements outlined in Subsections 85.15.3 and 85.15.4:

1. In their January 6, 2021 addendum, GCI provided a slope stability analysis, as required by KZC Section 85.15.3(i). Based on our review of the provided documentation, the scope of this analysis is limited to the eastern portion of the site, assumes the removal of the steeply sloping eastern fill material, and assumes the placement of a soldier pile wall (described in the GCI February 15, 2018 addendum) along the west side of the proposed building footprint. Our review of the above-mentioned project plans indicates neither the removal of the steeply sloping eastern fill pile, nor the placement of a soldier pile wall along the building footprint, to be completed as part of the proposed project. We recommend that GCI provide the required slope stability analysis, for both the eastern and western steeply sloping portions of the site, under the proposed conditions as shown in the project plans.
2. The subject site lies primarily within a City of Kirkland-mapped high liquefaction hazard area. KZC Section 85.15.3(k) requires an: *“estimate of the magnitude of seismically induced settlement that could occur during a seismic event for any project involving development within a seismic hazard area.”* As mentioned above, GCI stated that *“The dense soils underlying the site are not susceptible to seismic liquefaction under the Maximum Considered Earthquake (MCE), which has a 2 percent probability of occurring in 50 years.”* However, no analysis was included showing an estimate of seismically induced settlement for the subject site based on a code-required peak horizontal ground acceleration using the above-mentioned MCE, as defined in the current version of the *International Building Code (IBC)*. In addition, in test pit TP-2 GCI identified loose to medium dense granular soils in a very moist to wet condition. We suggest that GCI advance deeper explorations to verify the extent of looser, wet soils which could be potentially liquefiable and complete the code-required liquefaction analysis or, as provided in KZC 85.15.3(k), demonstrate that *“construction methods will mitigate the risk of seismically induced settlement such that there will be no significant impacts to life, health, safety and property.”*
3. The above-mentioned project plans indicate that a sanitary sewer service is to extend eastward from the planned residence, through the existing eastern “fill pile” (as described in the GCI December 21, 2017 report), to an existing cleanout near the northeast corner of the property. We recommend that GCI comment on the potential of fill settlement along this side sewer alignment, the potential impact to the side sewer pipe, and recommendations for the mitigation of this settlement, if warranted.
4. Section 85.15.4c of the KZC requires the inclusion of *“compaction and fill material requirements, use of site solids as fill or backfill, imported fill or backfill requirements, height and inclination of both cut and fill slopes and erosion control and wet weather construction considerations and/or limitations.”* Page 8 of the December 21, 2017 GCI report references a section called “General Earthwork and Structural Fill”, but our review indicated that this section was not present, and a compaction specification is not provided. In accordance with KZC, we recommend that the GCI report be revised to include a compaction specification for structural fill.

5. On Page 6 of their December 21, 2017 report, GCI provides design parameters for the use of 3- or 4-inch-diameter pipe piles for foundation support of the proposed residence. Our review of the structural plans indicates that 4-inch-diameter pipe piles are planned for foundation support of the proposed garage, but no allowable compressive capacity is stipulated. We recommend that GCI review the project plans and provide their opinion regarding the foundation system used by the structural engineer in design.

CLOSURE

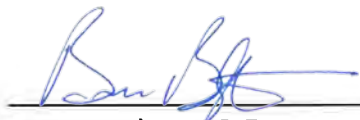
Our scope of work for this letter was limited to a review of the documents supplied to us. Our scope did not include a site visit, exploration of actual subsurface conditions, nor does our review purport to verify the accuracy of exploration logs or geotechnical analysis results presented within the documents.

We trust this letter meets your current needs. Should you have any questions, please contact us at your convenience.

Sincerely,
ASSOCIATED EARTH SCIENCES, INC.
Kirkland, Washington



Jeffrey P. Laub, P.E., L.G., L.E.G.
Associate Engineer/Geologist



Bruce L. Blyton, P.E.
Senior Principal Engineer



Stephen A. Siebert, P.E.
Associate Geotechnical Engineer

GEOTECH
CONSULTANTS, INC.2401 10th Ave E
Seattle, Washington 98102
(425) 747-5618

June 24, 2021

JN 17652

Artoush Fanaiyan
P.O. Box 133
Bellevue, Washington 98009
via email: artoush76@yahoo.com

Subject: **Geotechnical Response to April 12, 2021 Geotechnical Peer Review Letter**
Proposed New Residence
Vacant Lot
11662 – 91st Place Northeast
Parcel #375450040
Kirkland, Washington

Dear Mr. Fanaiyan:

This letter and the associated attachments are intended to respond to the comments raised by AESI in their April 12, 2021 *Geotechnical Peer Review* letter.

Comment 1: The slope stability analyses conducted previously did not consider any stabilizing effect from the installation of soldier piles. Even so, in order to respond to this comment from AESI, we completed additional slope stability analyses that: 1) accounted for the fact that soldier pile shoring would not be needed, and the planned foundation walls along the west and north sides of the basement will be backfilled against the existing steep slopes, and 2) considered the likelihood that the pile of existing fill located to the east of the house could remain in its current configuration. The results of these analyses, which considered both static and seismic conditions (under the Maximum Considered Earthquake) are attached to this response letter.

Our analyses confirmed our previous conclusions that the new pile-supported structure would: 1) provide long-term stability for the steep manmade fill slopes that currently exist along the west and north sides of the site, and 2) be protected against potential damage from foreseeable instability on the fill pile and short slope that exists to the east of the planned house.

Comment 2: The site is known to be underlain by glacially-compressed, non-liquefiable soils that will support all of the foundations for this project. This satisfies the requirements of KZC 85.15.3(k) that “there will be no significant impacts to life, health, safety and property.”

The moisture contents of the loose soils above the glacially-compressed materials were elevated in our test pits, but no indications of seepage were observed. It is possible that a thin perched groundwater table is present above the glacially-compressed soils during extended wet weather. However, even if this is the case, the potential for seismic liquefaction to occur with a thin saturated soil layer is very low, as there is a short drainage path for excess pore water dissipation to the unsaturated soil. Considering this, and the fact that the any ground settlement will not adversely impact the pile-supported structure, any potential ground settlement will not cause a life-safety risk for the constructed project.

Artoush Fanaiyan
June 24, 2021

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Page 2

The installation of all piles will be monitored by the geotechnical engineer of record, verifying that they are driven into dense, non-liquefiable soils. As such, conducting additional explorations on the site is not needed, and would not yield a safer project.

Comment 3: The conditions that will be encountered in the installation of the eastern side sewer will only become evident once the excavation for this utility is underway. If soil remains beneath the pipe, the pipe could undergo settlement that may eventually cause separation of joints in the pipe, or other problems. This is certainly a risk common for any utilities installed around structures on any project, particularly those where extensive excavation and backfilling has occurred.

For this project, if soft soils remain underneath the planned pipe once the excavation is completed, these could be excavated and replaced with imported structural fill, such as crushed rock. An alternative would be to install the pipe using High Density Polyethylene (HDPE) pipe, which can tolerate large amounts of settlement without joints being pulled apart.

Comment 4: The following section was inadvertently left out of our 2017 *Geotechnical Engineering Study*.

GENERAL EARTHWORK AND STRUCTURAL FILL

All building and pavement areas should be stripped of surface vegetation, topsoil, organic soil, and other deleterious material. The stripped or removed materials should not be mixed with any materials to be used as structural fill, but they could be used in non-structural areas, such as landscape beds.

Structural fill is defined as any fill, including utility backfill, placed under, or close to, a building, or in other areas where the underlying soil needs to support loads. All structural fill should be placed in horizontal lifts with a moisture content at, or near, the optimum moisture content. The optimum moisture content is that moisture content that results in the greatest compacted dry density. The moisture content of fill is very important and must be closely controlled during the filling and compaction process.

The allowable thickness of the fill lift will depend on the material type selected, the compaction equipment used, and the number of passes made to compact the lift. The loose lift thickness should not exceed 12 inches, but should be thinner if small, hand-operated compactors are used. We recommend testing structural fill as it is placed. If the fill is not sufficiently compacted, it should be recompacted before another lift is placed. This eliminates the need to remove the fill to achieve the required compaction. The following table presents recommended levels of relative compaction for compacted fill:

LOCATION OF FILL PLACEMENT	MINIMUM RELATIVE COMPACTION
Beneath slabs or walkways	95%
Behind retaining walls	90%
Beneath pavements	95% for upper 12 inches of subgrade; 90% below that level

Where: Minimum Relative Compaction is the ratio, expressed in percentages, of the compacted dry density to the maximum dry density, as determined in accordance with ASTM Test Designation D 1557-91 (Modified Proctor).

Artoush Fanaiyan
June 24, 2021

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Page 3

Structural fill that will be placed in wet weather should consist of a coarse, granular soil with a silt or clay content of no more than 5 percent. The percentage of particles passing the No. 200 sieve should be measured from that portion of soil passing the three-quarter-inch sieve.

Considering the lack of space on the site outside of the planned work area, it is unlikely that much, if any, of the excavated soil will be stockpiled for reuse. If some of the non-organic existing soil can be stockpiled, it could be reused as compacted fill beneath the planned structural slabs and/or pile-supported foundations if it is placed in dry weather.

Comment 5: The following notes regarding the 4-inch pipe piles are provided at the bottom of Sheet S-3 of the October 20, 2020 structural drawings.

4" DIA PIPE PILE FOUNDATION:

4"DIA STANDARD PIPE, SCHEDULE 40, ASTM A-53 TYPE E OR S, GRADE A (GALVANIZED). PROVIDE A PILE CAP TP66 1/2"x6"x6". USE THREADED COUPLERS TO EXTEND PIPE PILES. LENGTHS TO BE DETERMINED BY FIELD CONDITIONS. PIPE PILING WITH A DESIGN CAPACITY TO BE INSTALLED AS DESCRIBED IN GEOTECHNICAL REPORT. ALLOWABLE DEVIATION FROM INTENDED LOCATION 4" OR LESS. PIPE SHALL BE DRIVEN TO REFUSAL USING A MINIMUM 800 LB HYDRAULIC IMPACT HAMMER. REFUSAL IS DEFINED AS LESS THAN ONE INCH OF PENETRATION IN 15 SECONDS OF CONTINUOUS DRIVING. SEE GEOTECH REPORT FOR OTHER HAMMER SIZES. ALL PILING INSTALLATION TO BE INSPECTED BY A LICENSED GEOTECHNICAL ENGINEER.

These notes indicate that the design capacity is to be "as described in geotechnical report". Our report recommends an allowable design capacity of 10 tons.

The Foundation Plan shows a substantial number of piles supporting the residence, including the front entry, as well as structural floor slabs for the garage and basement spaces. This foundation design appears appropriate for the expected site conditions and the planned construction.

Please contact us if you have any questions regarding this letter, or if we can be of further assistance.

Respectfully submitted,

GEOTECH CONSULTANTS, INC.



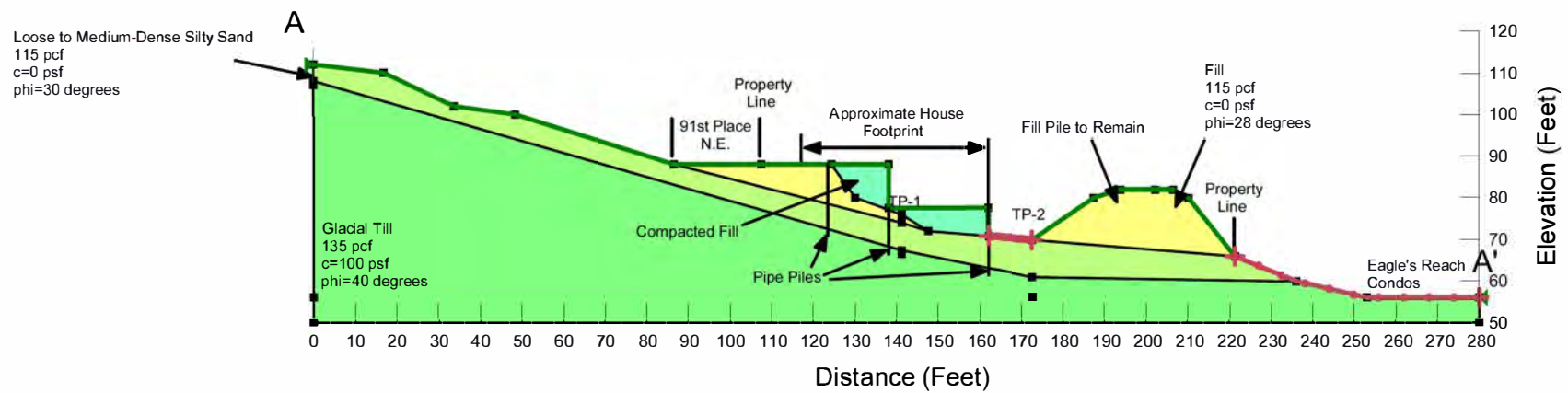
06/24/2021

Marc R. McGinnis, P.E.
Principal

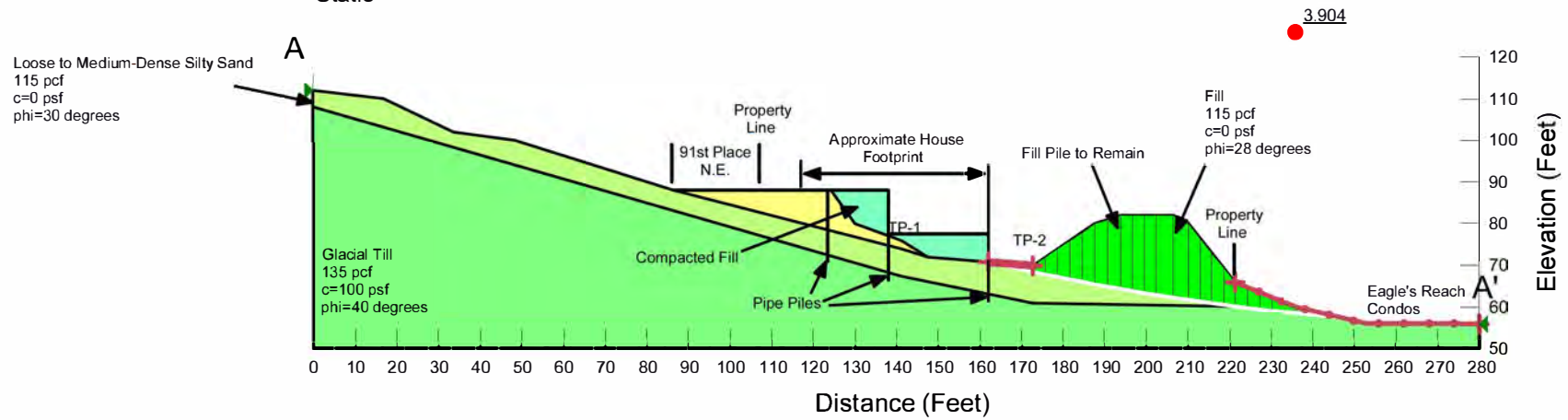
Attachments: Updated Slope Stability Analyses

MKM/MRM:kg

17652 - Artoush Fanaiyan
Developed Condition



17652 - Artoush Fanaiyan
Developed Condition
Static



Static

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File Information

File Version: 8.15
Title: 17652 - Fanaiyan
Created By: Matt McGinnis
Last Edited By: Adam Moyer
Revision Number: 20
Date: 6/23/2021
Time: 12:31:01 PM
Tool Version: 8.15.6.13446
File Name: 17652 Slope Stability - Developed Condition.gsz
Directory: C:\Users\AdamM\Geotech Consultants\Shared Documents - Documents\2017 Jobs\17652 Fanaiyan (91st Place NE) (MRM)\
Last Solved Date: 6/23/2021
Last Solved Time: 12:31:02 PM

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

Static

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
 Side Function
 Interslice force function option: Half-Sine
 PWP Conditions Source: (none)
Slip Surface
 Direction of movement: Left to Right
 Use Passive Mode: No
 Slip Surface Option: Entry and Exit
 Critical slip surfaces saved: 1
 Resisting Side Maximum Convex Angle: 1 °

Driving Side Maximum Convex Angle: 5 °
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)

F of S Distribution
F of S Calculation Option: Constant

Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Search Method: Root Finder
Tolerable difference between starting and converged F of S: 3
Maximum iterations to calculate converged lambda: 20
Max Absolute Lambda: 2

Materials

Existing Fill

Model: Mohr-Coulomb
Unit Weight: 115 pcf
Cohesion': 0 psf
Phi': 28 °
Phi-B: 0 °

Loose SM

Model: Mohr-Coulomb
Unit Weight: 115 pcf
Cohesion': 0 psf
Phi': 30 °
Phi-B: 0 °

Glacial Till

Model: Mohr-Coulomb
Unit Weight: 135 pcf
Cohesion': 100 psf
Phi': 40 °
Phi-B: 0 °

New Compacted Fill

Model: Mohr-Coulomb
Unit Weight: 130 pcf
Cohesion': 0 psf
Phi': 32 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: [Range](#)
Left-Zone Left Coordinate: [\(162, 70.84585\)](#) ft
Left-Zone Right Coordinate: [\(172.7, 70\)](#) ft
Left-Zone Increment: [10](#)
Right Projection: [Range](#)
Right-Zone Left Coordinate: [\(221.2, 66\)](#) ft
Right-Zone Right Coordinate: [\(280, 56\)](#) ft
Right-Zone Increment: [10](#)
Radius Increments: [10](#)

Slip Surface Limits

Left Coordinate: [\(0, 112\)](#) ft
Right Coordinate: [\(280, 56\)](#) ft

Seismic Coefficients

Horz Seismic Coef.: [0](#)

Points

	X (ft)	Y (ft)
Point 1	0	112
Point 2	16.9	110
Point 3	33.7	102
Point 4	48.4	100
Point 5	86.4	88
Point 6	107.4	88
Point 7	124.3	88
Point 8	130	80
Point 9	141.1	76
Point 10	147.4	72
Point 11	172.7	70
Point 12	187.5	80
Point 13	193.8	82
Point 14	202.2	82
Point 15	206.4	82
Point 16	221.2	66
Point 17	236	60
Point 18	253	56
Point 19	141.1	74
Point 20	141.1	67.5
Point 21	141.1	66.5
Point 22	172.7	61
Point 23	172.7	56
Point 24	0	108
Point 25	0	107

Point 26	0	56
Point 27	210	80
Point 28	138	88
Point 29	138	77.5
Point 30	162	77.5
Point 31	162	70.84585
Point 32	280	56
Point 33	280	50
Point 34	0	50

Regions

	Material	Points	Area (ft²)
Region 1	Existing Fill	5,19,10,9,8,7,6	255.4
Region 2	Existing Fill	11,12,13,14,15,27,16	464.7
Region 3	Loose SM	1,24,20,22,17,16,11,31,10,19,5,4,3,2	1,389.2
Region 4	New Compacted Fill	7,28,29,30,31,10,9,8	212.03
Region 5	Glacial Till	24,20,22,17,18,32,33,34,26,25	6,739.5

Current Slip Surface

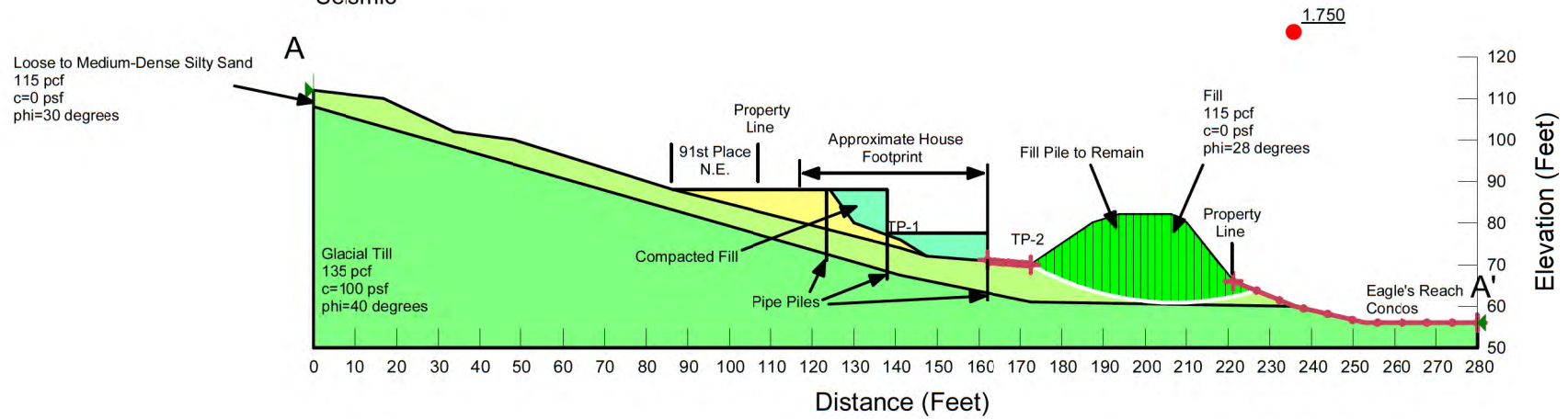
Slip Surface: 89
F of S: 3.904
Volume: 727.89155 ft³
Weight: 84,100.538 lbs
Resisting Moment: 32,357,976 lbs-ft
Activating Moment: 8,288,245.1 lbs-ft
Resisting Force: 51,862.9 lbs
Activating Force: 13,284.22 lbs
F of S Rank (Analysis): 1 of 1,331 slip surfaces
F of S Rank (Query): 1 of 1,331 slip surfaces
Exit: (246.72158, 57.477276) ft
Entry: (162, 70.84585) ft
Radius: 616.08795 ft
Center: (300.15484, 671.24372) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	163.3375	70.541218	0	22.098194	12.758398	0
Slice 2	166.0125	69.93821	0	65.53569	37.837048	0
Slice 3	168.6875	69.347694	0	107.50962	62.07071	0
Slice 4	171.3625	68.769634	0	148.06254	85.483947	0
Slice 5	174.18	68.174557	0	313.21871	180.8369	0
Slice 6	177.14	67.563813	0	602.85318	348.05744	0
Slice 7	180.1	66.968186	0	890.99282	514.41494	0
Slice 8	183.06	66.387631	0	1,177.9288	680.07752	0
Slice 9	186.02	65.822105	0	1,463.9266	845.19839	0

Slice 10	189.075	65.254391	0	1,695.5024	978.89878	0
Slice 11	192.225	64.685436	0	1,872.6163	1,081.1555	0
Slice 12	195.2	64.163145	0	1,989.5597	1,148.6728	0
Slice 13	198	63.68571	0	2,046.1686	1,181.356	0
Slice 14	200.8	63.221545	0	2,101.8043	1,213.4773	0
Slice 15	204.3	62.662015	0	2,169.6081	1,252.6238	0
Slice 16	208.2	62.059548	0	2,130.8461	1,230.2446	0
Slice 17	211.4	61.584029	0	1,879.4378	1,085.0939	0
Slice 18	214.2	61.182962	0	1,533.5396	885.3895	0
Slice 19	217	60.795002	0	1,184.9787	684.14775	0
Slice 20	219.8	60.420122	0	833.80795	481.39924	0
Slice 21	222.68756	60.047407	0	614.81572	515.89164	100
Slice 22	225.65323	59.678798	0	526.36522	441.67286	100
Slice 23	228.60945	59.325912	0	435.83094	365.70558	100
Slice 24	231.56567	58.987503	0	343.07029	287.87015	100
Slice 25	234.52189	58.663548	0	248.2465	208.30355	100
Slice 26	237.3402	58.367821	0	176.12918	147.78993	100
Slice 27	240.02059	58.099022	0	126.93676	106.51259	100
Slice 28	242.70099	57.842054	0	76.260967	63.990549	100
Slice 29	245.38138	57.596901	0	24.177934	20.287696	100

17652 - Artoush Fanaiyan
Developed Condition
Seismic



Seismic

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File Information

File Version: 8.15
Title: 17652 - Fanaiyan
Created By: Matt McGinnis
Last Edited By: Adam Moyer
Revision Number: 20
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Tool Version: 8.15.6.13446
File Name: 17652 Slope Stability - Developed Condition.gsz
Directory: C:\Users\AdamM\Geotech Consultants\Shared Documents - Documents\2017 Jobs\17652 Fanaiyan (91st Place NE) (MRM)\
Last Solved Date: 6/23/2021
Last Solved Time: 12:31:04 PM

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

Seismic

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
 Side Function
 Interslice force function option: Half-Sine
 PWP Conditions Source: (none)
Slip Surface
 Direction of movement: Left to Right
 Use Passive Mode: No
 Slip Surface Option: Entry and Exit
 Critical slip surfaces saved: 1
 Resisting Side Maximum Convex Angle: 1 °

Driving Side Maximum Convex Angle: 5 °
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)

F of S Distribution
F of S Calculation Option: Constant

Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Search Method: Root Finder
Tolerable difference between starting and converged F of S: 3
Maximum iterations to calculate converged lambda: 20
Max Absolute Lambda: 2

Materials

Existing Fill

Model: Mohr-Coulomb
Unit Weight: 115 pcf
Cohesion': 0 psf
Phi': 28 °
Phi-B: 0 °

Loose SM

Model: Mohr-Coulomb
Unit Weight: 115 pcf
Cohesion': 0 psf
Phi': 30 °
Phi-B: 0 °

Glacial Till

Model: Mohr-Coulomb
Unit Weight: 135 pcf
Cohesion': 100 psf
Phi': 40 °
Phi-B: 0 °

New Compacted Fill

Model: Mohr-Coulomb
Unit Weight: 130 pcf
Cohesion': 0 psf
Phi': 32 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: [Range](#)
Left-Zone Left Coordinate: [\(162, 71.083\) ft](#)
Left-Zone Right Coordinate: [\(172.7, 70\) ft](#)
Left-Zone Increment: [10](#)
Right Projection: [Range](#)
Right-Zone Left Coordinate: [\(221.2, 66\) ft](#)
Right-Zone Right Coordinate: [\(280, 56\) ft](#)
Right-Zone Increment: [10](#)
Radius Increments: [10](#)

Slip Surface Limits

Left Coordinate: [\(0, 112\) ft](#)
Right Coordinate: [\(280, 56\) ft](#)

Seismic Coefficients

Horz Seismic Coef.: [0.25](#)

Points

	X (ft)	Y (ft)
Point 1	0	112
Point 2	16.9	110
Point 3	33.7	102
Point 4	48.4	100
Point 5	86.4	88
Point 6	107.4	88
Point 7	124.3	88
Point 8	130	80
Point 9	141.1	76
Point 10	147.4	72
Point 11	172.7	70
Point 12	187.5	80
Point 13	193.8	82
Point 14	202.2	82
Point 15	206.4	82
Point 16	221.2	66
Point 17	236	60
Point 18	253	56
Point 19	141.1	74
Point 20	141.1	67.5
Point 21	141.1	66.5
Point 22	172.7	61
Point 23	172.7	56
Point 24	0	108
Point 25	0	107

Point 26	0	56
Point 27	210	80
Point 28	138	88
Point 29	138	77.5
Point 30	162	77.5
Point 31	162	70.84585
Point 32	280	56
Point 33	280	50
Point 34	0	50

Regions

	Material	Points	Area (ft²)
Region 1	Existing Fill	5,19,10,9,8,7,6	255.4
Region 2	Existing Fill	11,12,13,14,15,27,16	464.7
Region 3	Loose SM	1,24,20,22,17,16,11,31,10,19,5,4,3,2	1,389.2
Region 4	New Compacted Fill	7,28,29,30,31,10,9,8	212.03
Region 5	Glacial Till	24,20,22,17,18,32,33,34,26,25	6,739.5

Current Slip Surface

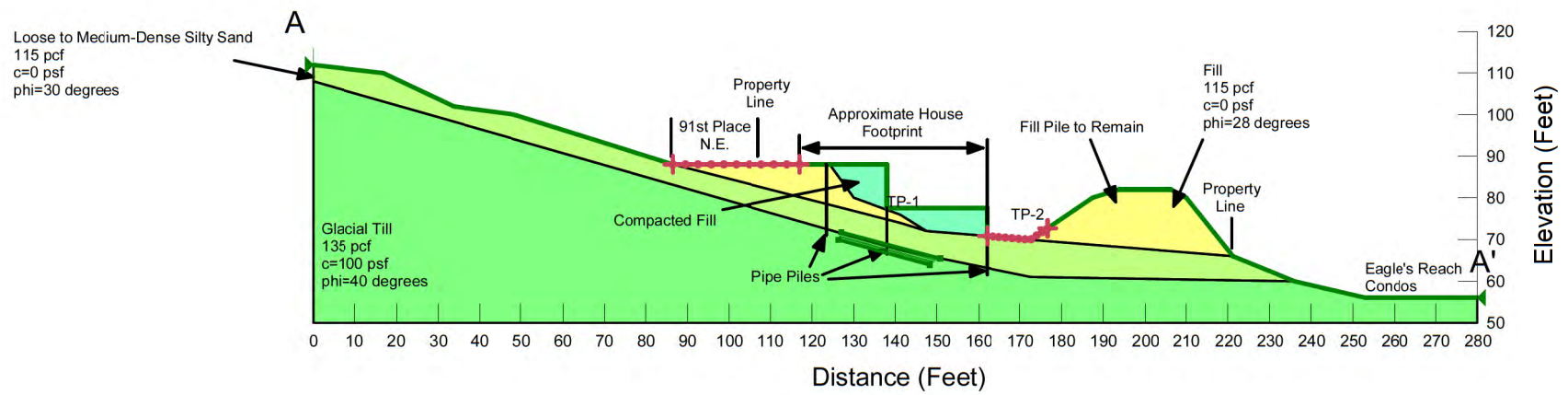
Slip Surface: 1,224
F of S: 1.750
Volume: 712.56808 ft³
Weight: 81,945.329 lbs
Resisting Moment: 3,251,141 lbs-ft
Activating Moment: 1,857,432 lbs-ft
Resisting Force: 46,187.765 lbs
Activating Force: 26,387.631 lbs
F of S Rank (Analysis): 1 of 1,331 slip surfaces
F of S Rank (Query): 1 of 1,331 slip surfaces
Exit: (226.80068, 63.729455) ft
Entry: (172.7, 70) ft
Radius: 69.246118 ft
Center: (207.08058, 130.10824) ft

Slip Slices

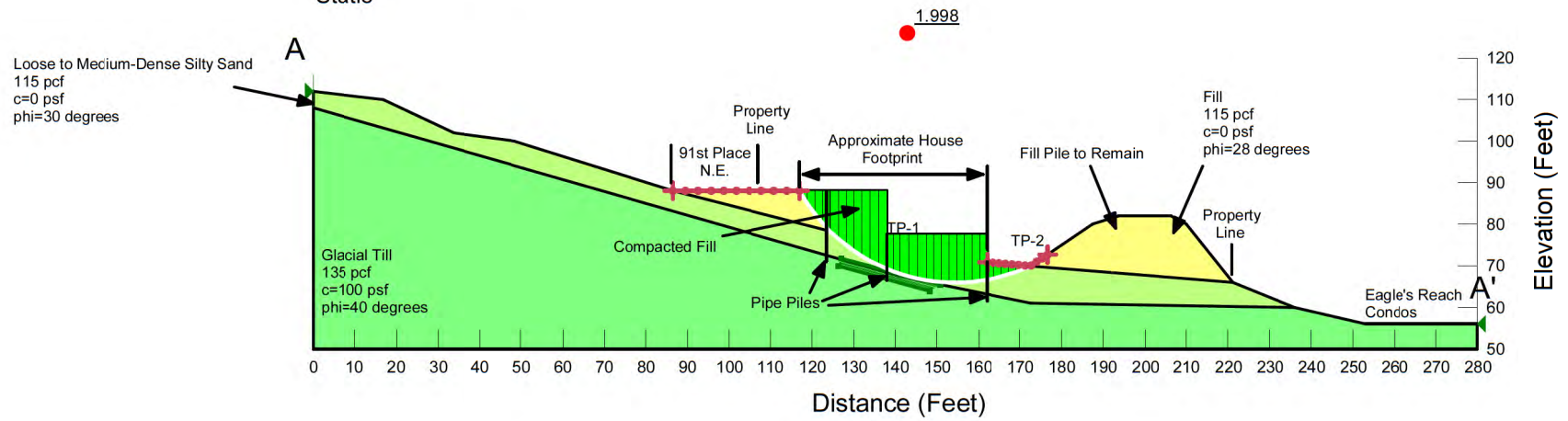
	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	173.625	69.489491	0	105.01013	60.627627	0
Slice 2	175.475	68.504415	0	296.38669	171.11893	0
Slice 3	177.325	67.589596	0	463.41912	267.55515	0
Slice 4	179.175	66.741988	0	613.28623	354.08097	0
Slice 5	181.025	65.958923	0	752.36792	434.37982	0
Slice 6	182.875	65.238062	0	886.58792	511.87178	0
Slice 7	184.725	64.577348	0	1,021.6737	589.86357	0
Slice 8	186.575	63.974979	0	1,163.3449	671.65751	0
Slice 9	188.55	63.396509	0	1,296.276	748.40529	0

Slice 10	190.65	62.848351	0	1,429.4746	825.30755	0
Slice 11	192.75	62.369716	0	1,591.4917	918.84815	0
Slice 12	194.64	61.99416	0	1,741.3233	1,005.3535	0
Slice 13	196.32	61.708592	0	1,869.7403	1,079.4951	0
Slice 14	198	61.465322	0	2,018.6755	1,165.4828	0
Slice 15	199.68	61.263903	0	2,186.1009	1,262.146	0
Slice 16	201.36	61.103968	0	2,367.8375	1,367.0716	0
Slice 17	203.25	60.97615	0	2,580.201	1,489.6797	0
Slice 18	205.35	60.891717	0	2,811.019	1,622.9426	0
Slice 19	207.3	60.868317	0	2,936.8078	1,695.5668	0
Slice 20	209.1	60.897429	0	2,936.3208	1,695.2856	0
Slice 21	210.93333	60.975703	0	2,785.8608	1,608.4175	0
Slice 22	212.8	61.105079	0	2,472.9071	1,427.7336	0
Slice 23	214.66667	61.285317	0	2,095.4864	1,209.8296	0
Slice 24	216.53333	61.516819	0	1,672.3032	965.50468	0
Slice 25	218.4	61.800108	0	1,226.6394	708.20056	0
Slice 26	220.26667	62.135831	0	781.58638	451.24911	0
Slice 27	222.13345	62.524796	0	462.81883	267.20857	0
Slice 28	224.00034	62.967937	0	267.74543	154.5829	0
Slice 29	225.86723	63.466313	0	85.703043	49.480675	0

17652 - Artoush Fanaiyan
Developed Condition



17652 - Artoush Fanaiyan
Developed Condition
Static



Static

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File Information

File Version: 8.15
Title: 17652 - Fanaiyan
Created By: Matt McGinnis
Last Edited By: Adam Moyer
Revision Number: 35
Date: 6/23/2021
Time: 12:55:30 PM
Tool Version: 8.15.6.13446
File Name: 17652 Slope Stability - Developed Condition - Global Beneath Residence.gsz
Directory: C:\Users\AdamM\Geotech Consultants\Shared Documents - Documents\2017 Jobs\17652 Fanaiyan (91st Place NE) (MRM)\
Last Solved Date: 6/23/2021
Last Solved Time: 12:55:32 PM

Project Settings

Length(L) Units: Feet
Time(t) Units: Seconds
Force(F) Units: Pounds
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D
Element Thickness: 1

Analysis Settings

Static

Kind: SLOPE/W
Method: Morgenstern-Price
Settings
 Side Function
 Interslice force function option: Half-Sine
 PWP Conditions Source: (none)
Slip Surface
 Direction of movement: Left to Right
 Use Passive Mode: No
 Slip Surface Option: Entry and Exit
 Critical slip surfaces saved: 1
 Resisting Side Maximum Convex Angle: 1 °

Driving Side Maximum Convex Angle: 5 °
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)

F of S Distribution
F of S Calculation Option: Constant

Advanced
Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Search Method: Root Finder
Tolerable difference between starting and converged F of S: 3
Maximum iterations to calculate converged lambda: 20
Max Absolute Lambda: 2

Materials

Existing Fill

Model: Mohr-Coulomb
Unit Weight: 115 pcf
Cohesion': 0 psf
Phi': 28 °
Phi-B: 0 °

Loose SM

Model: Mohr-Coulomb
Unit Weight: 115 pcf
Cohesion': 0 psf
Phi': 30 °
Phi-B: 0 °

Glacial Till

Model: Mohr-Coulomb
Unit Weight: 135 pcf
Cohesion': 100 psf
Phi': 40 °
Phi-B: 0 °

New Compacted Fill

Model: Mohr-Coulomb
Unit Weight: 130 pcf
Cohesion': 0 psf
Phi': 32 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: [Range](#)
Left-Zone Left Coordinate: [\(86.4, 88\)](#) ft
Left-Zone Right Coordinate: [\(117, 88\)](#) ft
Left-Zone Increment: [10](#)
Right Projection: [Range](#)
Right-Zone Left Coordinate: [\(162, 70.84585\)](#) ft
Right-Zone Right Coordinate: [\(176.70503, 72.7061\)](#) ft
Right-Zone Increment: [10](#)
Radius Increments: [10](#)

Slip Surface Limits

Left Coordinate: [\(0, 112\)](#) ft
Right Coordinate: [\(280, 56\)](#) ft

Seismic Coefficients

Horz Seismic Coef.: [0](#)

Points

	X (ft)	Y (ft)
Point 1	0	112
Point 2	16.9	110
Point 3	33.7	102
Point 4	48.4	100
Point 5	86.4	88
Point 6	107.4	88
Point 7	124.3	88
Point 8	130	80
Point 9	141.1	76
Point 10	147.4	72
Point 11	172.7	70
Point 12	187.5	80
Point 13	193.8	82
Point 14	202.2	82
Point 15	206.4	82
Point 16	221.2	66
Point 17	236	60
Point 18	253	56
Point 19	141.1	74
Point 20	141.1	67.5
Point 21	141.1	66.5
Point 22	172.7	61
Point 23	172.7	56
Point 24	0	108
Point 25	0	107

Point 26	0	56
Point 27	210	80
Point 28	138	88
Point 29	138	77.5
Point 30	162	77.5
Point 31	162	70.84585
Point 32	280	56
Point 33	280	50
Point 34	0	50

Regions

	Material	Points	Area (ft²)
Region 1	Existing Fill	5,19,10,9,8,7,6	255.4
Region 2	Existing Fill	11,12,13,14,15,27,16	464.7
Region 3	Loose SM	1,24,20,22,17,16,11,31,10,19,5,4,3,2	1,389.2
Region 4	New Compacted Fill	7,28,29,30,31,10,9,8	212.03
Region 5	Glacial Till	24,20,22,17,18,32,33,34,26,25	6,739.5

Current Slip Surface

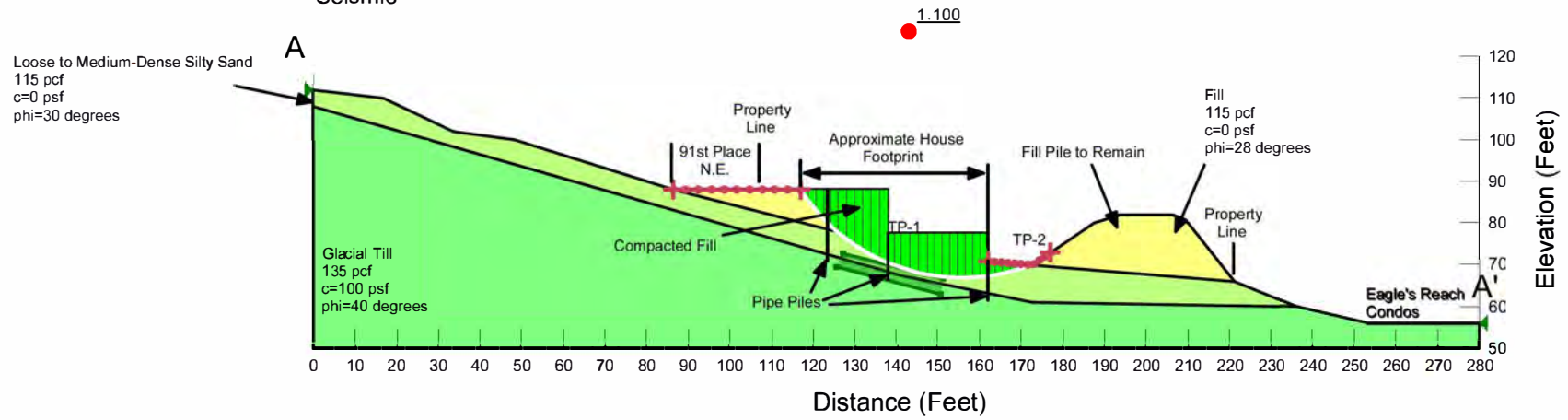
Slip Surface: 1,288
F of S: 1.998
Volume: 523.61451 ft³
Weight: 63,396.048 lbs
Resisting Moment: 1,586,156.7 lbs-ft
Activating Moment: 793,904.2 lbs-ft
Resisting Force: 33,696.717 lbs
Activating Force: 16,865.082 lbs
F of S Rank (Analysis): 1 of 1,331 slip surfaces
F of S Rank (Query): 1 of 1,331 slip surfaces
Exit: (172.64951, 70.003991) ft
Entry: (117, 88) ft
Radius: 42.885722 ft
Center: (154.47672, 108.849) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	117.9125	86.506654	0	115.36642	61.341414	0
Slice 2	119.7375	83.750312	0	331.82868	176.43644	0
Slice 3	121.5625	81.393397	0	518.89175	275.89964	0
Slice 4	123.3875	79.338172	0	685.62846	364.55512	0
Slice 5	124.35271	78.324853	0	771.05593	409.97771	0
Slice 6	125.33784	77.408662	0	853.81067	492.94782	0
Slice 7	127.20271	75.775555	0	1,029.637	594.4612	0
Slice 8	129.06757	74.32046	0	1,201.0618	693.43333	0
Slice 9	131	72.979785	0	1,364.8559	787.99994	0

Slice 10	133	71.746429	0	1,522.9945	879.3013	0
Slice 11	135	70.657605	0	1,682.6727	971.49151	0
Slice 12	137	69.7012	0	1,844.8236	1,065.1094	0
Slice 13	138.775	68.949781	0	806.00225	465.34561	0
Slice 14	140.325	68.373822	0	906.36284	523.28883	0
Slice 15	142.15	67.787638	0	1,026.1048	592.42187	0
Slice 16	144.25	67.214513	0	1,165.1511	672.70029	0
Slice 17	146.35	66.753892	0	1,299.2437	750.11869	0
Slice 18	148.3125	66.418617	0	1,410.2796	814.22532	0
Slice 19	150.1375	66.193225	0	1,495.4969	863.42555	0
Slice 20	151.9625	66.046799	0	1,568.5739	905.61655	0
Slice 21	153.7875	65.978528	0	1,626.5574	939.09335	0
Slice 22	155.6125	65.988039	0	1,666.5012	962.15492	0
Slice 23	157.4375	66.075382	0	1,685.7057	973.24265	0
Slice 24	159.2625	66.241039	0	1,681.9789	971.09097	0
Slice 25	161.0875	66.485928	0	1,653.8861	954.87161	0
Slice 26	162.88746	66.805861	0	577.90901	333.65592	0
Slice 27	164.66238	67.200436	0	498.66412	287.90387	0
Slice 28	166.4373	67.675274	0	405.67788	234.21823	0
Slice 29	168.21222	68.233194	0	300.68949	173.60316	0
Slice 30	169.98714	68.877685	0	185.69357	107.21023	0
Slice 31	171.76205	69.613022	0	62.742231	36.224244	0

17652 - Arttoush Fanaiyan
Developed Condition
Seismic



Seismic

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File Information

File Version: 8.15
 Title: 17652 - Fanaiyan
 Created By: Matt McGinnis
 Last Edited By: Adam Moyer
 Revision Number: 35
 Date: 6/23/2021
 Time: 12:55:30 PM
 Tool Version: 8.15.6.13446
 File Name: 17652 Slope Stability - Developed Condition - Global Beneath Residence.gsz
 Directory: C:\Users\AdamM\Geotech Consultants\Shared Documents - Documents\2017 Jobs\17652 Fanaiyan (91st Place NE) (MRM)\
 Last Solved Date: 6/23/2021
 Last Solved Time: 12:55:33 PM

Project Settings

Length(L) Units: Feet
 Time(t) Units: Seconds
 Force(F) Units: Pounds
 Pressure(p) Units: psf
 Strength Units: psf
 Unit Weight of Water: 62.4 pcf
 View: 2D
 Element Thickness: 1

Analysis Settings

Seismic

Kind: SLOPE/W
 Method: Morgenstern-Price
 Settings
 Side Function
 Interslice force function option: Half-Sine
 PWP Conditions Source: (none)
 Slip Surface
 Direction of movement: Left to Right
 Use Passive Mode: No
 Slip Surface Option: Entry and Exit
 Critical slip surfaces saved: 1
 Resisting Side Maximum Convex Angle: 1 °

Driving Side Maximum Convex Angle: 5 °
Optimize Critical Slip Surface Location: No
Tension Crack
Tension Crack Option: (none)

F of S Distribution

F of S Calculation Option: Constant

Advanced

Number of Slices: 30
F of S Tolerance: 0.001
Minimum Slip Surface Depth: 0.1 ft
Search Method: Root Finder
Tolerable difference between starting and converged F of S: 3
Maximum iterations to calculate converged lambda: 20
Max Absolute Lambda: 2

Materials

Existing Fill

Model: Mohr-Coulomb
Unit Weight: 115 pcf
Cohesion': 0 psf
Phi': 28 °
Phi-B: 0 °

Loose SM

Model: Mohr-Coulomb
Unit Weight: 115 pcf
Cohesion': 0 psf
Phi': 30 °
Phi-B: 0 °

Glacial Till

Model: Mohr-Coulomb
Unit Weight: 135 pcf
Cohesion': 100 psf
Phi': 40 °
Phi-B: 0 °

New Compacted Fill

Model: Mohr-Coulomb
Unit Weight: 130 pcf
Cohesion': 0 psf
Phi': 32 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: [Range](#)

Left-Zone Left Coordinate: [\(86.4, 88\) ft](#)

Left-Zone Right Coordinate: [\(117, 88\) ft](#)

Left-Zone Increment: [10](#)

Right Projection: [Range](#)

Right-Zone Left Coordinate: [\(162, 70.84585\) ft](#)

Right-Zone Right Coordinate: [\(177.05342, 72.9415\) ft](#)

Right-Zone Increment: [10](#)

Radius Increments: [10](#)

Slip Surface Limits

Left Coordinate: [\(0, 112\) ft](#)

Right Coordinate: [\(280, 56\) ft](#)

Seismic Coefficients

Horz Seismic Coef.: [0.25](#)

Points

	X (ft)	Y (ft)
Point 1	0	112
Point 2	16.9	110
Point 3	33.7	102
Point 4	48.4	100
Point 5	86.4	88
Point 6	107.4	88
Point 7	124.3	88
Point 8	130	80
Point 9	141.1	76
Point 10	147.4	72
Point 11	172.7	70
Point 12	187.5	80
Point 13	193.8	82
Point 14	202.2	82
Point 15	206.4	82
Point 16	221.2	66
Point 17	236	60
Point 18	253	56
Point 19	141.1	74
Point 20	141.1	67.5
Point 21	141.1	66.5
Point 22	172.7	61
Point 23	172.7	56
Point 24	0	108
Point 25	0	107

Point 26	0	56
Point 27	210	80
Point 28	138	88
Point 29	138	77.5
Point 30	162	77.5
Point 31	162	70.84585
Point 32	280	56
Point 33	280	50
Point 34	0	50

Regions

	Material	Points	Area (ft²)
Region 1	Existing Fill	5,19,10,9,8,7,6	255.4
Region 2	Existing Fill	11,12,13,14,15,27,16	464.7
Region 3	Loose SM	1,24,20,22,17,16,11,31,10,19,5,4,3,2	1,389.2
Region 4	New Compacted Fill	7,28,29,30,31,10,9,8	212.03
Region 5	Glacial Till	24,20,22,17,18,32,33,34,26,25	6,739.5

Current Slip Surface

Slip Surface: 1,288

F of S: 1.100

Volume: 472.3869 ft³

Weight: 57,504.873 lbs

Resisting Moment: 1,465,964.5 lbs-ft

Activating Moment: 1,332,641.4 lbs-ft

Resisting Force: 29,388.268 lbs

Activating Force: 26,737.385 lbs

F of S Rank (Analysis): 1 of 1,331 slip surfaces

F of S Rank (Query): 1 of 1,331 slip surfaces

Exit: (172.47012, 70.018173) ft

Entry: (117, 88) ft

Radius: 46.422238 ft

Center: (155.87477, 113.37274) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	117.9125	86.701215	0	83.69092	44.499251	0
Slice 2	119.7375	84.26939	0	238.11408	126.6075	0
Slice 3	121.5625	82.134069	0	369.39643	196.41157	0
Slice 4	123.3875	80.237141	0	484.56651	257.64859	0
Slice 5	125.12955	78.60884	0	595.09595	316.41813	0
Slice 6	126.96933	77.070792	0	709.12505	409.41354	0
Slice 7	128.98978	75.548348	0	844.65921	487.66422	0
Slice 8	131	74.195369	0	973.70221	562.16723	0
Slice 9	133	72.993938	0	1,100.112	635.14998	0

Slice 10	135	71.923807	0	1,238.4027	714.99213	0
Slice 11	137	70.974997	0	1,392.2226	803.80011	0
Slice 12	138.775	70.222692	0	527.39118	304.48944	0
Slice 13	140.325	69.640008	0	633.24416	365.60369	0
Slice 14	142.15	69.039386	0	769.04709	444.00954	0
Slice 15	144.25	68.442659	0	940.41498	542.94884	0
Slice 16	146.35	67.950812	0	1,122.428	648.0341	0
Slice 17	148.3125	67.57994	0	1,290.9854	745.35075	0
Slice 18	150.1375	67.31558	0	1,437.044	829.67775	0
Slice 19	151.9625	67.12472	0	1,573.0325	908.19075	0
Slice 20	153.7875	67.00645	0	1,690.3468	975.92218	0
Slice 21	155.6125	66.960216	0	1,779.9006	1,027.6261	0
Slice 22	157.4375	66.9858	0	1,833.3666	1,058.4947	0
Slice 23	159.2625	67.083324	0	1,844.587	1,064.9728	0
Slice 24	161.0875	67.253242	0	1,810.8323	1,045.4845	0
Slice 25	162.87251	67.489447	0	591.71327	341.62582	0
Slice 26	164.61753	67.789861	0	503.80962	290.87462	0
Slice 27	166.36255	68.159598	0	401.78857	231.97274	0
Slice 28	168.10757	68.600376	0	290.57213	167.7619	0
Slice 29	169.85259	69.114324	0	174.68043	100.85179	0
Slice 30	171.59761	69.704027	0	57.618095	33.265823	0

GEOTECH
CONSULTANTS, INC.2401 10th Ave E
Seattle, Washington 98102
(425) 747-5618

July 30, 2021

JN 17652

Artoush Fanaiyan
P.O. Box 133
Bellevue, Washington 98009
via email: artoush76@yahoo.com

Subject: **Geotechnical Response to Second Round of Peer Review Comments**
Proposed New Residence
Vacant Lot
11662 – 91st Place Northeast
Parcel #375450040
Kirkland, Washington

Dear Mr. Fanaiyan:

This letter and the associated attachments are intended to respond to the comments raised by AESI in their April 12, 2021 *Geotechnical Peer Review* letter. We understand from the City of Kirkland that this project is being reviewed under the 2015 IBC, not the 2018 IBC.

Comment 1: The pile of fill on the east side of the site is only approximately 10 feet in height, and was placed on the east side of the lot by a previous owner. Analyzing the stability of the fill pile, which is only approximately 10 feet in height, for the large ground shaking of a 1-in-2,500-year earthquake (Maximum Considered Earthquake) as required by KZC Section 85 is excessively conservative and onerous to the property owner. As we have mentioned in previous correspondence on this, and other projects, this requirement is much more conservative than the Design Earthquake required for slope stability analyses in the 2015 or 2018 IBC. Even so, as required by KZC 85, we completed slope stability analyses for the fill pile and underlying soils, and determined that a theoretical failure surface with a safety factor of less than 1.1 for seismic conditions could extend through the sideslopes of the fill pile.

Due to the distance of occupied structures from the site and the fill pile, there is only a negligible hazard presented by a theoretical failure of the fill pile's sideslopes in such a low probability earthquake. If left in place, the planned development of the western portion of the site would not cause any reduce of the fill pile.

If maintaining a minimum 1.1 safety factor for the fill pile under the peak ground acceleration of the Maximum Considered Earthquake is required by the City of Kirkland, our analyses indicate that the fill pile would need to be regraded by excavation to form a permanent slope no steeper than 3:1 (Horizontal:Vertical). This regrading would affect only the fill pile and not the surrounding ground, which slopes down to the south and east at a gentle to moderate inclination. The existing sloped ground located in the alley right-of-way to the east would not be disturbed by the removal of soil from the fill pile.

The soil removed from the regrading of the fill pile could be placed as compacted fill inside the planned pile-supported residence.

Artoush Fanaiyan
July 30, 2021

JN 17652
Page 2

Comment 2: The seismic accelerations presented in our *Geotechnical Engineering Study* and which were utilized in the structural design and our slope stability analyses are consistent with the 2015 IBC (ASCE 7-10). There is no need to update the structural calculations or our geotechnical engineering conclusions.

Please contact us if you have any questions regarding this letter, or if we can be of further assistance.

Respectfully submitted,

GEOTECH CONSULTANTS, INC.



07/30/2021

Marc R. McGinnis, P.E.
Principal

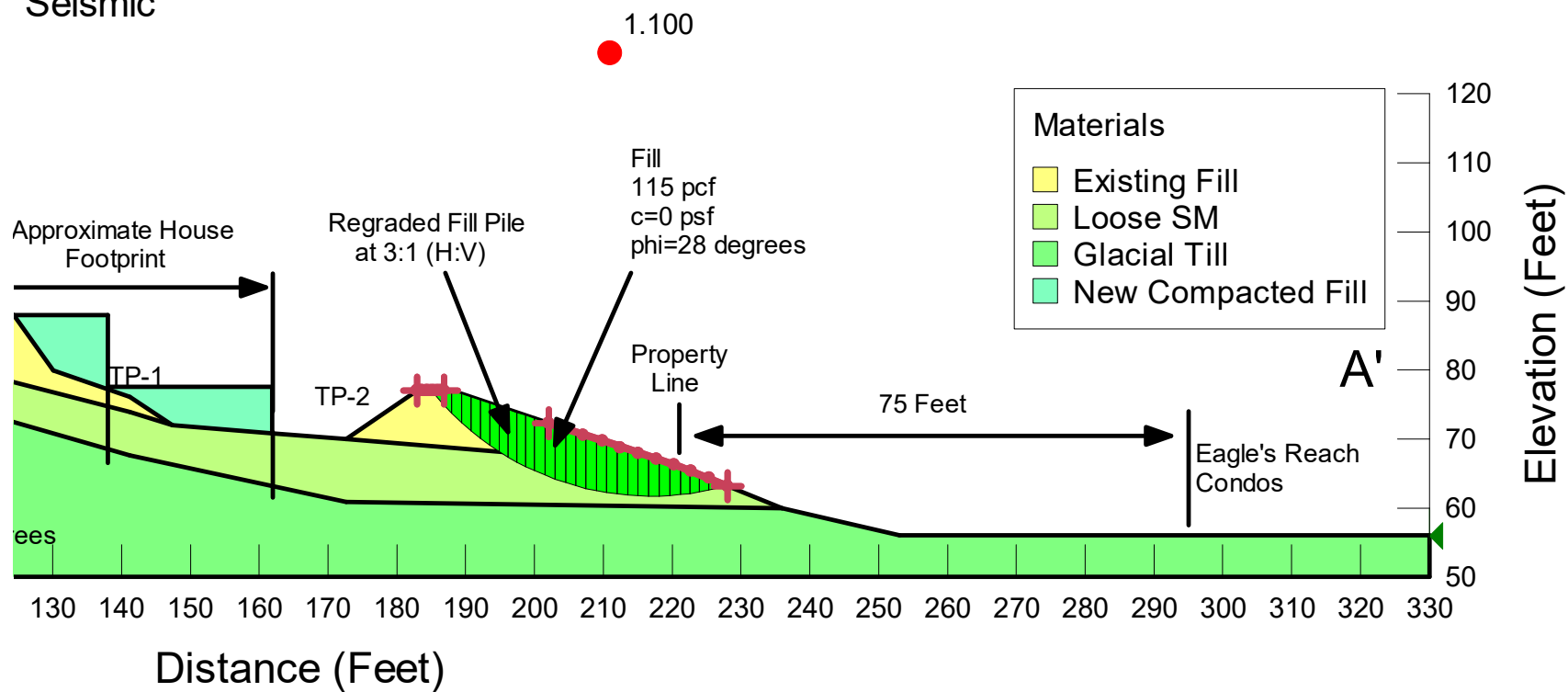
Attachments: Updated Slope Stability Analyses

cc: **Zbigniew Konofalski**
via email: zbigk@frontier.com

MKM/MRM:kg

17652 - Artoush Fanaiyan

Seismic



Seismic

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File Information

File Version: 8.15
 Title: 17652 - Fanaiyan
 Created By: Ma. McGinnis
 Last Edited By: Matt McGinnis
 Revision Number: 39
 Date: 7/28/2021
 Time: 3:39:54 PM
 Tool Version: 8.15.6.13446
 File Name: 17652 Slope Stability - regraded Soil Stockpile 3to1.gsz
 Directory: C:\Users\MattM\OneDrive - Geotech Consultants\Slope Stability Analysis\17652 Fanaiyan\
 Last Solved Date: 7/28/2021
 Last Solved Time: 4:07:39 PM

Project Settings

Length(L) Units: Feet
 Time(t) Units: Seconds
 Force(F) Units: Pounds
 Pressure(p) Units: psf
 Strength Units: psf
 Unit Weight of Water: 62.4 pcf
 View: 2D
 Element Thickness: 1

Analysis Settings

Seismic

Kind: SLOPE/W
 Method: Morgenstern-Price
 Settings
 Side Function
 Interslice force function option: Half-Sine
 PWP Conditions Source: (none)
 Slip Surface
 Direction of movement: Left to Right
 Use Passive Mode: No
 Slip Surface Option: Entry and Exit
 Critical slip surfaces saved: 1
 Resisting Side Maximum Convex Angle: 1 °
 Driving Side Maximum Convex Angle: 5 °
 Optimize Critical Slip Surface Location: No
 Tension Crack
 Tension Crack Option: (none)
 F of S Distribution
 F of S Calculation Option: Constant

Advanced

Number of Slices: 30

F of S Tolerance: 0.001

Minimum Slip Surface Depth: 0.1 ft

Search Method: Root Finder

Tolerable difference between starting and converged F of S: 3

Maximum iterations to calculate converged lambda: 20

Max Absolute Lambda: 2

Materials

Existing Fill

Model: Mohr-Coulomb

Unit Weight: 115 pcf

Cohesion': 0 psf

Phi': 28 °

Phi-B: 0 °

Loose SM

Model: Mohr-Coulomb

Unit Weight: 115 pcf

Cohesion': 0 psf

Phi': 30 °

Phi-B: 0 °

Glacial Till

Model: Mohr-Coulomb

Unit Weight: 135 pcf

Cohesion': 100 psf

Phi': 40 °

Phi-B: 0 °

New Compacted Fill

Model: Mohr-Coulomb

Unit Weight: 130 pcf

Cohesion': 0 psf

Phi': 32 °

Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range

Left-Zone Left Coordinate: (183.06, 77) ft

Left-Zone Right Coordinate: (187, 77) ft

Left-Zone Increment: 10

Right Projection: Range

Right-Zone Left Coordinate: (202, 72.33333) ft

Right-Zone Right Coordinate: (228, 63.24324) ft

Right-Zone Increment: 10

Radius Increments: 10

Slip Surface Limits

Left Coordinate: (0, 112) ft

Right Coordinate: (330, 56) ft

Seismic Coefficients

Horz Seismic Coef.: 0.25

Points

	X (ft)	Y (ft)
Point 1	0	112
Point 2	16.9	110
Point 3	33.7	102
Point 4	48.4	100
Point 5	86.4	88
Point 6	107.4	88
Point 7	124.3	88
Point 8	130	80
Point 9	141.1	76
Point 10	147.4	72
Point 11	172.7	70
Point 12	187.5	80
Point 13	193.8	82
Point 14	202.2	82
Point 15	206.4	82
Point 16	221.2	66
Point 17	236	60
Point 18	253	56
Point 19	141.1	74
Point 20	141.1	67.5
Point 21	141.1	66.5
Point 22	172.7	61
Point 23	172.7	56
Point 24	0	108
Point 25	0	107
Point 26	0	56
Point 27	210	80
Point 28	138	88
Point 29	138	77.5
Point 30	162	77.5
Point 31	162	70.84585
Point 32	330	56
Point 33	330	50
Point 34	0	50
Point 35	212	69
Point 36	200	73
Point 37	188	77
Point 38	183.06	77

Regions

	Material	Points	Area (ft²)
Region 1	Existing Fill	5,19,10,9,8,7,6	255.4
Region 2	Existing Fill	11,38,37,36,35,16	216.84
Region 3	Loose SM	1,24,20,22,17,16,11,31,10,19,5,4,3,2	1,389.2
Region 4	New Compacted Fill	7,28,29,30,31,10,9,8	212.03
Region 5	Glacial Till	24,20,22,17,18,32,33,34,26,25	7,039.5

Current Slip Surface

Slip Surface: 720

F of S: 1.100

Volume: 234.37256 ft³

Weight: 26,952.844 lbs

Resisting Moment: 599,752.81 lbs-ft

Acting Moment: 545,089.72 lbs-ft

Resisting Force: 13,749.114 lbs

Acting Force: 12,493.7 lbs

F of S Rank (Analysis): 552 of 1,331 slip surfaces

F of S Rank (Query): 552 of 1,331 slip surfaces

Exit: (228, 63.243243) ft

Entry: (185.03, 77) ft

Radius: 41.069653 ft

Center: (216.97901, 102.80654) ft

Slip Slices

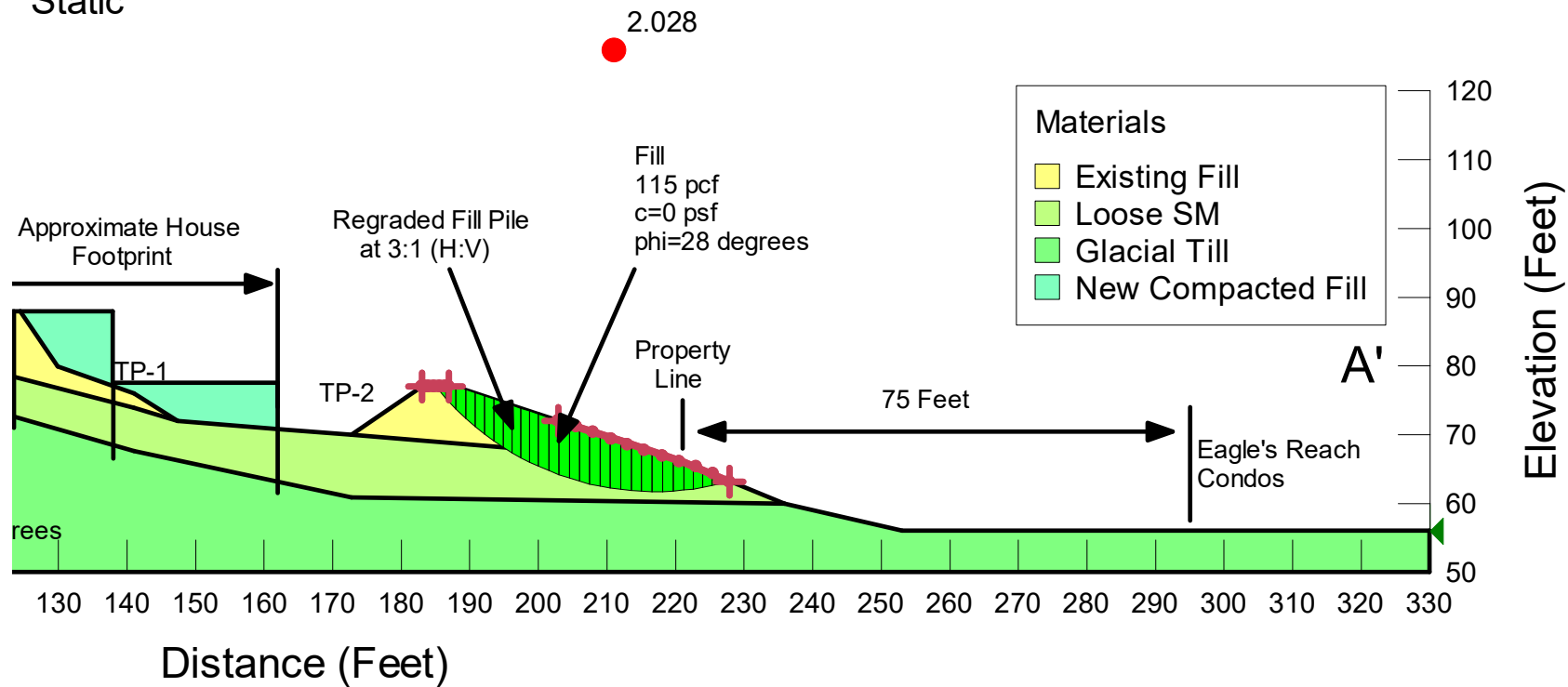
	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	185.7725	76.131371	0	60.874991	32.367807	0
Slice 2	187.2575	74.483578	0	173.46378	92.23233	0
Slice 3	188.69135	73.047249	0	251.7838	133.87582	0
Slice 4	190.07406	71.79037	0	300.93609	160.01055	0
Slice 5	191.45677	70.642073	0	343.90106	182.85544	0
Slice 6	192.83947	69.591045	0	382.56614	203.41402	0
Slice 7	194.22218	68.628278	0	418.4951	222.51779	0
Slice 8	195.54934	67.778972	0	449.67829	259.62188	0
Slice 9	196.82096	67.031729	0	482.73865	278.70929	0
Slice 10	198.09257	66.344139	0	516.27855	298.07356	0
Slice 11	199.36419	65.712881	0	550.83234	318.0232	0
Slice 12	200.75	65.08825	0	589.91074	340.58513	0
Slice 13	202.25	64.477341	0	634.45101	366.30046	0
Slice 14	203.75	63.933896	0	680.93716	393.13925	0
Slice 15	205.25	63.455115	0	728.58122	420.64656	0
Slice 16	206.75	63.038658	0	775.89229	447.96162	0
Slice 17	208.25	62.682581	0	820.59795	473.77245	0

Seismic

Slice 18	209.75	62.385287	0	859.64882	496.31847	0
Slice 19	211.25	62.145483	0	889.35444	513.46903	0
Slice 20	212.76667	61.960746	0	906.38469	523.30145	0
Slice 21	214.3	61.831555	0	906.36933	523.29258	0
Slice 22	215.83333	61.76003	0	884.88731	510.88993	0
Slice 23	217.36667	61.745869	0	839.85329	484.88952	0
Slice 24	218.9	61.789013	0	771.05055	445.16624	0
Slice 25	220.43333	61.889643	0	680.33537	392.79181	0
Slice 26	221.88	62.03611	0	570.71712	329.50368	0
Slice 27	223.24	62.222758	0	448.84573	259.1412	0
Slice 28	224.6	62.456096	0	321.11787	185.39749	0
Slice 29	225.96	62.736939	0	191.44437	110.53046	0
Slice 30	227.32	63.066297	0	62.95403	36.346526	0

17652 - Artoush Fanaiyan

Static



Static

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File Information

File Version: 8.15
 Title: 17652 - Fanaiyan
 Created By: Ma. McGinnis
 Last Edited By: Matt McGinnis
 Revision Number: 39
 Date: 7/28/2021
 Time: 3:39:54 PM
 Tool Version: 8.15.6.13446
 File Name: 17652 Slope Stability - regraded Soil Stockpile 3to1.gsz
 Directory: C:\Users\MattM\OneDrive - Geotech Consultants\Slope Stability Analysis\17652 Fanaiyan\
 Last Solved Date: 7/28/2021
 Last Solved Time: 4:07:39 PM

Project Settings

Length(L) Units: Feet
 Time(t) Units: Seconds
 Force(F) Units: Pounds
 Pressure(p) Units: psf
 Strength Units: psf
 Unit Weight of Water: 62.4 pcf
 View: 2D
 Element Thickness: 1

Analysis Settings

Static

Kind: SLOPE/W
 Method: Morgenstern-Price
 Settings
 Side Function
 Interslice force function option: Half-Sine
 PWP Conditions Source: (none)
 Slip Surface
 Direction of movement: Left to Right
 Use Passive Mode: No
 Slip Surface Option: Entry and Exit
 Critical slip surfaces saved: 1
 Resisting Side Maximum Convex Angle: 1 °
 Driving Side Maximum Convex Angle: 5 °
 Optimize Critical Slip Surface Location: No
 Tension Crack
 Tension Crack Option: (none)
 F of S Distribution
 F of S Calculation Option: Constant

Advanced

Number of Slices: 30

F of S Tolerance: 0.001

Minimum Slip Surface Depth: 0.1 ft

Search Method: Root Finder

Tolerable difference between starting and converged F of S: 3

Maximum iterations to calculate converged lambda: 20

Max Absolute Lambda: 2

Materials

Existing Fill

Model: Mohr-Coulomb

Unit Weight: 115 pcf

Cohesion': 0 psf

Phi': 28 °

Phi-B: 0 °

Loose SM

Model: Mohr-Coulomb

Unit Weight: 115 pcf

Cohesion': 0 psf

Phi': 30 °

Phi-B: 0 °

Glacial Till

Model: Mohr-Coulomb

Unit Weight: 135 pcf

Cohesion': 100 psf

Phi': 40 °

Phi-B: 0 °

New Compacted Fill

Model: Mohr-Coulomb

Unit Weight: 130 pcf

Cohesion': 0 psf

Phi': 32 °

Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range

Left-Zone Left Coordinate: (183.06, 77) ft

Left-Zone Right Coordinate: (187, 77) ft

Left-Zone Increment: 10

Right Projection: Range

Right-Zone Left Coordinate: (203, 72) ft

Right-Zone Right Coordinate: (228, 63.24324) ft

Right-Zone Increment: 10

Radius Increments: 10

Slip Surface Limits

Left Coordinate: (0, 112) ft

Right Coordinate: (330, 56) ft

Seismic Coefficients

Horz Seismic Coef.: 0

Points

	X (ft)	Y (ft)
Point 1	0	112
Point 2	16.9	110
Point 3	33.7	102
Point 4	48.4	100
Point 5	86.4	88
Point 6	107.4	88
Point 7	124.3	88
Point 8	130	80
Point 9	141.1	76
Point 10	147.4	72
Point 11	172.7	70
Point 12	187.5	80
Point 13	193.8	82
Point 14	202.2	82
Point 15	206.4	82
Point 16	221.2	66
Point 17	236	60
Point 18	253	56
Point 19	141.1	74
Point 20	141.1	67.5
Point 21	141.1	66.5
Point 22	172.7	61
Point 23	172.7	56
Point 24	0	108
Point 25	0	107
Point 26	0	56
Point 27	210	80
Point 28	138	88
Point 29	138	77.5
Point 30	162	77.5
Point 31	162	70.84585
Point 32	330	56
Point 33	330	50
Point 34	0	50
Point 35	212	69
Point 36	200	73
Point 37	188	77
Point 38	183.06	77

Regions

	Material	Points	Area (ft²)
Region 1	Existing Fill	5,19,10,9,8,7,6	255.4
Region 2	Existing Fill	11,38,37,36,35,16	216.84
Region 3	Loose SM	1,24,20,22,17,16,11,31,10,19,5,4,3,2	1,389.2
Region 4	New Compacted Fill	7,28,29,30,31,10,9,8	212.03
Region 5	Glacial Till	24,20,22,17,18,32,33,34,26,25	7,039.5

Current Slip Surface

Slip Surface: 720

F of S: 2.028

Volume: 234.37256 ft³

Weight: 26,952.844 lbs

Resisting Moment: 629,731 lbs-ft

Acting Moment: 310,502 lbs-ft

Resisting Force: 14,282.965 lbs

Acting Force: 7,043.5575 lbs

F of S Rank (Analysis): 531 of 1,331 slip surfaces

F of S Rank (Query): 531 of 1,331 slip surfaces

Exit: (228, 63.243243) ft

Entry: (185.03, 77) ft

Radius: 41.069653 ft

Center: (216.97901, 102.80654) ft

Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	185.7725	76.131371	0	74.359074	39.537421	0
Slice 2	187.2575	74.483578	0	214.19613	113.8901	0
Slice 3	188.69135	73.047249	0	314.98882	167.48253	0
Slice 4	190.07406	71.79037	0	381.2264	202.70167	0
Slice 5	191.45677	70.642073	0	440.04763	233.97747	0
Slice 6	192.83947	69.591045	0	493.0221	262.1445	0
Slice 7	194.22218	68.628278	0	541.32735	287.82886	0
Slice 8	195.54934	67.778972	0	580.69616	335.26509	0
Slice 9	196.82096	67.031729	0	619.65018	357.7552	0
Slice 10	198.09257	66.344139	0	656.19778	378.85596	0
Slice 11	199.36419	65.712881	0	690.46792	398.64184	0
Slice 12	200.75	65.08825	0	724.98258	418.56889	0
Slice 13	202.25	64.477341	0	759.28922	438.37584	0
Slice 14	203.75	63.933896	0	789.68989	455.92767	0
Slice 15	205.25	63.455115	0	815.46438	470.80858	0
Slice 16	206.75	63.038658	0	835.67867	482.4793	0
Slice 17	208.25	62.682581	0	849.21979	490.29728	0

Slice 18	209.75	62.385287	0	854.84852	493.54703	0
Slice 19	211.25	62.145483	0	851.27294	491.48266	0
Slice 20	212.76667	61.960746	0	837.63776	483.61039	0
Slice 21	214.3	61.831555	0	812.56366	469.13385	0
Slice 22	215.83333	61.76003	0	774.56753	447.19677	0
Slice 23	217.36667	61.745869	0	723.17789	417.52695	0
Slice 24	218.9	61.789013	0	658.43689	380.14871	0
Slice 25	220.43333	61.889643	0	580.94905	335.41109	0
Slice 26	221.88	62.03611	0	490.53952	283.21312	0
Slice 27	223.24	62.222758	0	390.01776	225.17686	0
Slice 28	224.6	62.456096	0	283.27507	163.54894	0
Slice 29	225.96	62.736939	0	171.90749	99.250833	0
Slice 30	227.32	63.066297	0	57.469102	33.179801	0

Jennifer Anderer

From: Jeffrey Laub <jlaub@aesgeo.com>
Sent: Wednesday, January 12, 2022 10:27 AM
To: Jennifer Anderer
Cc: Steve Siebert
Subject: Re: AESI Project No. 20210084E001 (SAR19-00591)

Hi Jennifer,

The slope stability analysis looks fine for the modeled condition (i.e., graded 3H:1V slope). Is there an updated site plan which reflects the grading shown in this analysis?

Jeffrey P. Laub, P.E., L.G., L.E.G. | Associate Engineer/Geologist



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jlaub@aesgeo.com | www.aesgeo.com

O | 425-827-7701 C | 425-766-2867

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From: Jennifer Anderer <JAnderer@kirklandwa.gov>
Sent: Monday, January 10, 2022 2:44 PM
To: Jeffrey Laub <jlaub@aesgeo.com>
Subject: AESI Project No. 20210084E001 (SAR19-00591)

CAUTION: This email was sent by an external sender. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Jeff,

The applicant submitted an updated Geotech report (see attached) where their additional analysis begins on page 30. Could you take a look and provide revision comments or an approval letter?

Thanks,

Jen

Jennifer Anderer | Associate Planner
 Planning and Building Department
 City of Kirkland
 p: 425.587.3239

Planning Counter hours: 8:00 am – 5:00 pm Monday-Friday; 10:30 am – 5:00 pm Wednesdays only. Located in City Hall at 123 Fifth Avenue, Kirkland, WA 98033.

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Seattle

Project No. TS – 6205

Arborist Report

TO: Artoush Fanaiyan, Artoush Construction and Remodeling
 SITE: 11666 91st Place NE Kirkland WA 98033 Parcel#375450040
 RE: Tree Inventory
 DATE: 01.15.2018
 PROJECT ARBORIST: Sean Dugan, ASCA Registered Consulting Arborist # 457
 ISA Board Certified Master Arborist PN- 5459B
 ISA Qualified Tree Risk Assessor

Attachment: Table of Trees, Marked-up Site Survey

Summary

I was asked to assess trees on site that are over six inches in diameter. Eleven (11) trees were inventoried and assessed. The total tree density credits available is calculated to be 15. According to the Kirkland Zoning Code Definitions (95.10), seven (7) trees are Viable due to being in good health condition. I calculated the potential tree density credits for the Viable trees to be 9.

Based on my knowledge, training, and experience it is my opinion that all these trees are poor candidates for retention. The trees will be proposed for removal for a total of zero tree density credits.

The total area of the site is 5,743 square feet (0.13 acres). The Kirkland Zoning Code (95.33) requires a minimum tree density of 3.9 tree credits for this size lot. A supplemental planting plan will need to be provided to the city to attain an additional 4 tree credits.

Trees located in the required setbacks may be considered by the city of Kirkland to be “High Retention Value” trees and will require being retained to the maximum extent feasible. The city makes this determination. In my opinion, all the trees within the setbacks are poor candidates for retention.

There are two trees on an adjacent site to the east that have canopies that overhangs the subject site. Tree A is unlikely to be compromised by development. Tree B may be negatively impacted depending on site development activities, especially grading.

Assignment & Scope of Report

This report outlines the site inspection of 11666 91st Place NE by Sean Dugan, of Tree Solutions Inc., on January 4, 2018. I was asked to evaluate the significant trees on site. I was asked to document the species, size, health condition, and viability of each tree. Artoush Fanaiyan, of Artoush Construction, requested these services to acquire information for project planning in accord with requirements set by the City of Kirkland.

Information specific to each tree can be found in the attached Table of Trees. Limits of assignment can be found in Appendix A. Methods can be found in Appendix B. Additional assumptions and limiting conditions can be found in Appendix C.

Observations and Discussion

The 5,743-square foot site is in Kirkland, Washington. The site is currently undeveloped. There does appear to have been recent disturbance to the soil on most of the site. The site is proposed for development of a single-family structure.

There are currently 11 significant size trees existing on site. According to the Kirkland Zoning Code Definitions (95.10), seven trees are Viable due to being in good health condition. There is one tree on the site survey that I measured to be below six inches in diameter.

Trees located in the required setbacks may be considered by the city of Kirkland to be “High Retention Value” trees and will require being retained to the maximum extent feasible. The city makes this determination.

In my opinion, all the trees within the setbacks are poor candidates for retention. The tree species include red alder (*Alnus rubra*) and black cottonwood (*Populus trichocarpa*) trees. Both are fast growing trees that are undesirable next to developed sites. Alder trees have a short safe useful life expectancy and often decline after site development. Cottonwood trees have the potential to grow very large, which would not be appropriate for this location. Based on my knowledge, training, and experience it is my opinion that disturbance will compromise these trees and they should be proposed for removal.

Tree Density Credits

The Kirkland Zoning Code (95.33) requires tree density to satisfy 30 tree credits per acre. The property is 5,743 square feet or 0.13 acres. Therefore, a tree density worth 3.9 tree credits ($.13 \times 30 = 3.9$) is required to meet the minimum requirement. Supplemental tree planting will be necessary to achieve the minimum tree credits.

Supplemental Tree Credits

The required minimum size of the supplemental tree, worth one tree credit, shall be six (6) feet tall for conifers and 2-inch caliper for deciduous or broad-leaf evergreen tree. Four trees will need to be planted to achieve the minimum credits necessary. Additional credits may be awarded for larger supplemental trees.

Adjacent Site Trees

There are two trees on an adjacent property to the east of the site. The canopies of the trees overhang the subject property by no greater than four feet. Tree A has a high potential to be preserved without any additional tree protection measures applied. Tree B will require protection to the drip line. In my opinion, if there is substantial site grading, this tree may become compromised.

Recommendations

- Prepare a supplemental tree planting plan to achieve the minimal tree credits for the site.
- Obtain all necessary permits and approval from the City of Kirkland prior to commencement of site work.

- If tree B is to be retained, install tree protection fencing prior to the commencement of site work.

Glossary

crown/canopy: the aboveground portions of a tree (Lilly 2001)

DBH: diameter at standard height; the diameter of the trunk measured 54 inches (4.5 feet) above grade (Matheny *et al.* 1998)

ISA: International Society of Arboriculture

Limit of Disturbance: The boundary between the protected area around a tree and the allowable site disturbance as determined by a qualified professional measured in feet from the trunk. (KZC 95.10)

Retention Value: The Planning Official's designation of a tree based on information provided by a qualified professional that is one (1) of the following:

a. High, a viable tree, located within required yards and/or required landscape areas. Tree retention efforts shall be directed to the following trees if they are determined to be healthy and windfirm by a qualified professional, and provided the trees can be safely retained when pursuing alternatives to development standards pursuant to KZC 95.32:

- 1) Specimen trees;
- 2) Tree groves and associated vegetation that are to be set aside as preserved groves pursuant to KZC 95.51(3);
- 3) Trees on slopes of at least 10 percent; or
- 4) Trees that are a part of a grove that extends into adjacent property, such as in a public park, open space, sensitive area buffer or otherwise preserved group of trees on adjacent private property. If significant trees must be removed in these situations, an adequate buffer of trees may be required to be retained or planted on the edge of the remaining grove to help stabilize; (KZC 95.10)

significant size: a tree measuring 6" DBH or greater.

structural defects: flaws, decay, or other faults in the trunk, branches, or root collar of a tree, which may lead to failure (Lilly 2001)

Viable Tree: A significant tree that a qualified professional has determined to be in good health, with a low risk of failure due to structural defects, is windfirm if isolated or remains as part of a grove, and is a species that is suitable for its location. (KZC 95.10)

References

ANSI A300 (Part 1) – 2008 American National Standards Institute. American National Standard for Tree Care Operations: Tree, Shrub, and Other Woody Plant Maintenance: Standard Practices (Pruning). New York: Tree Care Industry Association, 2008.

Dunster & Associates Environmental Consultants Ltd. Assessing Trees in Urban Areas and the Urban-Rural Interface, US Release 1.0. Silverton: Pacific Northwest Chapter ISA, 2006.

Kirkland Zoning Code Chapter 95.

<http://www.codepublishing.com/WA/Kirkland/?KirklandZ95/KirklandZ95.html> (accessed January 12, 2018).

Lilly, Sharon. Arborists' Certification Study Guide. Champaign, IL: The International Society of Arboriculture, 2001.

Matheny, Nelda and James R. Clark. Trees and Development: A Technical Guide to Preservation of Trees During Land Development. Champaign, IL: International Society of Arboriculture, 1998.

Mattheck, Claus and Helge Breloer, The Body Language of Trees.: A Handbook for Failure Analysis. London: HMSO, 1994.

Purcell, Lindsey. Purdue University Extension – Tree Appraisal Pamphlet, FNR-473-W. West Lafayette, IN. 2012.

Appendix A - Limits of Assignment

Unless stated otherwise: 1) information contained in this report covers only those trees that were examined and reflects the condition of those trees at the time of inspection; and 2) the inspection is limited to visual examination of the subject trees without dissection, excavation, probing, climbing, or coring unless explicitly specified. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the subject trees may not arise in the future.

Tree Solutions did not review any reports or perform any tests related to the soil located on the subject property unless outlined in the scope of services. Tree Solutions staff are not and do not claim to be soils experts. An independent inventory and evaluation of the site's soil should be obtained by a qualified professional if an additional understanding of the site's characteristics is needed to make an informed decision.

Appendix B - Methods

I evaluated tree health and structure utilizing visual tree assessment (VTA) methods. The basis behind VTA is the identification of symptoms, which the tree produces in reaction to a weak spot or area of mechanical stress. A tree reacts to mechanical and physiological stresses by growing more vigorously to re-enforce weak areas, while depriving less stressed parts (Mattheck & Breloer 1994). An understanding of the uniform stress allows me to make informed judgments about the condition of a tree.

I measured the diameter of each tree at 54 inches above grade, diameter at standard height (DSH)

Tree health considers crown indicators including foliar density, size, color, stem shoot extensions, decay, and damage. We have adapted our ratings based on the Purdue University Extension Formula Values for health condition. These values are a general representation used to assist in arborists in assigning ratings. Tree health needs to be evaluated on an individual basis and may not always fall entirely into a single category, however, a single condition rating must be assigned.

Excellent - Perfect specimen with excellent form and vigor, well-balanced crown. Normal to exceeding shoot length on new growth. Leaf size and color normal. Trunk is sound and solid. Root zone undisturbed. No apparent pest problems. Long safe useful life expectancy for the species.

Good - Imperfect canopy density in few parts of the tree, up to 10% of the canopy. Normal to less than ¾ typical growth rate of shoots and minor deficiency in typical leaf development. Few pest issues or damage, and if they exist they are controllable or tree is reacting appropriately. Normal branch and stem development with healthy growth. Safe useful life expectancy typical for the species.

Fair - Crown decline and dieback up to 30% of the canopy. Leaf color is somewhat chlorotic/necrotic with smaller leaves and "off" coloration. Shoot extensions indicate some stunting and stressed growing conditions. Stress cone crop clearly visible. Obvious signs of pest problems contributing to lesser condition, control might be possible. Some decay areas found in main stem and branches. Below average safe useful life expectancy

Poor - Lacking full crown, more than 50% decline and dieback, especially affecting larger branches. Stunting of shoots is obvious with little evidence of growth on smaller stems. Leaf size and color reveals overall stress in the plant. Insect or disease infestation may be severe and uncontrollable. Extensive decay or hollows in branches and trunk. Short safe useful life expectancy.

Tree health condition ratings have been adapted from the Purdue University Extension bulletin FNR-473-W - Tree Appraisal.

Appendix C - Assumptions & Limiting Conditions

1. Consultant assumes that any legal description provided to Consultant is correct and that title to property is good and marketable. Consultant assumes no responsibility for legal matters. Consultant assumes all property appraised or evaluated is free and clear, and is under responsible ownership and competent management.
2. Consultant assumes that the property and its use do not violate applicable codes, ordinances, statutes or regulations.
3. Although Consultant has taken care to obtain all information from reliable sources and to verify the data insofar as possible, Consultant does not guarantee and is not responsible for the accuracy of information provided by others.
4. Client may not require Consultant to testify or attend court by reason of any report unless mutually satisfactory contractual arrangements are made, including payment of an additional fee for such Services as described in the Consulting Arborist Agreement.
5. Unless otherwise required by law, possession of this report does not imply right of publication or use for any purpose by any person other than the person to whom it is addressed, without the prior express written consent of the Consultant.
6. Unless otherwise required by law, no part of this report shall be conveyed by any person, including the Client, the public through advertising, public relations, news, sales or other media without the Consultant's prior express written consent.
7. This report and any values expressed herein represent the opinion of the Consultant, and the Consultant's fee is in no way contingent upon the reporting of a specific value, a stipulated result, the occurrence of a subsequent event or upon any finding to be reported.
8. All photographs included in this report were taken by Tree Solutions Inc. during the documented site visit, unless otherwise noted.
9. Sketches, drawings and photographs in this report, being intended as visual aids, are not necessarily to scale and should not be construed as engineering or architectural reports or surveys. The reproduction of any information generated by architects, engineers or other consultants and any sketches, drawings or photographs is for the express purpose of coordination and ease of reference only. Inclusion of such information on any drawings or other documents does not constitute a representation by Consultant as to the sufficiency or accuracy of the information.
10. Unless otherwise agreed, (1) information contained in this report covers only the items examined and reflects the condition of the those items at the time of inspection; and (2) the inspection is limited to visual examination of accessible items without dissection, excavation, probing, climbing, or coring. Consultant makes no warranty or guarantee, express or implied, that the problems or deficiencies of the plans or property in question may not arise in the future.
11. Loss or alteration of any part of this Agreement invalidates the entire report.



Artoush Construction - Table of Trees
Parcel# 375450040; 116XX 91st Pl. NE
 Kirkland, WA

Date of Inventory: 01.04.2018

Table Prepared: 01.12.2018

							Drip line Radius (feet)							
Tree ID	Scientific Name	Common Name	DSH (inches)	Health Condition	Structural Condition	Limits of Disturbance Radial Feet	North	East	South	West	Viability	Proposed Action	Credits	Notes
130	<i>Populus trichocarpa</i>	cottonwood	8	Good	Good	4	6	6	6	10	Yes	Remove	0	Root zone disturbance
131	<i>Alnus rubra</i>	red alder	7	Good	Fair	4	10	10	3	6	Yes	Remove	0	Root zone disturbance, trunk leans east
132	<i>Alnus rubra</i>	red alder	8	Good	Fair	4	6	6	6	6	Yes	Remove	0	Low live crown ratio, <25%
133	<i>Alnus rubra</i>	red alder	7	Fair	Poor	3	8	8	8	8	No	Remove	0	Top failed in past, Low live crown ratio
134	<i>Alnus rubra</i>	red alder	9	Good	Good	4	6	10	10	10	Yes	Remove	0	
135	<i>Populus trichocarpa</i>	cottonwood	10	Good	Fair	5	4	10	5	16	Yes	Remove	0	Root zone disturbance, trunk damaged in past, odd re-growth
136	<i>Alnus rubra</i>	red alder	6	Fair	Fair	3	4	4	4	4	No	Remove	0	Low live crown ratio, <30% canopy; no scaffold branches
137	<i>Populus trichocarpa</i>	cottonwood	14	Fair	Fair	7	8	8	8	8	No	Remove	0	Root zone disturbance, lost top
138	<i>Alnus rubra</i>	red alder	6	Fair	Poor	3	4	6	6	6	No	Remove	0	defect in lower trunk from a girdling wound
139	<i>Alnus rubra</i>	red alder	8	Good	Good	4	10	10	10	10	Yes	Remove	0	
140	<i>Populus trichocarpa</i>	cottonwood	14	Good	Good	7	12	12	12	12	Yes	Remove	0	
											Total available credits		15	
											Total viable credits		9	
											Total credits retained		0	
Adjacent Site Trees														



Artoush Construction - Table of Trees
Parcel# 375450040; 116XX 91st Pl. NE
 Kirkland, WA

Date of Inventory: 01.04.2018

Table Prepared: 01.12.2018

Tree ID	Scientific Name	Common Name	DSH (inches)	Health Condition	Structural Condition	Limits of Disturbance Radial Feet	Drip line Radius (feet)				Viability	Proposed Action	Credits	Notes
							North	East	South	West				
A	<i>Alnus rubra</i>	red alder	6	Good	Good	Drip line	8	10	8	10		retain	0	
B	<i>Alnus rubra</i>	red alder	14	Good	Good	Drip line			3			retain	0	

Additional notes:

*DSH (Diameter at Standard Height) is measured 4.5 feet above grade.**Drip line is measured from the center of the tree to the outermost extent of the canopy.*

LEGAL DESCRIPTION

(PER STATUTORY WARRANTY DEED) RECORDING NO. 19991208001603.
LOT 7 & 8, BLOCK 1, AS PER PLAT RECORDED IN VOLUME 32 OF
PLATS, PAGE 25 INCLUSIVE, RECORDS OF KING COUNTY, WA.

BASIS OF BEARINGS

N71°22'43"E BETWEEN SURVEY MONUMENTS FOUND ON THE
CENTERLINE OF N.E. 117TH PL./N.E. 120TH ST., SHOWN HEREON,
PER PLAT OF JUANITA BEACH CAMPS.

REFERENCES

R1 JUANITA BEACH CAMPS, RECORDED IN VOLUME 32 OF PLATS,
PAGE 25, RECORDS OF KING COUNTY, WASHINGTON.

VERTICAL DATUM

NAVD(88) PER GPS OBSERVATIONS.

SURVEYOR'S NOTES

1. THE TOPOGRAPHIC SURVEY SHOWN HEREON WAS PERFORMED IN
AUGUST OF 2017. THE FIELD DATA WAS COLLECTED AND
RECORDED ON MAGNETIC MEDIA THROUGH AN ELECTRONIC
THEODOLITE. THE DATA FILE IS ARCHIVED ON DISC OR CD.
WRITTEN FIELD NOTES MAY NOT EXIST. CONTOURS ARE SHOWN
FOR CONVENIENCE ONLY. DESIGN SHOULD RELY ON SPOT
ELEVATIONS.
2. ALL MONUMENTS SHOWN HEREON WERE LOCATED DURING THE
COURSE OF THIS SURVEY UNLESS OTHERWISE NOTED.
3. BURIED UTILITIES SHOWN BASED ON RECORDS FURNISHED BY
OTHERS AND VERIFIED WHERE POSSIBLE IN THE FIELD. TERRANE
ASSUMES NO LIABILITY FOR THE ACCURACY OF THOSE RECORDS
OR ACCEPTS RESPONSIBILITY FOR UNDERGROUND LINES WHICH
ARE NOT MADE PUBLIC RECORD. FOR THE FINAL LOCATION OF
EXISTING UTILITIES IN AREAS CRITICAL TO DESIGN, CONTACT THE
UTILITY OWNER/AGENCY. AS ALWAYS, CALL 1-800-424-5555
BEFORE CONSTRUCTION.
4. SUBJECT PROPERTY TAX PARCEL NO. 375450-0040
5. SUBJECT PROPERTY AREA PER THIS SURVEY IS 5,743.4 S.F.
(0.13184 ACRES)
6. THIS SURVEY WAS PERFORMED WITHOUT THE BENEFIT OF A TITLE
REPORT. EASEMENTS AND OTHER ENCUMBRANCES MAY EXIST
THAT ARE NOT SHOWN HEREON.
7. FIELD DATA FOR THIS SURVEY WAS OBTAINED BY DIRECT FIELD
MEASUREMENTS WITH A CALIBRATED ELECTRONIC 6-SECOND
TOTAL STATION AND/OR SURVEY GRADE GPS OBSERVATIONS.
ALL ANGULAR AND LINEAR RELATIONSHIPS ARE ACCURATE AND
MEET THE STANDARDS SET BY WAC 332-150-090.

LEGEND

VICINITY MAP
N.T.S.

TOPOGRAPHIC & BOUNDARY SURVEY



TOPOGRAPHIC & BOUNDARY SURVEY
SEE PLAT OF SURVEY FOR RECORDS (TYP.)
PAGE 25, RECORDS OF KING COUNTY, WA.

ARTOUSH FANAYAN
11600 91ST PL. NE
SEATTLE, WA 98104



Terrane
10801 Main Street, Suite 102, Bellevue, WA 98004
phone 425-458-4488 support@terrane.net
www.terrane.net

JOB NUMBER: 171182
DATE: 09/05/17
DRAFTED BY: LCH
CHECKED BY: EAD
SCALE: 1" = 10'

REVISION HISTORY

1. 09/05/17
2. 09/05/17
3. 09/05/17

SHEET NUMBER
1 OF 1

measure success

Jennifer Anderer

From: bill burke <wburke007@aol.com>
Sent: Wednesday, February 19, 2020 11:12 AM
To: Jennifer Anderer
Subject: SAR19-00591 Location: 11662 91st Place NE

Hello Ms. Anderer,

Thank you for the call yesterday and the explanation of the Reasonable Use Exception application on the property abutting us to the North in the Juanita neighborhood.

As we understand it, the application would involve a revision to the residential building footprint which was originally proposed by the applicant, due to soil and drainage condition on the applicants site.

Having owned our property for over 30 years, we are very familiar with the applicants site, including current and past drainage conditions and issues on this site, and present and past drainage issues in the immediate area.

We encourage the City in processing the application, to assure that:

- the site drainage system is properly engineered to allow the constant and seasonal run off to be directed away from our property, and
- that soil stabilization measures be required to eliminate the potential for the uphill bank to sluff-off onto our lot.

As you no doubt know, the Finn Hill/"Goat Hill" drainage is a rather complex series of informal, "bootlegged", and more recently formalized measures to mitigate the almost constant flow of ground water off of the hill.

A number of years ago during one of the infamous Hundred Year storms, we had substantial run-off from the properties up hill and to the west of us, resulting in over a half a foot of silt flowing across our property up to our western foundation wall and into our crawl space access.

Due to this situation, we had numerous contacts with the King County Public Works Neighborhood Drainage Assistance Program, which agreed to construct drainage mitigation measures, which included reopening ditches on their unconstructed ROW up hill to the West, the installation of two catch basins on our property, a rip-rap weir and pipe connections from the County's up hill ditches to the catch basins, and some restoration to our property.

Needless to say we are constantly vigilant about drainage around the property. We would appreciate a copy of the revised site plan including any drainage plans that may be available

Thank you again for the time spent updating us on the Reasonable Use application.

William and Christine Burke
Property address: 11658 91st Lane NE
206-412-1006



CONFLUENCE

ENVIRONMENTAL COMPANY

11662 91st Place NE FINAL MITIGATION PLAN

Prepared for:

Artoush Fanaiyan
February 17, 2022



11662 91st Place NE FINAL MITIGATION PLAN

Prepared for:

Artoush Fanaiyan
11407 NE 103rd Street
Kirkland, WA 98033

Authored by:

Kerrie McArthur, PWS, CERP
Confluence Environmental Company

February 17, 2022

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APPENDICES

Appendix A– King County Critical Areas Bond Worksheet

1.0 INTRODUCTION

The purpose of this report is to present a mitigation plan for unavoidable impacts to wetland and stream buffers from development of the property at 11662 91st Place NE, Kirkland, WA (tax parcel number 3754500040) (Figure 1). This report describes how the project meets the requirements per Kirkland Zoning Code (KZC) 90.60.2b. This mitigation plan will be submitted to the City of Kirkland (City) for acceptance.

This mitigation plan iteration has incorporated 3 rounds of review comments from the City of Kirkland planning department and is the most current version of the mitigation plan. This mitigation plan document has been updated to incorporate changes to the site plan, which was revised to eliminate all wetland impacts.

1.1 Background

On May 11, 2018, November 14, 2018, and August 5, 2019, Confluence Environmental Company (Confluence) conducted site visits to determine the presence of critical areas such as wetlands and streams. Critical areas, such as steep slopes, were not part of these studies. Two wetlands and one stream were delineated on- and off-site of the property (Confluence 2019). Figure 1 shows the existing critical areas.

Wetland A is located off-site, to the east of the property, and is estimated to be 7,455 square feet in size. According to the 2014 wetland rating system (Hruby 2014), Wetland A was rated as a Category IV wetland, with a hydrology score of 5, water quality score of 4, and habitat score of 6. Wetland A has a standard buffer of 40 feet. On the property, vegetation within the wetland buffer is dominated by red alder (*Alnus rubra*), red-osier dogwood (*Cornus sericea*), Himalayan blackberry (*Rubus armeniacus*), and Japanese knotweed (*Polygonum cuspidatum*). Approximately 3,330 square feet of Wetland A buffer encroaches onto the property.

Wetland B is located in the southern portion of the property and is estimated to be 307 square feet in size. According to the 2014 Wetland Rating System (Hruby 2014), Wetland A was rated as a Category IV wetland, with a hydrology score of 5, water quality score of 5, and habitat score of 5. Wetland B also has a standard buffer of 40 feet. Dominant vegetation within the buffer includes black cottonwood (*Populus trichocarpa*), Himalayan blackberry, Japanese knotweed, giant horsetail (*Equisetum telmateia*), and field bindweed (*Convolvulus arvensis*).

An unnamed creek was mapped by the City of Kirkland GIS within the right-of-way, just south of the parcel (Kirkland 2018). The creek is a non-fish-bearing, seasonal (i.e., Type Ns) creek. The stream begins off-site, at the southern boundary of the wetland, and flows south approximately 475 feet, then flows west approximately 120 feet before going into a culvert. Flows eventually discharge into Lake Washington, approximately 150 feet west of Juanita Creek.



Figure 1. Delineated Critical Areas and Standard Buffers

1.2 Proposed Development

The existing 5,743-square-foot property is undeveloped. The proposed development would construct a single-family home with a disturbance area of 2,871 square feet and an enhancement area of 2,872 square feet (Figure 2). The disturbance area associated with the sewer line will be planted with native vegetation once the line has been installed, although this area would still be designated as disturbance area under KZC. The site plan has been developed to avoid impacts to the off-site Wetland A, most of Wetland A's 40-foot buffer, on-site Wetland B, the unnamed creek, and the on-site portion of the unnamed creek buffer. However, impacts to a small area of northern Wetland A and B buffer, associated with the sewer line installation, and the western portion of Wetland B's buffer associated with the house footprint. Approximately half of the on-site wetland buffer associated with Wetland B and a small portion of the on-site wetland buffer associated with Wetland A would be impacted by the project in order to achieve reasonable use of the property, as is allowed per the code analysis below.

1.3 Compliance with Reasonable Use

Since the property is encumbered by a critical area and critical area buffers, redevelopment of the property must go through the Reasonable Use Exemption process and obtain a Reasonable Use Exemption. Under a Reasonable Use Exemption, all buffer impacts must be minimized to the greatest extent practical. The proposed development was designed to meet the criteria of a Reasonable Use Exemption. The house and driveway are a modest size for the neighborhood. Both the house and driveway are located as far from the off-site wetland and stream area as feasibly allowed. No lawn areas are proposed. In addition, the development proposes to enhance the buffer east of the development. The proposed enhancement is described in Section 3.0, below.

Note that this mitigation plan document references the code requirements under City of Kirkland Code Ordinance O-4551, which were the code requirements as of December 19, 2016. The recent code update—Ordinance 4713—updated KZC 90.180 in early 2020, and therefore the mitigation plan and associated critical areas study predate this code change. These project documents are therefore vested in the 2016 version of the code language as provided in O-4551. According to KZC 90.180, as part of the reasonable use request, in addition to submitting an application, the applicant must meet several decision criteria. These criteria—as included in KZC 90.180.4 through -.6—and a statement on how the proposed development meets these criteria are below. (Note: The code is cited verbatim [and italicized] with responses [not italicized] interspersed.)

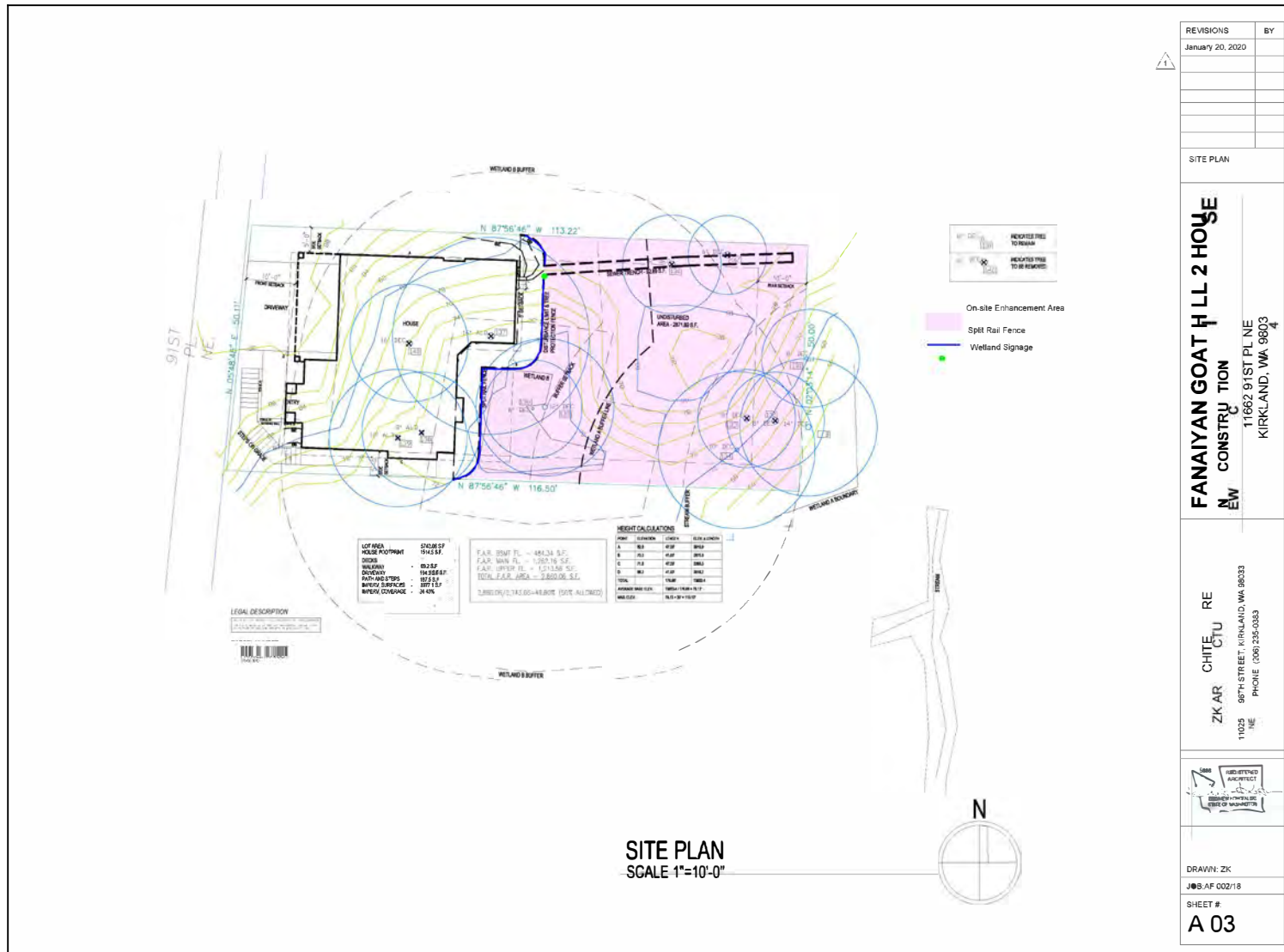


Figure 2. Revised Proposed Site Development Plan (Source: ZK Architecture, LLC 2022)

KZC 90.180.4: Submittal Requirements

- a. For a wetland, the additional report information requirements specified in KZC 90.110(5). For a stream, the additional report information requirements specified in KZC 90.110(6).*

A delineation of sensitive areas and sensitive area buffers was prepared by Confluence (2019) (Figure 1).

- b. An analysis of whether any other reasonable use with less impact on the sensitive area and sensitive area buffer is possible.*

The site is undeveloped, within residential zoning. The only reasonable use of the property is the construction of a single-family residence. There is no optional reasonable use, as the site is undeveloped. The average home footprint on the street is 2,600 square feet. By proposing a house with a 1,514-square-foot footprint, the project provides the least impact to sensitive areas while having reasonable use of the property, in keeping with neighborhood aesthetics.

- c. Site design and construction staging of the proposal shall have the least impact to the critical area and critical area buffer.*

A majority of the site is within a critical area buffer. Site design has occurred to have the least impact to sensitive areas by moving the proposed home farther west, and thus, farther away from the off-site sensitive areas. Construction staging will occur to minimize the impacts to the buffer. Once construction is complete, the on-site buffer will be planted with a combination of native trees and shrubs. Section 3.0 describes the proposed planting.

- d. A site plan showing items described in KCZ 90.180.A.4(d)1-3.*

The site plan showing these items was included with the permit application.

- e. A description of protective measures that will be undertaken, such as siltation curtains, compost berms and other siltation prevention measures, and scheduling the construction activity to avoid interference with wildlife and fisheries rearing, nesting or spawning activities.*

The off-site stream is a non-fish-bearing stream; therefore, no construction scheduling to avoid interference with fisheries is required. Best management practices, such as silt curtains or hay bales, will be employed to ensure sediment does not enter the off-site wetland and stream. Please see the site plan drawings for additional information on best management practices to be used and their locations.

- f. A description of protective measures that will be undertaken, such as siltation curtains, compost berms and other siltation prevention measures, and scheduling the construction activity to avoid interference with wildlife and fisheries rearing, nesting or spawning activities.*

The off-site stream is a non-fish-bearing stream; therefore, no construction scheduling to avoid interference with fisheries is required. Best management practices, such as silt curtains or hay bales, will be employed to ensure sediment does not enter the off-site wetland and stream. Please see the site plan drawings for additional information on best management practices to be used and their locations.

- g. An analysis of the impact that the amount of development proposed would have on the sensitive area and the sensitive area buffer.*

While the proposed development would occur within a sensitive area, the current on-site wetland provides little function due to the small size and high percentage of invasive plant species. The portion of the off-site wetland and stream buffer that occurs on-site currently provides little function, and it is also dominated by invasive species. The proposed development will remove invasive plant species and replant the area outside of the development footprint with native trees and shrubs. Replacement of invasive plant species with native plants would improve habitat functions of the buffer. Thus, the proposed development will not adversely affect fish, wildlife, or their habitat.

- h. How the proposal mitigates for impacts to the critical areas and buffers.*

The proposed disturbance area is 2,871 square feet, the maximum square-footage allowed for the 5,743-square-foot property. The proposed development includes no lawn and specifies the enhancement of the remaining sensitive area buffer through plantings of native vegetation. The proposed mitigation is described in Sections 2.0 and 3.0, below.

- i. How the proposal minimizes to the greatest extent possible net loss of critical area functions.*

The surrounding area is composed of single-family residences on steeply sloped terrain. The property is situated on a very steep (approximately 45%) slope. The existing buffer is providing some function, but there is opportunity for it to function more effectively. While there are established native trees, it is lacking strata, as there is limited native shrub layer, no groundcover layer, and the buffer contains invasive species. Also, like in many urban areas in the Northwest, the trees are almost exclusively deciduous, which are early successional species; this means that these species are shorter-lived and typically give way to later successional species, which are typically conifers.

The proposed enhancement would occur within the property, outside of the development footprint (see Section 3.0). The following mitigation actions are proposed

to increase function of the buffer, and ensure site longevity, ensuring there is no net loss of critical area function.

- Removal of invasive and non-native species, such as Himalayan blackberry.
- Installation of native plants.
 - A native shrub understory is currently limited throughout the site. Its addition will provide habitat for birds and small mammals.
 - No conifers exist within the current buffer. Many urban sites have only deciduous trees, which are typically earlier successional species. Adding conifers will allow the site to mature and last into the future.
 - Greater density of native plants will provide more erosion control for the hillside.

- j. *Whether the improvement is located away from the sensitive area and the sensitive area buffer to the greatest extent possible.*

As stated above, the majority of the property is within the sensitive area buffer. There is no location within the property that would put the proposed development outside of a sensitive area. The proposed house is shifted as far west as possible, placing it farther away from the off-site sensitive areas. Thus, the proposed project is located as far away from the sensitive area to the greatest extent possible.

- k. *Such other information or studies as the Planning Official may reasonably require.*

At this time, no other information or studies have been requested by the Planning Official.

KZC 90.180.5: Decisional Criteria

- a. *The following land uses may be proposed within a reasonable use exemption:*

- 1) *Residential Zones – one (1) single family dwelling*

The project property is within a residential zone, and a single-family dwelling is proposed.

- 2) *Commercial or Office zones:*

These requirements do not apply.

- b. *There is no feasible alternative to the proposed activities and uses on the subject property, including reduction in size, density or intensity, 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 economic use with less adverse impacts to the critical area and buffer;

As stated previously, the site is undeveloped, within residential zoning. The only reasonable use of the property is the construction of a single-family residence. The average home footprint on the street is 2,600 square feet. The proposed development has reduced the size of house footprint to the maximum extent practicable, has created a disturbance area less than 50% of the lot, and has proposed a layout that avoids all direct impacts to wetlands. There is no optional reasonable use that would allow a reasonable economic use of the property with less adverse impacts. Thus, this criterion is met.

- c. Unless the applicant can demonstrate unique circumstances related to the subject property, the amount of site area that will be disturbed by structure placement and all land alteration associated with the proposed development activity, including but not limited to land surface modification, utility installation, decks, driveways, paved areas, and landscaping, shall not exceed the following limits:*

- 1) If the subject property contains 6,000 square feet of area or less, no more than 50 percent of the site may be disturbed.*

The project property contains approximately 5,743 square feet of area, and so this regulatory limit applies. Approximately 2,872 square feet (or 50%) of the project parcel will be designated a protected non-disturbance area. Therefore, 50% of the parcel will be disturbed due to project actions.

- 2) If the subject property contains more than 6,000 square feet but less than 30,000 square feet, not more than 3,000 square feet may be disturbed.*

This regulation does not apply.

- 3) For the subject property containing 30,000 square feet or more, the maximum allowable site disturbance shall be between 3,000 square feet and 10 percent of the lot area, to be determined by the City on a case-by-case basis.*

This regulation does not apply.

- 4) The amount of allowable disturbance shall be that which will have the least impact on the critical area and the critical area buffer given the characteristics and context of the subject property, critical area, and buffer.*

The amount of disturbance proposed is the minimum amount required for reasonable use of the property. The proposed development has been designed to

minimize unavoidable impacts to the critical area and critical area buffer to the maximum extent feasible.

- 5) *Public improvements within the right-of-way required by Chapter 110 KZC, (for example, required curb, gutter and sidewalk improvements), are not counted in the maximum allowable area of site disturbance. The City shall allow or require modifications to the public improvement standards that minimize the impact to the critical area and buffer and any impacts associated with required public improvements shall be mitigated by the applicant.*

As no public improvements within the right-of-way have been required by the City, this regulation does not apply.

- 6) *The portion of a driveway located within an improved right-of-way is not counted in the maximum allowable area of site disturbance. However, a driveway or any other private improvement located in an unimproved right-of-way shall be counted in the maximum allowable area of site disturbance.*

As the driveway will be located on the parcel, this regulation does not apply.

- d. *The proposal is compatible in design, scale and use with other legally established development in the immediate vicinity of the subject property in the same zone and with similar critical area site constraints.*

The proposed house is compatible in design with adjacent single-family homes and is in fact smaller in scale than the adjacent single-family homes to avoid impacts to critical areas. Thus, this criterion is met.

- e. *The proposal utilizes to the maximum extent possible innovative construction, design, and development techniques that minimize to the greatest extent possible net loss of critical area functions and values, including pin construction, vegetated roofs, and pervious surfaces.*

The proposed house has utilized innovative construction and design to minimize to the greatest extent possible net loss of critical area functions and values, including pin construction, vegetated roofs, and pervious surfaces. In addition, the area outside of the disturbance area will be enhanced by removing invasive species and planting native trees and shrubs, thus further reducing impacts to critical area functions. Thus, this criterion is met.

- f. *The proposed development does not pose an unacceptable threat to the public health, safety, or welfare on or off the subject property.*

The proposed development does not pose an unacceptable threat to the public health, safety, or welfare on or off the subject property. Thus, this criterion is met.

- g. The proposal meets the mitigation, maintenance, and monitoring requirements of this chapter.*

Sections 3.0 through 6.0 describe the mitigation, maintenance, and monitoring and meets requirements of this chapter. Thus, this criterion is met.

- h. The proposed development is on a lot meeting the criteria of KZC 115.80, Legal Building Site.*

The lot meets the criteria of KZC 115.80. Thus, this criterion is met.

- i. The inability to derive reasonable use is not the result of the applicant's actions or that of previous property owners, such as by altering lot lines pursuant to Chapter 22 KMC that results in an undevelopable condition;*

The inability to derive reasonable use of the property is from natural conditions and is not the result of the applicant's actions or that of previous property owners. Thus, this criterion is met.

The granting of the exception will not confer on the applicant any special privilege that is denied by this chapter to other lands, buildings, or structures under similar circumstances.

The applicant understands that the granting of the exception will not confer on the applicant any special privilege that is denied by this chapter to other lands, buildings, or structures under similar circumstances. Thus, this criterion is met.

2.0 PROPOSED MITIGATION

The proposed site plan has been revised to avoid all impacts to the on-site Wetland B. As such, no wetland mitigation is proposed. However, the proposed development will impact a portion of the Wetland B buffer, as shown in Figure 2 and described previously. The buffer impacts will be mitigated as described in Section 3.0 of this plan. Additionally, the on-site Wetland B will be improved through wetland enhancement actions, also described in Section 3.0.

3.0 WETLAND AND VEGETATED BUFFER ENHANCEMENT PLAN

The development will result in more than 1,000 square feet of total new net impervious area; thus, the wetland buffer must meet the following vegetation standards described in KZC 90.130. (Note: The code is cited verbatim [and italicized] with responses [not italicized] interspersed.)

- a. Native cover of at least 80% on average throughout the buffer area. Additionally, the first two of the following strata of native plant species each must compose of [sic] at least 20% areal cover, and the third may compose no more than 20% areal cover:*

- 1) Multi-age forest canopy (combination of existing and new vegetation);*
- 2) Shrubs; and*

- 3) *Woody groundcover (such as kinnikinnick, salal and sword fern) or unmowed herbaceous groundcover;*

During the site visit on August 5, 2019, the wetland buffers did not have at least 80% cover of native vegetation, with a forested canopy and shrub layer each exceeding 20%. Additionally, the forest canopy contains a single-age forest canopy; thus, the buffer does not meet this criterion.

- b. At least three (3) native species each making up a minimum of 10% coverage (for diversity);*

Currently only 2 native species, red alder and red-osier dogwood, exceed the 10% coverage; thus, this criterion is not met.

- c. Less than 10% noxious weeds cover using King County weed list and permanent removal of all knotweed; and*

Currently, Himalayan blackberry and Japanese knotweed each make up approximately 20% of the buffer; thus, this criterion is not met.

- d. Removal of lawn and any illegal fill as determined by the City.*

Currently there is no lawn or illegal fill within the buffer; thus, this criterion is met.

As previously stated, the proposed site plan revisions avoid all impacts to on-site Wetland B, and half of the 5,743-square-foot parcel—approximately 2,872 square feet—will be designated a non-disturbance area. Within this non-disturbance area, the on-site Wetland B as well as the on-site buffers for both Wetland A, Wetland B, and the unnamed creek will be enhanced through the restoration actions detailed further in this section.

3.1 Grading and Invasive Species Removal

Throughout the 2,872-square-foot, non-disturbance and wetland- and buffer-enhancement area, invasive species such as Himalayan blackberry and Japanese knotweed will be removed as part of the regrading of the fill pile that will be required as part of the project. The fill pile must meet a 1:1 factor of safety. To obtain this safety factor, the fill pile will be regraded at 3:1 slope. KZC 90.180.B.5.c, the location of the fill pile within the wetland and stream buffer and the required regrading qualifies as a unique circumstance which will result in land disturbance (i.e., regrading) in order to meet factors of safety and be revegetated to a higher standard than the existing conditions. Since less than 50% of the site will be disturbed, the relevant conditions of KZC 90.180.B.5.c are met.

The regrading will remove all invasive species within the enhancement area, include much of the root zone.

3.2 Planting Plan

The following planting schedule is proposed for the 2,872-square-foot mitigation area so that the on-site wetland and stream buffers will comply with the vegetation standards described in KZC 90.130. The planting schedule will also enhance vegetation within Wetland B. Based on King County's mitigation plant specifications for plant spacing of forested buffers and scrub-shrub wetlands, a total of 180 native plants must be present within the total mitigation area (i.e., wetland/stream buffer enhancement area and wetland enhancement area).. See Table 1 below for the proposed planting schedule.

Table 1. Planting Schedule

Common Name	Scientific Name	Container Size	Spacing (feet OC)	Quantity*
Wetland Buffer Planting Area (approximately 2,572 square feet)				
Western red-cedar	<i>Thuja plicata</i>	2 gallon	9	14
Pacific dogwood	<i>Cornus nuttallii</i>	2 gallon	9	14
Salal	<i>Gaultheria shallon</i>	2 gallon	6	13
Nootka rose	<i>Rosa nutkana</i>	2 gallon	6	14
Red-flowering currant	<i>Ribes sanguineum</i>	2 gallon	6	13
Ocean-spray	<i>Holodiscus discolor</i>	2 gallon	6	13
Evergreen huckleberry	<i>Vaccinium ovatum</i>	2 gallon	6	13
Creeping Oregon grape	<i>Mahonia repens</i>	2 gallon	6	13
Bleeding heart	<i>Dicentra formosa</i>	2 gallon	4	20 (in clumps of 3-5)
Sword fern	<i>Polystichum munitum</i>	4-inch pot	4	18
Western red cedar	Thuja Plicata	5 gallon	10	7

Wetland Planting Area (approximately 300 square feet)				
Nootka rose	<i>Rosa nutkana</i>	2 gallon	6	8
Common camas	<i>Camassia quamash</i>	4-inch pot	4	10 (in clumps of 3-5)
Showy fleabane	<i>Erigeron speciosus</i>	4-inch pot	4	10 (in clumps of 3-5)
TOTAL				180

* Quantities are based on 2,872 square feet of total planting area and plants installed based on square pattern.

3.3 Mulching

At least 4 inches of suitable mulch will be placed around plants in a 24-inch diameter circle around the plant for weed control. Mulch will be placed so that the plant root systems will not come in contact with mulch.

3.4 Fencing and Signage

A split-rail fence will be installed along the west side of the mitigation area. One “native growth protection” sign will be placed along the fence. Figure 2 shows the location of fencing and signage.

4.0 PERFORMANCE STANDARDS

The objective of the vegetated buffer is to comply with KZC 90.130. Monitoring will be conducted yearly for a period of 5 years to determine if the buffer is on a trajectory to meeting KZC 90.130. The success criteria for the following performance standards are summarized in Table 2.

Table 2. Summary of Success Criteria

Performance Standard	Success Criteria					
	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Plant Survival (%)	NC	100%	80%	NC	NC	NC
Native Species (% cover)	<u>NC</u>	<u>NC</u>	<u>NC</u>	<u>50%</u>	<u>NC</u>	<u>80%[±]</u>
Invasive Species* (% cover)	NC	≤10%	≤10%	≤10%	≤10%	≤10%
Native Plant Diversity						<u>3 native species comprising >10% ea.</u>
* Source: King County NWCB 2021 (or latest version) PS Performance standard NC No criterion may be used as baseline information. [±] 2 out of 3 tree, shrub, or groundcover must be at least 20% and at least 3 native species each comprise at least 10% cover.						

4.1 Plant Survival

Planted vegetation and natural recruits will be monitored for survival for 3 years (Year 1, Year 2, and Year 3). Monitoring will not occur after Year 3 because it is expected that plant growth and the amount of natural recruits will make identifying planted vegetation extremely difficult. Monitoring will occur once in the spring after deciduous plants have flowered or leafed-out, and once in the fall before deciduous leaves have dropped for easier identification, though detailed data will only be collected in the fall (see Section 5). Table 2 shows the success criteria for plant survival.

Contingency Measure

Plant survival could be negatively affected by improper installation, diseased or infested plants, inadequate watering, or extreme weather. If more than 25% of new plantings die in a single year, the cause of the high losses will be investigated and corrected before dead plants are replaced. Dead plant material will only be removed after that year's scheduled monitoring.

4.2 Native Plant Cover

Planted vegetation and natural recruits will also be monitored for percent cover for 2 years (Year 3 and Year 5). Monitoring will occur in the fall before deciduous leaves have dropped for easier identification, (See Section 5). Table 2 shows the success criterion for percent cover for each year of monitoring.

Contingency Measure

Plant growth, as determined by percent cover, could be negatively affected by improper installation, diseased or infested plants, inadequate watering, or extreme weather. If the percent cover success criterion is not met, the cause will be investigated and corrected. Correction measures may include increased watering, soil amendments, fertilizing, or revision of planting palette and additional plantings.

4.3 Invasive Species Cover

The percent cover of area dominated by invasive species will be monitored for 5 years (Year 1, Year 2, Year 3, Year 4, and Year 5). Monitoring will occur during the growing season after deciduous plants have flowered or leafed-out for easier identification, though detailed data will only be collected in the fall (see Section 5). Table 2 shows the success criterion for invasive species cover for each year of monitoring.

Contingency Measure

Dominance by invasive species could result from the disturbance of the soil, a high mortality rate of the native planted vegetation, or colonization by windborne seeds. To reduce colonization by invasive species, a site maintenance plan is described in Section 6.0. If more than 25% of area is covered by invasive species, the cause of infestation will be investigated and corrective actions will be taken before weeds are removed. Contingency measures could include increasing the frequency of weeding until native vegetation can grow and dominate the area, or increasing the density of native vegetation with additional plantings.

4.4 Native Plant Diversity

Planted vegetation and natural recruits will also be monitored for diversity for 1 year (Year 5). Monitoring will occur in the fall before deciduous leaves have dropped for easier identification, (See Section 5). Table 2 shows the success criterion for native plant diversity for each year of monitoring.

Contingency Measure

Plant diversity, as determined by percent cover, could be negatively affected by improper installation, diseased or infested plants, inadequate watering, or extreme weather. If the percent cover success criterion is not met, the cause will be investigated and corrected. Correction

measures may include increased watering, soil amendments, fertilizing, or revision of planting palette and additional plantings.

5.0 MONITORING

A monitoring period of 5 years is proposed to ensure that the vegetated wetland buffer meets the criterion of KZC 90.130. A Year 0 (or “as-built” report) will serve as the baseline for future monitoring events.

5.1 Year 0 Monitoring

Data collected in Year 0 will provide the baseline for the success criteria for Years 1 through 5 monitoring. There are no success criteria associated with Year 0.

Confluence will use a global positioning system (GPS) to record the location of each installed plant. An as-built map of installed plants will then be used in subsequent monitoring events to determine plant survival.

5.2 Yearly Monitoring

Following are the methods to occur during the annual fall monitoring.

5.2.1 *Plant Survival*

Interim and final success will be defined by meeting the success criteria shown in Table 2. Plant survival will be recorded within the mitigation area by comparing the number and species of plants recorded on the as-built drawings to site conditions at the time of monitoring. The percent survival is calculated by dividing the number of plants (by species) identified as alive during the monitoring event by the number of plants (by species) identified on the as-built plan. Table 2 summarizes the success criterion for plant survival.

Monitoring will occur during the growing season after deciduous plants have flowered or leafed-out for easier identification.

It is the expectation that all plants be monitored for survival for 3 years, so if plants are installed after Year 0, then those plants will be monitored for survival for 3 consecutive years, which may require monitoring to occur after Year 3.

5.2.2 *Percent Cover*

Interim and final success will be defined by meeting the success criteria for percent cover of invasive species performance standards shown in Table 2. The percent cover method will be used to record the percent cover of trees and shrubs within permanent circular plots 10 feet in diameter. The location of each circular plot along the transect will be determined during the

Year 0 monitoring. Each plot must be at least 20 feet apart. In each circular plot, the percent cover of herbaceous species, including bare ground, will be estimated and recorded.

5.2.3 *Plant Diversity*

Plant diversity will be calculated by determining if at least 3 native plant species, each making up a minimum of 10% coverage, is present within the mitigation area.

5.2.4 *Site Photographs*

At each of the photo points, a fixed-lens digital camera will be used to take photographs, either a panoramic photo or one at every 90 degrees of the compass.

5.3 Reporting

Confluence will prepare 6 reports over a 5-year period, including one Year 0 report and 5 annual progress reports.

5.3.1 *Year 0 Report (As-Built)*

The Year 0 report and as-built drawing will be completed within approximately 30 days after buffer enhancement site construction is completed. One copy of the report will be provided to the City. The following will be included in the report:

- actual planting schedule (density, container size);
- coordinates of actual location of transects and photo points;
- location of transects and photo points depicted on a figure;
- location of installed plants depicted on a figure; and
- description of changes from original site design.

5.3.2 *Annual Progress Reports*

For each fall monitoring event, Confluence will prepare a report. One copy of each report will be provided to the City. The following will be included in each report:

- data tables;
- species lists;
- date of survey;
- a narrative description of methods and contingency measures taken;
- identification of planted and naturally-recruited trees and shrubs;
- interpretation of results;
- recommendations for additional plantings, if needed;
- recommendations for additional maintenance, if needed; and
- color photos.

All annual progress reports will be submitted within approximately 60 days of conducting the monitoring survey. Monitoring reports would be submitted for Years 1, 2, 3, 4, and 5 documenting success of meeting the performance criteria listed in Table 2.

6.0 MAINTENANCE

Maintenance activities will include, but are not limited to, vegetative maintenance (including watering, replanting, weed control around plantings, control of invasive species) and general maintenance.

6.1 Watering

Since plant installation is planned to occur during fall, watering is not scheduled, other than at the time of plant installation. Monthly watering may be necessary during the first, second, and third summers after plant installation to assist survival and establishment of plantings. If replacement plants are installed, a similar watering schedule would occur.

How watering occurs will be determined by the contractor overseeing the maintenance of the enhancement area. For example, watering could occur via water truck or the installation of an irrigation system.

6.2 Weeding

Weeding around trees and shrubs will be important during the growing seasons to ensure establishment and prevent stress to the plants from competition for resources. Weeding will occur at least annually. While Japanese knotweed and Himalayan blackberry are the primary weeds currently in the enhancement area, all invasive species will be weeded. This schedule of weeding will occur until the plants have established themselves and outcompete the invasive species.

Prior to installation of native plants, the site will be sprayed with an herbicide to kill invasive species. Herbicides will only be applied at the rates and for the site conditions specified on the herbicide label. Herbicide applications will follow requirements set forth by the City of Kirkland (Kirkland 2019). Following the initial herbicide application, removal methods may include additional, targeted spraying and/or hand removal methods.

6.3 Mulching

Mulching may occur around shrub and tree plantings to help retain water and exclude weeds. Mulch will be placed when plants are installed and additional mulch may be placed as needed throughout the monitoring period. Mulch around plantings will be no thicker than 3 to 4 inches.

6.4 Dead Plant Removal

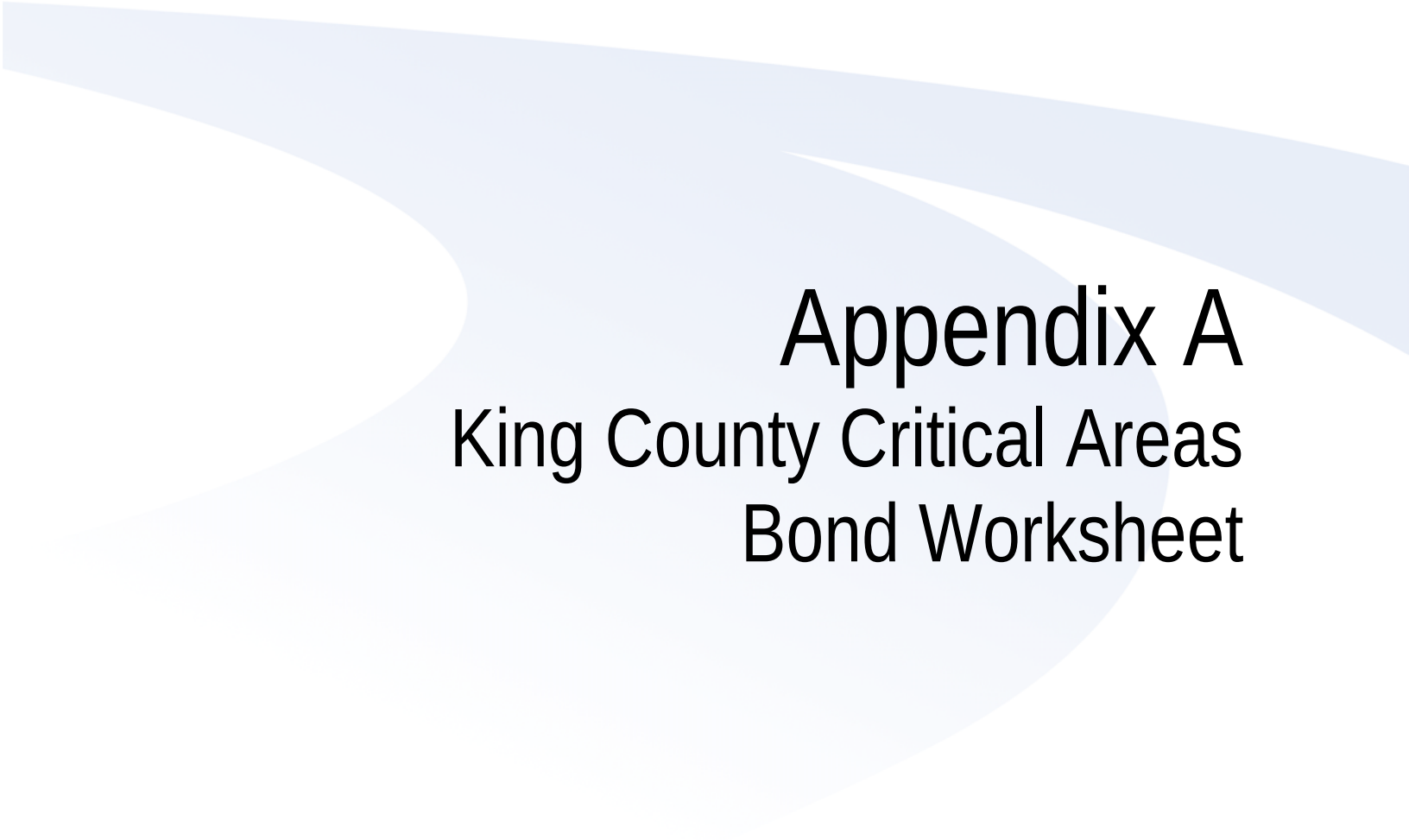
Dead plant material will only be removed after scheduled monitoring. This will allow for the accurate assessment of planting success needed for the monitoring program and to aid in determining why the plants did not survive. Replacement planting will be detailed in a section of the monitoring report for the year.

7.0 FINANCIAL SECURITY

KZC 90.130 states that a performance or maintenance security may be required in the amount and form as the Planning Official deems necessary to assure that all work or actions are satisfactorily completed and maintained in accordance with the approved plans, specifications, and permit or approval requirements. Per KZC 90.165, the King County Critical Areas Bond worksheet was used to determine the amount of required financial security to be \$15,285.67. This Critical Areas Mitigation Bond worksheet is attached in Appendix A.

8.0 REFERENCES

- Confluence (Confluence Environmental Company). 2019. 11662 91st Place NE 2nd revised critical areas study. Prepared for Artoush Fanaiyan, Bellevue, Washington by Confluence Environmental Company, Seattle, Washington.
- Hruby, T. 2014. Washington State wetland rating system for western Washington, 2014 update. Washington State Department of Ecology, Olympia. Publication # 14-06-029.
- King County NWCB (Noxious Weed Control Board). 2021. 2021 King County noxious weed list. King County Department of Natural Resources and Parks Water and Land Resources Division, Seattle, Washington.
- Kirkland (City of Kirkland). 2018. City of Kirkland GIS. Available at: http://maps.kirklandwa.gov/Html5Viewer_24/ (accessed on May 15, 2018).
- Kirkland. 2019. Managing weeds and pests. Available at: <https://www.kirklandwa.gov/Assets/Kirkland+Green/Kirkland+Green+PDFs/Integrated+Pest+Management.pdf> (accessed August 5, 2019).
- USDA (U.S. Department of Agriculture) and USDI (U.S. Department of Interior). 1999. Sampling Vegetation Attributes. Interagency Technical Reference. BLM Technical Reference BLM/RS/ST-96/002+1730. Available at: http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1044175.pdf (accessed June 10, 2016).
- ZK Architecture, LLC. 2022. Site Plan, 11662 91st Place NE, Kirkland, WA. Prepared for Artoush Fanaiyan, Kirkland, Washington, by ZK Architecture, LLC, Kirkland, Washington.



Appendix A

King County Critical Areas Bond Worksheet


King County

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

Critical Areas Mitigation Bond Quantity Worksheet

C24 09/09/2015

Project Name: 11662 91st Place NE Mitigation **Date:** 1-Dec-21 **Prepared by:** Kerrie McArthur

Project Number: **Project Description:** Mitigate for single-family residential development through 3,300 sqft of wetland and wetland buffer enhancement.

Location: 11662 91st Place NE, Kirkland, WA 98034 **Applicant:** Artoush Fanaiyan **Phone:**

PLANT MATERIALS (includes labor cost for plant installation)

Type	Unit Price	Unit	Quantity	Description	Cost
PLANTS: Potted, 4" diameter, medium	\$5.00	Each	58.00	Native Herbaceous Species: bleeding heart, sword fern, common camas, showy fleabane	\$ 290.00
PLANTS: Container, 2 gallon, medium soil	\$20.00	Each	115.00	Native Tree and Shrub Species: Western red-cedar, pacific dogwood, pacific madrone, Salal, nootka rose, red-osier dogwood, red flowering currant, oceanspray, evergreen huckleberry, creeping Oregon grape.	\$ 2,300.00
TOTAL					\$ 2,590.00

INSTALLATION COSTS (LABOR, EQUIPMENT, & OVERHEAD)

Type	Unit Price	Unit	Quantity	Description	Cost
Irrigation - temporary	\$3,000.00	Acre	0.07	Temporary irrigation across the 3,300 sq.ft. mitigation area.	\$ 198.00
TOTAL					\$ 198.00

EROSION CONTROL					
ITEMS	Unit Cost	Unit			Cost
Fence, silt	\$1.60	LF	65.00	Silt fence will be placed along the Disturbance Limit to ensure that no project activities impact the mitigation area.	\$ 104.00
Mulch, by hand, wood chips, 2" deep	\$3.25	SY	319.50	Wood chick mulch installed over the entire mitigaion area.	\$ 1,038.38
				TOTAL	\$ 1,142.38
GENERAL ITEMS					
ITEMS	Unit Cost	Unit			Cost
Fencing, split rail, 3' high (2-rail)	\$10.54	LF	65.00	Split Rail Fence will be placed along the Disturbance Limit after construction to delineate and protect the mitigation area.	\$ 685.10
Signs, sensitive area boundary (inc. backing, post, install)	\$28.50	Each	1.00		\$ 28.50
				TOTAL	\$ 713.60
OTHER			(Construction Cost Subtotal)		
			\$ 4,643.98		
ITEMS	Percentage of Construction Cost	Unit			Cost
Mobilization	10%	1			\$ 464.40
Contingency	30%	1			\$ 1,393.19
				TOTAL	\$ 1,857.59
MAINTENANCE AND MONITORING					
NOTE: Projects with multiple permit requirements may be required to have longer monitoring and maintenance terms. This will be evaluated on a case-by-case basis for development applications. Monitoring and maintance ranges may be assessed anywhere from 5 to 10 years.					
Maintenance, annual (by owner or consultant)					
Larger than 1,000 sq. ft. but less than 5,000 sq.ft. of wetland or buffer mitigation	\$ 180.00	Page 2 of 3 EACH	20.00	(4hr @\$45/hr); 4 times/year for 5 years	\$ 3,600.00

Monitoring, annual (by owner or consultant)					
Larger than 1,000 sq.ft. but less than 5,000 wetland or buffer mitigation	\$ 720.00	EACH	5.00	(8 hrs @ 90/hr) for 5 years	\$ 3,600.00
				TOTAL	\$ 7,200.00
				Total	\$13,701.57





April 6, 2022

Jennifer Anderer
City of Kirkland Planning and Building Department
Kirkland, WA 98103
Via email: janderer@kirklandwa.gov

**Re: Critical Areas Review of 11662 91st Place NE, #SAR19-00591,
Updated Site Plan**

The Watershed Company Reference Number: 170622.53

Dear Jennifer:

Thank you for requesting peer review of the latest submittal for the property at 11662 91st Place NE (parcel # 3754500040). This letter summarizes my review of the following updated critical area documentation:

- December 1, 2021. *11662 91st Place NE Final Mitigation Plan*. Prepared by Confluence Environmental (Confluence).
- August 25, 2020. *Fanaiyan Goat Hill 2 House, new construction, 11662 91st Pl. NE, Kirkland, WA 98034*. (Site Plan) By ZK Architecture.

This project is vested to the 2017 Kirkland Zoning Code (Ordinance O-4551), Chapter 90 (Personal Comm. With City Planner Jennifer Anderer, 4/20/2021).

For this review, documentation from the prior peer reviews of this site were referenced.

Peer Review Findings

The Mitigation Report and Site Plan were reviewed to assess documented changes. A few key items require follow up to clarify site plan edits and associated mitigation plan changes.

Impact Assessment

Sewer Line

The site plan was updated to include a sanitary sewer line through wetland buffer in the northeast quadrant of the property. The updated Site Plan includes TESC sheet 1 of 4; it shows a disturbance totaling approximately 104 square feet (52-feet long by 2-feet wide) for installation of the sewer line. No easement for the sewer line is identified.

Wetland buffer impacts were not updated to account for the sewer line. Sewer line impacts for pipe installation are presumed to be temporary. However, typically a maintenance easement is established, and planting is restricted within that easement to avoid damage to the utility line from tree roots. Commonly utility easements extend 10-15 feet on either side of the utility line. If trees cannot be planted in this area, that should be noted on the mitigation plan. Additionally, the proposed sewer line is within driplines of two existing significant trees. Those trees are not marked for removal. An arborist should verify that those trees can sustain the proposed root damage and are suitable for retention.

House

The Mitigation Report also documents that the house footprint was reduced by three square feet, from 2,868 to 2,871 square feet. Such a small change is not evident on the plans.

Mitigation Proposed

Section 3.2 of the Mitigation Report states that the enhancement planting area was reduced by 158 square feet, from 3,030 to 2,872 square feet. This reduction is not evident in the hatched enhancement area on the provided site plan (Sheet A 03). The proposed planting has been reduced based on this smaller enhancement area. Although the proposed plant schedule is appropriate for a 2,872 square foot area, the reason and location(s) of the 158 square feet reduction is unclear. It is not itemized in the submittal. Otherwise, the site plan does not differ significantly from the previous plan and enhancement planting covers the remainder of the property.

Section 4.0 Performance Standards (Table 2), a note needs to be added to address knotweed. Tolerance for knotweed is zero percent. Other noxious weeds, such as non-native blackberry, must be maintained at less than 10 percent cover.

In our experience the proposed bleeding-heart groundcover is difficult to establish. Heartier groundcover plants, like kinnikinnick are recommended.

Bond Quantity Worksheet

The plant quantities listed are higher than shown in the Mitigation Report, Table 1 – Planting schedule.

For monitoring, please increase the quantity to six to include the as-built documentation.

The King County form is very old and does not reflect current unit pricing, especially considering recent inflation rates. Per Kirkland Zoning Code section 90.165.4, the amount can be based on the King County form but “The City may request changes in unit pricing if the worksheet is found to be out of date with respect to current market prices.” Therefore, I recommend the unit prices be researched and revised accordingly.

Other items

The code compliance section of the submitted Mitigation Report lists KZC 90.180.4.e twice as both e and f. This results in a mislabeling of the code excerpts that follow it.

Additionally, as noted previously, the City requires recorded critical area easements or tracts for critical area protection in perpetuity (KZC 90.210).

Recommendations

The following updates or revisions are recommended to demonstrate compliance with City of Kirkland critical area regulations.

- Revise the mitigation plan report and associated mitigation plan to address the items above:
 - o Consolidate all relative mitigation details into one separate plan set for ease of review, installation, and monitoring activities. Relevant details would include: existing conditions, impact calculations, planted areas with plant schedule, soil amendments, habitat structures, and notes outlining performance standards and monitoring and maintenance requirements.
 - o Correct the code excerpt typo in the code compliance section.
 - o Have an TRAQ certified arborist review the retention of two trees with driplines/roots in the sewer line area.

- o Review sewer line easement requirements, planting restrictions, and potential tree impacts associated with the proposed sewer line.
 - o Document and quantify temporary and permanent impacts or restrictions associated with the new proposed sewer line.
 - o Update enhancement mitigation area figures and plant schedule as needed to capture plan revisions.
 - o Update the invasive plant cover performance standard to note that there is zero-tolerance for knotweed. The 10 percent cover threshold applies to the other invasive weeds, such as non-native blackberry.
- Bond Quantity Worksheet
 - o Update bond quantity worksheet to include any soil amendment and the Year-0 as-built report in the monitoring quantity.
 - o Update the plant costs to match the reported plant schedule (post-revision).
 - o A pricing update to the submitted BQW is also recommended to comply with KZC 90.165.4.
- Ensure recording of a critical area easement or tract per KZC 90.210.

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

Sincerely,



Nell Lund, PWS
Senior Ecologist



April 27, 2022

Jennifer Anderer
City of Kirkland
123 5th Avenue
Kirkland, WA 98033

Re: Response to April 6, 2022, Comments Regarding Critical Areas Review of 11662 91st Place NE, #SAR19-00591, Updated Site Plan

Dear Jennifer:

This letter has been prepared to address comments in The Watershed Company's (TWC's) review letter, dated April 6, 2022 (TWC 2022), and summarize related discussions from our April 22, 2022, virtual meeting. It was agreed upon during our meeting that this response letter addressing TWC's comments would suffice as an amendment to the final mitigation plan (Confluence 2022) and a revised mitigation plan would not be required.

TWC's comment letter focused on a few key items, namely the sewer line, changes to the house footprint, and the planting schedule described in the mitigation plan (as it relates to the sewer line).

IMPACT ASSESSMENT

Sewer Line

TWC stated that wetland buffer impacts were not updated to account for the sewer line; however, as discussed in the mitigation plan and shown in Figure 2 of the mitigation plan, the sewer line is within the area classified as disturbance area and is therefore included in the wetland buffer impact calculations. In fact, the footprint of the house was reduced so that the disturbance area remained at 50% of the lot size (as required under Kirkland Zoning Code [KZC] 90.180.5.c). The sewer line will be a hand dug trench; thus, the width of the disturbance area associated with the sewer line is approximately 2 feet. Because this is a private sewer line, within a designated disturbance area, a maintenance easement is not required.

TWC was likely unaware of the multiple iterations of the site and sewer line plans that have been developed in coordination with the City of Kirkland. TWC's comment letter states that there are two trees within the sewer line, these trees were not marked for removal, and an arborist needed to be consulted for trenching within the drip line of these trees. However, as

Ms. Jennifer Anderer
April 27, 2022



explained during our meeting, the trees are being removed as part of the geotechnical requirements to stabilize the steep slopes associated with the fill pile and not being removed for the installation of the sewer line. Thus, there would be no trees within the sewer line route and this comment is error.

House

The house footprint was redesigned and reduced by 3 square feet so that the sewer line could be accommodated within the confines of the disturbance area, as required by KZC 90.180. A 3-square-foot reduction in house footprint cannot be seen at the scale of plans included in the mitigation plan.

MITIGATION PROPOSED

The enhancement area in Figure 2 of the mitigation plan purposefully includes the disturbance area associated with the sewer line. That is because this area will be planted with native herbaceous plants and will therefore be enhanced. The non-disturbance area is the only area that will be subject to the maintenance and monitoring requirements described in the monitoring plan, and as amended in this letter. TWC commented that the non-disturbance area was reduced by 158 square feet; this reduction is due to the requirement to have the sewer line be designated as part of the disturbance area.

Per TWC's comment, the success criteria will be updated to include 0% cover for Japanese knotweed (Table 2).

Table 2. Summary of Success Criteria

Performance Standard	Success Criteria					
	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Plant Survival (%)	NC	100%	80%	NC	NC	NC
Native Species (% cover)	<u>NC</u>	<u>NC</u>	<u>NC</u>	<u>50%</u>	<u>NC</u>	<u>80%[‡]</u>
Invasive Species* (% cover)	NC	≤10%	≤10%	≤10%	≤10%	≤10%
Japanese knotweed [<i>Fallopia japonica</i>] (% cover)	NC	0%	0%	0%	0%	0%
Native Plant Diversity						<u>3 native species comprising >10% ea.</u>
* Source: King County NWCB 2021 (or latest version)						
NC No criterion may be used as baseline information.						
[‡] 2 out of 3 tree, shrub, or groundcover must be at least 20% and at least 3 native species each comprise at least 10% cover.						

Ms. Jennifer Anderer
April 27, 2022



BOND QUANTITY WORKSHEET

We understand TWC comments and that the city will be updating the bond quantity worksheet.

RECOMMENDATIONS

TWC had a series of recommendations. I have provided them below, in italics, followed by our responses.

Revise the mitigation plan report and associated mitigation plan to address the items above:

- *Consolidate all relative mitigation details into one separate plan set for ease of review, installation, and monitoring activities. Relevant details would include: existing conditions, impact calculations, planted areas with plant schedule, soil amendments, habitat structures, and notes outlining performance standards and monitoring and maintenance requirements.*

It is our understanding that this will be a condition of approval. We will prepare a mitigation plan set with the updated information and clarifications discussed in this letter.

- *Correct the code excerpt typo in the code compliance section.*

Since a mitigation plan set will be created rather than revisions to the mitigation plan, this typo will not be corrected.

- *Have an TRAQ certified arborist review the retention of two trees with driplines/roots in the sewer line area.*

Per the discussion above, the sewer line will not cause the removal of any trees. Rather it is the required grading to stabilize steep slopes that results in the removal of the trees. Thus, an arborist review is not applicable.

- *Review sewer line easement requirements, planting restrictions, and potential tree impacts associated with the proposed sewer line.*

This issue was discussed during our meeting. Based on our discussion, it was concluded that since this is a private sewer line within a disturbance area, a sewer line easement is not required.

Ms. Jennifer Anderer
April 27, 2022



- *Document and quantify temporary and permanent impacts or restrictions associated with the new proposed sewer line.*

The sewer line is within the area classified as disturbance area, as shown in Figure 2 of the mitigation plan. The mitigation plan clearly defines and quantifies the disturbance area and non-disturbance area and discusses the enhancement of the non-disturbance area. Thus, we do not believe further clarification is needed.

- *Update enhancement mitigation area figures and plant schedule as needed to capture plan revisions.*

This will be completed as part of the mitigation plan set.

- *Update the invasive plant cover performance standard to note that there is zero-tolerance for knotweed. The 10 percent cover threshold applies to the other invasive weeds, such as non-native blackberry.*

This was updated within this letter and will be included in the mitigation plan set.

Bond Quantity Worksheet

- *Update bond quantity worksheet to include any soil amendment and the Year-0 as-built report in the monitoring quantity.*
- *Update the plant costs to match the reported plant schedule (post-revision).*
- *A pricing update to the submitted BQW is also recommended to comply with KZC 90.165.4.*

Based on City comments and discussions, it is our understanding that the City will be updating the bond quantity worksheet as part of the staff report. Thus, there is no action on our part.

If you have comments or questions, please feel free to contact me.

Respectfully yours,

A handwritten signature in blue ink, appearing to read "Kerrie McArthur", is written over a light blue horizontal line.

KERRIE McARTHUR, PWS, CERP, FP-C
Managing Senior Biologist
206.999.6201
kerrie.mcarthur@confenv.com

Ms. Jennifer Anderer
April 27, 2022



REFERENCES

Confluence (Confluence Environmental Company). 2022. 11662 91st Place NE final mitigation plan. Prepared for Artoush Fanaiyan, Kirkland, Washington, by Confluence, Seattle, Washington.

King County NWCB (Noxious Weed Control Board). 2021. 2021 King County noxious weed list. King County Department of Natural Resources and Parks Water and Land Resources Division, Seattle, Washington.

TWC (The Watershed Company). 2022. Critical areas review of 11662 91st Place NE, #SAR19-00591, updated site plan. Prepared for City of Kirkland, Washington by The Watershed Company, Kirkland, Washington.

Fanaiyan, Artoush_001134\1134.005 - 91st PI NE\Report\Response to 040622 Comments

Jennifer Anderer

From: Jennifer Anderer
Sent: Tuesday, May 08, 2018 5:03 PM
To: 'zbigkonofalski@frontier.com'
Cc: 'artoush76@yahoo.com'
Subject: Legal Lot Status - PIN 3754500040

All,

Please find below the City's analysis of the legal status for PIN 3754500040:

115.80 Legal Building Site

1. General – It is a violation of this code to erect any structure on or to use or occupy any lot or parcel unless that lot or parcel is a legal building site. A lot or parcel is a legal building site if it meets all of the following criteria:
 - a. It was created or segregated pursuant to all applicable laws, ordinances and regulations. - **OK**
 - b. Except as specified in subsection (2) of this section, it meets the allowable minimum lot size established by this code.
- **NOT OK**
 - c. It is either adjacent to, or has a legally created means of access to, a street providing access to the lot or parcel. - **OK**
2. Exception, Detached Dwelling Units – An applicant may build one (1) detached dwelling unit on a lot or parcel regardless of the size of the lot or parcel if:
 - a. The applicant applies for necessary permits to construct the unit within five (5) years of the date the lot or parcel is annexed into the City and the lot or parcel was a lawfully created lot under King County subdivision and zoning laws; or - **NO; this property was annexed on 06/01/2018**
 - b. There is or ever has been a residence on the subject property. At any time, the applicant may remodel, rebuild, or enlarge that one (1) residence; provided, that all other Zoning Code requirements are met; or - **I do not see any evidence of this in any of the historical data available to me**
 - c. The lot size was approved pursuant to all applicable laws, ordinances and regulations; or - **See analysis below**
 - d. The lot lines defining the lot or parcel were recorded in the King County Assessor's Office prior to May 17, 1972, and the lot or parcel has not simultaneously been owned by the owner of a contiguous lot or parcel which fronts on the same right-of-way subsequent to May 17, 1972. - **Data not provided by the applicant**

(Ord. 4408 § 1, 2013; Ord. 3852 § 1, 2002)

[Back to Top](#)

Analysis of 115.80.2.c Criteria

Compliance with Subsection C requires analysis of King County Zoning to show that the “lot size” of the Parcel was approved pursuant to applicable “laws, ordinances, or regulations” before it was annexed by the City:

King County Zoning (1937) – The County tried to enact zoning regulations in 1937 (+/- 10 years after the Juanita Beach Camps subdivision was recorded), but it was deemed unconstitutional due to a lack of Comprehensive Plan.

King County Zoning (1958) – The first lawful zoning code enacted by King County is dated 08/12/1958 which adopted six different residential zones with the smallest permitted lot being 6,000SF (R-6). Since this lot is only 5,743 SF it does not meet any possible residential zoning classification per the County’s 1958 code.

King County (2011) – The zoning in effect when the property was annexed by the City (2011) provides additional guidance toward determining legal lot status. The County enacted code to address those parcels that were created prior to the effective date of zoning by creating certain requirements which can deem legal building sites. For example, the County enacted Ordinance No. 13694 in 1999 (since amended), which is codified as KCC 19A.08.070. Here there are two requirements that the lot must meet to be recognized as a legal building site today:

1. For lots created before October 1, 1972 (which this is), it must be recognized as a separate tax lot by the County Assessor (KCC 19A.08.070(B)(1)(a)(2)). The property cards you supplied for this and the neighboring lots were sufficient in showing that this lot was taxed as its’ own separate lot.
2. For lots created by the separation of multiple lots in a plat recorded prior to June 9, 1937 (such as the Juanita Beach Camps plat) the lot must have been provided with approved sewage disposal, water, or roads prior to January 1, 2000 (KCC 19A.08.070(B)(a)(b)). Based on the City’s research, it is believed that this property meets this requirement with regards to sewage disposal. (See Case Number L98G0014 under the norther parcel PIN 3754500025).

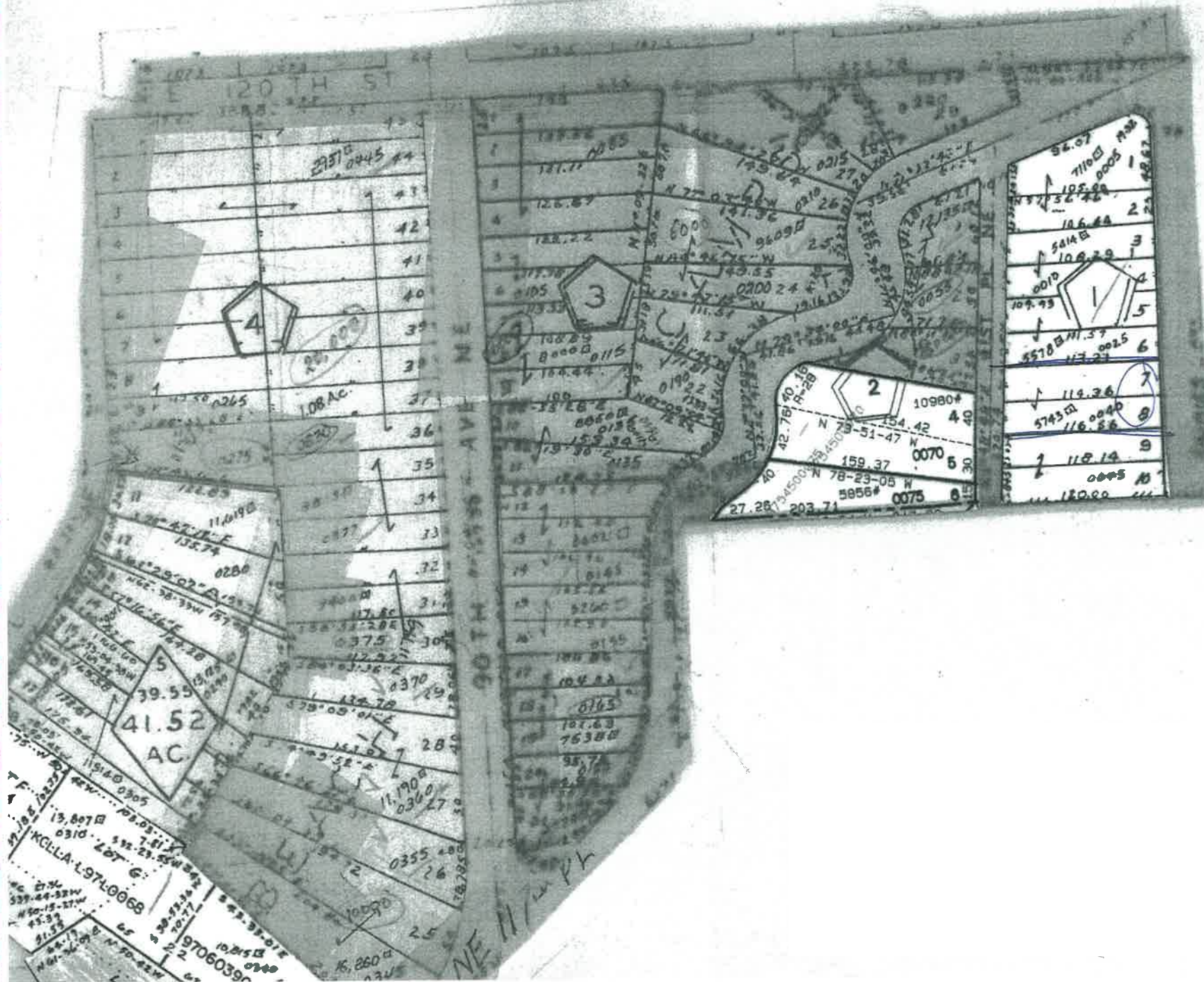
As such, this lot can meet the legal building status due to meeting the amended County regulations listed above.

Note: City research has shown that there is a possible stream critical area to the east of this parcel and significant steep slopes. The applicant should determine if there are any critical area buffers impacting this lot.

Thank you,

Jennifer Anderer | Assistant Planner
Planning and Building Department
City of Kirkland
p: 425.587.3239

Planning Counter hours: 8:00 am – 5:00 pm Monday-Friday; 10:30 am – 5:00 pm Wednesdays only. Located in City Hall at 123 Fifth Avenue, Kirkland, WA 98033.



—JUANITA BEACH CAMPS—



— JUANITA BEACH CAMPS —



DESCRIPTION.

This plot of JUANITA BEACH CAMPS covers and includes all of the following described parcels of land and shorelands, to-wit:

A portion of Government Lot Five (5), Section Thirty (30), Township Twenty-six (26), North, Range Five (5) East, W.M., beginning at the concrete monument marking the northeast corner of said Government Lot Five (5), thence along the east boundary line of said Lot south 2°05'14" west 330.75 feet to the north-east corner of that certain tract of land heretofore conveyed by deed to William J. Carr and recorded in Volume 131 of Deeds, Page 605, Records of King County, Washington, thence along the north boundary line of said Carr tract north 87°14'34" west 358.00 feet to the northwest corner of said Carr tract, thence along the west boundary line of said Carr tract south 87°14'34" west 350.07 feet to the northeast corner of that certain tract of land heretofore also conveyed by deed to William J. Carr and recorded in Volume 139 of Deeds, Page 440, Records of King County, Washington, thence along the north boundary line of said last mentioned Carr tract north 87°14'34" west 100.00 feet to the northeast corner of said last mentioned Carr tract, thence along the west boundary line of said Carr tract south 87°14'34" west 351.31 feet to an intersection with the north boundary line of the plot of JUANITA BEACH CAMPS, thence southwesterly following the curving course of said north boundary line of said plot 87°14'34" west 351.31 feet to a point which is south 6°41'34" east 62.00 feet and north 0°41'34" east 1.55 feet from the concrete monument which marks the southwest corner of said Government Lot Five (5), thence north 6°41'34" east 156.16 feet to a point on the north boundary line of said Government Lot Five (5), said point being south 66°55'26" east 48.00 feet from the northwest corner of said Lot, thence south 66°55'26" east 1340.70 feet to the place of beginning.

Also Lots One (1), Two (2), Three (3) and Four (4) Block Thirty-seven (37), Waterfront Addition, to Kirkland, less portions taken for County Road, and that portion of Block O, LAKE WASHINGTON SHORE LANDS, lying east of a line beginning at the point of intersection of the west line of Lot Four (4), Block Thirty-seven (37), WATERFRONT ADDITION to KIRKLAND, with the north line of said Block O, running thence southerly to a point on the inner Harbor line of Lake Washington, which is the middle point on the south line of said Block O.

All courses and dimensions are as shown on the face of the plot.

All bearings are referred to the meridian of the plot of LAKE WASHINGTON SHORE LANDS.

CERTIFICATE.

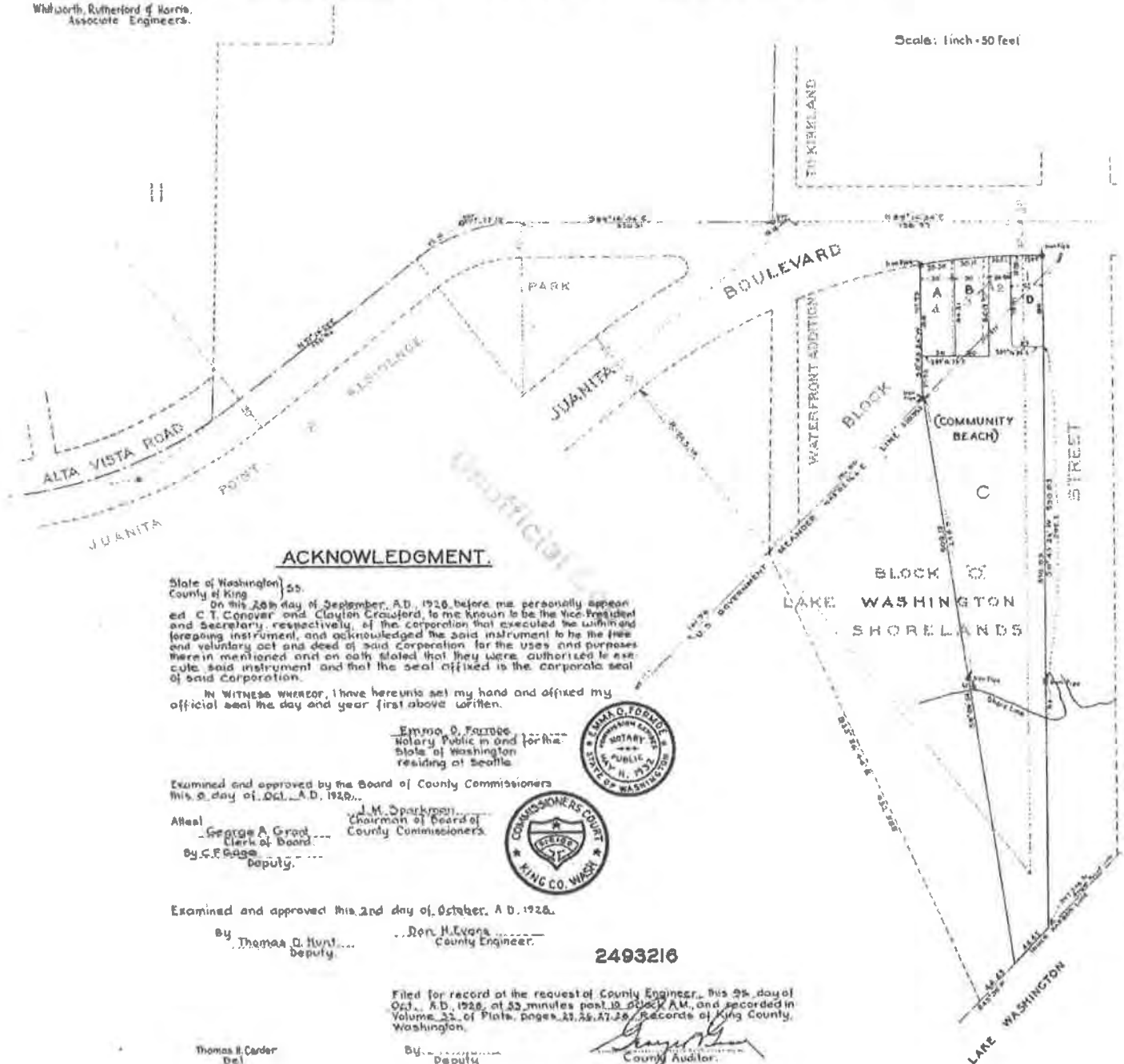
We hereby certify that the plot of JUANITA BEACH CAMPS is based upon an actual survey and subdivision of Section 30, Township 26, North, Range 5 East, W.M., that the distances and courses shown hereon are correct, the monuments have been set and lot and block corners staked upon the ground.

W. H. RUTHERFORD & HARRIS
By M. W. Rutherford.

— JUANITA BEACH CAMPS —

Whitworth, Rutherford & Harris,
Associate Engineers.

Scale: 1 inch = 50 feet



ACKNOWLEDGMENT.

State of Washington) ss.
County of King

On this 20th day of September, A.D. 1928, before me, personally appeared C. T. Conover and Clayton Crawford, to me known to be the Vice-President and Secretary, respectively, of the corporation that executed the within and foregoing instrument, and acknowledged the said instrument to be the free and voluntary act and deed of said corporation for the uses and purposes therein mentioned, and on oath stated that they were authorized to execute said instrument and that the seal affixed is the corporate seal of said corporation.

In Witness Whereof, I have hereunto set my hand and affixed my official seal the day and year first above written.

Emma O. Forde,
Notary Public in and for the
State of Washington
residing at Seattle.

Examined and approved by the Board of County Commissioners
this 20 day of Oct., A.D. 1928.

Attest
George A. Grant,
Clerk of Board
By C. F. Gage,
Deputy.

J. M. Sparkman,
Chairman of Board of
County Commissioners.



Examined and approved this 2nd day of October, A.D. 1928.

By Thomas Q. Hunt,
Deputy.

Don H. Evans,
County Engineer.

2493216

Filed for record at the request of County Engineer, this 25 day of Oct., A.D. 1928, at 53 minutes past 10 o'clock A.M., and recorded in Volume 22 of Plats, pages 23, 24, 25, 26, Records of King County, Washington.

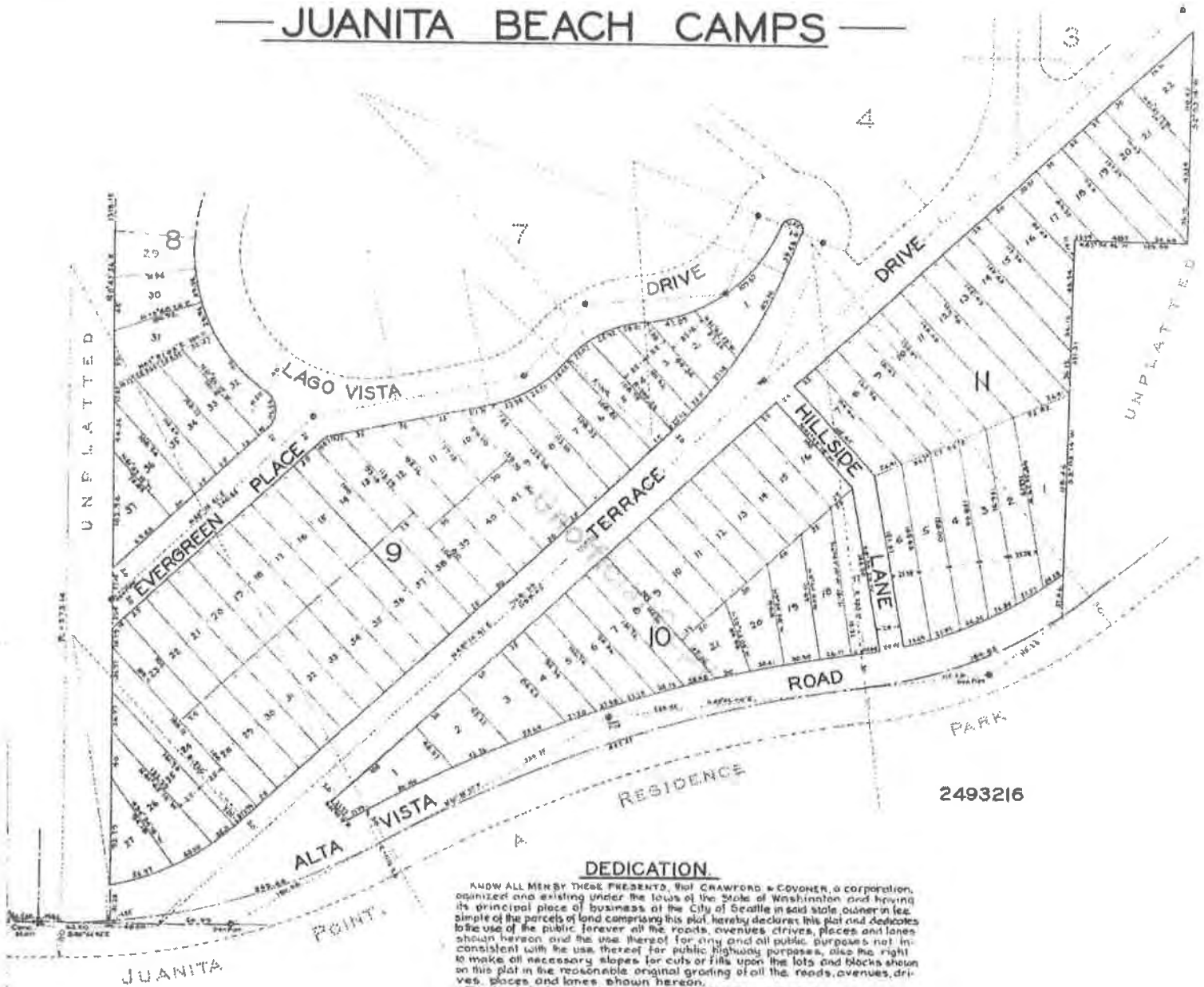
Thomas H. Carter
Deputy

By _____
Deputy

County Auditor.

27

JUANITA BEACH CAMPS



2493216

DEDICATION

KNOW ALL MEN BY THESE PRESENTS, that CRAWFORD & CONOVER, a corporation, organized and existing under the laws of the State of Washington and having its principal place of business at the City of Seattle in said state, owner in fee simple of the parcels of land comprising this plat, hereby declares this plat and dedicates to the use of the public forever all the roads, avenues, drives, places and lanes shown hereon and the use thereof for any and all public purposes not inconsistent with the use thereof for public highway purposes, also the right to make all necessary slopes for cuts or fills upon the lots and blocks shown on this plat in the reasonable original grading of all the roads, avenues, drives, places and lanes shown hereon.

The tract designated hereon as Tract 'C' is the undivided and common property of all the owners of lots in this plat of 'JUANITA BEACH CAMPS' for their common use and enjoyment, and is not dedicated to the public.

In Witness Whereof the said corporation has caused these presents to be executed in its corporate name by its Vice-President and Secretary and its corporate seal hereunto affixed, this 26th day of September, A.D. 1928.



CRAWFORD & CONOVER
By C. J. Conover,
Its Vice-President
Alfred Clayton Crawford,
Its Secretary.

1928

1. DISTRICT _____ 2. ADDITION JUANITA BEACH CAMPS. 37545

SECTION _____ TWP. _____ N. RANGE _____ EWM. _____ BLOCK 1 TRACT OR LOT NO. 8

DESCRIPTION _____

THE VALUE OF EACH LOT INCLUDES AN UND. INT. IN COMMUNITY PROPERTY.

CODE NO. 375450-0040 60 7338 3630 7315 3637

3. ADDRESS OF PROPERTY _____ CONTRACT PURCHASER _____

4. FEE OWNER Samuel Glant 2-24-33

LAND INFORMATION

1. SIZE OF TRACT OR LOT X TOPOGRAPHY sloping GRADE below 3 FT. 2. STREET-ROAD yes SURFACE gravel

ALLEY none 3. SIDEWALK none SEWAGE none WATER none PUMP _____ DRAINAGE poor

4. LANDSCAPING none CONDITION nat. 5. TREND static VALUE OF LOT \$ 15 FRONT STREET

FACTOR 5 _____ SIDE STREET FACTOR \$ _____ DEPTH FACTOR \$ _____ CREDIT _____

6. USE residential 7. DISTRICT med.-old

LAND USE	SOIL TYPE	CROPS-TIMBER STAND	NO. ACRES	VALUE ACRE	VALUE
<u>unimp.</u>	<u>E.F.</u>			\$	\$
				\$	\$
				\$	\$
				\$	\$
				\$	\$
O LAND SIZE	X	TOTAL		\$	<u>15</u>
C OWNER OR CONTRACT PURCHASER	DATE	FILE NO.	PRICE	MTGE.	STAMP
DISTRICT:	ROAD	SCHOOL	WATER	FIRE	SEWER
<u>3</u>		<u>414</u>	<u>58</u>	<u>41</u>	<u>NELW</u>
			<u>72</u>		<u>HSPIL</u>
					<u>DOZ. #2</u>

ASSESSED VALUE LAND

LOT	\$
UNIMPROVED ACRES	\$
IMPROVED ACRES	\$
OTHER LANDS	\$
TIMBER	\$
TOTAL ASSESSED VALUE 50% \$	
DATE <u>1-1-40</u>	

REMARKS _____

ASSESSED VALUE			DECREASE OR INCREASE IN ASSESSED VALUATION			LAND	
YEAR	AC.	LAND	DATE	BY	REASON	DECREASE	INCREASE
19 <u>40</u>		<u>15</u>					
19 <u>52</u>		<u>20</u>					
19 <u>61</u>		<u>60</u>	<u>5-16-60</u>	<u>BA</u>			
19 <u>68</u>		<u>100</u>	<u>5-22-67</u>	<u>BA</u>			
71	L	200 B		T	200*375450-0040-0	8/9	
1							
19							
19							
19							
19							
19							

1. DISTRICT _____ 2. ADDITION JUANITA BEACH CAMPS. 87545 0045 10

SECTION TWP N. RANGE EWM BLOCK 1 TRACT OR LOT NO. 9-10

DESCRIPTION _____

CODE NO. 375450-0045 130 7338 3630
7315 2457

THE VALUE OF EACH LOT INCLUDES AN UND. INT. IN COMMUNITY PROPERTY.

3. ADDRESS OF PROPERTY _____ CONTRACT PURCHASER _____

4. FEE OWNER CRAWFORD + CONOVER 10-9-28

LAND INFORMATION

1. SIZE OF TRACT OR LOT X TOPOGRAPHY sloping GRADE below 3 FT. 2. STREET-ROAD yes SURFACE gravel

ALLEY none 3. SIDEWALK none SEWAGE none WATER none PUMP _____ DRAINAGE poor

4. LANDSCAPING none CONDITION changed 5. TREND static VALUE OF LOT \$ 15 FRONT STREET

FACTOR \$ _____ SIDE STREET FACTOR \$ _____ DEPTH FACTOR \$ _____ CREDIT _____

6. USE residential 7. DISTRICT med.-old

LAND USE	SOIL TYPE	CROPS-TIMBER STAND	NO. ACRES	VALUE ACRE	VALUE
unimprov.	E.F.			\$	\$
				\$	\$
				\$	\$
				\$	\$
				\$	\$

O LAND SIZE X TOTAL \$ 15

OWNER OR CONTRACT PURCHASER	DATE	FILE NO.	PRICE	MTGE.	STAMP
<u>Carl Pollack</u>	<u>3/9/41</u>				
<u>Claf Flare</u>	<u>2-19-59</u>	<u>E289714</u>	<u>\$500</u>		<u>PA</u>
<u>C. L. Lafferty</u>	<u>1-21-63</u>	<u>E289778</u>	<u>\$2500</u>		

DISTRICT: ROAD 3 SCHOOL 414 WATER 57 FIRE 41 SEWER NELW HSPTE NOS. #2

ASSESSED VALUE LAND

LOT \$ _____

UNIMPROVED ACRES \$ _____

IMPROVED ACRES \$ _____

OTHER LANDS \$ _____

TIMBER \$ _____

TOTAL ASSESSED VALUE 50% \$ _____

DATE 1-1-40

REMARKS _____

ASSESSED VALUE			DECREASE OR INCREASE IN ASSESSED VALUATION			LAND	
YEAR	AC.	LAND	DATE	BY	REASON	DECREASE	INCREASE
19 <u>40</u>		<u>15</u>					
19 <u>52</u>		<u>20</u>					
19 <u>54</u>		<u>40</u>	<u>9-53</u>	<u>AK</u>	<u>merge</u>		
19 <u>61</u>		<u>130</u>	<u>5-16-60</u>	<u>BS</u>	<u>Re V</u>		
19 <u>68</u>		<u>400</u>	<u>5-22-67</u>	<u>BS</u>	<u>Re</u>		
71	L	800 8		T	800*375450-0045-0 8/9		
19							
19							
19							
19							

37545

74-1

SEWER HSPIL AIRPT. FERRY
NELW Bld. 4%

Metro

0025

DISTRICT	ROAD	SCHOOL	WATER	FIRE
3		414	51	41

375450-0025

135 150 2620
7338 2315 445

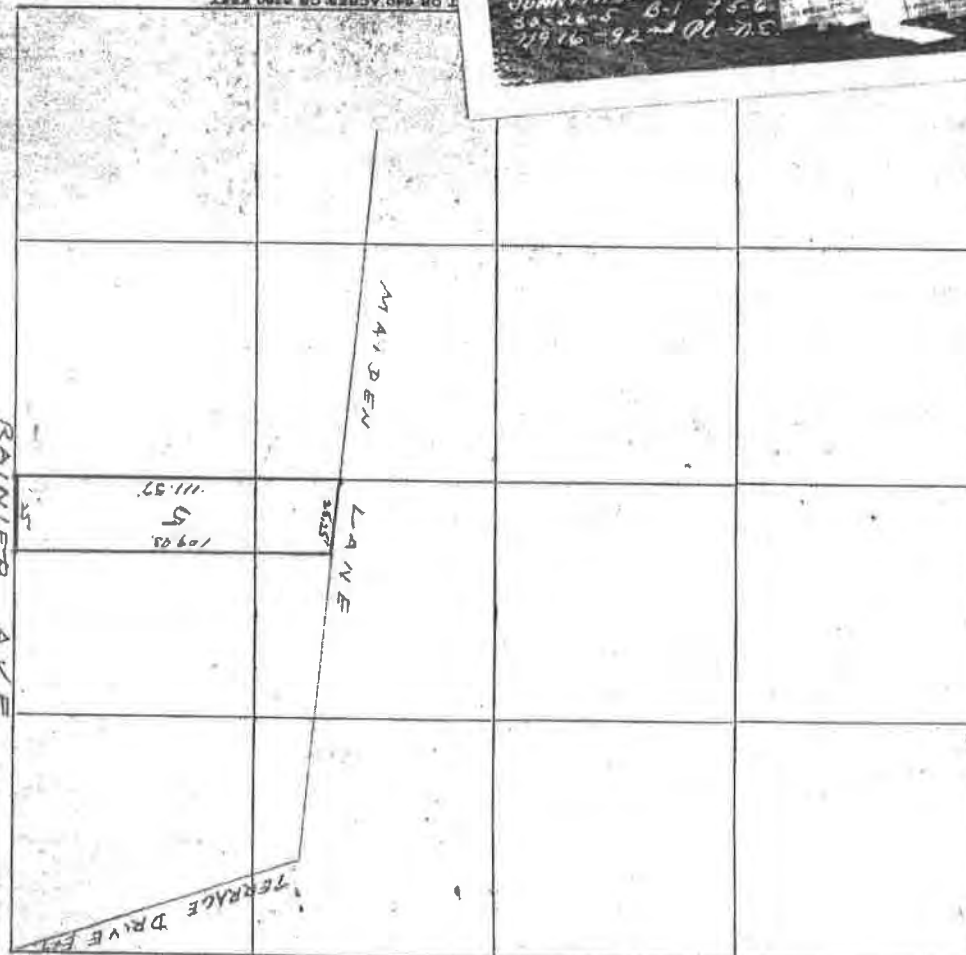
LUATION

RECORD OF ASSESSED VALUE					DATE	BY	REASON	LAND		BUILDING	
YEAR	AC	LAND	BLDG'S	TOTAL				DECREASE	INCREASE	DECREASE	INCREASE
1940		15	150	145							
1950		15	350	365	7-48	JF	R.V. purchase				
1952		20	350	370							
1954		40	350	390	9-53	JF	merge				
1961		130	350	480	5-4-60	ARI	Rt 1				
1965		130	750	880	9-4-63	HJ	Rt 1 add.				
1967		130	1000	1130	2-21-66	JB	1000 Revalue				
1968		400	1000	1400	5-22-67	RR	1000				
1971	L	800	B	2000	T	2800	375450-0025-0	8/9			



FOR 10 ACRES OR 200 FEET
FOR 40 ACRES OR 200 FEET
FOR 100 ACRES OR 200 FEET
FOR 400 ACRES OR 200 FEET

ACRES LAND TYPE
PASTURE
00 THORN
XX BUMP
.. GRAVEL ON
USELESS
SWAMP
LAND USE
Folio # CO. 25377



LAND CLASSIFICATION AND SEGREGATION
THIS SQUARE INDICATES
ACRES
INDICATE BY AREAS, USE OF LAND BY MARKS AND TYPE BY LETTERS

SECTION 50
TWP. 26 N
RANGE 5 E
PARCEL NO.
TAX LOT NO.





GEOLOGICALLY HAZARDOUS AREAS COVENANT

<i>File No.:</i> <i>Parcel Number:</i> <i>Project Name:</i> <i>Project Address:</i>	
--	--

The undersigned are all of the owners of the real property described as follows:

The real property contains geologically hazardous area(s) as depicted on the City of Kirkland's critical areas map.

The undersigned hereby agree to indemnify, defend, and hold harmless the City of Kirkland, its officers, agents, and employees (hereinafter collectively referred to as the "City") from and against all claims, real or imaginary, filed against the City, alleging damage or injury caused by fault on the part of the undersigned, their employees or agents, and/or the City, arising out of any landslide or seismic activity occurring on the property and for any loss including any claim made therefor resulting from soil disturbance on the "property" in connection with the construction of improvements, including but not limited to storm water retention and foundations; provided, however, this Agreement shall not include damage resulting from the sole fault of the City. "Loss" as used herein means loss from injury or damage incurred on or off the real property. Fault as herein used shall have the same meaning as set forth in RCW 4.22.015. This Agreement shall also include all reasonable costs and expenses, including reasonable attorney's fees, incurred by the City in investigation and/or defense of any such claim.

This Covenant shall be binding upon the heirs, successors, and assigns of the parties hereto and shall run with the land.

DATED at Kirkland, Washington, this _____ day of _____, _____.

(Sign in blue ink)

(Individuals Only)

OWNER(S) OF REAL PROPERTY (INCLUDING SPOUSE)

(Individuals Only)

STATE OF WASHINGTON)
) SS.
 County of King)

On this ____ day of _____, _____, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared _____ an
 d _____ to me known to be the individual(s) described herein and who executed the Geologically Hazardous Areas Covenant and acknowledged that _____ signed the same as _____ free and voluntary act and deed, for the uses and purposes therein mentioned.

WITNESS my hand and official seal hereto affixed the day and year first above written.

 Notary's Signature

 Print Notary's Name

Notary Public in and for the State of Washington,
 Residing _____ at:

My commission expires: _____

(Partnerships Only)
OWNER(S) OF REAL PROPERTY

(Name of Partnership or Joint Venture)

By General Partner

By General Partner

By General Partner

(Partnerships Only)

STATE OF WASHINGTON)
) SS.
County of King)

On this ____ day of _____, _____, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared _____ an
d _____ to me,
known to be general partners of
_____, the partnership that
executed the Geologically Hazardous Areas Covenant and
acknowledged the said instrument to be the free and voluntary
act and deed of each personally and of said partnership, for the
uses and purposes therein set forth, and on oath stated that they
were authorized to sign said instrument.

WITNESS my hand and official seal hereto affixed the day and
year first above written.

Notary's Signature

Print Notary's Name

Notary Public in and for the State of Washington,
Residing _____ at:

My commission expires: _____

(Corporations Only)
OWNER(S) OF REAL PROPERTY

(Name of Corporation)

By President

By Secretary

(Corporations Only)

STATE OF WASHINGTON)
County of King) SS.

On this ____ day of _____, _____, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared _____ and _____ to me, known to be the President and Secretary, respectively, of _____, the corporation that executed the Geologically Hazardous Areas Covenant and acknowledged the said instrument to be the free and voluntary act and deed of said corporation, for the uses and purposes therein set forth, and on oath stated that they were authorized to sign said instrument and that the seal affixed is the corporate seal of said corporation.
WITNESS my hand and official seal hereto affixed the day and year first above written.

Notary's Signature

Print Notary's Name

Notary Public in and for the State of Washington,
Residing _____ at:

My commission expires: _____

(LLC Only)

OWNER(S) OF REAL PROPERTY

(Name of Company)

By Managing Member

By Member

(LLC Only)

STATE OF WASHINGTON)
) SS.
County of King)

On this _____ day of _____, _____, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared _____ and _____ to me, known to be the Member(s), respectively, of _____, the company that executed the Geologically Hazardous Areas Covenant and acknowledged the said instrument to be the free and voluntary act and deed of said corporation, for the uses and purposes therein set forth, and on oath stated that they were authorized to sign said instrument and that the seal affixed is the corporate seal of said company.

WITNESS my hand and official seal hereto affixed the day and year first above written.

Notary's Signature

Print Notary's Name

Notary Public in and for the State of Washington,
Residing _____ at:

My commission expires:



NOTICE OF GEOLOGICALLY HAZARDOUS AREA

File Number:	
Parcel Number:	
Project Name:	
Project Address:	

The undersigned, being all owners of the hereinafter described real property, hereby acknowledge that pursuant to the City of Kirkland Zoning Code, Section 85.50 and as hereafter amended, the property or designated portions thereof, are potentially located in a geologically hazardous area.

This determination is based on review of the development permit application submitted to the City in File Number _____. Contact the City of Kirkland Planning and Building Department to view available maps, obtain a copy of the geotechnical report used in the review of the development permit, or review of any other information the City has collected with regard to this file.

This Notice is for the benefit of all current owners of the real property and their heirs, successors, and assigns; and this Notice and runs with the land described as follows:

Legal Description:

DATED at Kirkland, this ____ day of _____, _____.

(Sign in blue ink)

(*Individuals Only*)

OWNER(S) OF REAL PROPERTY (INCLUDING SPOUSE)

(*Individuals Only*)

STATE OF WASHINGTON)

) SS.

County of King)

On this _____ day of _____, _____, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared _____ and _____

_____ to me known to be the individual(s) described herein and who executed the Notice of Geologically Hazardous Area and acknowledged that _____ signed the same as _____ free and voluntary act and deed, for the uses and purposes therein mentioned.

WITNESS my hand and official seal hereto affixed the day and year first above written.

 Notary's Signature

 Print Notary's Name

Notary Public in and for the State of Washington,
 Residing at: _____

My commission expires: _____

(Partnerships Only)

OWNER(S) OF REAL PROPERTY

(Name of Partnership or Joint Venture)

By General Partner

By General Partner

By General Partner

(Partnerships Only)

STATE OF WASHINGTON)

) SS.

County of King)

On this _____ day of _____, _____, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared _____ and _____

_____ to me, known to be general partners of _____, the partnership that executed the Notice of Geologically Hazardous Area and acknowledged the said instrument to be the free and voluntary act and deed of each personally and of said partnership, for the uses and purposes therein set forth, and on oath stated that they were authorized to sign said instrument.

WITNESS my hand and official seal hereto affixed the day and year first above written.

Notary's Signature

Print Notary's Name

Notary Public in and for the State of Washington,
Residing at: _____

My commission expires: _____

(Corporations Only)

OWNER(S) OF REAL PROPERTY

(Name of Corporation)

By President

By Secretary

(Corporations Only)

STATE OF WASHINGTON)
County of King) ss.

On this _____ day of _____, _____, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared _____ and _____

to be the President and Secretary, respectively, of _____, the corporation that executed the Notice of Geologically Hazardous Area and acknowledged the said instrument to be the free and voluntary act and deed of said corporation, for the uses and purposes therein set forth, and on oath stated that they were authorized to sign said instrument and that the seal affixed is the corporate seal of said corporation.

WITNESS my hand and official seal hereto affixed the day and year first above written.

Notary's Signature

Print Notary's Name

Notary Public in and for the State of Washington,
Residing at:

My commission expires: _____

(LLC Only)

OWNER(S) OF REAL PROPERTY

(Name of Company)

By Managing Member

By Member

(LLC Only)

STATE OF WASHINGTON)
County of King) ss.

On this _____ day of _____, _____, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared _____ and _____

to be the Member(s), respectively, of _____, the company that executed the Notice of Geologically Hazardous Area and acknowledged the said instrument to be the free and voluntary act and deed of said corporation, for the uses and purposes therein set forth, and on oath stated that they were authorized to sign said instrument and that the seal affixed is the corporate seal of said company.

WITNESS my hand and official seal hereto affixed the day and year first above written.

Notary's Signature

Print Notary's Name

Notary Public in and for the State of Washington,
Residing at:

My commission expires: _____



NATURAL GREENBELT PROTECTIVE EASEMENT

Grantor: _____, owner of the hereinafter described real property, hereby grants to

Grantee: The City of Kirkland, a municipal corporation.

A natural greenbelt protective easement over and across the following described real property to wit ("Easement Area"):

No tree trimming, tree topping, tree cutting, tree removal, shrub or brush-cutting or removal of native vegetation, application of pesticides, herbicides, or fertilizers; construction; clearing; or alteration activities shall occur within the Easement Area without prior written approval from the City of Kirkland. Application for such written approval to be made to the Kirkland Department of Planning and Community Development who may require inspection of the premises before issuance of the written approval and following completion of the activities. Any person conducting or authorizing such activity in violation of this paragraph or the terms of any written approval issued pursuant hereto, shall be subject to the enforcement provisions of Chapter 170, Ordinance 3719, the Kirkland Zoning Code. In such event, the Kirkland Department of Planning and Community Development may also require within the immediate vicinity of any damaged or fallen vegetation, restoration of the affected area by planting replacement trees and other vegetation as required in applicable sections of the Kirkland Zoning Code. The Department also may require that the damaged or fallen vegetation be removed.

It is the responsibility of the property owner to maintain critical areas and their buffers by removing non-native, invasive, and noxious plants in a manner that will not harm critical areas or their buffers and in accordance with Kirkland Zoning Code requirements for trees and other vegetation within critical areas and critical area buffers.

The City shall have a license to enter the Easement Area (and the property if necessary for access to the Easement Area) for the purpose of monitoring compliance with the terms of this easement.

Development outside of this Natural Greenbelt Protective Easement may be limited by codified standards, permit conditions, or movement of the critical area.

Each of the undersigned owners agree to defend, pay, and save harmless the City of Kirkland, its officers, agents, and employees from any and all claims of every nature whatsoever, real or imaginary, which may be made against the City, its officers, agents, or employees for any damage to property or injury to any person arising out of the existence of said Natural Greenbelt Protective Easement over said owner's property or the actions of the undersigned owners in carrying out the responsibilities under this agreement, including all costs and expenses, and recover attorney's fees as may be incurred by the City of Kirkland in defense thereof; excepting therefrom only such claims as may arise solely out of the negligence of the City of Kirkland, its officers, agents, or employees.

This easement is given to satisfy a condition of the development permit approved by the City of Kirkland under Kirkland File/Permit No. _____, for construction of _____ upon the following described real property:

This easement shall be binding upon the parties hereto, their successors and assigns, and shall run with the land.

DATED at Kirkland, Washington, this _____ day of _____, _____.

(Sign in blue ink)

(*Individuals Only*)

OWNER(S) OF REAL PROPERTY (INCLUDING SPOUSE)

(*Individuals Only*)

STATE OF WASHINGTON)

) SS.

County of King)

On this _____ day of _____, _____, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared _____ and _____

_____ to me known to be the individual(s) described herein and who executed the Natural Greenbelt Protective Easement and acknowledged that _____ signed the same as _____ free and voluntary act and deed, for the uses and purposes therein mentioned.

WITNESS my hand and official seal hereto affixed the day and year first above written.

 Notary's Signature

 Print Notary's Name

Notary Public in and for the State of Washington,
 Residing at: _____

My commission expires: _____

(Partnerships Only)

OWNER(S) OF REAL PROPERTY

(Name of Partnership or Joint Venture)

By General Partner

By General Partner

By General Partner

(Partnerships Only)

STATE OF WASHINGTON)

) SS.

County of King)

On this _____ day of _____, _____, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared _____ and _____

_____ to me, known to be general partners of _____, the partnership that executed the Natural Greenbelt Protective Easement and acknowledged the said instrument to be the free and voluntary act and deed of each personally and of said partnership, for the uses and purposes therein set forth, and on oath stated that they were authorized to sign said instrument.

WITNESS my hand and official seal hereto affixed the day and year first above written.

Notary's Signature

Print Notary's Name

Notary Public in and for the State of Washington,
Residing at: _____

My commission expires: _____

(Corporations Only)

OWNER(S) OF REAL PROPERTY

(Name of Corporation)

By President

By Secretary

(Corporations Only)

STATE OF WASHINGTON)
County of King) ss.

On this _____ day of _____, _____, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared _____ and _____

to be the President and Secretary, respectively, of _____, the corporation that executed the Natural Greenbelt Protective Easement and acknowledged the said instrument to be the free and voluntary act and deed of said corporation, for the uses and purposes therein set forth, and on oath stated that they were authorized to sign said instrument and that the seal affixed is the corporate seal of said corporation.

WITNESS my hand and official seal hereto affixed the day and year first above written.

Notary's Signature

Print Notary's Name

Notary Public in and for the State of Washington,
Residing at:

My commission expires: _____

(LLC Only)

OWNER(S) OF REAL PROPERTY

(Name of Company)

By Managing Member

By Member

(LLC Only)

STATE OF WASHINGTON)
County of King) ss.

On this _____ day of _____, _____, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared _____ and _____

to be the Member(s), respectively, of _____, the company that executed the Natural Greenbelt Protective Easement and acknowledged the said instrument to be the free and voluntary act and deed of said corporation, for the uses and purposes therein set forth, and on oath stated that they were authorized to sign said instrument and that the seal affixed is the corporate seal of said company.

WITNESS my hand and official seal hereto affixed the day and year first above written.

Notary's Signature

Print Notary's Name

Notary Public in and for the State of Washington,
Residing at:

My commission expires: _____