CITY OF
MUKILTEO

REQUEST FOR COMMENTS

DATE: February 26, 2019

	Alderwood Water District – Dan Sheil /Lauren Balisky		Puget Sound Clean Air Agency (Beth Carper)
X	Burlington Northern Santa Fe Railway (Marvinique Hill)	X	Puget Sound Energy (Dom Amor)
	City of Edmonds (Rob Chave)	X	Puget Sound Regional Council
	City of Everett (Allan Giffen)		Seattle Dist. Corps of Engineers (Dept. Army-Reg. Branch)
	City of Everett (Steve Ingalsbe)		Snohomish Co. Airport/Paine Field (A. Rardin/B. Dolan)
	City of Lynnwood (Paul Krauss)		Snohomish Co. Assessor's Office *(Ordinances Only)*
	City of Mill Creek (Tom Rogers)		Snohomish Co. Conservation District
X	City of Mukilteo (Building Official)		Snohomish Co. Environmental (Cheryl Sullivan)
X	City of Mukilteo (Fire Chief)		Snohomish Co. Fire District #1 (Kevin Zweber)
X	City of Mukilteo (Fire Marshal)		Snohomish Co. Marine Res. Comm. (Kathleen Herrmann)
X	City of Mukilteo (Engineering "In-Box")		Snohomish Co. Planning & Dev. Srvc. (Darryl Easton)
X	City of Mukilteo (Com. Dev. Dir.)(Postcard/Notice only)		Snohomish Co. Public Works (Deb Werdal)
X	City of Mukilteo (Cheol Kang, Glen Koen)	X	Snohomish Co. PUD: Dist. Eng. Services (Mary Wicklund)
X	Comcast of Washington (Casey Brown)		Snohomish Health District (Bruce A. Straughn)
X	Community Transit (Kate Tourtellot)		Sound Transit Authority (Perry Weinberg)
X	Dept. of Commerce (Growth Mgmt. Svcs Rev. Team)	X	Tulalip Tribes
	Dept. of Natural Resources (James Taylor)	X	Tulalip Tribes – (Richard Young)
	FAA/Air Traffic Division, ANM-0520 (Daniel Shoemaker)	X	United States Postal Service (Soon H. Kim)
	FEMA (John Graves)	X	Verizon Company of the NW, Inc. (Tim Rennick.)
	Island County MRC (Rex Porter) *(Shoreline Only)*	X	Washington Dept. of Ecology (Peg Plummer)
X	Master Builders King/Sno. Counties (Jennifer Anderson)		Washington Dept of Fish & Wildlife (Jamie Bails)
X	Mukilteo Beacon (Editor) (Postcard/Notice only)	X	WSDOT (Scott Rodman)
X	Mukilteo School District (Cindy Steigerwald)		WSDOT (Ramin Pazooki)
X	Mukilteo School District (Josette Fisher)		WSDOT Ferries(Kevin Bartoy) *(Shoreline Only)*
X	Mukilteo Tribune (Editor) *(Postcard/Notice only)*		WRIA 7 Water Resources
X	Mukilteo Water & Wastewater District (Jim Voetberg, Manager; Rick Matthews; Kendra Chapman)	X	Planning Commission *(Postcard Only)*
	National Marine Fishery Service	X	Adjacent Property Owners
	Office of Archaeology & Historic Pres. (Allyson Brooks)	X	Applicant/Contact Person *(Notice Only)*
	Ogden, Murphy, Wallace (Scott Snyder) *(Ordinances Only)*	X	Parties of Interest
	Pilchuck Audubon Society (Karen Snyder)		Parties of Record
	Port of Everett (Graham Anderson)	X	Property Owners within 300' *(Postcard/Notice Only)*
			Other:

FILE NO.: SFR-RUP-HE-2019-001

PROPONENT: Jesse Jarrell on behalf of Mahmood Kakar

PROPOSAL NAME: Kakar Single Family Residence Reasonable Use/Variance located at 9180 63rd PL W

PROPOSAL DESCRIPTION: Construction of a new single-family residence with a detached garage including associated grading, parking, landscaping and street frontage improvements on approximately 1.4 acres consisting mainly of steep slopes. The property is zoned Single-Family Residential 12.5.

FILE NO.: SFR-RUP-HE-2019-001

PROPONENT: Jesse Jarrell on behalf of Mahmood Kakar

PROPOSAL NAME: Kakar Single Family Residence Reasonable Use/Variance

ATTACHED IS:

X	Notice of Application	X	Project Narrative
X	Applications	X	Location Map
X	Site Plan (Reduced)	X	Topography Map
X	Building Elevations	X	Civil Plans
X	Geotechnical Engineering Study Proposed Single Family Residence 63rd Place West & 92nd Street SW Mukilteo, WA prepared by Geo Group Northwest dated May 29, 2008	X	Environmental Checklist prepared by Jesse Jarrell dated January 23, 2019
X	Targeted Drainage Report for the Kakar Property at 9180 63rd Place W. prepared by Western Engineers & Surveyors dated January 11, 2019		

NOTE: _____

_____

****

Please review this project as it relates to your area of concern and return your comments with this cover sheet by, Monday, March 18, 2019 to Linda Ritter, Senior Planner, City of Mukilteo, 11930 Cyrus Way, Mukilteo, WA 98275.

Linda Ritter — 2/27/19

Linda Ritter
Senior Planner

Date

****

RESPONSE SECTION:

_____ Comments Attached _____ No Comments

COMMENTS: _____

_____

_____ _____

Signature Date

_____

Company

DO YOU WANT A COPY OF OUR NOTICE OF DECISION YES __ NO __

CITY OF
MUKILTEO

11930 Cyrus Way
Mukilteo, WA 98275
(425) 263-8000

Notice of Application

for Kakar Single-Family Residence
Reasonable Use/Variance
at 9180 63rd Place W.

Jesse Jarrell, on the behalf of **Mahmood Kakar**, applied for a Reasonable Use Permit/Variance with the City of Mukilteo on **January 25, 2019**. The application was deemed complete on **February 19, 2019**. (File No. SFR-RUP-HE-2019-001).

Description of Proposal: Construction of a new single-family residence with a detached garage including associated grading, parking, landscaping and street frontage improvements on approximately 1.4 acres consisting mainly of steep slopes. The property is zoned Single-Family Residential 12.5. The footprint for the conceptual house and driveway area have been placed in the southeastern portion of the site in order to minimize driveway lengths and disturbance areas on site. Water, sewer and dry utilities are to be extended into the site from existing services located in 92nd Street/63rd Place right-of-way areas. Total permanent disturbance area estimated at around 7,000 sf. The applicant is asking for a reduction in the required critical areas and zoning setbacks.

Location of Proposal: Section 17 Township 28 Range 04 Quarter NE OLYMPUS TERRACE ASSR PLAT OF BLK 000 D-00 TH PTN LOT 21 LY NLY FDL COM MOST NLY COR LOT 25 TH N27*00 30W ALG NWLY LN SD LOT 25 72.08FTTAP ON A LN TH ISPLW & 71FT N WH MEAS AT R/A FR NELY LN SD LOT 25 THE TPB OF HEREIN DESC LN TH S53*03 00E ALG SD PLL LN 324.85FT TAP ON ELY LN OF SD LOT 21 & TERM OF HEREIN SD LN TGW TH PTN VAC 61ST PL W LY ADJ THRTOPER CITY OF MUK ORD NO 1264 REC AFN 201105030615; otherwise known as 9180 63rd Place West, Mukilteo, Washington.

Environmental Documents Prepared for the Proposal:

- Environmental Checklist prepared by Jesse Jarrell dated January 23, 2019
- Geotechnical Engineering Study Proposed Single Family Residence 63rd Place West & 92nd Street SW Mukilteo, WA prepared by Geo Group Northwest dated May 29, 2008
- Targeted Drainage Report for the Kakar Property at 9180 63rd Place W. prepared by Western Engineers & Surveyors dated January 11, 2019

List of Required Permits:

- Reasonable Use
- Variance
- Building
- Engineering
- Any State and Federal Permits if applicable

Applicable Policies and Requirements

The project will be reviewed for consistency with the following policies, standards and regulations:

☐ Possession Shores Master Plan
☒ Comprehensive Plan, Shoreline Master Plan
☒ International Building Code (2015 Edition)
☒ International Fire Code (2015 Edition)
☐ Sector Plan & Amendments
☒ Mukilteo Municipal Code
☒ City of Mukilteo Development Standards

Comment Period

The application and supporting documents are available for review at the City of Mukilteo, 11930 Cyrus Way, Mukilteo, WA 98275. The public is invited to comment on the project by submitting written comments to the Community Development Department at the above address by 4:30 p.m. on the date noted below.

Notice of Application (NOA) Issued:	Monday, March 4, 2019
End of NOA Comment Period:	Monday, March 18, 2019 at 4:30PM

You may request notice of and participate in any hearings (if applicable), request a copy of the decision once made and be informed of appeal rights. The City will not act on this application until the end of the 14-day public comment period. You may request a copy of the final decision on the project by making a written request to the City contact person named below.

Public Hearing

There will be a public hearing conducted on this project. You have the right to request notice of and to participate in the public hearing. If you want to receive notice of the hearing, you may make a written request to the City contact person named below.

Appeals

The final decision on this project is not administratively appealable. An appeal must be filed within 21 days after the final decision on the project is issued. Only parties of record may file an appeal of the decision. A party of record is the applicant, any person who testified at the open record hearing on the application and/or any person who submitted written comments concerning the application.

Contact Person: Linda Ritter, Senior Planner (425) 263-8043

Signature: Linda Ritter Date: 2/27/19
Linda Ritter, Senior Planner

Location Map

Date Issued: Monday, March 4, 2019
Date Advertised: Monday, March 4, 2019
End Comment Period: Monday, March 18, 2019 at 4:30 PM

pc: Applicant/Representative
Reviewing Agencies
Interested Parties
CDD Director
Permit Services Supervisor
Permit Services Assistants (2)
Property File
Property Owners (300')

O:\Dev Review\2019\REASONABLE USE\SFR-RUP-HE-2019-001 9180 63RD PL. W\Kakar NOA.docx

SFR-RUP-HE-2019-001

Date stamp RECEIVED
JAN 25 2019
CITY OF MUKILTEO

CITY OF MUKILTEO

11930 Cyrus Way Mukilteo, WA 98275
(425) 263-8000

PPR # _____
Misc # _____

Land Use Permit Application

OWNER			APPLICANT		
Name: Mahmood Kakar			**Name:** Jesse Jarrell		
Address: 13426 46th Pl W			**Address:** 9740 Evergreen Way		
City: Mukilteo	**State:** Wa	**Zip:** 98275	**City:** Everett	**State:** Wa	**Zip:** 98204
Phone #:	**Email Address:** kakarmahmood@gmail.com		**Phone #:** 425-356-2700	**Email Address:** jessej@wesi.co	

Project Address: 9180 63rd Pl W Mukilteo, Wa 98275

Legal Description of Property: Section 17 Township 28 Range 04 Quarter NE OLYMPUS TERRACE ASSR PLAT OF BLK 000 D-00 TH PTN LOT 21 LY NLY FDL COM MOST NLY COR LOT 25 TH N27*00 30W ALG NWLY LN SD LOT 25 72.08FTTAP ON A LN TH ISPLW & 71FT N WH MEAS AT R/A FR NELY LN SD LOT 25 THE TPB OF HEREIN DESC LN TH S53*03 00E ALG SD PLL LN 324.85FT TAP ON ELY LN OF SD LOT 21 & TERM OF HEREIN SD LN TGW TH PTN VAC 61ST PL W LY ADJ THRTOPER CITY OF MUK ORD NO 1264 REC AFN 201105030615

Key Contact Person: Jesse Jarrell Phone: 425-356-2700

Email: jessej@wesi.co Fax: _____

Project Type:

- ☐ Commercial
- ☐ Multi-Family
- ☐ Industrial
- ☐ Shoreline* (JARPA)
- ☐ Conditional Use*
- ☐ Variance*
- ☐ Preliminary Subdivision*
- ☐ Final Subdivision*
- ☐ Preliminary Short Plat*
- ☐ Final Short Plat*
- ☐ Sector Plan Amendment
- ☐ Waterfront Development
- ☐ Single Family Residence
- ☐ Special Use Permit*
- ☐ Reasonable Use
- ☐ Lot Line Adjustment*
- ☐ Grading*
- ☐ Binding Site Plan
- ☐ Project Rezone
- ☐ Other, Specify_____

* Need to fill out supplemental application form with project.

Project Resume:

Existing Use: Forest
Proposed Use: SFR
Total Site Area: 60,451 SF.
Water District: Mukilteo WWD
Building Foot Print Area: 2,105 SF.
Sewer District: Mukilteo WWD
Lot Coverage: 60,500
# of Proposed Units: 1
No. of Parking Stalls Provided: 4
Building Height: _____
Comp Plan Designation: Residential
Zoning: RD-12.5
Gross Floor Area by Uses: _____

Electric Vehicle Charging Units Provided: Yes ___ No X ___ If Yes, How Many? _____

Solar Panels being installed: Yes _____ No. X ___ If Yes, How Many

Pre-application Meeting Held: (Y/N; date) Y, 5/24/18

The information given is said to be true under the penalty of perjury by the laws of the State of Washington.

Applicant/Authorized Agent Signature — **Date** 1/18/19

Owners Signature — **Date** 1/25/19

C:\Users\Owner\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.Outlook\U8M1O171\Land Use Permit Application.docxx

CITY OF MUKILTEO

11930 Cyrus Way, Mukilteo, WA 98275
(425) 263-8000
Fax (425) 212-2068

RECEIVED
JAN 25 2019
CITY OF MUKILTEO

Variance
Supplemental Application Form

Date: 1/25/19 Application Number: SFR-RUP-2019-001

Fee Received: $_____ ☐ Cash ☐ Check ☐Other Receipt #: _____

APPLICANT/OWNER INFORMATION

Applicant: Mahmood Kakar
Address: 13426 46th Pl W
Mukilteo, Wa 98275
Phone:(Home) (510) 709-5962
(Office) _____
(Fax) _____

Legal Property Owner(s): Same As Applicant
Address: _____
_____
Phone:(Home) _____
(Office) _____
(Fax) _____

Applicant is: ☐ Owner in fee simple ☐ Contract purchaser ☐ Agent for Owner

PRIMARY CONTACT PERSON

Name: Western Engineers & Surveyors - Jesse Jarrell
Address: 9740 Evergreen Way
Everett, Wa 98204
Phone:(Home) _____
(Office) (425) 356-2700
(Fax) _____

Date of Present Ownership of Property:
_____
Date of Contract if Now Purchasing Property:
_____
Please provide a copy of the contract.

PROPERTY/LOT INFORMATION

Legal Description of property (attach): Ptn of Lot 21, Plat of Olympus Terrace, Recorded in Vol 12 of Plats, Page 77, Records of Snohomish County, WA

Assessor's Tax Account Number: 00536900002100

Location/Street Address of Property: 9180 63rd Pl W, Mukilteo, Wa 98275

Zoning District: RD-12.5

Comprehensive Plan Designation: Installation of house, driveway and associated drainage/utilities within a steep slope area through a Reasonable Use Process

Lot Area (Square Feet) ~60,470

BUILDING INFORMATION

Area of all Existing Building(s) (Square Feet): _____

Area of all Proposed Building(s) (Square Feet): 2,100 sf. footprint (main) & 480 sf. footprint (garage)

Area of all Proposed Additions: _____

VARIANCE REQUEST INFORMATION

Cite Code Section for Which Variance Use is Being Requested: 17.20.020 – 25' front setback

NARRATIVE EXPLANATION OF REQUEST: Please submit a written detailed explanation of the purpose of the request and discuss how the Variance application meets the criteria for approval and the project's relationship to current plans, policies, and regulations. Refer to the Variance brochure for the criteria.

REQUIRED SIGNATURES

THE INFORMATION GIVEN IS SAID TO BE TRUE UNDER THE PENALTY OF PERJURY BY THE LAWS OF THE STATE OF WASHINGTON.

_____ 1/18/19
Applicant/Authorized Agent — Date

_____ 1/25/19
Legal Property Owner* — Date

_____ _____
Legal Property Owner* — Date

* NOTE: If legal owner is a corporation or partnership, proof of ability to sign for the corporation or partnership shall be submitted to the City of Mukilteo with this application.

WESTERN ENGINEERS & SURVEYORS
SURVEYORS · ENGINEERS · LAND USE CONSULTANTS

9740 Evergreen Way * Everett, Washington 98204

(425) 356-2700 FAX (425) 356-2708

January 25, 2019

City of Mukilteo Public Works
Attn: Linda Ritter
11930 Cyrus Way
Mukilteo, WA 98275
425-263-8088

Subject: **Kakar Reasonable Use,** Narrative Letter

To Whom It May Concern:

Site Description:

The undeveloped site is located at 9810 63rd Place West in Mukilteo, WA. The approximate 1.4 Acre site mainly consists of steep slope areas that slope from southeast to northwest towards BNRR railway located along the edge of Puget Sound.

Project Description:

The project proposes the installation of a new single-family residence, detached garage, driveway along with associated utilities and drainage installation. Conceptual house and driveway area have been placed in the southeastern portion of the site in order to minimize driveway lengths and disturbance areas on site. Water, sewer and dry utilities are to be extended into the site from existing services located in 92ND Street/63rd Place R/W areas. New drainage for the site consists mainly of tight lining all developed runoff down the on-site steep slope (with anchoring and welded joints) which will drain to an existing open ditch along the edge of the downstream railroad area (provided approval from BNRR can be obtained). Total permanent disturbance area estimated at around 7,000 sf which will include a permanent 5' landscape area around the northeasterly and northwesterly portions of the new buildings for future maintenance.

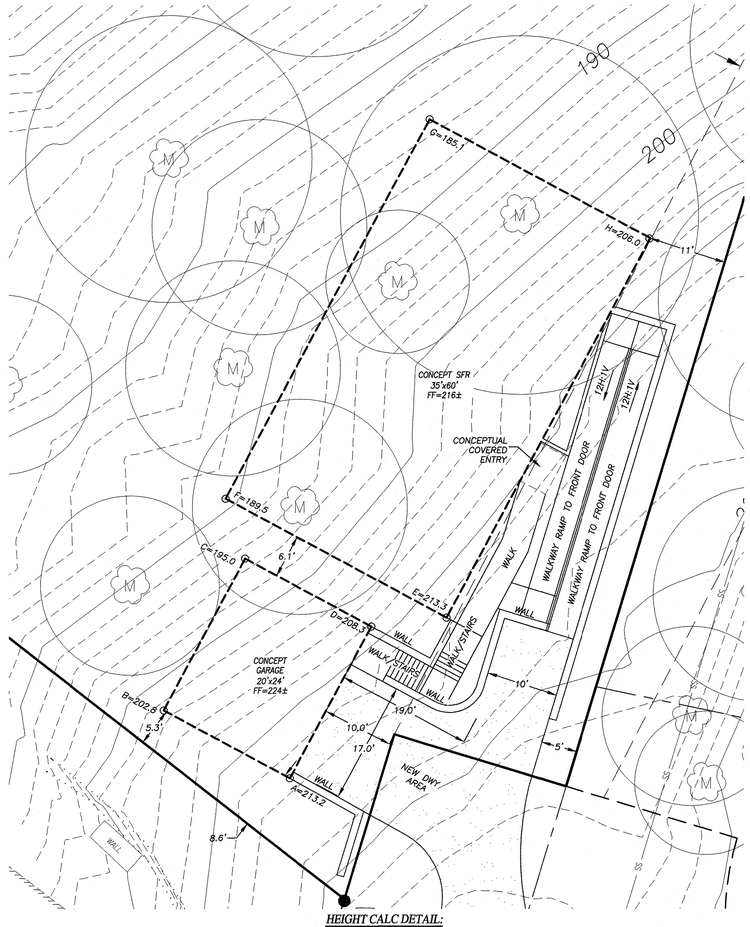
Please call me if you have any questions regarding this letter or the revised drawings.

Sincerely,

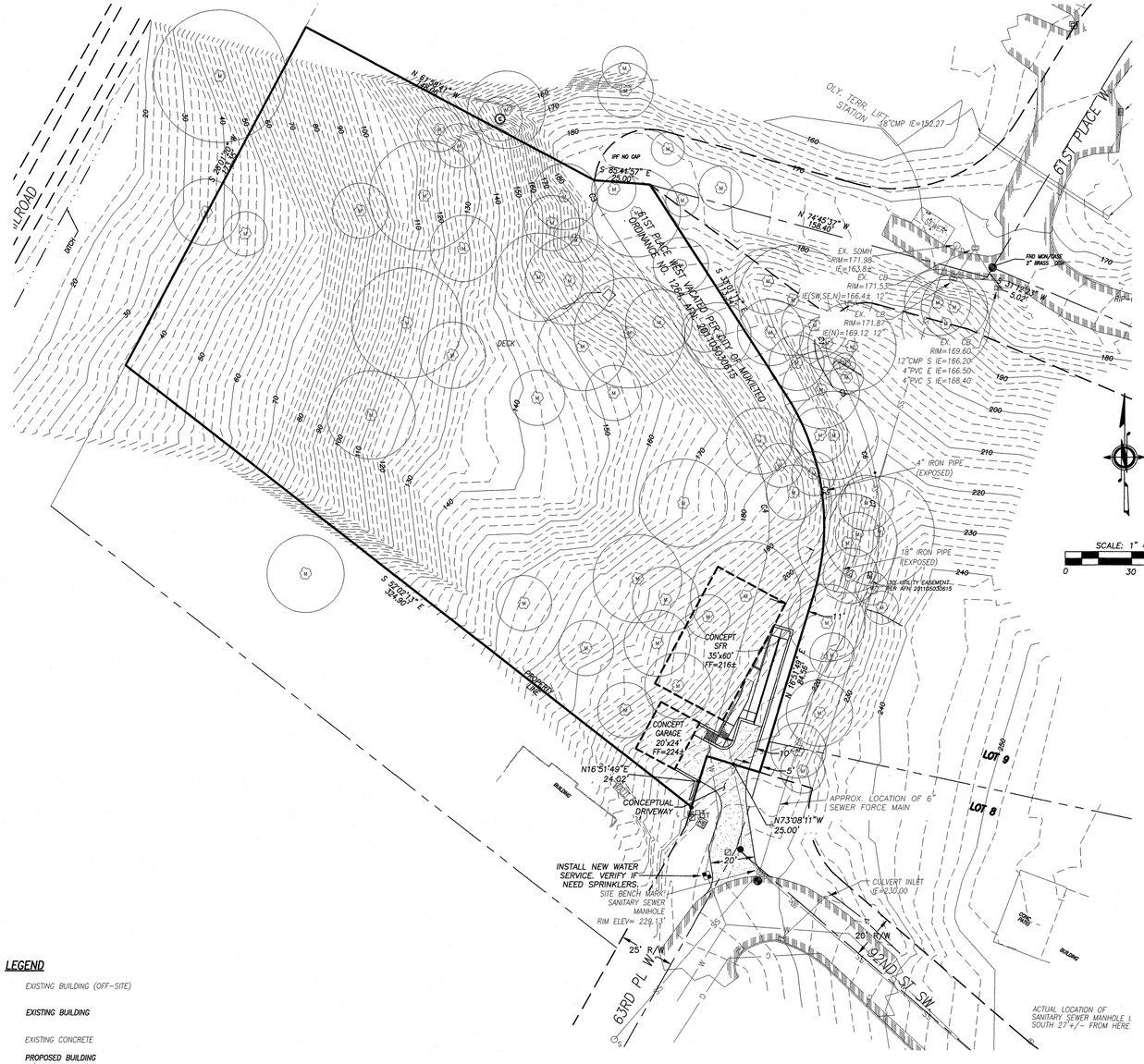
Jesse Jarrell

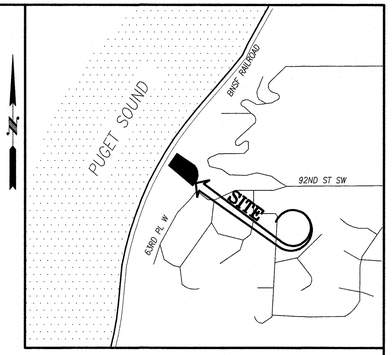
Jesse Jarrell, P.E.
Project Manager

SE 1/4, NE 1/4, SEC.17, T.28N., R.4E., W.M.
CITY OF MUKILTEO, WASHINGTON



HEIGHT CALC DETAIL:
SCALE: 1"=10'





VICINITY MAP
SCALE 1" = 2000'

TBM ELEV=229.13'

VERTICAL DATUM: NAVD88 GEOID 12A

SEWER MANHOLE RIM LOCATED NEAR THE SW CORNER OF THE SITE

BUILDING HEIGHT CALCULATIONS:

GARAGE:
SE (A) – 213.2'
SW (B) – 202.8'
NW (C) – 195.0'
NE (D) – 202.3'
TOTAL 819.3'

AVERAGE GRADE = 819.3'/4 = 204.82'

MAXIMUM BUILDING HEIGHT = 30' OR
234.82' ELEVATION

DESIGN HEIGHT = 224' + 10' = 234.0'

KAKAR SFR:
SE (E) – 213.3'
SW (F) – 189.5'
NW (G) – 185.1'
NE (H) – 206.0'
TOTAL 793.9'

AVERAGE GRADE = 793.9'/4 = 198.47'

MAXIMUM BUILDING HEIGHT = 30' OR
228.47' ELEVATION

DESIGN HEIGHT = 216.0' + 12' = 228.0'

LEGEND

- EXISTING BUILDING (OFF-SITE)
- EXISTING BUILDING
- EXISTING CONCRETE
- PROPOSED BUILDING W/ ROOF OVERHANG
- PROPOSED DRIVEWAY
- EXISTING PROPERTY BOUNDARY
- XXX EXISTING CONTOUR (MAJOR)
- EXISTING EDGE OF ASPHALT
- SD PROPOSED STORM DRAIN LINE
- SSMH#X PROPOSED SANITARY SEWER MANHOLE (SSMH)
- CB#X PROPOSED STORM DRAIN CATCH BASIN (CB)
- PROPOSED CONCRETE WALL

CRITICAL AREA NOTE

ANALYSING THE SLOPES ON SITE. THE MAJORITY OF THE SLOPES ARE CLASSIFIED AS STEEP. THERE ARE 13% OF THE SLOPES UNDER 3:1 RATIO, WHILE 72% ARE BETWEEN 3:1 AND 1:1, AND 15% IS OVER 1:1

HYDRANT NOTE

THE CLOSEST FIRE HYDRANT TO THE SITE IS LOCATED APPROXIMATELY 77' FROM THE CORNER OF 92ND AND 62ND WHICH IS APPROXIMATELY 223' TO THE SOUTHEAST, FROM THE SITE.

HARDSCAPE AREA CALCULATION

TOTAL PROPERTY AREA: 60,470 (1.388 AC)

ON-SITE HARDSCAPE

PROP. SFR ROOF	2,394 SF.
PROP. GARAGE ROOF	621 SF.
PROP. WALKWAYS/PATIOS	600 SF.
PROP. DWY	425 SF.
TOTAL	4,040 SF.

OFF-SITE HARDSCAPE

PROP DWY APRON	940 SF.
TOTAL	940 SF.

TOTAL NEW/REPLACED HARDSCAPE: 4,980 SF.

LOT COVERAGE CALCULATION

TOTAL PROPERTY AREA: 60,470 (1.388 AC)

MAXIMUM LOT COVERAGE ALLOWED:
30% OF NET AREA OR 18,141 SF.

DESIGNED BUILDING FOOTPRINT:

PROPOSED SFR	= 2,100 SF.
PROPOSED GARAGE	= 480 SF.
TOTAL	= 2,580 SF (4.27%)

EQUIPMENT AND PROCEDURE:

METHOD OF SURVEY
SURVEY PERFORMED BY TOPCON GNSS GR-3 RECIEVERS AND/OR FIELD TRAVERSE

INSTRUMENTATION
10" TOTAL STATION

PRECISION
MEETS OR EXCEEDS STATE STANDARDS WAC 322-130-090

BASIS OF BEARING
THE SOUTH LINE OF LOT 3 OF SNOHOMISH COUNTY SHORT PLAT NO. 221(4-78), BEARING S52°02'13"E PER RECORDED UNDER RECORDING NO. 7812220268, RECORDS OF SNOHOMISH COUNTY, WASHINGTON

DEVELOPMENT DATA:

EXISTING ZONING:	RD-12.5
PROPOSED USE:	SINGLE-FAMILY RESIDENCE
TOTAL SITE:	60,470 SQ. FT. (1.39 ACRES)
ON-SITE PERMANENT DISTURBANCE AREA:	5,750 SQ. FT. (0.13 ACRES)

ENGINEER/ CONTACT:

WESTERN ENGINEERS, INC.
9740 EVERGREEN WAY
EVERETT, WA 98204
TELEPHONE #: (425) 356-2700
FAX #: (425) 356-2708

SURVEYOR:

HARMSEN & ASSOCIATES
125 EAST MAIN ST., SUITE 104
PO BOX 516
MONROE, WA 98272
TELEPHONE #: (360) 794-7811

GREENE LAND SURVEYING
EDMONDS AND SOAP LAKE, WA 98026/98851
TELEPHONE #: (206) 498-0979

ARCHITECT:

DESIGN LINES
1915 MADISON STREET
EVERETT, WA 98203
TELEPHONE #: (425) 353-0531
DUANE@DESIGNLINES.COM

APPLICANT/ OWNERS OF INTEREST:

MAHMOOD KAKAR
13426 46TH PL W
MUKILTEO, WA 98275
TELEPHONE #: (510) 709-5962
EMAIL: KAKARMAHMOOD@GMAIL.COM

LEGAL DESCRIPTION:

(PER STATUTORY WARRANTY DEED A.F. NO. 200703290242)

PARCEL 00536900002100
THAT PORTION OF LOT 21, PLAT OF OLYMPUS TERRACE, ACCORDING TO THE PLAT THEREOF RECORDED IN VOLUME 12 OF PLATS, PAGE 77, RECORDS OF SNOHOMISH COUNTY, WASHINGTON, LYING NORTHERLY OF THE FOLLOWING DESCRIBED LINE:

BEGINNING AT THE MOST NORTHERLY CORNER OF LOT 25, SAID PLAT OF OLYMPUS TERRACE; THENCE NORTH 27°00'30" WEST ALONG THE NORTHWESTERLY LINE OF SAID LOT 25, 72.08 FEET TO A POINT ON A LINE THAT IS PARALLEL WITH AND 71.0 FEET NORTH, WHEN MEASURED AT RIGHT ANGLES, FROM THE NORTHEASTERLY LINE OF SAID LOT 25, THE TRUE POINT OF BEGINNING OF THE HEREIN DESCRIBED LINE;
THENCE SOUTH 53°03' EAST, ALONG SAID PARALLEL LINE, 324.85 FEET TO A POINT ON THE EASTERLY LINE OF SAID LOT 21 AND THE TERMINUS OF THE HEREIN DESCRIBED LINE;

(ALSO KNOWN AS LOT 3 OF SNOHOMISH COUNTY SHORT PLAT NO. 221(4-78), RECORDED UNDER RECORDING NO. 7812220268, RECORDS OF SNOHOMISH COUNTY, WASHINGTON)

TOGETHER WITH THAT PORTION OF OF VACATED 61ST PLACE WEST LYING ADJACENT THERETO PER CITY OF MUKILTEO ORDINANCE NUMBER 1264 RECORDED ON AUDITOR'S FILE NUMBER 201105030615, RECORDS OF SNOHOMISH COUNTY, WASHINGTON.

TAX ACCOUNT NO.(S):
00536900002100

SITE ADDRESS:
9180 63RD PL W
MUKILTEO, WA 98275

CITY OF MUKILTEO
PLANNING AND DEVELOPMENT SERVICES
APPROVED FOR CONSTRUCTION

BY: _____
NAME

R/W PERMIT NUMBER: _____

PFN 18-_____

CALL TWO (2) BUSINESS DAYS BEFORE YOU DIG 8-1-1

GRADING QUANTITIES

CUT: 300 CU.YDS.
FILL: 150 CU.YDS.

(GRADING QUANTITIES ARE ROUGH CALCULATIONS WHICH DO NOT ACCOUNT FOR SOIL SWELLING & SHRINKAGE)

CUT YARDAGE NOTED IS BASED ON APPROXIMATED EXCAVATION NEEDED FOR NEW BUILDING FOUNDATION INSTALLATION BASED ON PRELIMINARY BUILDING DESIGN. ALL MATERIAL REMOVED FROM SITE SHALL BE HAULED TO A CITY APPROVED SITE.

UTILITY CONFLICT NOTE:

CAUTION:

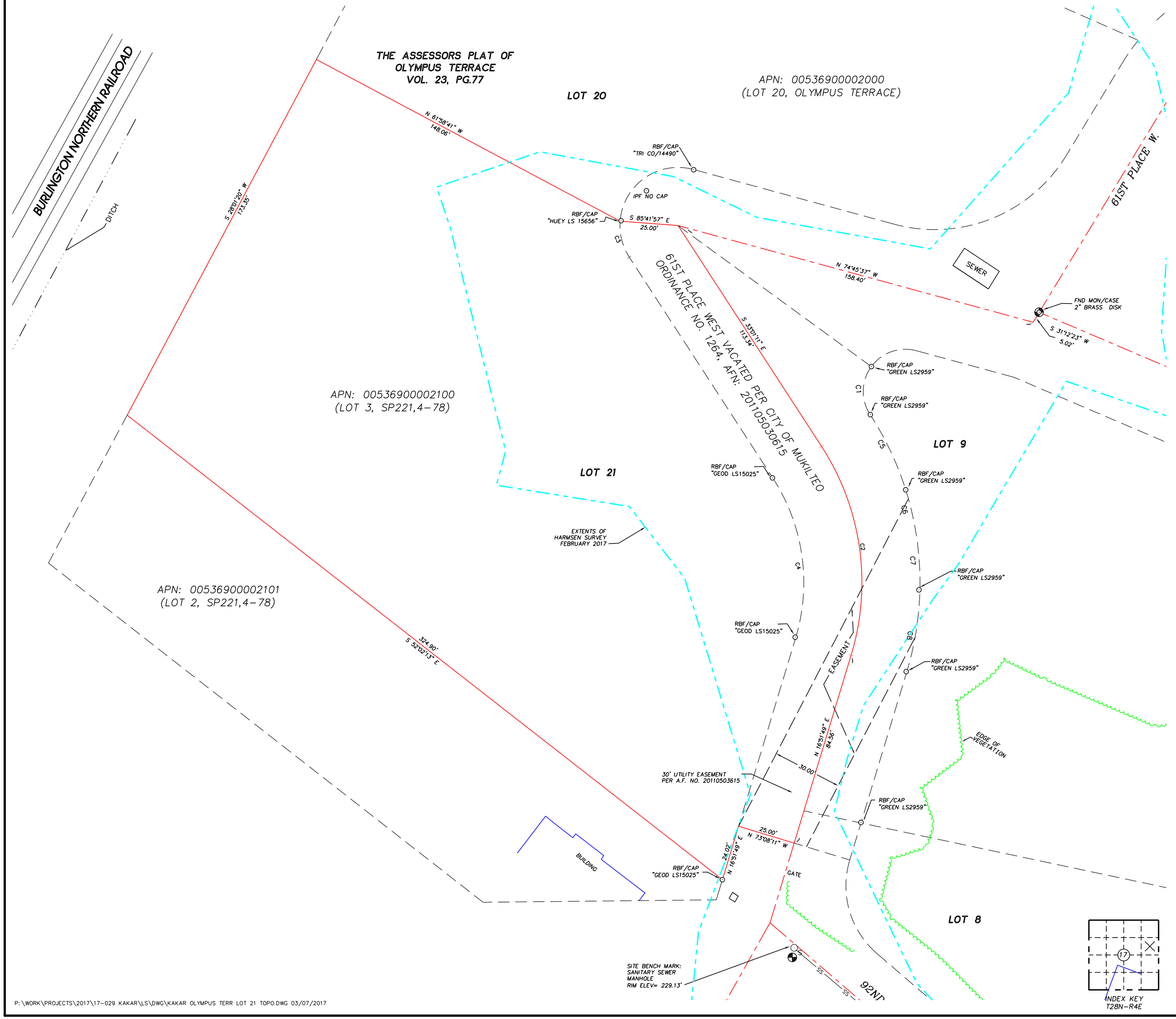
THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION, DIMENSION, AND DEPTH OF ALL EXISTING UTILITIES WHETHER SHOWN ON THESE PLANS OR NOT, BY POTHOLING THE UTILITIES AND SURVEYING THE HORIZONTAL AND VERTICAL LOCATION PRIOR TO CONSTRUCTION. THIS SHALL INCLUDE CALLING UTILITY LOCATE @ **8-1-1** AND THEN POTHOLING ALL OF THE EXISTING UTILITIES AT LOCATIONS OF NEW UTILITY CROSSINGS TO PHYSICALLY VERIFY WHETHER OR NOT CONFLICTS EXIST. LOCATIONS OF SAID UTILITIES AS SHOWN ON THESE PLANS ARE BASED UPON THE UNVERIFIED PUBLIC INFORMATION AND ARE SUBJECT TO VARIATION. IF CONFLICTS SHOULD OCCUR, THE CONTRACTOR SHALL CONSULT **WESTERN ENGINEERS & SURVEYORS, INC.** TO RESOLVE ALL PROBLEMS PRIOR TO PROCEEDING WITH CONSTRUCTION.

Western Engineers & Surveyors (425) 356-2700
SURVEYORS + PLANNERS + ENGINEERS
LAND USE CONSULTANTS
CIVIL ENGINEERS ⊙ LAND SURVEYORS
*** 9740 EVERGREEN WAY * EVERETT * WA * 98204 ***

CONCEPTUAL SITE PLAN FOR:
KAKAR PROPERTY
SE 1/4, NE 1/4, SEC.17, T.28N, R.04E, W.M.
MUKILTEO, WASHINGTON

DRAWN BY	DATE	REV. BY	DATE	PROJECT MANAGER	SCALE
EMH	04/24/18	03 JAJ	01/18/19	J. JARRELL	VARIES
DRAWING FILE NAME		CHECKED BY	F.B. NO.	JOB NUMBER	SHEET NO.
171715ABASE.DWG		JAJ	–	17-1715-A	1 OF 1

GOV LOT 1, SE 1/4, NE 1/4, SECTION 17, TOWNSHIP 28 NORTH, RANGE 4 EAST, W.M.



SURVEY NOTES:

1) SURVEY PROCEDURES & EQUIPMENT:
SECTION CONTROL: TOPCON GNSS GR-3 RECEIVERS.
ON SITE CONTROL AND STAKING: TOPCON GNSS GR-3 RECEIVERS AND/OR FIELD TRAVERSE & 10" TOTAL STATION.

2) THE GPS SURVEY PERFORMED FOR THIS SURVEY MEETS OR EXCEEDS THOSE STANDARDS CONTAINED IN WAC 332-130-160. THE FIELD TRAVERSES USED IN THIS SURVEY MEET OR EXCEED THOSE STANDARDS CONTAINED IN WAC 332-130-090.

3) GPS CONTROL: WASHINGTON STATE REFERENCE NETWORK (WSRN) GPS NETWORK. HORIZONTAL DATUM IS NAD83(NA2011) EPOCH 2010.00. VERTICAL DATUM IS NAVD88 Geoid 12A.

3) DISTANCES ARE IN FEET AND DECIMALS THEREOF.

4) ALL CONTROLLING MONUMENTS SHOWN ARE OF RECORD, ARE LOCALLY ACCEPTED AS REPRESENTATIVE OF THEIR PURPORTED POSITIONS, AND WERE VISITED DURING THE COURSE OF THIS SURVEY UNLESS OTHERWISE NOTED.

5) THIS SURVEY DOES NOT PURPORT TO SHOW ALL EASEMENTS.

LEGAL DESCRIPTION:

(PER STATUTORY WARRANTY DEED A.F. NO. 200703290242)

PARCEL 00536900002100
THAT PORTION OF LOT 21, PLAT OF OLYMPUS TERRACE, ACCORDING TO THE PLAT THEREOF RECORDED IN VOLUME 12 OF PLATS, PAGE 77, RECORDS OF SNOHOMISH COUNTY, WASHINGTON, LYING NORTHERLY OF THE FOLLOWING DESCRIBED LINE:

BEGINNING AT THE MOST NORTHERLY CORNER OF LOT 25, SAID PLAT OF OLYMPUS TERRACE;
THENCE NORTH 27°00'30" WEST ALONG THE NORTHWESTERLY LINE OF SAID LOT 25, 72.08 FEET TO A POINT ON A LINE THAT IS PARALLEL WITH AND 71.0 FEET NORTH, WHEN MEASURED AT RIGHT ANGLES, FROM THE NORTHEASTERLY LINE OF SAID LOT 25, THE TRUE POINT OF BEGINNING OF THE HEREIN DESCRIBED LINE;
THENCE SOUTH 53°03' EAST, ALONG SAID PARALLEL LINE, 324.85 FEET TO A POINT ON THE EASTERLY LINE OF SAID LOT 21 AND THE TERMINUS OF THE HEREIN DESCRIBED LINE;

(ALSO KNOWN AS LOT 3 OF SNOHOMISH COUNTY SHORT PLAT NO. 221(4-78), RECORDED UNDER RECORDING NO. 7812220268, RECORDS OF SNOHOMISH COUNTY, WASHINGTON)

TOGETHER WITH THAT PORTION OF OF VACATED 61ST PLACE WEST LYING ADJACENT THERETO PER CITY OF MUKILTEO ORDINANCE NUMBER 1264 RECORDED ON AUDITOR'S FILE NUMBER 201105030615, RECORDS OF SNOHOMISH COUNTY, WASHINGTON.

UTILITY NOTE:

ALL UNDERGROUND UTILITY LOCATIONS ARE BASED ON STRUCTURES LOCATED BY FIELD MEASUREMENTS IN FEBRUARY 2017 AND LOCATIONS PROVIDED BY:

APPLIED PROFESSIONAL SERVICES
43530 SE NORTH BEND WAY
NORTH BEND, WA 98045
(425) 888-2590

THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM THE INFORMATION PROVIDED. ALL EXISTING UTILITIES SHOWN ON PLANS ARE TO BE VERIFIED HORIZONTALLY AND VERTICALLY PRIOR TO ANY CONSTRUCTION.

SURVEYOR'S CERTIFICATION:

LOCATIONS, BOUNDARIES AND TOPOGRAPHY SHOWN ON THIS MAP ARE BASED ON A BOUNDARY AND TOPOGRAPHIC SURVEY MADE BY GREENE LAND SURVEYING ON DECEMBER 23, 2011 REFERENCE JOB NUMBER 2011.17KAKAR TOGETHER WITH A FIELD SURVEY CHECKING SPOT ELEVATIONS AND LOCATIONS DONE BY HARMSEN AND ASSOCIATES ON FEBRUARY 13 THROUGH 21, 2017 AND RECORDED IN FIELDBOOK 1164. HARMSEN SURVEY WAS PERFORMED UNDER MY SUPERVISION IN CONFORMANCE WITH APPLICABLE STATE AND INDUSTRY STANDARDS AT THE REQUEST OF M. KAKAR IN JANUARY, 2017.

3/7/17

RICHARD F. CARPENTER, PROFESSIONAL LAND SURVEYOR (DATE)
REGISTRATION NO. 34137

P:\WORK\PROJECTS\2017\17-029 KAKAR\LS\DWG\KAKAR OLYMPUS TERR LOT 21 TOPO.DWG 03/07/2017

UNPUBLISHED WORK COPYRIGHT©2017 BY HARMSEN & ASSOCIATES INC

REVISIONS

DWN. BY: RML
CHK. BY: RFC / SMW
DATE: 3/7/17
JOB #: 17-029
F/B #: 1164
SCALE: 1" = 20'

HARMSEN & ASSOCIATES INC
ENGINEERS SURVEYORS
125 EAST MAIN STREET, SUITE 104
P.O. BOX 516
MONROE, WA 98272
(360) 794-7811
(206) 343-5903
FAX: (360) 805-9732

RICHARD F. CARPENTER REGISTERED PROFESSIONAL LAND SURVEYOR STATE OF WASHINGTON 34137 LS 3/7/17

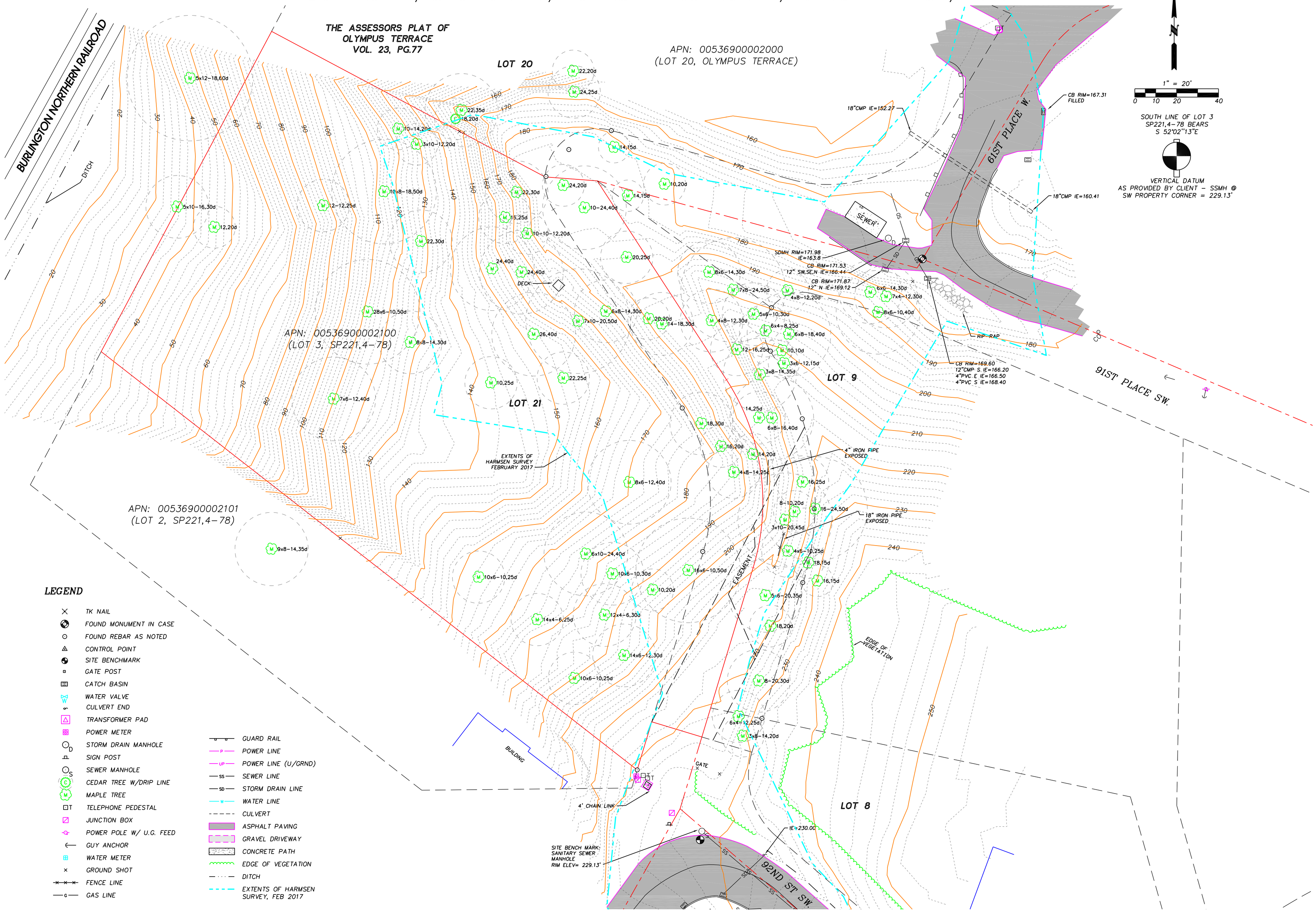
MAHMOOD KAKAR
13426 46th PLACE W
MUKILTEO, WA 98275

TOPOGRAPHIC SURVEY
APN: 00536900002100

DRAWING: S1

SHEET: 1 OF 2

GOV LOT 1, SECTION 17, TOWNSHIP 28 NORTH, RANGE 4 EAST, W.M.



P:\WORK\PROJECTS\2017\17-029 KAKAR\LS\DWG\KAKAR OLYMPUS TERR LOT 21 TOPO.DWG 03/07/2017

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REVISIONS

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RICHARD F. CARPENTER
STATE OF WASHINGTON
REGISTERED PROFESSIONAL LAND SURVEYOR
3/7/17

MAHMOOD KAKAR
13426 46th PLACE W
MUKILTEO, WA 98275

TOPOGRAPHIC SURVEY
APN: 00536900002100

DRAWING:
S2

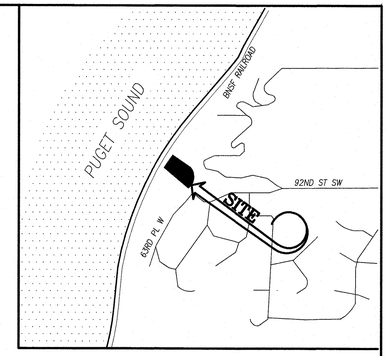
SHEET: 2 OF 2

SE 1/4, NE 1/4, SEC.17, T.28N, R.04E, W.M.
MUKILTEO, WASHINGTON

KAKAR PROPERTY

LEGEND

- EXISTING BUILDING (OFF-SITE)
- EXISTING BUILDING
- EXISTING CONCRETE
- PROPOSED BUILDING W/ ROOF OVERHANG
- PROPOSED DRIVEWAY
- EXISTING PROPERTY BOUNDARY
- XXX — EXISTING CONTOUR (MAJOR)
- EXISTING EDGE OF ASPHALT
- SD → PROPOSED STORM DRAIN LINE
- SSMH#X — PROPOSED SANITARY SEWER MANHOLE (SSMH)
- CB#X — PROPOSED STORM DRAIN CATCH BASIN (CB)
- PROPOSED CONCRETE WALL



VICINITY MAP
SCALE 1" = 2000'

SWPPP LEGEND

- CLEARING LIMITS
- SF — SILT FENCE
- PL — PLASTIC COVERING
- MU — MULCH OR STRAW MATTING
- VEG — RETAIN NATIVE VEGETATION
- EXISTING FLOW DIRECTION
- SL# — SOIL LOG #

CONTOUR & FEATURES NOTE

CONTOURS AND EXISTING STRUCTURES SHOWN BASED ON SURVEYING PERFORMED BY GREENE LAND SURVEYING.

BOUNDARY LINE NOTE

BOUNDARY LINES BEARINGS AND DISTANCES SHOWN PER RECORD OF RIGHT OF WAY UNDER AFN 201105030615. NO SURVEYING CONDUCTED BY W.E.S.I. FOR INFO SHOWN.

DRAINFIELD NOTE:

ACCORDING TO SNOHOMISH COUNTY HEALTH DISTRICT RECORDS THERE ARE NO KNOWN DRAINFIELDS WITHIN 100 FEET OF THE SITE.

SOIL AMENDMENT NOTES:

1. NATIVE TOP SOILS SHALL BE STRIPPED AND STOCKPILE NEAR SITE DISTURBANCE AREA TO BE REAPPLIED DURING FINAL STABILIZATION.

2. FULL DESCRIPTION OF SOIL AMENDMENT OPTIONS AND PROCEDURES CAN BE FOUND IN THE APPENDIX OF THE FULL STORMWATER SITE PLAN DRAINAGE REPORT.

3. RECEIPTS FOR ALL TOP SOIL AND/OR COMPOST IMPORTED INTO THE SITE FOR SOIL AMENDMENT SHALL BE RETAINED AND PROVIDED TO THE ENGINEER OR RECORD UPON COMPLETION OF PROJECT FOR FINAL SOIL AMENDMENT VERIFICATION LETTER.

3. SOD SHALE BE FREE OF WEEDS, OF UNIFORM THICKNESS (APPROXIMATELY 1" THICK), AND SHALL HAVE A DENSE ROOT MAT FOR MECHANICAL STRENGTH.

THE FOLLOWING STEPS ARE RECOMMENDED FOR SOD INSTALLATION:

A: SHAPE AND SMOOTH THE SURFACE TO FINAL GRADE IN ACCORDANCE WITH THE APPROVED GRADING PLAN.

B: AMEND 2" (MINIMUM) OF WELL-ROTTED COMPOST INTO THE TOP 6" OF THE SOIL IF THE ORGANIC CONTENT OF THE SOIL IS LESS THEN 10%. COMPOST USED SHOULD MEET ECOLOGY PUBLICATION 98-38 SPECIFICATIONS FOR GRADE A QUALITY COMPOST. THE COMPOST SHALL FIRST COME FROM THE EXISTING DUFF LAYER OF THE CLEARED AREAS. IF THE AMOUNT OF EXISTING DUFF LAYER IS INSUFFICIENT TO MEET ALL COMPOSTING NEEDS, THE COMPOST SHALL BE IMPORTED AND MEET THE ECOLOGY PUBLICATION 98-38 SPECIFICATIONS.

C: FERTILIZE ACCORDING TO THE SUPPLIER'S RECOMMENDATIONS. DISTURBED AREAS WITHIN 200' OF WATER BODIES AND WETLANDS MUST USE A NON-PHOSPHORUS FERTILIZER.

D: WORK LINE AND FERTILIZER 1" TO 2" INTO THE SOIL, AND SMOOTH THE SURFACE.

E: LAY STRIPS OF SOD BEGINNING AT THE LOWEST ARE TO BE SODDED AND PERPENDICULAR TO THE DIRECTION OF WATER FLOW. WEDGE STRIPS SECURELY INTO PLACE. SQUARE THE ENDS OF EACH STRIP TO PROVIDE FOR A CLOSE, TIGHT FIT. STAGGER JOINTS AT LEAST 12". STAPLE ON THE SLOPES STEEPER THAN 3H:1V.

F. ROLL THE SODDED AREA AND IRRIGATE.

G. WHEN SODDING IS CARRIED OUT IN ALTERNATION STRIPS OR OTHER PATTERNS, SEED THE AREAS BETWEEN THE SOD IMMEDIATELY AFTER SODDING.

HARDSCAPE AREA CALCULATION

TOTAL PROPERTY AREA: 80,451 (1.388 AC)

ON-SITE HARDSCAPE	
PROP. SFR	2,420 SF.
PROP.RETAILING WALL	130 SF.
PROP. DWY	1,340 SF.
TOTAL	3,890 SF.

OFF-SITE HARDSCAPE	
PROP. DWY APRON	860 SF.
TOTAL	860 SF.

TOTAL NEW/REPLACED HARDSCAPE: 4,750 SF.

SHEET INDEX

1 OF 4	COVER SHEET
2 OF 4	GRADING & EROSION PLAN
3 OF 4	DRAINAGE & UTILITY PLAN
4 OF 4	DETAIL SHEET

LEGAL DESCRIPTION:

(PER STATUTORY WARRANTY DEED A.F. NO. 200703290242)

PARCEL 00536900002100
THAT PORTION OF LOT 21, PLAT OF OLYMPUS TERRACE, ACCORDING TO THE PLAT THEREOF RECORDED IN VOLUME 12 OF PLATS, PAGE 77, RECORDS OF SNOHOMISH COUNTY, WASHINGTON, LYING NORTHERLY OF THE FOLLOWING DESCRIBED LINE:

BEGINNING AT THE MOST NORTHERLY CORNER OF LOT 25, SAID PLAT OF OLYMPUS TERRACE; THENCE NORTH 27°00'30" WEST ALONG THE NORTHWESTERLY LINE OF SAID LOT 25, 72.08 FEET TO A POINT ON A LINE THAT IS PARALLEL WITH AND 71.0 FEET NORTH, WHEN MEASURED AT RIGHT ANGLES, FROM THE NORTHEASTERLY LINE OF SAID LOT 25, THE TRUE POINT OF BEGINNING OF THE HEREIN DESCRIBED LINE;
THENCE SOUTH 53°03' EAST, ALONG SAID PARALLEL LINE, 324.85 FEET TO A POINT ON THE EASTERLY LINE OF SAID LOT 21 AND THE TERMINUS OF THE HEREIN DESCRIBED LINE;

(ALSO KNOWN AS LOT 3 OF SNOHOMISH COUNTY SHORT PLAT NO. 221(4-78), RECORDED UNDER RECORDING NO. 7812220268, RECORDS OF SNOHOMISH COUNTY, WASHINGTON)

TOGETHER WITH THAT PORTION OF OF VACATED 61ST PLACE WEST LYING ADJACENT THERETO PER CITY OF MUKILTEO ORDINANCE NUMBER 1264 RECORDED ON AUDITOR'S FILE NUMBER 201105030615, RECORDS OF SNOHOMISH COUNTY, WASHINGTON.

SUBJECT TO ALL EASEMENTS, RESTRICTIONS, AND RESERVATIONS.
SITUATED IN CITY OF MUKILTEO, STATE OF WASHINGTON.

VEGETATED COVER BEFORE CLEARING & GRADING

FOREST

VEGETATED COVER AFTER CLEARING & GRADING

RESIDENTIAL LAWN AND UNTOUCHED FOREST

NATIVE SOIL TYPE(S)

ALDERWOOD-EVERETT GRAVELLY SANDY LOAM

ENGINEER:

WESTERN ENGINEERS & SURVEYORS, INC.
9740 EVERGREEN WAY
EVERETT, WA 98204
PHONE: (425) 356-2700
FAX: (425) 356-2708

ZONING

RD-12.5

CESCL (ON-CALL)/CONTACT

WESTERN ENGINEERS & SURVEYORS, INC.
TIMOTHY SARKELA, EIT.
9740 EVERGREEN WAY
EVERETT, WA 98204
PHONE: (425) 356-2700
FAX: (425) 356-2708

OWNER/APPLICANT

MAHMOOD KAKAR
13426 46TH PL W
MUKILTEO, WA 98275

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TAX ACCOUNT NO.(S): 00536900002100

SITE ADDRESS: 9180 63RD PL W, MUKILTEO, WA 98275

PFN 18-_____

UTILITY CONFLICT NOTE:

CAUTION:

THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION, DIMENSION, AND DEPTH OF ALL EXISTING UTILITIES WHETHER SHOWN ON THESE PLANS OR NOT, BY POTHOLING THE UTILITIES AND SURVEYING THE HORIZONTAL AND VERTICAL LOCATION PRIOR TO CONSTRUCTION. THIS SHALL INCLUDE CALLING UTILITY LOCATE @ **8-1-1** AND THEN POTHOLING ALL OF THE EXISTING UTILITIES AT LOCATIONS OF NEW UTILITY CROSSINGS TO PHYSICALLY VERIFY WHETHER OR NOT CONFLICTS EXIST. LOCATIONS OF SAID UTILITIES AS SHOWN ON THESE PLANS ARE BASED UPON THE UNVERIFIED PUBLIC INFORMATION AND ARE SUBJECT TO VARIATION. IF CONFLICTS SHOULD OCCUR, THE CONTRACTOR SHALL CONSULT **WESTERN ENGINEERS & SURVEYORS, INC.** TO RESOLVE ALL PROBLEMS PRIOR TO PROCEEDING WITH CONSTRUCTION.

CALL 811 TWO (2) BUSINESS DAYS BEFORE YOU DIG

JESSE A. JARRELL — STATE OF WASHINGTON — 45844 — REGISTERED PROFESSIONAL ENGINEER
01-18-19

Western Engineers & Surveyors (425) 356-2700
SURVEYORS • PLANNERS • ENGINEERS
LAND USE CONSULTANTS
CIVIL ENGINEERS • LAND SURVEYORS
*** 9740 EVERGREEN WAY • EVERETT • WA • 98204 ***

COVER SHEET FOR:
KAKAR PROPERTY
SE 1/4, NE 1/4, SEC.17, T.28N, R.04E, W.M.
MUKILTEO, WASHINGTON

DRAWN BY	DATE	REV. BY	DATE	PROJECT MANAGER	SCALE
EMH	04/24/18	01 JAJ	01/18/19	J. JARRELL	
DRAWING FILE NAME		CHECKED BY	F.B. NO.	JOB NUMBER	SHEET NO.
171715ABASE.DWG		JAJ	–	17-1715-A	1 OF 4

SE 1/4, NE 1/4, SEC.17, T.28N, R.04E, W.M.
MUKILTEO, WASHINGTON

LEGEND

- EXISTING BUILDING (OFF-SITE)
- EXISTING BUILDING
- EXISTING CONCRETE
- PROPOSED BUILDING W/ ROOF OVERHANG
- PROPOSED DRIVEWAY
- EXISTING PROPERTY BOUNDARY
- XXX EXISTING CONTOUR (MAJOR)
- EXISTING EDGE OF ASPHALT
- SD PROPOSED STORM DRAIN LINE
- SSMH#X PROPOSED SANITARY SEWER MANHOLE (SSMH)
- CB#X PROPOSED STORM DRAIN CATCH BASIN (CB)
- PROPOSED CONCRETE WALL
- EX. DECIDUOUS TREE W/ASSOCIATED CANOPY
- EX. DECIDUOUS TREE TO BE REMOVED

SWPPP LEGEND

- CLEARING LIMITS
- SF SILT FENCE
- PL PLASTIC COVERING
- MU MULCH OR STRAW MATTING
- VEG RETAIN NATIVE VEGETATION
- EXISTING FLOW DIRECTION
- SL# SOIL LOG #

SOIL AMENDMENT LEGEND

R UNDISTURBED SOIL
D REAPPLY FOREST DUFF

GRADING QUANTITIES

CUT: 50 CUBIC YARDS
FILL: 1,350 CUBIC YARDS

DRAINFIELD NOTE

ACCORDING TO SNOHOMISH COUNTY HEALTH DISTRICT RECORDS THERE ARE NO EXISTING DRAINFIELDS WITHIN 100 FEET OF THE SITE.

CONTOUR & FEATURES NOTE

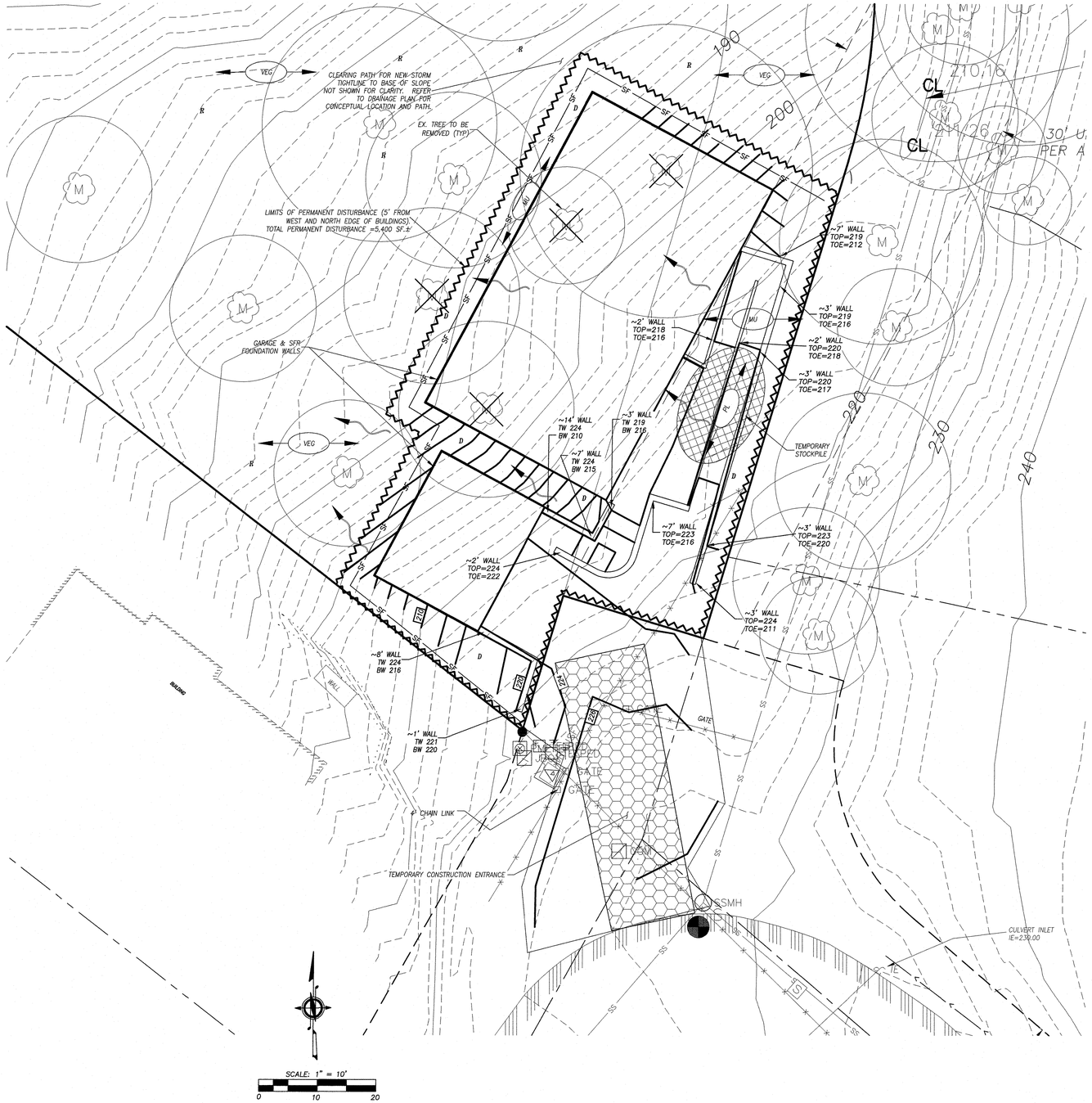
CONTOURS AND EXISTING STRUCTURES SHOWN BASED ON SURVEYING PERFORMED BY GREENE LAND SURVEYING.

BOUNDARY LINE NOTE

BOUNDARY LINES BEARINGS AND DISTANCES SHOWN PER RECORD OF SURVEY FIELD UNDER AFN 005369000021OO. NO SURVEYING CONDUCTED BY W.E.S.I. FOR INFO SHOWN.

DRAWING NOTE

ENTIRE BOUNDARY OF PROPERTY NOT SHOWN FOR CLARITY. REFER TO PROJECT SITE PLAN FOR DEPICTION OF ENTIRE PROPERTY.



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GRADING QUANTITIES

CUT: 300 CU.YDS.
FILL: 150 CU.YDS.

(GRADING QUANTITIES ARE ROUGH CALCULATIONS WHICH DO NOT ACCOUNT FOR SOIL SWELLING & SHRINKAGE)

CUT YARDAGE NOTED IS BASED ON APPROXIMATED EXCAVATION NEEDED FOR NEW BUILDING FOUNDATION INSTALLATION BASED ON PRELIMINARY BUILDING DESIGN. ALL MATERIAL REMOVED FROM SITE SHALL BE HAULED TO A CITY APPROVED SITE.

UTILITY CONFLICT NOTE:

CAUTION:

THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION, DIMENSION, AND DEPTH OF ALL EXISTING UTILITIES WHETHER SHOWN ON THESE PLANS OR NOT, BY POTHOLING THE UTILITIES AND SURVEYING THE HORIZONTAL AND VERTICAL LOCATION PRIOR TO CONSTRUCTION. THIS SHALL INCLUDE CALLING UTILITY LOCATE @ **8-1-1** AND THEN POTHOLING ALL OF THE EXISTING UTILITIES AT LOCATIONS OF NEW UTILITY CROSSINGS TO PHYSICALLY VERIFY WHETHER OR NOT CONFLICTS EXIST. LOCATIONS OF SAID UTILITIES AS SHOWN ON THESE PLANS ARE BASED UPON THE UNVERIFIED PUBLIC INFORMATION AND ARE SUBJECT TO VARIATION. IF CONFLICTS SHOULD OCCUR, THE CONTRACTOR SHALL CONSULT **WESTERN ENGINEERS & SURVEYORS, INC.** TO RESOLVE ALL PROBLEMS PRIOR TO PROCEEDING WITH CONSTRUCTION.

JESSE A. JARRELL — STATE OF WASHINGTON — 45844 — REGISTERED PROFESSIONAL ENGINEER
01-18-19

Western Engineers & Surveyors
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*** 9740 EVERGREEN WAY * EVERETT * WA * 98204 ***
(425) 356-2700

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TAX ACCOUNT NO.(S): 005369000021OO
SITE ADDRESS: 9180 63RD PL W MUKILTEO, WA 98275
PFN 18-_____

SWPPP REPORT FOR:
KAKAR PROPERTY
SE 1/4, NE 1/4, SEC.17, T.28N, R.04E, W.M.
MUKILTEO, WASHINGTON

DRAWN BY	DATE	REV. BY	DATE	PROJECT MANAGER	SCALE
EMH	04/24/18	01 JAJ	01/18/19	J. JARRELL	1"=10'
DRAWING FILE NAME		CHECKED BY	F.B. NO.	JOB NUMBER	SHEET NO.
171715ABASE.DWG		JAJ	–	17-1715-A	2 OF 4

SE 1/4, NE 1/4, SEC.17, T.28N, R.04E, W.M.
MUKILTEO, WASHINGTON

LEGEND

- EXISTING BUILDING (OFF-SITE)
- EXISTING BUILDING
- EXISTING CONCRETE
- PROPOSED BUILDING W/ ROOF OVERHANG
- PROPOSED DRIVEWAY
- EXISTING PROPERTY BOUNDARY
- XXX — EXISTING CONTOUR (MAJOR)
- EXISTING EDGE OF ASPHALT
- SD → PROPOSED STORM DRAIN LINE
- SSMH#X — PROPOSED SANITARY SEWER MANHOLE (SSMH)
- CB#X — PROPOSED STORM DRAIN CATCH BASIN (CB)
- PROPOSED CONCRETE WALL

HARDSCAPE AREA CALCULATION

TOTAL PROPERTY AREA: 60,470 (1.388 AC)

ON-SITE HARDSCAPE	
PROP. SFR ROOF	2,394 SF.
PROP. GARAGE ROOF	621 SF.
PROP. WALKWAYS/PATIOS	600 SF.
PROP. DWY	425 SF.
TOTAL	4,040 SF.

OFF-SITE HARDSCAPE	
PROP DWY APRON	940 SF.
TOTAL	940 SF.

TOTAL NEW/REPLACED HARDSCAPE: 4,980 SF.

DRAINFIELD NOTE:

ACCORDING TO SNOHOMISH COUNTY HEALTH DISTRICT RECORDS THERE ARE NO KNOWN DRAINFIELDS WITHIN 100 FEET OF THE SITE.

CONTOUR & FEATURES NOTE

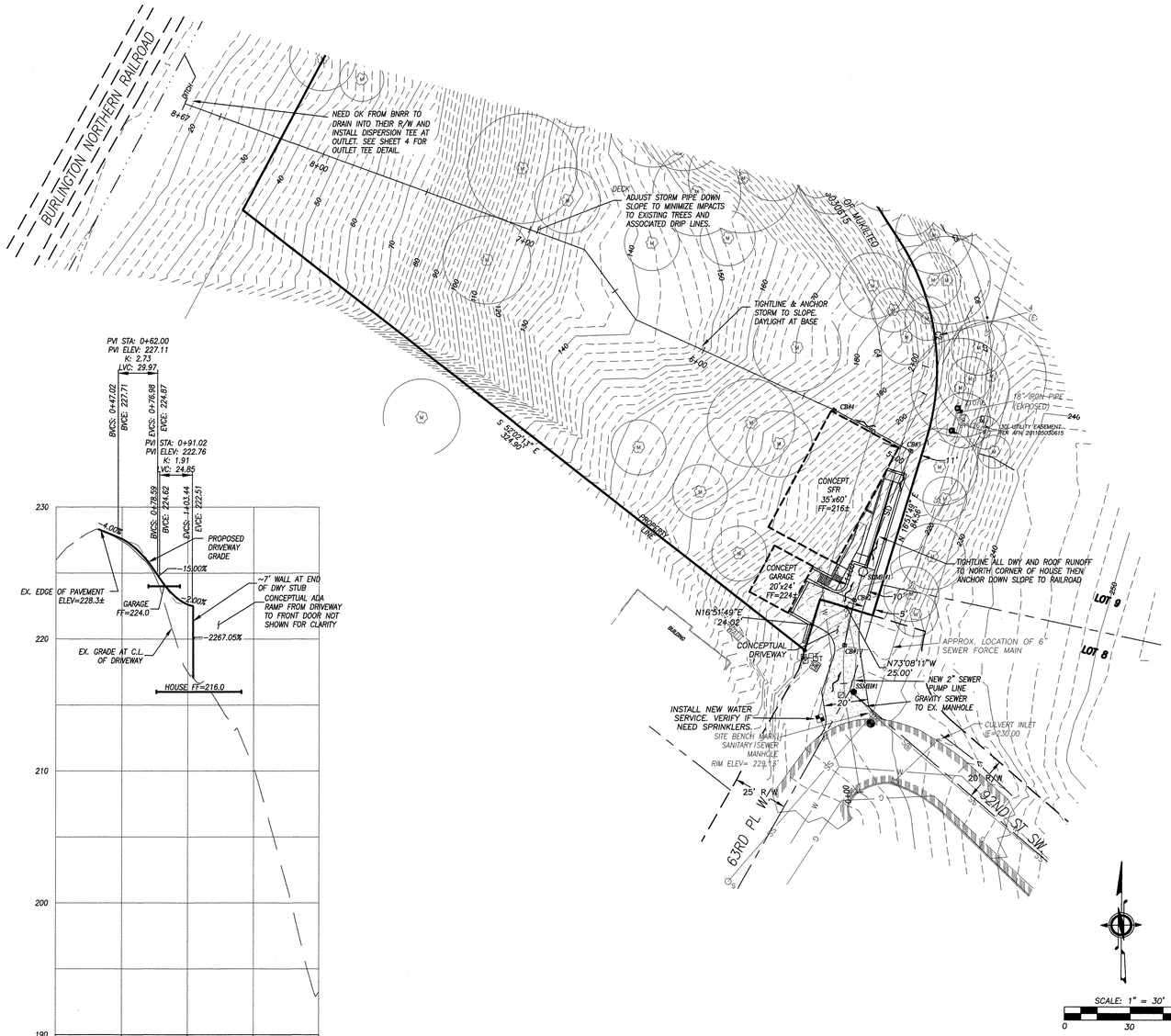
CONTOURS AND EXISTING STRUCTURES SHOWN BASED ON SURVEYING PERFORMED BY GREENE LAND SURVEYING.

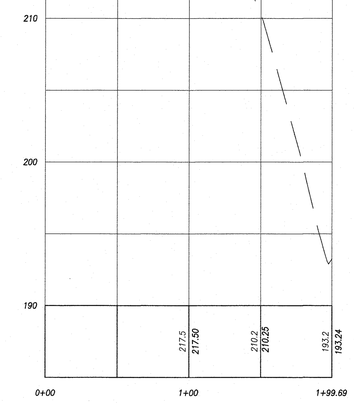
BOUNDARY LINE NOTE

BOUNDARY LINES BEARINGS AND DISTANCES SHOWN PER RECORD OF SURVEY FIELD UNDER AFN 005369000002100. NO SURVEYING CONDUCTED BY W.E.S.I. FOR INFO SHOWN.

DRAWING NOTE

ENTIRE BOUNDARY OF PROPERTY NOT SHOWN FOR CLARITY. REFER TO PROJECT SITE PLAN FOR DEPICTION OF ENTIRE PROPERTY.





DRIVEWAY PROFILE
SCALE:
VERT: 1"=5'
HORZ: 1"=50'

CALL 811 TWO (2) BUSINESS DAYS BEFORE YOU DIG

UTILITY CONFLICT NOTE:

CAUTION:

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JESSE A. JARRELL — STATE OF WASHINGTON — 45844 — REGISTERED PROFESSIONAL ENGINEER
01-18-19

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CIVIL ENGINEERS • LAND SURVEYORS
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TAX ACCOUNT NO.(S): 00536900002100

SITE ADDRESS: 9180 63RD PL W MUKILTEO, WA 98275

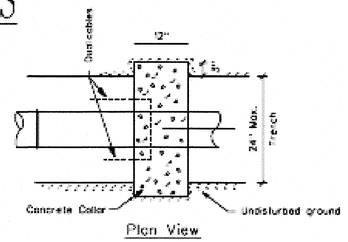
PFN 18-_____

DRAINAGE & UTILITY PLAN FOR:
KAKAR PROPERTY
SE 1/4, NE 1/4, SEC.17, T.28N, R.04E, W.M.
MUKILTEO, WASHINGTON

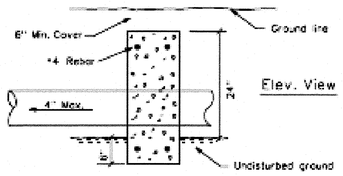
DRAWN BY	DATE	REV. BY	DATE	PROJECT MANAGER	SCALE
EMH	04/24/18	01 JAJ	01/18/19	J. JARRELL	VARIES
DRAWING FILE NAME		CHECKED BY	F.B. NO.	JOB NUMBER	SHEET NO.
171715ABASE.DWG		JAJ	–	17-1715-A	3 OF 4

DRAINS FOR STEEP SLOPES

Installation of the pipeline will be difficult due to the slope in which the pipe will be laid. Any damage to the slope due to construction must be repaired to its original condition. A large load on the conrete anchor which supports the pipe at the top of the slope will result due to this installation. This anchor should be moved as far away from the face of the slope as possible to maximize its support capability. The pipeline should be designed to withstand the weight of the water within the pipe.
See details below commonly used to support and hold the pipe in place, which should be used for this installation. If the pipeline fails, it will be the owners responsibility to reinstall the pipeline. If damage occurs to railway property due to the failure of the pipeline, the property owner will be responsible for damages. The property owner must not deposit grass clippings, yard waste, trees or other debris on the slope at any time.

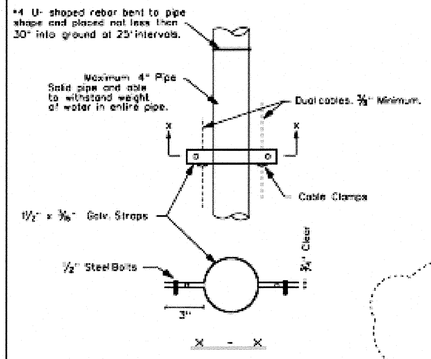


Plan View

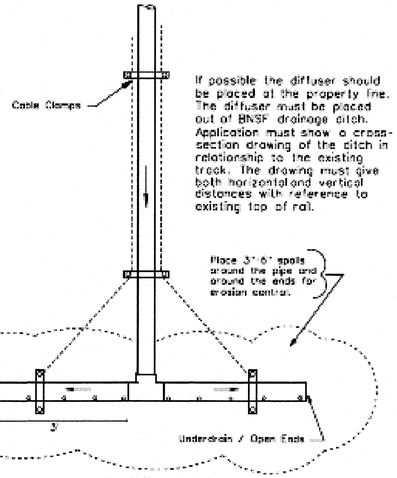


Elev. View

PIPE ANCHOR DETAIL



CLAMP DETAIL



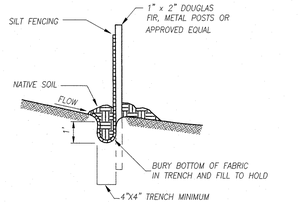
If possible the diffuser should be placed at the property line. The diffuser must be placed out of BNSF drainage ditch. Application must show a cross-section drawing of the ditch in relationship to the existing track. The drawing must give both horizontal and vertical distances with reference to existing top of rail.

DIFFUSER

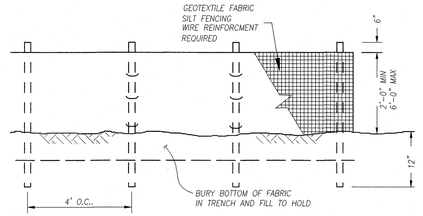
NOT TO SCALE

BURLINGTON NORTHERN & SANTA FE RAILWAY CO. OCT 1998

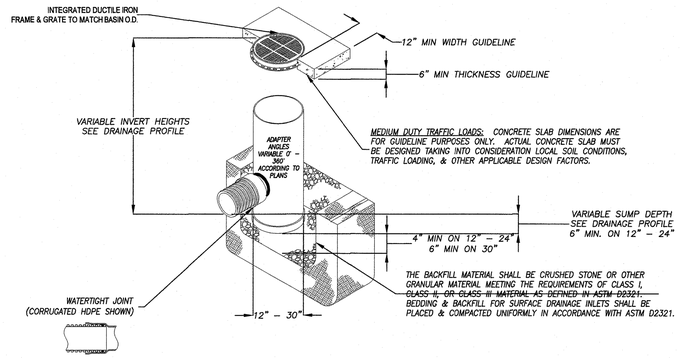
A-10



NOTES:
1. SEE BMP C233 OF THE ECOLOGY MANUAL FOR FABRIC SPECIFICATIONS
2. MAXIMUM SHEET OR OVERLAND FLOW PATH LENGTH = 100' TO FENCE
3. NO FLOWS GREATER THAN 0.5 CFS
4. PREFAB FENCE ALLOWED, IF REINFORCED AND APPROVED BY CITY INSPECTOR
5. JOINTS IN FILTER FABRIC SHALL BE OVERLAPPED 6" AT POST
6. USE STAPLES, WIRE RINGS OR EQUIVALENT TO ATTACH FABRIC TO FENCE



SILT FENCE DETAIL:
NOT TO SCALE



NYLOPLAST DRAIN BASIN WITH PEDESTRIAN GRATE
NOT TO SCALE

CALL 811 TWO (2) BUSINESS DAYS BEFORE YOU DIG

COPYRIGHT © 2018

TAX ACCOUNT NO.(S): 00536900002100

SITE ADDRESS: 9180 63RD PL W MUKILTEO, WA 98275

PFN 18-_____

JOSEPH A. ARNELL STATE OF WASHINGTON 45844 REGISTERED PROFESSIONAL ENGINEER
01-18-19

Western Engineers & Surveyors (425) 356-2700
SURVEYORS • PLANNERS • ENGINEERS
LAND USE CONSULTANTS
CIVIL ENGINEERS • LAND SURVEYORS
*** 9740 EVERGREEN WAY • EVERETT • WA • 98204 ***

DETAILS FOR:
KAKAR PROPERTY
SE 1/4, NE 1/4, SEC.17, T.28N, R.04E, W.M.
MUKILTEO, WASHINGTON

DRAWN BY	DATE	REV. BY	DATE	PROJECT MANAGER	SCALE
EMH	04/24/18	01 JAJ	01/18/19	J. JARRELL	N.A.
DRAWING FILE NAME		CHECKED BY	F.B. NO.	JOB NUMBER	SHEET NO.
171715ABASE.DWG		JAJ	–	17-1715-A	4 OF 4

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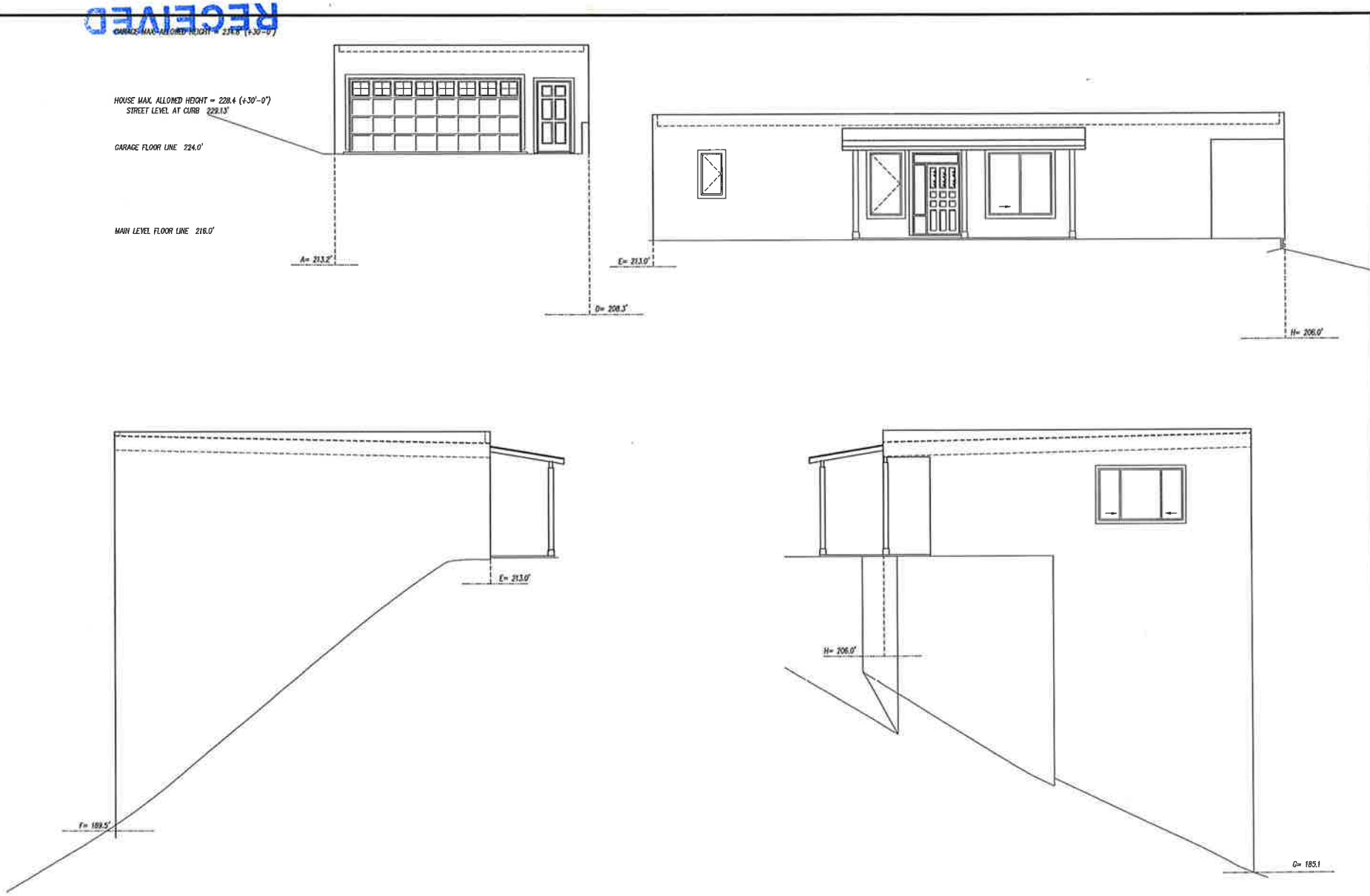
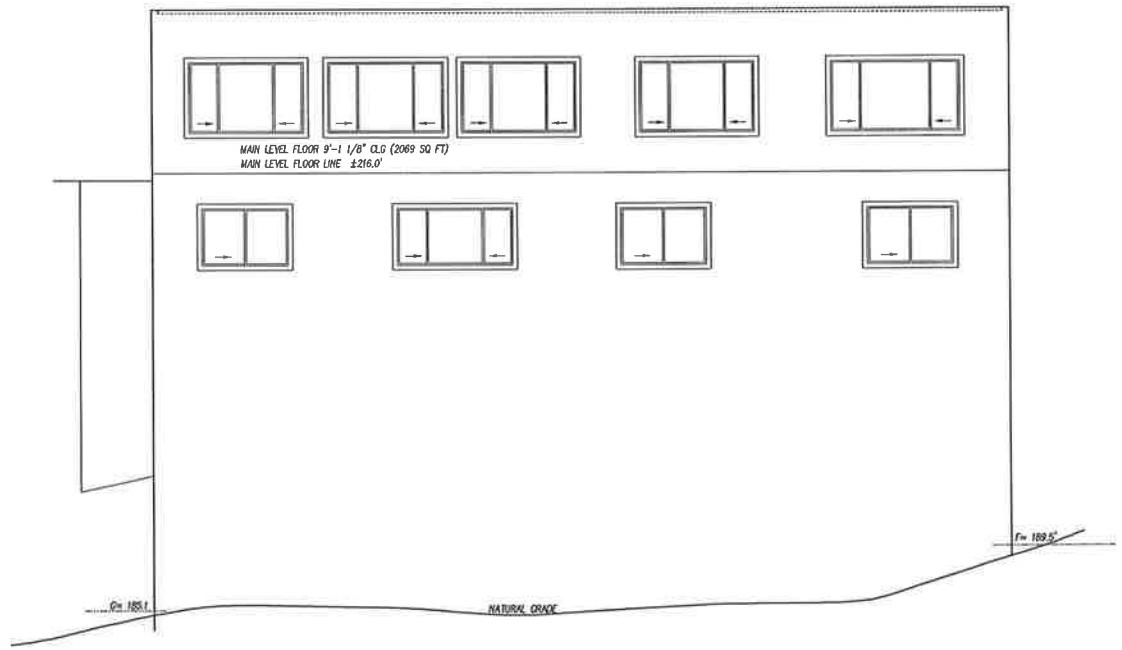
JAN 2 5 2019
CITY OF MUKILTEO



KAKAR

CUSTOM HOME

1 of 10



COMPLETE HOME & BUILDING PLAN CENTER
DESIGN HOME, SITE PLANS, ADDITIONS, BUILDING PLANS
PLANS LIGHT COMMERCIAL, DRAFTING SERVICES
1515 MADISON ST
EVERETT, WA 98203
425 353 8533
425 353 8006 FAX

DRAWN: 11-7-2018
BY: RJB
REVISED: REVISED

KAKAR
MAILING ADDRESS
CITY, ST ZIP
PHONE(S)

CUSTOM HOME
OPTIONAL INFO
COPYRIGHT © 2018 - ALL RIGHTS RESERVED
DESIGN LINES, INC. EVERETT, WASHINGTON

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JAN 25 2019
CITY OF MUKILTEO

CITY OF
MUKILTEO

ENVIRONMENTAL CHECKLIST

Purpose of checklist:

Governmental agencies use this checklist to help determine whether the environmental impacts of your proposal are significant. This information is also helpful to determine if available avoidance, minimization or compensatory mitigation measures will address the probable significant impacts or if an environmental impact statement will be prepared to further analyze the proposal.

***Instructions for applicants*:**

This environmental checklist asks you to describe some basic information about your proposal. Please answer each question accurately and carefully, to the best of your knowledge. You may need to consult with an agency specialist or private consultant for some questions. You may use "not applicable" or "does not apply" only when you can explain why it does not apply and not when the answer is unknown. You may also attach or incorporate by reference additional studies reports. Complete and accurate answers to these questions often avoid delays with the SEPA process as well as later in the decision-making process.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

Instructions for Lead Agencies:

Please adjust the format of this template as needed. Additional information may be necessary to evaluate the existing environment, all interrelated aspects of the proposal and an analysis of adverse impacts. The checklist is considered the first but not necessarily the only source of information needed to make an adequate threshold determination. Once a threshold determination is made, the lead agency is responsible for the completeness and accuracy of the checklist and other supporting documents.

Use of checklist for nonproject proposals: [help]

For nonproject proposals (such as ordinances, regulations, plans and programs), complete the applicable parts of sections A and B plus the SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS (part D). Please completely answer all questions that apply and note that the words "project," "applicant," and "property or site" should be read as "proposal," "proponent," and "affected geographic area," respectively. The lead agency may exclude (for non-projects) questions in Part B - Environmental Elements –that do not contribute meaningfully to the analysis of the proposal.

A. Background [help]

1. Name of proposed project, if applicable: [help]

Kakar Property

2. Name of applicant: [help]

Mahmood Kakar

3. Address and phone number of applicant and contact person: [help]

APPLICANT: MAHMOOD KAKAR
13426 46TH PL W
MUKILTEO, WA 98275
KAKARMAHMOOD@GMAIL.COM

CONTACT: WESTERN ENGINEERS, INC.
9740 EVERGREEN WAY
EVERETT, WA 98204
(425) 356-2700.

4. Date checklist prepared: [help]

November 8, 2018

5. Agency requesting checklist: [help]

City of Mukilteo

6. Proposed timing or schedule (including phasing, if applicable): [help]

Within one year of City approval

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain. [help]

No

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal. [help]

Drainage report, SWPPP report, Geotechnical report.

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain. [help]

None Known

10. List any government approvals or permits that will be needed for your proposal, if known. [help]

Not Known

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.) [help]

The proposed site improvements consists of clearing and grading approximately 6,500 sf of forested area for the construction of a SFR with a garage and drainage improvements.

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist. [help]

LOCATED WITHIN SE ¼, NE ¼, SEC. 17, T.28N, R.4E
9180 63rd PL W, MUKILTEO, WA 98275. TAX #: 00536900002100

B. ENVIRONMENTAL ELEMENTS [help]

1. Earth [help]

a. General description of the site: [help]

(circle one): Flat, rolling, hilly, steep slopes, mountainous, other _____

b. What is the steepest slope on the site (approximate percent slope)? [help]

Majority of the site is steep slopes, with 15% of the site being over a 100% slope..

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils. [help]

The soils on site are generally a silty type of soil

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe. [help]

Yes, Towards the middle of the site there seems to have been a landslide at some point due to the change in contours.

e. Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill. [help]

The purpose of the project is to clear and regrade part of the south corner. With the grading approximately 1,300 cu yards of fill will need to be imported.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe. [help]

Yes, however minimized by the use of BMPs

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)? [help]

Less then 10% of the site is to be converted to impervious surface.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any: [help]

Preventative measure such as, but not limited to, triangle silt damn, silt fence, and slope protection will be utilized in compliance with sound construction practies and city requirements

2. Air [help]

a. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known. [help]

Dust and equipement during construction: Delivery trucks, autos, electric saw and related construction equipment. After construction: None

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe. [help]

None Known

c. Proposed measures to reduce or control emissions or other impacts to air, if any: [help]

Conform with City of Mukilteo and State of Washington statutory requirements.

3. **Water** [help]

a. Surface Water:

1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into. [help]

Yes, the site is within the vicinity of the Puget Sound

2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans. [help]

The proposed project plans to do minor construction in the ditch with in the Right of Way of the railroad, which is within 200' of the Puget Sound.

3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material. [help]

None

4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known. [help]

None expected. If encountered, groundwater to be recharged into ground or dispersed through vegetated areas of site or hauled to an approved dump site.

5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan. [help]

No

6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge. [help]

No, does not apply

b. Ground Water:

1) Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give general description, purpose, and approximate quantities if known. [help]

Dewatering during construction may be encountered but is not expected. All groundwater encounter to be pumped and dispersed through existing vegetated areas.

2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals. . . ; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve. [help]

None

c. Water runoff (including stormwater):

1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe. [help]

Runoof from the SFR roof and driveway are to be collected within catch basins and direct to the bottom of the slope through anchored pipes.

2) Could waste materials enter ground or surface waters? If so, generally describe. [help]

No waste materials are expected to enter ground or surface waters. Possile fuel spillage during construction shall be cleaned up immediately per contractors spill prevention plan.

3) Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe. [help]

None

d. Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any: [help]

Convey runoff through anchored pipes to the bottom of the slope and into established BNSF drainage ditch

4. **Plants** [help]

a. Check the types of vegetation found on the site: [help]

_X__deciduous tree: alder, maple, aspen, other
____evergreen tree: fir, cedar, pine, other
_X__shrubs
_X__grass
____pasture
____crop or grain
____ Orchards, vineyards or other permanent crops.
____ wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other
____water plants: water lily, eelgrass, milfoil, other
____other types of vegetation

b. What kind and amount of vegetation will be removed or altered? [help]

~5,200 sf

c. List threatened and endangered species known to be on or near the site. [help]

None Known

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any: [help]

Most of the site is proposed to remain untouched, some will be converted to residential lawn

e. List all noxious weeds and invasive species known to be on or near the site. [help]

None Known

5. **Animals** [help]

a. List any birds and other animals which have been observed on or near the site or are known to be on or near the site. [help]

Examples include:

birds: hawk, heron, eagle, songbirds, other:
mammals: deer, bear, elk, beaver, other:
fish: bass, salmon, trout, herring, shellfish, other _____

b. List any threatened and endangered species known to be on or near the site. [help]

None Known

c. Is the site part of a migration route? If so, explain. [help]

Yes, Pacific Flyway

d. Proposed measures to preserve or enhance wildlife, if any: [help]

None

e. List any invasive animal species known to be on or near the site. [help]

None Known

6. **Energy and Natural Resources** [help]

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc. [help]

Electric

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe. [help]

No

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any: [help]

Archetech may call for energy conservation measyres, to be determained

7. **Environmental Health** [help]

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe. [help]

1) Describe any known or possible contamination at the site from present or past uses. [help]

Possible fuel spillage during construction.

2) Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity. [help]

Possible underground utility lines

3) Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project. [help]

Fuel will be used and possibly store during construction.

4) Describe special emergency services that might be required. [help]

Hazardous waste clean-up.

5) Proposed measures to reduce or control environmental health hazards, if any: [help]

Contractor's safety plan and program.

b. Noise [help]

1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)? [help]

The area around the project is SFR, the noises that exist in the due to the traffic

2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site. [help]

Short Term: Construction Equipment
7:00 am – 7:00 pm
Long Term: Trucks and Autos

3) Proposed measures to reduce or control noise impacts, if any: [help]

Comply with applicable statues and standard construction measures.

8. **Land and Shoreline Use** [help]

a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe. [help]

The site and the property to the north are forested, the property to the west is the railroad right of way and to the west of the railroad tracks is the Puget Sound, The properties to the south and east are partially developed with SFR.The project will have no affect on current land uses on nearby and adjacent properties.

b. Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses as a result of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use? [help]

No, none

1) Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how: [help]

No

c. Describe any structures on the site. [help]

There are no structures on the site

d. Will any structures be demolished? If so, what? [help]

No

e. What is the current zoning classification of the site? [help]

RD-12.5

f. What is the current comprehensive plan designation of the site? [help]

RD-12.5

g. If applicable, what is the current shoreline master program designation of the site? [help]

Not Applicable

h. Has any part of the site been classified as a critical area by the city or county? If so, specify. [help]

Yes, the entire site due to the steep slopes.

i. Approximately how many people would reside or work in the completed project? [help]

2-10

j. Approximately how many people would the completed project displace? [help]

None

k. Proposed measures to avoid or reduce displacement impacts, if any: [help]

Not applicable

L. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any: [help]

To be controlled by the City of Mukilteo land use controls

m. Proposed measures to ensure the proposal is compatible with nearby agricultural and forest lands of long-term commercial significance, if any: [help]

Not applicable

9. **Housing** [help]

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing. [help]

One, SFR, Mid to High Income

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing. [help]

None

c. Proposed measures to reduce or control housing impacts, if any: [help]

Not Applicable

10. **Aesthetics** [help]

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed? [help]

The roof to the garage is the tallest structure, finished floor being at 224' in elevation with a building height of 10' making the height of the garage at 234'.

b. What views in the immediate vicinity would be altered or obstructed? [help]

None

b. Proposed measures to reduce or control aesthetic impacts, if any: [help]

Not Applicable

11. **Light and Glare** [help]

a. What type of light or glare will the proposal produce? What time of day would it mainly occur? [help]

SFR lighting around the perimeter of the home, whenever the lawn owners have them on.

b. Could light or glare from the finished project be a safety hazard or interfere with views? [help]

No, lighting to be obstructed by forest vegetation

c. What existing off-site sources of light or glare may affect your proposal? [help]

None

d. Proposed measures to reduce or control light and glare impacts, if any: [help]

Not Applicable

12. **Recreation** [help]

a. What designated and informal recreational opportunities are in the immediate vicinity? [help]

None

b. Would the proposed project displace any existing recreational uses? If so, describe. [help]

No

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any: [help]

Not Applicable

13. **Historic and cultural preservation** [help]

a. Are there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers located on or near the site? If so, specifically describe. [help]

None Known

b. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources. [help]

None Known

c. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the department of archeology and historic preservation, archaeological surveys, historic maps, GIS data, etc. [help]

Not Applicable

d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required. [help]

None proposed, if historical objects or places are found, the contractor is to stop construction and notify the appropriate agency to determine what needs to be done to minimize inpacts, if any

14. **Transportation** [help]

a. Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. Show on site plans, if any. [help]

Access to 63rd Pl W will be provided by internal drive aisle.

b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop? [help]

No, The closest transit stop is approximately 5,000' east.

c. How many additional parking spaces would the completed project or non-project proposal have? How many would the project or proposal eliminate? [help]

4 proposed, none eliminated

d. Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private). [help]

Yes, there will be minor frontage improvement to allow a new driveway access

e. Describe the existing condition of the proposed access road, including width of easement, width of pavement or roadway, curbs, gutters, and/or sidewalks.

Not applicable

f. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe. [help]

Not expected

g. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and nonpassenger vehicles). What data or transportation models were used to make these estimates? [help]

Not Known

h. Will the proposal interfere with, affect or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe. [help]

No

i. Proposed measures to reduce or control transportation impacts, if any: [help]

Not applicable

15. **Public Services** [help]

a. Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe. [help]

Yes, fire protection, police, health, schools

b. Proposed measures to reduce or control direct impacts on public services, if any. [help]

Pay application fees, if any

16. **Utilities** [help]

a. Circle utilities currently available at the site: [help]
electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other _____

b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed. [help]

A pump system for the sewer, new lines for dry utilities, a tight line for the storm drainage, and a new water meter.

C. Signature [help]

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: _____

Name of signee Jesse Jarrell

Position and Agency/Organization PE-WESI

Date Submitted: 1/23/19

D. supplemental sheet for nonproject actions [help]

(**IT IS NOT NECESSARY** to use this sheet for project actions)

Because these questions are very general, it may be helpful to read them in conjunction with the list of the elements of the environment.

When answering these questions, be aware of the extent the proposal, or the types of activities likely to result from the proposal, would affect the item at a greater intensity or at a faster rate than if the proposal were not implemented. Respond briefly and in general terms.

1. How would the proposal be likely to increase discharge to water; emissions to air; production, storage, or release of toxic or hazardous substances; or production of noise?

Adding 5,000 sf of impervious surface creates runoff into the Puget sound

Proposed measures to avoid or reduce such increases are:

No measures can be taken except to tight line it to the bottom of the slope so it does not effect the steep slopes.

2. How would the proposal be likely to affect plants, animals, fish, or marine life?

No

Proposed measures to protect or conserve plants, animals, fish, or marine life are:

Not applicable

3. How would the proposal be likely to deplete energy or natural resources?

Not

Proposed measures to protect or conserve energy and natural resources are:

Not applicable

4. How would the proposal be likely to use or affect environmentally sensitive areas or areas designated (or eligible or under study) for governmental protection; such as parks, wilderness, wild and scenic rivers, threatened or endangered species habitat, historic or cultural sites, wetlands, floodplains, or prime farmlands?

Not

Proposed measures to protect such resources or to avoid or reduce impacts are:

Not applicable

5. How would the proposal be likely to affect land and shoreline use, including whether it would allow or encourage land or shoreline uses incompatible with existing plans?

Not

Proposed measures to avoid or reduce shoreline and land use impacts are:

Not applicable

6. How would the proposal be likely to increase demands on transportation or public services and utilities?

None

Proposed measures to reduce or respond to such demand(s) are:

Not applicable

7. Identify, if possible, whether the proposal may conflict with local, state, or federal laws or requirements for the protection of the environment.

The project conflicts with the code stating that if redeveloping a piped stream the stream needs to become an open stream, working with local agencies to resolve this issue.

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GEOTECHNICAL ENGINEERING STUDY
PROPOSED SINGLE FAMILY RESIDENCE
63RD PLACE WEST & 92ND STREET SW
MUKILTEO, WASHINGTON

G-2720

PREPARED FOR

Mr. Mahmood Kakar
13426 46th Pl
Mukilteo, WA 98275

May 29, 2008

GEO Group Northwest, Inc.
13240 N.E. 20th Street, Suite 10
Bellevue, WA 98005
Phone: (425)649-8757

GEO Group Northwest, Inc.
Geotechnical Engineers, Geologists
& Environmental Scientists

May 29, 2008 Job No. G-2720

Mr. Mahmood Kakar
13426 46th Pl
Mukilteo, WA 98275

Subject: **GEOTECHNICAL ENGINEERING STUDY**
PROPOSED SINGLE FAMILY RESIDENCE
63RD PLACE WEST & 92ND STREET SW
MUKILTEO, WASHINGTON

Dear Mr. Kakar:

We are pleased to submit herewith our report titled "Geotechnical Engineering Study, Proposed Single Family Residence, 63rd Place West & 92nd Street SW, Mukiteo, Washington." The scope of our services included a visual reconnaissance of the site, subsurface exploration of the site by drilling 2 borings, soils analysis, review of the geologic map for the area, and preparation of this geotechnical report to address foundation support considerations and site development criteria.

The project site is located in an area with signs of past and present landslide activity. Construction of a single family residence at this location is feasible provided that adequate stability can be achieved for the site and the house.

The soils encountered at the boring locations consist of very soft to stiff SILT overlying very stiff to hard SILT at depths ranging from 12 to 15 feet below ground surface (bgs). GEO Group Northwest, Inc., observed signs of soil movement at the site, including at the potential house locations, consisting of soil cracks, apparent slump blocks and leaning trees.

Based on the subsurface soil conditions encountered and the results of our analyses, it is our professional opinion that the proposed single family residence can be supported on an augered

concrete pile foundation embedded at least ten feet into the hard silt soils. The two main geotechnical issues are:

A. The presence of up to 15 feet of very soft to stiff soils at the proposed building pads which are not suitable for bearing foundation loads;

B. The existence of very soft to stiff soils to a depth of between 12 and 15 feet below the ground surface on the steep slopes at the project site. These soils require that the project development be designed to withstand and deflect surficial slides.

We have evaluated the site stability based upon our investigation and the topographic and boundary site information which we were provided. The topographic survey by Geodimensions (9/6/06) only delineates topography for a portion of the sloping areas around the proposed building locations. GEO Group Northwest, Inc., recommends that a survey be prepared for the entire lot and that additional topography be collected for the adjacent eastern lot, in order to show off-site steep slopes. Once this information is obtained, GEO Group Northwest, Inc., can evaluate the overall site stability.

Our recommendations, along with other geotechnically related aspects of the project, are discussed in more detail in the text of the attached report. We appreciate the opportunity to perform this geotechnical study and look forward to working with you in the construction phase of the project. If you or your design team have any questions about the content of this report, or if we can be of further assistance, please call.

Sincerely,
GEO GROUP NORTHWEST, INC.

William Chang

William Chang, P.E.
Principal

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GEOTECHNICAL ENGINEERING STUDY
PROPOSED SINGLE FAMILY RESIDENCE
63RD PLACE WEST & 92ND STREET SW
MUKILTEO, WASHINGTON

Project No. G-2720

1.0 INTRODUCTION

1.1 Project Description

The project site consists of an undeveloped residential parcel located on the west-facing bluffs, overlooking Puget Sound, in Mukilteo, Washington. The project site is located near the intersection of 63rd Place West and 92nd St. SW as indicated on the **Vicinity Map, Plate 1**. We have been provided with a site address of 9180 63rd Place West, by the Architect, Mr. Young Kim. The purpose of our study was to investigate the soil conditions at the site and provide recommendations for the proposed development.

The preliminary development plans as shown the attached **Plate 2 - Site Plan** and **Plate 3 - Partial Site Plan** indicate that one single family residence is proposed to be constructed at one of the two "Potential House Locations." For the purposes of this report we will refer to these locations as northern and southern house locations, to differentiate between the two. At the northern house location the house may be configured in one of two directions as shown; one with the longest dimension going downslope (east-west) and one with the longest dimension being parallel to the slope contours. We understand that the proposed new house will be wood-framed single family residence. The building floor elevations have not yet been determined. At this stage in the process the project is very preliminary and no definitive locations have been proposed for driveway access, however, we anticipate that potential driveways may access the building locations from either the north at 91st Pl SW and 61st Pl SW or from the south at 63rd Pl W and 92nd St SW. We anticipate that some retaining walls may be necessary in order to construct driveways on and around the steep slopes at the site.

GEO Group Northwest, Inc. should be consulted to review the validity of the recommendations contained in this report once the architectural and site development plans are finalized.

1.2 Scope of Services

We performed this study in general accordance with our proposal dated April 14, 2008. This

report has been prepared for the specific application to this project for the exclusive use of the owner and his representatives. We recommend that this report, in its entirety, be included in the project contract documents so that the contractor will be aware of our recommendations.

2.0 SITE CONDITIONS

2.1 Surface

The subject property consists of a heavily vegetated and undeveloped steeply sloping lot located on the west-facing bluffs overlooking Puget Sound. Based upon the Topographic and Boundary Survey prepared by Geodimensions the project site consists of Lot 3, an irregularly shaped parcel of undeveloped land. The project parcel is bounded on the east and north by an "undeveloped road" right-of-way. East of this right-of-way is a single family residence located above the site, at the top of the site steep slopes. A single family residence is located on the adjacent southern property, near the top of the west-facing bluffs. The immediate vicinity located adjacent to a portion of the northern property boundary is undeveloped. A new house is located north of this area, however, it is unclear whether or not the house is located on the adjacent northern parcel or a parcel which is located north of the adjacent parcel. The property is bounded on the west by the Burlington Northern Railroad property located at the base of the bluff.

Based upon the survey by Geodimensions the generally west-facing slopes at the project site have inclinations ranging from 28 to 113 percent from the horizontal. The majority of the slopes are steep, having inclinations which are greater than 40 percent from the horizontal. The topographic survey by Geodimensions delineates topography in the immediate vicinity of the proposed house construction but does not include topography downslope from the development area, near the northern portion of the "undeveloped road", or at the top of the slope on the adjacent eastern property. In order to fully evaluate the stability of the site and the associated risks we recommend that additional topographic information be collected in these areas and that we be retained to evaluate this information. Details regarding our request for more topographic information are included in the recommendations section of this report. Based upon our site reconnaissance we estimate that some of the slopes located below the development area are as steep if not steeper than those shown in the immediate vicinity of the proposed house locations and that the total slope height on the subject property may be twice the elevation differential shown on the provided

survey.

Vegetation on the slopes consists of primarily deciduous trees with underbrush and blackberry bushes. Based upon our site reconnaissance it is apparent that at one time a road was cleared and graded at the "undeveloped road" location, however, it is also clear that landslides or soil movement and erosion has occurred which has eliminated the roadway grade in some areas. Signs of soil movement such as soil cracks, apparent slump blocks, and leaning trees were observed at many locations on the site. We have located the most obvious soil movement features on the attached **Plate 3 - Partial Site Plan**. In addition an underground sewer pipe has become exposed within the adjacent "undeveloped road" area. The topography near the sewer pipe location and downhill from this area, in addition to the overall configuration of the "undeveloped road" suggest that a large portion of the pre-existing roadway may have slid and formed a slide debris area at the toe of the steeper portions of the site.

2.2 Subsurface

According to the geologic maps[1][2] for the project site the surficial soils at the site consist of the Whidbey Formation (Qw) or Double Bluff Drift (Qdb). Landslide deposits (Qls) appear to be located just north of the site location, per the maps. The Whidbey Formation soils reportedly consist of medium-bedded sand, silt and clay, non-glacial floodplain deposits. These soils are mostly cross-bedded sands. The Double Bluff Drift reportedly contains (1) cemented gravel, (2) pebbly glaciolacustrine silts and (3) massive silt with lesser beds of sand and gravel. This unit underlies the Whidbey Formation and it sometimes contains lodgment till. This deposit is well-compacted and will stand in near-vertical cliff configurations. The Double Bluff Drift commonly fails locally along vertical joint planes.

---

1 "Distribution and Description of Geologic Units in the Mukilteo, Quadrangle, Washington", USGS, Miscellaneous Field Studies, Map MF-1438, James P. Minard, 1982.

2 "Preliminary Surficial Geologic Map of the Mukilteo and Everett Quadrangles, Snohomish County, Washington", WA DNR & USGS, Geologic Map GM-20, Mackey Smith, 1976.

On May 7 and 8, 2008, the subsurface conditions of the site were explored by drilling two borings at the potential house locations as shown on the site plan. The borings were drilled by hand-portable drill rig with a continuous flight hollow stem auger. Boring number B-1 was located at the southern house location whereas boring B-2 was located at the northern house location. Copies of our boring logs are included with this report as **Appendix A - Boring Logs and Soil Legend**.

The soils encountered at the boring locations consist of very soft to stiff SILT overlying very stiff to hard SILT at depths ranging from 12 to 15 feet below ground surface (bgs). Some of the overlying soils appeared to be more fractured than the underlying very stiff to hard soils. The presence of some fractured soils suggests that soil movement may have occurred. We interpret the soils encountered to be indicative of the Double Bluff Drift soil unit.

2.3 Groundwater

Groundwater was not encountered in the borings during the drilling process. A small amount of water was encountered at the bottom of the Boring B-1 when we returned to the site on the second day of drilling. This water may indicate very slow seepage. It is possible however, that this water was a remnant of water which was added to the borehole by the driller or water which fell as rainfall overnight. Although significant groundwater seepage was not encountered at the boring locations we did observe signs of seepage located on the lower, non-mapped, portion of the slope near the Burlington Northern Railroad property. Some water was puddled at the trail on the lower portion of the slope. In addition cattails and other wetland type vegetation was observed on the lower portion of the slope, adjacent to the railroad.

3.0 CRITICAL AREAS

3.1 Critical Areas Review

Based upon our review of the City of Mukilteo Municipal Code section 17.52 Critical Areas are defined as:

> "For the purpose of the critical area regulations contained in Chapters 17.52 through 17.52E, "critical areas" are defined as those possessing existing slopes in excess of forty percent, or areas containing unstable soils or other geologic hazards, or natural drainage ways or ravines, areas of special flood hazard, areas of critical recharging effect on aquifers used for potable water, areas supporting hydrologic flows for seasonal or year around water bodies, or areas that have been identified as providing significant wildlife habitat by the Washington Department of Fish and Wildlife, wetland areas, or those areas defined as shorelines of Mukilteo, the state, or of state-wide significance."

Based upon the topographic survey for the site, the subject site slopes exceed 40 percent, which means that the site qualifies as a Critical Area.

3.2 Geologic Sensitive Areas

The City of Mukilteo also regulates development in areas which are termed Geologic Sensitive Areas. Based on the City of Mukilteo code 17.52A areas susceptible to one or more of the following types of hazards shall be designated as a geologic sensitive area:

"A. Areas subject to erosion rated moderate to severe or higher by the US Department of Agriculture's Natural Resource Conservation Service;

B. Areas subject to erosion caused by streams, surface drainage, or along the shoreline;

C. Areas within a stream's channel migration zone;

D. Areas mapped on the city of Mukilteo landslide hazard map having a moderate or higher rating;

E. Areas that are found to have, based on a site specific inspection, all of the following characteristics:

1. Springs or ground water seepage;
2. Hillsides showing intersecting geologic contacts; and
3. Slopes steeper than fifteen percent, fifteen foot rise over one-hundred-foot run;

F. Areas that are underlain or covered by mass wastage debris or landslide materials;

G. Areas of known landslides, earth movement, or containing evidence of past landslides or earth movement;

H. Areas of steep slopes; slopes that have forty percent or steeper gradients and having a vertical relief greater than ten feet, excluding constructed slopes;

I. Areas subject to liquefaction due to soil type and/or location or seismically induced ground disturbance such as surface rupture, fissuring, and lateral spreading;

J. Areas that have soil types that fall within soil category II or III per the Preliminary Surficial Geologic Map of the Mukilteo and Everett Quadrangle, Snohomish County, Washington, 1976; and/or

K. Areas that are subject to tsunami wave action."

Based upon our review of the City of Mukilteo Geologic Features Boundary Map the subject site appears to be located in an area of High Landslide risk (item #D) which indicates that the site is considered a Geologic Sensitive Area. The site also appears to qualify as a Geologic Sensitive area based upon our observations of soil movement (item #F & #G). As discussed above, the project site has steep slopes which further qualify the site as a Geologic Sensitive Area (item #H). Based upon our subsurface investigation we interpret the site soils to be the Double Bluff Drift which is a Soil Type II per the City of Mukilteo code. Consequently, the soil type also indicates that the subject site is located in a Geologic Sensitive Area (item #J).

3.3 Known Landslide Areas

GEO Group Northwest, Inc., has contacted the City of Mukilteo Planning Department as well as the Mukilteo Water District to inquire about whether or not there are records of landslides at the project site. Both offices indicated that they do not have records of landslides for the subject property.

3.4 Regulation Overview - Critical Areas & Geologic Hazard Areas

The City of Mukilteo requires that new development have a minimum buffer of at least 25 feet from steep slope Critical Areas unless allowed through "reasonable use" provisions of the Mukilteo Municipal Code and supported by a geotechnical report and approved by the public works director. We verified with the city planning department that this project site will require a reasonable use application.

3.5 Slope Stability Evaluation

Based upon the observed evidence of soil movement at the site and our subsurface investigation which indicates that a 12 to 15 foot thickness of very soft to stiff soils overly the competent site soils, it is our opinion that the site presents some significant risks that soil movement will occur. It is our opinion that erosion, sloughing and surficial creep are occurring on many portions of the site currently and we anticipate that they will continue to occur on the steeper portions of the site and may be exacerbated by wet weather or groundwater seepage, if it develops. Any proposed development at the site needs to take into account the potential for surficial soil movement and its potential impact on the proposed development.

Although the very stiff to hard silty site soils may stand at near vertical inclinations for temporary time periods the site soils, especially the overlying very soft to stiff silts, are prone to failure at weak bedding planes, when they are disturbed, and when they are impacted by surface water or groundwater. The specific details for mitigating the risk of damage due to movement are highly dependent upon the configuration of the actual development, however, at minimum we anticipate that the proposed development at the site will require the following in order to mitigate the risk of damage to the proposed structures:

1. The building should be founded on a system of augered concrete piles with concrete grade beams spanning between the piles.

2. Lateral resistance to movement for the building should be generated by using tieback anchors, such as helical anchors, or using battered piles.

3. For an at-grade building, catchment walls should either be incorporated into the uphill sides of the building or constructed uphill and separate from the building in order to catch and deflect slide material and projectiles. Catchment walls may not be necessary for the building if the building is elevated.

4. Soldier pile walls may be required to retain soils at cut or fills for access roads. The specifics for these walls will be highly dependent upon the configuration of the access roads.

3.6 Project Location

Based upon our subsurface investigation at the site and our site reconnaissance it is the opinion of GEO Group Northwest, Inc., that it is possible to construct a single family residence at the subject property, however, there are risks related to soil movement at the site as discussed above. The proposed development should take these risks into account in the siting and design of the new building. For this reason we recommend that if possible the new house should be located on the lowest inclination slopes and should be setback from the top of very steep slopes, those slopes steeper than 80%, by a minimum of 20 feet.

In accordance with the Mukilteo Code requirements we have reviewed the available information for the site and determined that the preferable location for the new building, with regard to site stability, is located on the lower inclination slopes near the central portion of the site provided that the building can be setback from the top of lower steep slope areas by at least 20 feet, the building is placed on a deep pile foundation with tiebacks or battered piles and proper engineering such as catchment walls are incorporated to mitigate the risk of damage to the structure from sliding soils, located above the building. This potential location is located roughly between the two current potential house locations and is delineated on **Plate 3 - Partial Site Plan** as "GEO Group NW Preferred House Location". It may be appropriate to modify the house shape so that it maximizes space on the lower angle slope. It will also be necessary to obtain additional topographic information so that the top of steeper slopes, located west of this area can be delineated. A discussion regarding the need for additional surveying is included in the discussion and recommendations section of this report. In addition, if this preferred house location is chosen, then we recommend additional subsurface investigation be performed at this location in order to determine the depth to dense, stable soils.

The new house may be constructed at the current proposed house locations, however, these locations appear to present a greater risk of soil movement and construction related difficulties then the GEO Group NW preferred house location, described above. At the northern building location the house will be located on a slope with an average inclination of 83 percent from the horizontal. Building on such a steep slope will be difficult no matter how stable the soils are due to access issues, and in this case there is an overlying thickness of 12 feet of very soft to stiff soils at this location. Just moving machinery onto this slope and creating access to the work area will increase the risk of soil movement. It may be possible to construct an elevated structure at this location, however, even this process would require benching into the slope for the pile installation equipment. At the southern proposed house location we have observed signs of movement at this location which suggests that soils within this area may currently be moving downslope. The average surface inclination at this location is 65 percent from the horizontal which presents similar construction access issues as that described for the northern house location. In addition, a 15 foot thickness of soft to stiff soils was found to overlie the competent soils at this location.

The GEO Group Northwest preferred house location, discussed above, is likely to be located in an area of historic landslide debris which will likely require a pile foundation and catchment wall protection, however, because it is located on a less steep portion of the site we may anticipate that the risk of movement at the house location could be lower than at the current proposed house locations.

4.0 SEISMICITY

4.1 Seismic History

The project site is located within the Seattle metropolitan area. The greater Puget Sound area has experienced a number of small to moderate earthquakes and occasional strong shocks during the brief 155-year historical record in the Pacific Northwest. The major earthquakes in the region are believed to be associated with deep-seated plate tectonic activity. Major faults within the region have not been active in the Holocene Age (geologic period dating since the last glacial retreat 14,000 years ago), consequently, none are known to be associated with historical seismicity.

Historical records for the region indicate that the Olympia earthquake of April 13, 1949, with a Richter magnitude of 7.1, produced ground-shaking of intensity VIII near its epicenter; and the Seattle-Tacoma earthquake of April 29, 1965, with a Richter magnitude of 6.5, produced a ground-shaking of intensity IV to VIII on the Modified Mercalli Scale near its epicenter. The Nisqually earthquake which occurred on February 28, 2001 had a Richter magnitude of 6.8 with reported intensities ranging from V to VIII near the epicenter. This level of ground-shaking is estimated to be the maximum that has occurred in the region during the 155 years of historic record.

The foundation design criteria recommendations and the slope stability evaluation for the development have taken into consideration the one in 100 year seismic event (an earthquake ground motion that has a 40% probability of exceedence in 50 years). Calculations of soil bearing capacity, general soil stability, and equivalent fluid pressure presented in this report reflect a one in 100 year seismic event. The analysis for the one in 100 year seismic event was based on a near crustal event having an assumed magnitude of 6.5 and occurring directly below the site. The pseudostatic horizontal acceleration which may be assumed for this event is 0.15g.

GEO Group Northwest, Inc., has reviewed the USGS mapping for quaternary age faults using Google Earth (data set updated Mar 27, 2006). Based upon this data set there are no quaternary age faults located at the project site.

4.2 Seismic Design Site Classification

According to the 2003 International Building Code (IBC), the project site has Site Class D soil (Stiff Soil), as derived from Table 1615.1.1 in the IBC, based upon the subsurface soil conditions found during our site investigation.

5.0 DISCUSSION AND RECOMMENDATIONS

It is the opinion of GEO Group Northwest, Inc., that the proposed house development may occur at the subject site, however, there are significant challenges with regard to mitigating the risk of soil movement at the site. Based upon our subsurface investigation and observations of soil movement at the site it is our opinion that the site steep slopes present a risk of movement and potential damage to the proposed building if these risks are not properly mitigated. A general

discussion of these risks is provided in the sections **3.5 - Slope Stability Evaluation** and **3.6 - Project Location**.

The topographic survey by Geodimensions delineates topography in the immediate vicinity of the proposed house construction but does not include topography downslope from the development area, near the northern portion of the "undeveloped road", or at the top of the slope on the adjacent eastern property. In order to fully evaluate the stability of the site and the associated risks we recommend that additional topographic information be collected in these areas and that we be retained to evaluate this information. Based upon our site reconnaissance we estimate that some of the slopes located below the development area are as steep if not steeper than those shown in the immediate vicinity of the proposed house locations and that the total slope height on the subject property may be twice the elevation differential shown on the provided survey. GEO Group Northwest, Inc., requires additional topographic information in order to evaluate the stability of the slopes located both above and below the proposed house locations. We recommend that a licensed surveyor be retained to collect current topography for the entire project parcel and portions of the adjacent parcels, including the portion of the "undeveloped road" which is not shown and a delineation for the top of the slopes located on the adjacent eastern property.

5.1 General

Based on the results of our study, it is our opinion that the site is geotechnically suitable for the development of the proposed single family residence. The main geotechnical issues for the project include:

1) The existence of very soft to stiff soils to a depth of 12 to 15 feet below ground surface which are not suitable for supporting building loads.

2) The risk of soil movement at the site which presents the potential of damage to the proposed building unless properly mitigated.

Development in a known landslide area on steep slopes such as at the project site presents an inherent risk to the development. The risk of damage to the development and adjacent properties from soil instability can be mitigated provided the recommendations herein are followed. It is our opinion that no cuts in excess of three feet should be made into the site slopes without the benefit

of properly designed shoring or retaining wall systems. We anticipate that a series of soldier pile shoring walls may be used to shore the hillside and all cuts which cannot meet the minimum temporary slope requirements described in **Section 5.7 - Excavations and Slopes**. In addition, the permanent walls on the uphills side(s) of the building should be designed to provide catchment of debris from anticipated landslides or separate soldier pile supported catchment walls should be constructed uphill from the proposed building. The extent and height of the catchment wall(s) is dependent upon the location of the proposed building and proposed building floor elevations which are currently unknown.

Based upon the presence of up to 15 feet of soft to stiff silty soils overlying the slope, it is our opinion that the proposed house should be supported on augered concrete piles drilled at least 10 feet into the very stiff to hard soils. The building floors should be structurally supported on the pile foundation via a system of concrete grade beams. The designer should use battered piles or tieback anchors such as helical anchors in order to resist lateral forces on the new building. Specific recommendations regarding site development considerations are presented in the following sections.

5.2 Stability Analysis

An analysis of the soil stability and its potential effects on the proposed house must be completed, however, this work can only be done when a final plan of the house location, proposed floor elevations and additional topography are available. If the house location is different than the current proposed house locations then additional subsurface investigation may be necessary. When this information is available GEO Group Northwest, Inc., will be able to calculate slope stability at the house location and provide design parameters for lateral loading for the new house foundation as well as describing in more detail, how and to what extent catchment and retaining walls may be required.

5.3 Site Preparation and General Earthwork

The building, sidewalk, driveway areas should be stripped and cleared of surface vegetation. Disturbance to the site should be kept to a minimum. To minimize erosion silt fences should be installed below areas disturbed by construction activity to prevent sediment-laden surface runoff from being discharged off-site. Exposed soils should be compacted, and/or covered with plastic

sheeting, or both. Plastic sheeting may be removed during the day while working, provided that heavy rainfall is not occurring, however the sheeting should be replaced during non-working hours. Due to erosion concerns we recommend that earthwork not occur during heavy rain events, when precipitation exceeds ½ inch within a 24 hour period.

To identify soft or disturbed subgrade soils below proposed sidewalks, driveways and parking areas, we recommend they be proof-rolled with a loaded dump truck. Any soft spots or disturbed areas thus detected should be recompacted or excavated and replaced with compacted structural fill. To protect utilities from settlement, we recommend that the bottom of utility trenches be compacted using a backhoe mounted "hoe-pack".

All fill material used to achieve design site elevations below sidewalk, driveway and parking areas should meet the requirements for structural fill. During wet weather, material to be used as backfill or structural fill for the project should have the following specifications:

1. Be free draining, granular material, which contains no more than three (5) percent fines (silt and clay-size particles passing the No. 200 mesh sieve);
2. Be free of organic and other deleterious substances;
3. Have a maximum size of three (3) inches.

All fill material should be placed at or near the optimum moisture content. The optimum moisture content is the water content in soil that enables the soil to be compacted to the highest dry density for a given compaction effort. During dry weather, any compactable non-organic soil meeting the above criteria may be used as structural fill, provided the material is near the optimum moisture content for compaction purposes. The site soils will not be usable as structural fill due to their high silt content and moisture sensitivity.

Structural fill under driveways and sidewalks should be compacted to at least 90 percent of the maximum dry density with the exception of the upper twelve (12) inches (ASTM D-1557-91). The top twelve (12) inches should be compacted to at least 95 percent of the maximum dry density. We recommend that a representative from GEO Group Northwest, Inc. evaluate the suitability of structural fill material and monitor the compaction effort during the earthwork phase of construction for verification that the recommendations herein are achieved and for quality assurance.

Fill placement shall not occur on the steep slopes at the site unless the fills consist of clean crushed rock material and unless the fills are retained via a structural retaining wall. Permanent fill slopes shall not exceed an inclination of greater than 3H:1V.

5.4 Foundations

The proposed new building may be supported on a deep pile foundation consisting of augered concrete piles embedded at least 10 feet into the underlying very stiff to hard site soils. The concrete piles should be tied together with a system of concrete grade beams. Floors should be structurally supported and also be tied to the grade beams.

The concrete piles should penetrate a minimum of 10 feet into the dense underlying soils. Based upon the subsurface investigation we anticipate that the piles will have a depth below existing grade of approximately 25 feet.

The piles should have a minimum diameter of 14 inches. For concrete piles 14 to 16 inches in diameter, embedded a minimum of 10 feet into the dense substrate, the structural engineer may use the following allowable bearing capacities for the pile design:

Pile Diameter (Inches)	Allowable Bearing (Tons)	Allowable Uplift (Tons)
14	50	25
16	63	31

No reduction in pile capacity is required if the pile spacing is at least three times the pile diameter. A one-third increase in the above allowable pile capacities can be used when considering short-term transitory wind or seismic loads.

Lateral loads can be resisted by using battered piles, horizontal tiebacks or helical anchors.

The performance of piles depends on how and to what bearing stratum the piles are installed. Since a completed pile in the ground cannot be observed, it is critical that judgement and experience be used as a basis for determining the embedment length and acceptability of a pile. Therefore, we recommend that GEO Group Northwest, Inc. be retained to monitor the pile installation operation, collect and interpret installation data and verify suitable bearing stratum. We also suggest that the contractor's equipment and installation procedure be reviewed by GEO Group Northwest, Inc. prior to pile installation to help mitigate problems which may impede work progress.

Although loading information was not furnished to us, based on our past experience of similar structures supported on similar soils, we estimate that the maximum total post-construction settlement should one-quarter (1/4) inch or less, and the differential settlement across building width should be one-quarter (1/4) inch or less.

5.5 Floor Slabs

We recommend that the floors for the proposed building be supported on a system of concrete grade beams placed on top of the concrete piles and that the floors be designed to span between pile supports.

To avoid moisture build-up on the subgrade, concrete floor slabs should be placed on a capillary break, which is in turn placed on the prepared subgrade. The capillary break should consist of a minimum four (4) inch thick layer of free-draining gravel, or crushed rock, containing no more than five (5) percent fines, passing the No. 4 sieve. A vapor barrier, such as a 10-mil plastic membrane, is recommended to be placed over the capillary break beneath the slab to reduce water vapor transmission through the slab. Two to four inches of sand may be placed over the barrier membrane for protection during construction.

5.6 Permanent Basement and Conventional Retaining Walls

Building floor elevations have not yet been determined. Consequently, it is not clear whether or not the building will have permanent basement floors. If excavations are required for basement walls on the steep slope areas and if they exceed 3 feet in depth then we recommend that they be completed by installing soldier pile supported shoring. The shoring may be designed to be

incorporated into the permanent basement walls.

Permanent basement walls restrained horizontally on top are considered unyielding and should be designed for a lateral soil pressure under the at-rest condition; while conventional reinforced concrete walls free to rotate on top should be designed for an active lateral soil pressure.

Active Earth Pressure

Conventional reinforced concrete walls that are designed to yield an amount equal to 0.002 times the wall height, should be designed to resist the lateral earth pressure imposed by an equivalent fluid with a unit weight of:

- 35 pcf for level backfill behind yielding retaining walls
- 45 pcf for a 25 percent sloped backfill
- 60 pcf for a 50 percent sloped backfill
- 75 pcf for a 75 percent sloped backfill

At-Rest Earth Pressure

Walls supported horizontally by floor slabs are considered unyielding and should be designed for lateral soil pressure under the at-rest condition. The lateral soil pressure design should have an equivalent fluid pressure of:

- 60 pcf for level ground behind permanent unyielding retaining walls
- 75 pcf for a 25 percent sloped backfill
- 100 pcf for a 50 percent sloped backfill
- 125 pcf for a 75 percent sloped backfill

Passive Earth Pressure and Base Friction

The available passive earth pressure that can be mobilized to resist lateral forces may be assumed to be equal to 300 pcf equivalent fluid weight in both undisturbed soils and engineered structural backfill. The base friction that can be generated between concrete and undisturbed bearing soils or engineered structural backfill may be based on an assumed 0.3 friction coefficient.

We recommend that a vertical drain mat, Miradrain 6000 or equivalent and a 12-inch wide zone of clean free-draining crushed rock be used to facilitate drainage behind permanent concrete basement or conventional retaining walls. The drain mat core is placed against the basement wall with the filter fabric side facing the backfill. The drain mat and free-draining zone extends from the finished surface grade, down to the footing drain pipe. A minimum of 18 inches of clean, free draining, washed rock, crushed rock, or pea gravel should be placed in the bottom of the footing trench, surrounding the footing drain, and separated from the surrounding silty site soils by a layer of filter fabric, Mirafi 140N or equivalent. If soldier pile walls are constructed the drainage may consist of a drainage mat installed on the face of temporary timber lagging and backfill for the soldier pile wall should be clean free-draining crushed rock.

The backfill in areas adjacent to basement or conventional retaining walls should be compacted with hand held equipment or a hoepack. Backfill for site retaining walls should not include the native silty site soils. Heavy compacting machines should not be allowed within a horizontal distance equivalent to one half the wall height, unless the walls are designed with the added surcharge.

Seismically Induced Surcharges

For the 1 in 100 year seismic event the designer should design permanent retaining walls, including soldier pile retaining/catchment walls for a uniform lateral load above the base of excavation which is equivalent to 10H psf.

5.7 Excavations and Slopes

We recommend that temporary cuts without shoring be limited to a height of three (3) feet, or less. For the most part, the extent and depth of excavations on the site slopes should be limited wherever possible and should always be supported through the use of a properly designed shoring system if deeper than three feet.

Under no circumstances should temporary excavation slopes be greater than the limits specified in local, state and national government safety regulations. Temporary utility excavation sidewalls greater than three feet in height should be sloped at an inclination no steeper than 1H:1V (Horizontal:Vertical). Should groundwater seepage be encountered during excavation the

excavation should be halted and the excavation stability should be evaluated by GEO Group Northwest, Inc. If utility trench sidewall slopes of this inclination or flatter cannot be constructed, and if excavations greater than three feet in depth are required, temporary shoring will be necessary.

Surface runoff should not be allowed to flow uncontrolled over the top of slopes into the project area. Exposed slopes should be covered with plastic sheets during construction to minimize erosion. All permanently exposed slopes which are disturbed during construction should be planted with an appropriate species of slope stabilizing vegetation to reduce erosion and improve the stability of the surficial layer of soil.

5.8 Temporary Shoring, Catchment and Permanent Soldier Pile Retaining Walls

Because of the potential for surficial landslides to strike the potential and preferred house locations it will be necessary to design the uphill sides of the building to withstand a design landslide event and provide catchment for slide debris. The uphill walls of the building may be designed for catchment by constructing concrete reinforced retaining walls which are capable of temporarily retaining a soil load from slide debris and resisting projectile loads from tree trunks located within the slide mass. Usually these walls cannot have windows or doors due to the anticipated slide debris loads. Alternatively, catchment for slide debris may be accomplished using separate retaining walls which are located uphill from the proposed building location. We recommend that these separate catchment walls be constructed using soldier pile supported walls. The actual parameters of the catchment design can only be provided once building location and floor elevations are determined. Also, we anticipate that temporary shoring may be required dependent upon the floor elevations for the new building. Additionally, we anticipate that permanent retaining walls may be required at the site in order to create level grades for the access driveway and other areas. We recommend that these temporary shoring structures and permanent retaining walls be supported by soldier piles.

Cantilever soldier pile walls may generally be designed for walls with retaining heights of up to 14 feet. Retaining heights which are greater than 14 feet generally require that the walls be modified to include tiebacks and/or bracing with rakers. It is important to note that permanent tiebacks cannot extend beyond the property line without easements from the adjacent property owners. The temporary shoring and/or catchment walls may be designed to be incorporated into the permanent

basement and/or uphill walls for the new building. In order to adequately maintain the catchment wall system the slide debris must be removed following each landslide event.

Cantilever soldier pile walls may be designed in accordance with the active and passive Equivalent Fluid Pressures which were provided for un-restrained walls in **Section 5.6 - Permanent Basement and Conventional Retaining Walls** of this report. If the soldier pile walls are incorporated into the permanent basement walls and designed to support the building then the designer may assume that a 24" diameter soldier pile embedded 10 feet into the very stiff to hard site soils may provide an allowable bearing capacity of 134 tons per pile.

5.9 Drainage

We did not observe significant seepage at the boring locations. Accordingly, we do not anticipate groundwater seepage at the proposed construction locations. However, if construction occurs during the rainy season, from October through April, it is possible that a small amount of perched groundwater seepage could affect the stability of the site slopes and site excavations. If groundwater seepage is encountered at the building excavations GEO Group Northwest, Inc., should be informed so that recommendations for construction may be revised if necessary. Small amounts of groundwater seepage may be easily directed away from the steep slopes by a series of well positioned french drains.

Site stormwater should not be allowed to discharge onto the steep slopes at the project site due to the risk of erosion and surficial sloughing. Stormwater should be tightlined to discharge away from the steep slopes. This may require that stormwater be tightlined all the way to the bottom of the hillside or that stormwater be pumped to an existing stormwater system.

We recommend that footing drains be installed around the foundation perimeter and behind permanent basement and concrete retaining walls. The drains should consist of a four (4) inch minimum diameter, perforated or slotted, rigid drain pipe laid at or just below the invert of the footing/grade beam with a gradient sufficient to generate flow. The drain line should be bedded on, surrounded by, and covered with a free-draining crushed rock and separated from the silty site soils by a layer of filter fabric, Mirafi 140N or equivalent. The footing drains should be tightlined to the stormwater system, as discussed above.

Under no circumstances should roof downspout drain lines be connected to the footing or basement wall drainage system. All roof downspouts must be separately tight-lined to discharge into the storm water collection system. We recommend that sufficient cleanouts be installed at strategic locations to allow for periodic maintenance of the footing drains and downspout tight-line systems.

6.0 LIMITATIONS

Our recommendations and conclusions are based on the site soils observed, engineering analyses, and our experience and engineering judgement. The conclusions and recommendations are professional opinions derived in a manner consistent with the level of care and skill ordinarily exercised by other members of the profession currently practicing under similar conditions in this area. No other warranty, expressed or implied, is made.

The recommendations submitted in this report are based upon the data obtained during our site visit. Soil and groundwater conditions encountered during construction may vary from those anticipated. If variations appear, GEO Group Northwest, Inc. should be requested to reevaluate the recommendations of this report and to modify or verify them in writing prior to proceeding with the construction.

7.0 ADDITIONAL SERVICES

We recommend that GEO Group Northwest, Inc. be retained to perform a general review of the final design and specifications of the proposed development, to verify that the earthwork and foundation recommendations have been properly interpreted and implemented in the design and in the construction documents.

We recommend that GEO Group Northwest, Inc. be retained to provide monitoring and testing services for geotechnical-related work during construction, including installation of the augered concrete piles for verification of proper embedment depth. This is to observe compliance with the design concepts, specifications or recommendations and to allow design changes in the event subsurface conditions differ from those anticipated prior to the start of construction.

Thank you for the opportunity to provide geotechnical services. Should you have any questions, please call.

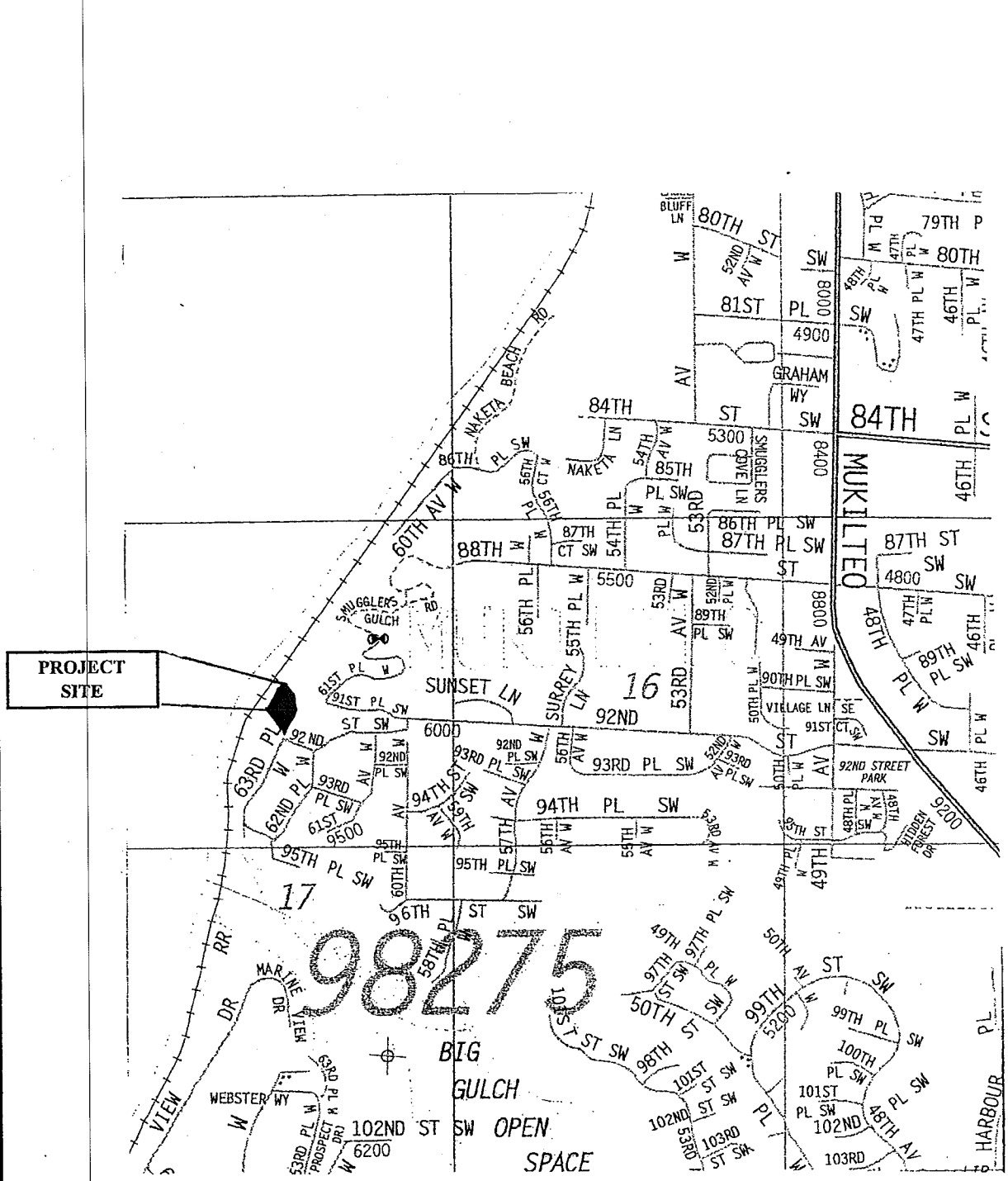
Sincerely,
GEO GROUP NORTHWEST, INC.

Adam Gaston
Project Engineer

William Chang, P.E.
Principal

ILLUSTRATIONS

G-2720

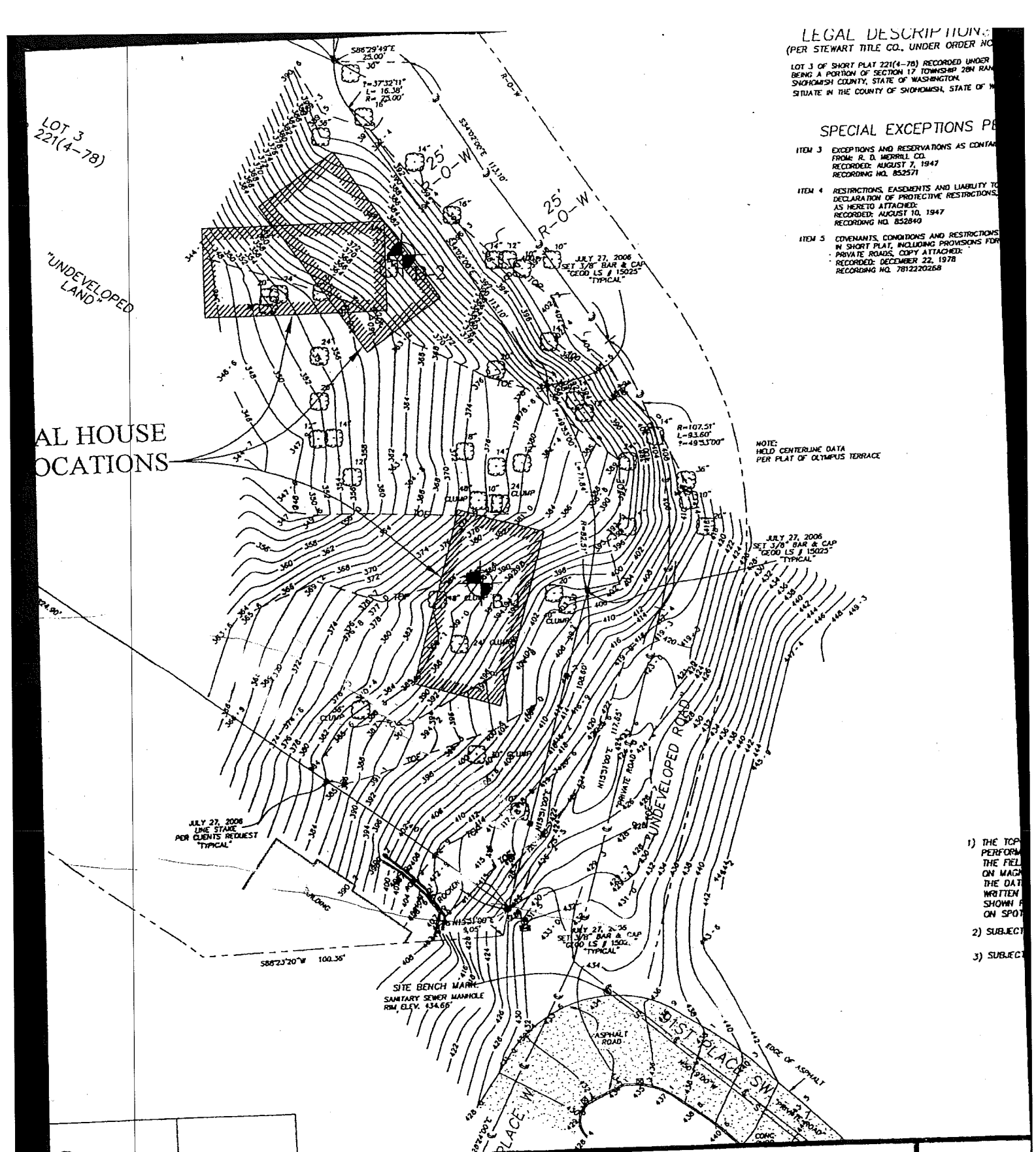


VICINITY MAP

PROPOSED SINGLE FAMILY RESIDENCE
63RD PL W & 92ND ST SW
MUKILTEO, WASHINGTON

GEO Group Northwest, Inc.
Geotechnical Engineers, Geologists, & Environmental Scientists

SCALE:	NONE	DATE:	5/16/08	MADE:	AG	CHKD:	WC	JOB NO:	G-2720	PLATE	1



ns

NG NUMBER AND
KIMATE LOCATION

GEO

Group Northwest, Inc.

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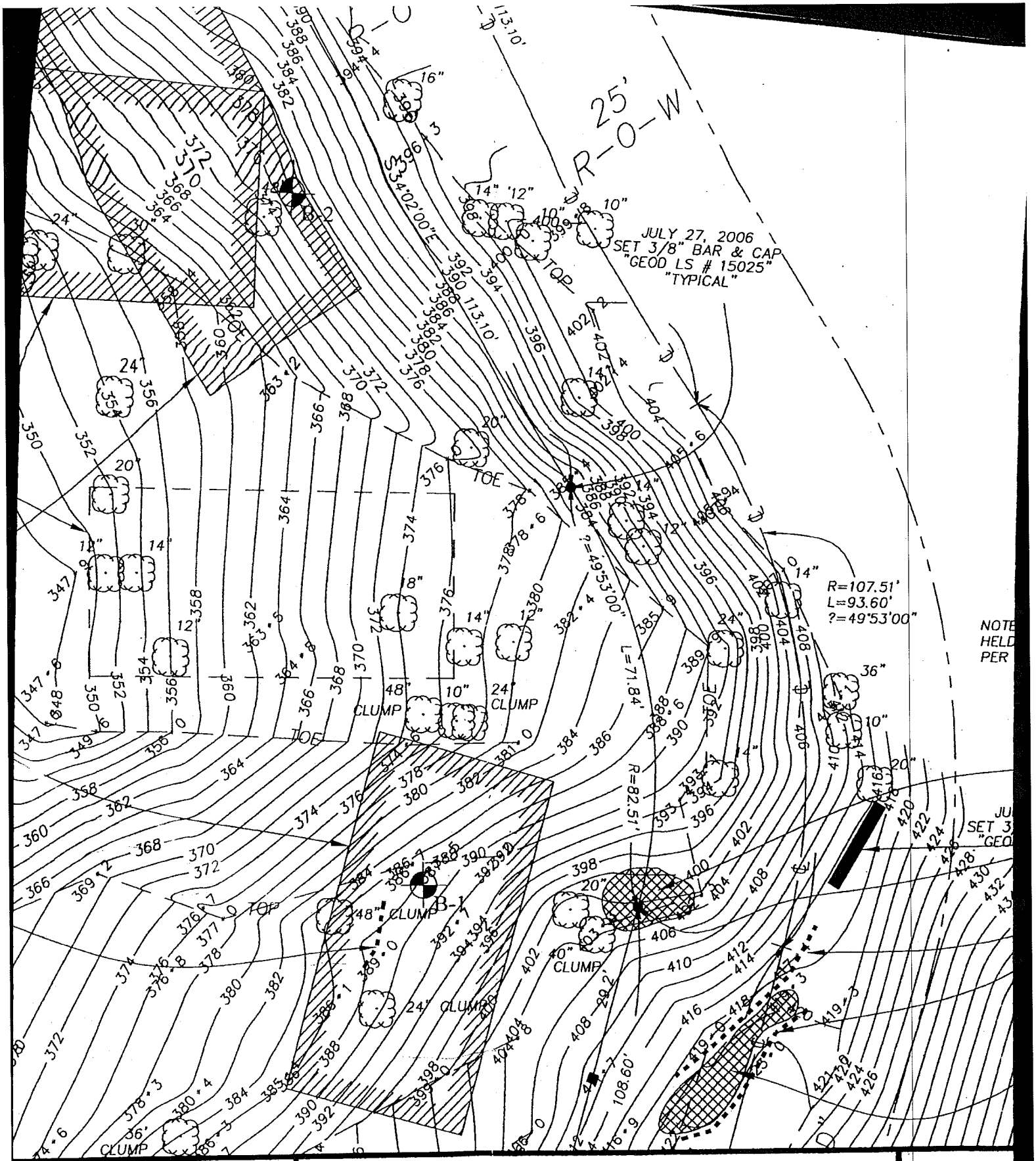
Email info@geogroupnw.com

SITE PLAN
PROPOSED
63RD PL W
MUKILTEO



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PARTIAL S
PROPOSED
63RD PL W
MUKILTEO

APPENDIX A:

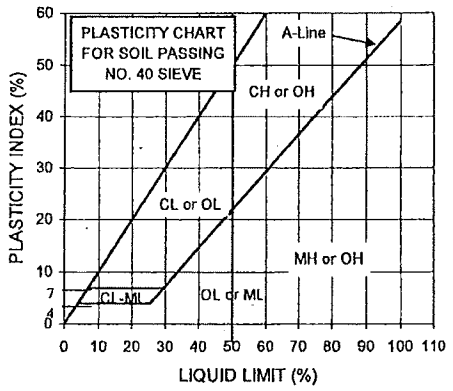
BORING LOGS AND SOIL LEGEND

G-2720

LEGEND OF SOIL CLASSIFICATION AND PENETRATION TEST

UNIFIED SOIL CLASSIFICATION SYSTEM (USCS)

MAJOR DIVISION			GROUP SYMBOL	TYPICAL DESCRIPTION	LABORATORY CLASSIFICATION CRITERIA		
COARSE-GRAINED SOILS More Than Half by Weight Larger Than No. 200 Sieve	GRAVELS (More Than Half Coarse Grains Larger Than No. 4 Sieve)	CLEAN GRAVELS (little or no fines)	GW	WELL GRADED GRAVELS, GRAVEL-SAND MIXTURE, LITTLE OR NO FINES	DETERMINE PERCENTAGES OF GRAVEL AND SAND FROM GRAIN SIZE DISTRIBUTION CURVE COARSE GRAINED SOILS ARE CLASSIFIED AS FOLLOWS: < 5% Fine Grained: GW, GP, SW, SP > 12% Fine Grained: GM, GC, SM, SC 5 to 12% Fine Grained: use dual symbols	Cu = (D60 / D10) greater than 4 Cc = (D302) / (D10 * D60) between 1 and 3	
			GP	POORLY GRADED GRAVELS, AND GRAVEL-SAND MIXTURES LITTLE OR NO FINES		NOT MEETING ABOVE REQUIREMENTS	
		DIRTY GRAVELS (with some fines)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES		CONTENT OF FINES EXCEEDS 12%	ATTERBERG LIMITS BELOW "A" LINE. or P.I. LESS THAN 4
			GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES			ATTERBERG LIMITS ABOVE "A" LINE. or P.I. MORE THAN 7
	SANDS (More Than Half Coarse Grains Smaller Than No. 4 Sieve)	CLEAN SANDS (little or no fines)	SW	WELL GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES		Cu = (D60 / D10) greater than 6 Cc = (D30^2) / (D10 * D60) between 1 and 3	
			SP	POORLY GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES		NOT MEETING ABOVE REQUIREMENTS	
		DIRTY SANDS (with some fines)	SM	SILTY SANDS, SAND-SILT MIXTURES		CONTENT OF FINES EXCEEDS 12%	ATTERBERG LIMITS BELOW "A" LINE with P.I. LESS THAN 4
			SC	CLAYEY SANDS, SAND-CLAY MIXTURES			ATTERBERG LIMITS ABOVE "A" LINE with P.I. MORE THAN 7
FINE-GRAINED SOILS More Than Half by Weight Smaller Than No. 200 Sieve	SILTS (Below A-Line on Plasticity Chart, Negligible Organic)	Liquid Limit < 50%	ML	INORGANIC SILTS, ROCK FLOUR, SANDY SILTS OF SLIGHT PLASTICITY			
		Liquid Limit > 50%	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS, FINE SANDY OR SILTY SOIL			
	CLAYS (Above A-Line on Plasticity Chart, Negligible Organic)	Liquid Limit < 30%	CL	INORGANIC CLAYS OF LOW PLASTICITY, GRAVELLY, SANDY, OR SILTY CLAYS, CLEAN CLAYS			
		Liquid Limit > 50%	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS			
	ORGANIC SILTS & CLAYS (Below A-Line on Plasticity Chart)	Liquid Limit < 50%	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY			
		Liquid Limit > 50%	OH	ORGANIC CLAYS OF HIGH PLASTICITY			
HIGHLY ORGANIC SOILS			Pt	PEAT AND OTHER HIGHLY ORGANIC SOILS			



SOIL PARTICLE SIZE

FRACTION	U.S. STANDARD SIEVE			
	Passing		Retained	
	Sieve	Size (mm)	Sieve	Size (mm)
SILT / CLAY	#200	0.075		
SAND				
FINE	#40	0.425	#200	0.075
MEDIUM	#10	2	#40	0.425
COARSE	#4	4.75	#10	2
GRAVEL				
FINE		19	#4	4.75
COARSE		76		19
COBBLES	76 mm to 203 mm			
BOULDERS	> 203 mm			
ROCK FRAGMENTS	> 76 mm			
ROCK	>0.76 cubic meter in volume			

GENERAL GUIDANCE OF SOIL ENGINEERING PROPERTIES FROM STANDARD PENETRATION TEST (SPT)

SANDY SOILS				SILTY & CLAYEY SOILS		
Blow Counts N	Relative Density %	Friction Angle ϕ, degree	Description	Blow Counts N	Unconfined Strength Qu, tsf	Description
0 - 4	0 - 15		Very Loose	< 2	< 0.25	Very soft
4 - 10	15 - 35	26 - 30	Loose	2 - 4	0.25 - 0.50	Soft
10 - 30	35 - 65	28 - 35	Medium Dense	4 - 8	0.50 - 1.00	Medium Stiff
30 - 50	65 - 85	35 - 42	Dense	8 - 15	1.00 - 2.00	Stiff
> 50	85 - 100	38 - 46	Very Dense	15 - 30	2.00 - 4.00	Very Stiff
				> 30	> 4.00	Hard

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PLATE A1

BORING NO. B-1

Logged By: AG **Date Drilled:** 05/07/2008

Depth ft.	USCS	Soil Description	SAMPLE Type	SAMPLE No.	Blows per 6-inches	SPT N Blows per-foot	Water Content %	Other Tests & Comment
	ML	Mottled SILT with some charcoal pieces, fractured, moist, soft		S1	1,1,3	4	42.7	
	ML	Gray SILT, fractured, moist, medium stiff		S2	1,2,3	5	35.5	
5	ML	Gray SILT, fractured, dry to moist, medium stiff		S3	4,4,5	9	32	
				S4	3,4,5	9	34.7	
10	ML	Gray SILT with trace fine gravel, fractured, dry to moist, stiff		S5	5,6,9	15	31.7	
				S6	4,6,9	15	36.1	
15	ML	Gray SILT, fractured/massive, moist, very stiff		S7	4,7,14	21	37.4	
20	ML	Gray SILT, slightly fractured, moist, very stiff		S8	6,9,20	29	32	
25	ML	Gray SILT, fractured/massive, moist, hard		S9	8,9,22	31	29.2	
30	ML	Gray SILT, massive, moist, hard		S10	5,12,23	35	35.2	
35		End of boring at 31.5 feet bgs; No groundwater seepage observed during drilling; Driller added water during drilling, below 16' bgs; <1' of water observed next day at bottom of borehole;						

LEGEND:
- 2" O.D. Split-Spoon Sampler
- 3" O.D. Shelby-Tube Sampler
- 3" O.D. California Sampler

GROUNDWATER OBSERVATION WELL:
- Seal
- Measured Water Level
- Well Tip (Screen)

GEO Group Northwest, Inc.
Geotechnical Engineers, Geologists, & Environmental Scientists

BORING LOG
PROPOSED NEW RESIDENCES
63RD PL W AND 92ND ST SW
MUKILTEO, WASHINGTON

DATE:	5/8/08	JOB NO:	G-2720	PLATE	A2

BORING NO. B-2

Logged By: AG **Date Drilled:** 05/07/2008

Depth ft.	USCS	Soil Description	SAMPLE Type	SAMPLE No.	Blows per 6-inches	SPT N Blows per-foot	Water Content %	Other Tests & Comment
	ML	Brown SILT with some sand, moist, very soft		S1	1,1,1	2	23.3	
	ML	Brown SILT, moist, soft (hit wood - root)		S2	2,7,4	11	23.8	
5	ML	Brown SILT, moist, soft, some small wood pieces		S3	1,2,1	3	19.7	
	ML	Gray SILT, moist, medium stiff		S4	2,3,4	7	22.1	
10	ML	Gray SILT, fractured, moist, stiff		S5	5,5,6	11	26.6	
	ML	Gray SILT, massive, moist, hard		S6	11,16,17	33	18.5	
15	ML	Gray SILT, massive, moist, very stiff		S7	7,7,9	16	32.3	
20	ML	Gray SILT, massive, moist, hard		S8	12,28,41	69	22	
		End of boring at 21.5 feet bgs; No groundwater seepage observed during drilling; Drilled adjacent to large tree - wood / roots encountered in surficial soils						
25								
30								
35								

LEGEND:
- 2" O.D. Split-Spoon Sampler
- 3" O.D. Shelby-Tube Sampler
- 3" O.D. California Sampler

GROUNDWATER OBSERVATION WELL:
- Seal
- Measured Water Level
- Well Tip (Screen)

GEO Group Northwest, Inc.
Geotechnical Engineers, Geologists, & Environmental Scientists

BORING LOG
PROPOSED NEW RESIDENCES
63RD PL W AND 92ND ST SW
MUKILTEO, WASHINGTON

DATE:	5/8/08	JOB NO:	G-2720	PLATE	A3

WESTERN ENGINEERS & SURVEYORS
SURVEYORS · ENGINEERS · LAND USE CONSULTANTS

9740 Evergreen Way • Everett, WA 98204

P: (425) 356-2700 F: (425) 356-2708 W: WESI.CO

TRAGETED DRAINAGE REPORT

for

KAKAR PROPERTY
9180 63rd Pl W.
Mukilteo, WA 98275

PFN _____

ISSUE DATE: January 11, 2019
REVISION DATE:

PREPARED BY:
Eric M Haines, E.I.T.

REVIEWED BY:
JESSE A. JARRELL, P.E.

01-18-19

CLIENT
Mahmood Kakar
13426 46th Pl W
Mukilteo, WA 98275

ENGINEER
Western Engineers & Surveyors, Inc.
Job # 17-1715-A

WESTERN ENGINEERS © 2018

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Minimum Requirement # 1: Stormwater Site Plan

Executive Summary

On-site improvements consist entirely of clearing/grading and removal of existing forest for the construction of a new Single Family Residence located in the south east corner of the site. Access to the Single Family Residence is to be provided by a new driveway, connect to the northwest corner of 63rd Pl W and 92nd St SW. Utilities for the Single Family Residence are to be provided by extension of existing utilities located along 63rd Pl W.

Drainage mitigation for the site is planned to be provided by the installation of catch basins for collection of runoff and pipe anchored to the hill to direct the developed stormwater to the bottom of the existing slope on-site, which uses a flow diffuser outlet to release into a ditch within railroad right of way. The driveway is also design to direct all run off into the same system. Disturbed pervious areas will be amended per BMP T5.13. The project is to be designed to the 2012 (With 2014 Updates) WADOE Stormwater Design Manual, and 2017 City of Mukilteo Development Standard.

Existing Conditions Summary

The property is one tax parcel, containing forested area. The property is accessed via the northwest side of 63rd Pl W, which lies to the southeast of the site. Vegetation on-site consists mainly of tree canopy coverage. On-site slopes are steep with majority of the slopes ranging from 3:1 to 1:1. The sloping goes from the east to west toward the Puget Sound.

VICINITY MAP

MAP TAKEN FROM GOOGLE MAPS

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(425) 356-2700 (425) 356-2708 (FAX)
westernengineers.com

KAKAR PROPERTY
MUKILTEO, WA 98275

SCALE: 1" = 200'	**DATE:** 05/29/18	**CHECKED:** JAJ
BY: EMH	**JOB NUMBER:** 17-1715-A	**FILE NAME:** 171715A/VICINITYMAP

Upstream Analysis

The topography of the site and the surrounding area is steep. Minor sheet flows are expected from residential lawn on parcels to the east. Runoff south of the site from 92nd St SWappears to have minor sheet flows from pavement areas running into the site. No other upstream flows appear to enter into the site and no sources of erosion were observed.

Downstream Analysis

A downstream analysis was provided by Eric Haines, E.I.T. of Western Engineers & Surveyors Inc., on May 29, 2018. Weather was overcast with a temperature around 55 degrees.

Runoff from the site appears to flow down the steep slopes towards the Puget Sound. The Puget Sound is located approximately 130 to the west of the site. The BNSF right of way is between the site and The Puget Sound. On the east side of the right of way there is a ditch that intercepts the runoff, where it flows north to a culvert which directs the runoff under the railroad and into the Puget Sound. Further downstream analysis is not required.

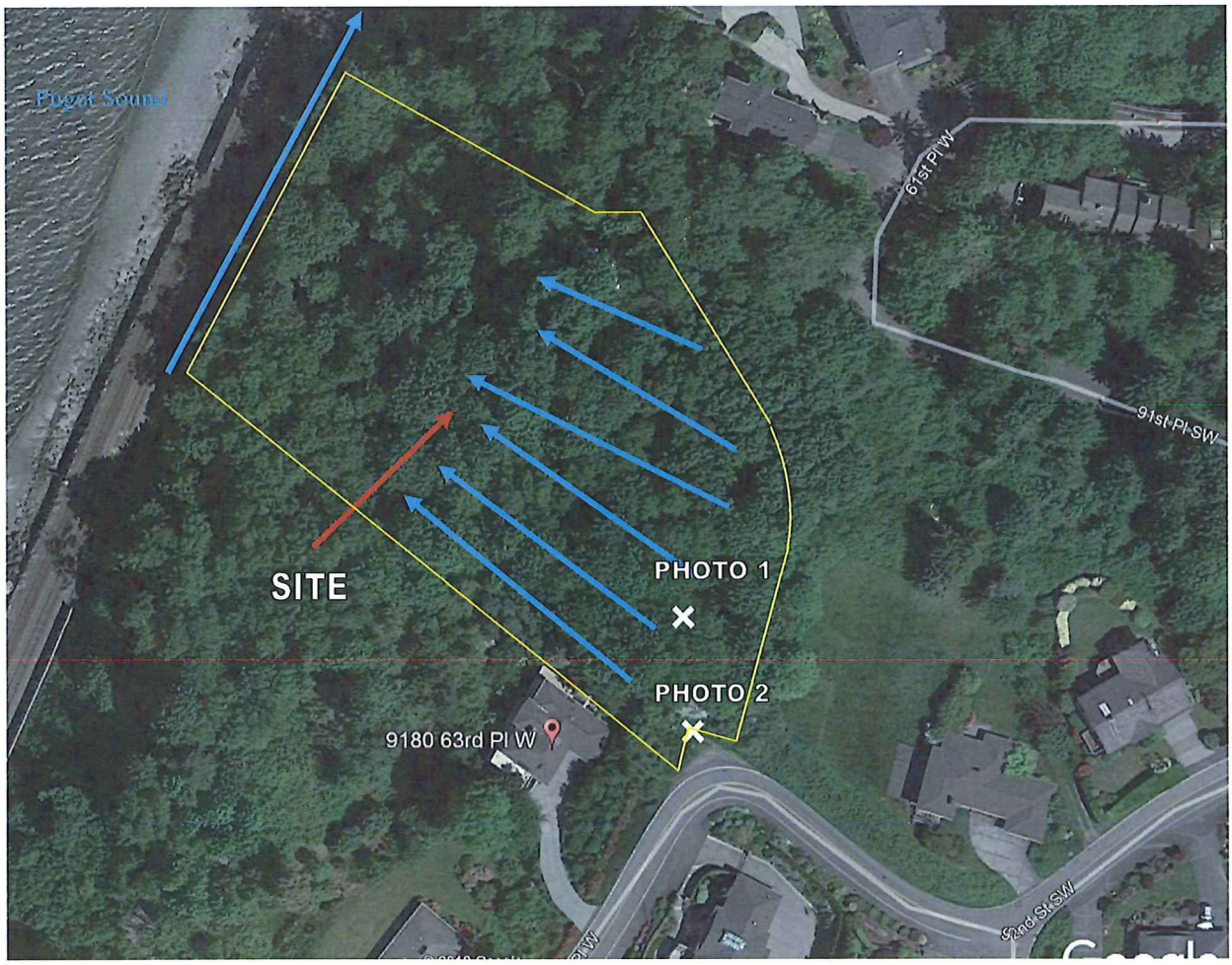
Drainage Complaints

There are no known drainage complaints for this site.

DOWNSTREAM AND AERIAL MAPS

DOWNSTREAM AND PHOTO MAP

Photo Taken from Google Earth



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KAKAR PROPERTY
MUKILTEO, WA 98275

SCALE: 1" = ~100'	**DATE:** 05/29/18	**CHECKED:** JAJ
BY: EMH	**JOB NUMBER:** 17-1715-A	**FILE NAME:** Aerial Map

DOWNSTREAM PHOTOGRAPHS

DOWNSTREAM PHOTOGRAPHS

PHOTO 1:
Figure Above:
Looking northerly down the slope for the proposed driveway, and where the stormwater flows

PHOTO 2:
Figure Below:
Looking from the street down the proposed driveway and the flow direction

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SCALE: None	**DATE:** 05/29/18	**SHEET:** 1 OF 1	
BY: EMH	**JOB NUMBER:** 17-1715-A	**FILE NAME:** Downstream 1.DOC	

Minimum Requirement # 2: SWPPP Narrative

Element #1: Mark Clearing Limits

Clearing limits have been shown on the SWPPP Plan.

Element #2: Establish Construction Entrance

A construction entrance shall be provided on the proposed driveway. All vehicles shall be free of debris prior to leaving the site.

Element # 3: Control Flow Rates

Flow rates during construction are to be contained through the installation of silt fencing in the west area of the site.

Element # 4: Install Sediment Controls

Sediment controls mainly consist of the installation of silt fencing in the west area of the site.

Element # 5: Stabilize Soils

All soils disturbed during site grading will be stabilized by use of the most appropriate BMP method available. These consist of short-term and long-term solutions. Short-term methods consist of compaction of the soils by vibratory roller or bulldozer. Long-term methods consist of straw covering over the soils (this is in the case of the project becoming dormant for greater than 1 month). At this time no wintertime grading or construction activities will occur. During construction periods longer than 1 working week (7 days) where the soils are exposed and un-worked will use the proscribed methods in the Storm Water Management Manual for Western Washington, and City of Mukilteo 2017 Development Standard Manual to reduce sedimentation transported offsite. If winter grading is conducted, all exposed soils shall be covered within 2 days.

Element # 6: Protect Slopes

There are slope up to 1:1 with in the clearing areas, so the slopes will need to be protected. Protect the slopes by use of the most appropriate BMP method available. Use the prescribed methods in the Storm Water Management Manual for Western Washington, and City of Mukilteo 2017 Development Standard Manual. Such as matting and surface roughening

Element # 7: Protect Drain Inlets

No inlets were observed within the downstream vicinity of the site. No other known drainage inlets exist in the area. Inlet protection is not required.

Element # 8: Stabilize Channels and Outlets

Channels and drainage outlets are not needed around the proposed development area on site. No stabilization is necessary. Existing channels or drainage outlets located within 500-

feet of the property should be routinely inspected for debris that may dam and/or aid erosion.

Element # 9: Control Pollutants

All pollutants from construction vehicles will be contained and disposed of in the approved manner consistent with state environmental policies. Any vehicle maintenance will be performed by authorized mechanics using drip pans and waste containment vessels. All pollutants will be disposed offsite at approved facilities.

Element # 10: Control De-Watering

De-watering of the site is not expected. If dewatering of the site is needed, all groundwater removed shall be retained and recharged into the ground after de-watering has been finalized.

Element # 11: Maintain BMP's

All Temporary Erosion and Sedimentation Control (TESC) devices and equipment will be inspected and maintained on a weekly basis if not sooner, based on storm events contributing to runoff. When construction is complete and the site is stabilized, any existing sediment will be removed and stabilized onsite.

Element # 12: Manage the Project

A general construction manager will manage the project for or by the owners. The construction manager shall maintain all of the above items in order to minimize sediment transport and turbid water leaving the site. His job will entail continual observation of the grading operations to ensure minimal effects to adjacent properties and offsite waterways.

Element # 13: Protect On-Site Stormwater Management BMPs

Soil amendment areas will be protected from compaction where feasible. No other stormwater BMP's proposed for development.

Minimal Requirement # 3: Water Pollution Source Control

All proposed development is to consist of small residential type construction. No water pollution source control is needed.

Minimum Requirement # 4: Preservation of Natural Drainage Systems and Outfalls, and provisions of off-site mitigation

No changes to the existing drainage systems and outfalls are proposed with this development. All proposed runoff from the project area is to be pipe to the bottom of the hill into a ditch, which is the natural drainage point of the site.

Minimum Requirement #5 On-Site Storm Water Management

The project results in less than 5,000 square feet of new/replaced hard surfaces and must evaluate Minimum Requirements 1 through 5 and select on-site stormwater BMPs according to List 1 for each proposed hard surface. Note that due to geometry and spacing between the property line and the proposed edge of house, infiltration and dispersion BMPs are generally infeasible. Refer to List 1 below for appropriate BMP selection or infeasibility description:

Lawn and landscaped areas:

- Post-Construction Soil Quality and Depth in accordance with BMP T5.13 in Chapter 5 of Volume V. (To be used in disturbed vegetated areas)

Roofs feasibility description:

1. Full Dispersion per BMP T5.30 or Downspout Full Infiltration per BMP T5.10A.
    i. Full Dispersion is infeasible due to the site consisting mostly of steep slopes. Full Infiltration is infeasible due to steepness of the site.
2. Bioretention per Volume V, Chapter 7.
    i. Due to the fact that the entire site contains steep slopes, bioretention facilities are infeasible.
3. Downspout Dispersion Systems in accordance with BMP T5.10B.
    i. Due to the fact that the slopes are over the maximum slope of 15%, dispersion is infeasible.
4. Perforated Stub Out Connections BMP T5.10C
    i. Perforated Stub Out is infeasible for this project because all types of infiltration are not recommended due to steep slopes.
5. Convey to the Existing Downstream Drainage System
    i. Due to all other BMPs being infeasible runoff from the site will be discharge directly into an existing downstream drainage system.

Other Hard Surfaces feasibility description:

1. Full Dispersion per BMP T5.30
    i. As noted above, Full Dispersion is infeasible due to the steepness of the slopes.
2. Permeable Pavement per BMP T5.15
    i. Due to the fact that the entire site consists of steep slopes areas, permeable pavement is infeasible.
3. Biorention per Volume V, Chapter 7.
    i. Due to the fact that the entire site consists of steep slopes areas, bioretention facilities are infeasible.
4. Sheet Flow Dispersion in accordance with BMP T5.12 or BMP T5.11.
    i. Sheet Flow Dispersion BMP T5.12 is infeasible because the slopes are over 15%.
5. Convey to the Existing Downstream Drainage System
    i. Due to all other BMPs being infeasible runoff from the site will be discharge directly into an existing downstream drainage system.

Minimum Requirement # 6: Runoff Treatment

Due to the site proposing less than 5,000 sf. of new/replaced pollution generating impervious surfaces (approximately 1,365 sf. driveway area proposed for the site), and less than ¾ acres of pollution generating pervious surfaces, runoff treatment is not required.

Minimum Requirement # 7: Flow Control

Due to the site proposing less than 5,000 sf of new/replaced impervious surface, less than ¾ acres of forest to lawn conversion, less than 2.5 acres of forest to pasture conversion, flow control is not required.

Existing and Developed Site Summary

Gross Property Area	= 60,470 sf. (1.388 Ac.)
(Project Clearing Area	= 7,000 sf. (0.161 Ac.)

Existing Site

On-Site Hardscape area:

On-Site Pervious area:

Existing Tree Cover	= 60,470 sf. (1.388 Ac.)

Proposed Site

On-Site Hardscape area:

Proposed SFR Roof	= 2,394 sf.
Proposed Garage Roof	= 621 sf.
Proposed Walks	= 600 sf.
Proposed Driveway	= 425 sf.
Total	=4,040 sf. (0.093 Ac.)

Off-Site Hardscape area:

Proposed Driveway Apron	= 940 sf.
Total	= 940 sf. (0.022 Ac.)

Total New/Replaced Impervious Surface = 4,980 sf. (0.114 Ac.)

On-Site Pervious area:

Existing Lawn and Tree Cover to Remain	= 55,070 sf.
Proposed Compost Amended Lawn/Landscape	= 1,360 sf.
Total	= 56,430 sf.

Minimum Requirement # 8: Wetland Protection

No known wetlands in downstream vicinity, wetland protection not required.

Minimum Requirement # 9: Operation and Maintenance

BMP T5.13 Post-Construction Soil Quality and Depth

Maintenance

- Soil quality and depth should be established toward the end of construction and once established, should be protected from compaction, such as from large machinery use, and from erosion.
- Soil should be planted and mulched after installation.
- Plant debris or its equivalent should be left on the soil surface to replenish organic matter.

Table V-4.5.2(5) Maintenance Standards - Catch Basins

Maintenance Component	Defect	Conditions When Maintenance is Needed	Results Expected When Maintenance is performed
General	Trash & Debris	Trash or debris which is located immediately in front of the catch basin opening or is blocking inletting capacity of the basin by more than 10%. Trash or debris (in the basin) that exceeds 60 percent of the sump depth as measured from the bottom of basin to invert of the lowest pipe into or out of the basin, but in no case less than a minimum of six inches clearance from the debris surface to the invert of the lowest pipe. Trash or debris in any inlet or outlet pipe blocking more than 1/3 of its height. Dead animals or vegetation that could generate odors that could cause complaints or dangerous gases (e.g., methane).	No Trash or debris located immediately in front of catch basin or on grate opening. No trash or debris in the catch basin. Inlet and outlet pipes free of trash or debris. No dead animals or vegetation present within the catch basin.
	Sediment	Sediment (in the basin) that exceeds 60 percent of the sump depth as measured from the bottom of basin to invert of the lowest pipe into or out of the basin, but in no case less than a minimum of 6 inches clearance from the sediment surface to the invert of the lowest pipe.	No sediment in the catch basin
	Structure Damage to Frame and/or Top Slab	Top slab has holes larger than 2 square inches or cracks wider than 1/4 inch. (Intent is to make sure no material is running into basin).	Top slab is free of holes and cracks. Frame is sit-

Table V-4.5.2(5) Maintenance Standards - Catch Basins (continued)

Maintenance Component	Defect	Conditions When Maintenance is Needed	Results Expected When Maintenance is performed
		Frame not sitting flush on top slab, i.e., separation of more than 3/4 inch of the frame from the top slab. Frame not securely attached	ting flush on the riser rings or top slab and firmly attached.
	Fractures or Cracks in Basin Walls/ Bottom	Maintenance person judges that structure is unsound. Grout fillet has separated or cracked wider than 1/2 inch and longer than 1 foot at the joint of any inlet/outlet pipe or any evidence of soil particles entering catch basin through cracks.	Basin replaced or repaired to design standards. Pipe is regrouted and secure at basin wall.
	Settlement/ Misalignment	If failure of basin has created a safety, function, or design problem.	Basin replaced or repaired to design standards.
	Vegetation	Vegetation growing across and blocking more than 10% of the basin opening. Vegetation growing in inlet/outlet pipe joints that is more than six inches tall and less than six inches apart.	No vegetation blocking opening to basin. No vegetation or root growth present.
	Contamination and Pollution	See "Detention Ponds" (No. 1).	No pollution present.
Catch Basin Cover	Cover Not in Place	Cover is missing or only partially in place. Any open catch basin requires maintenance.	Catch basin cover is closed
	Locking Mechanism Not	Mechanism cannot be opened by one maintenance person with proper tools. Bolts into	Mechanism opens with

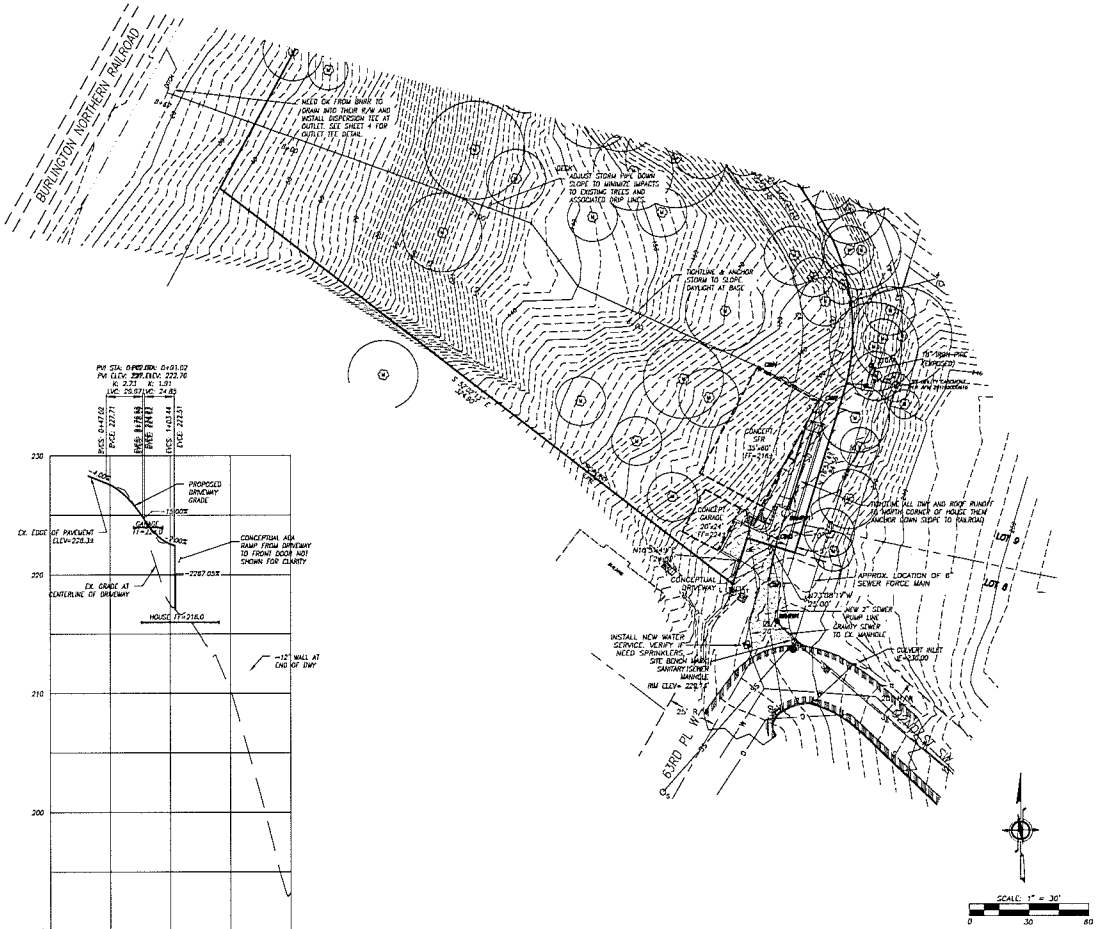
Table V-4.5.2(5) Maintenance Standards - Catch Basins (continued)

Maintenance Component	Defect	Conditions When Maintenance is Needed	Results Expected When Maintenance is performed
	Working	frame have less than 1/2 inch of thread.	proper tools.
	Cover Difficult to Remove	One maintenance person cannot remove lid after applying normal lifting pressure. (Intent is keep cover from sealing off access to maintenance.)	Cover can be removed by one maintenance person.
Ladder	Ladder Rungs Unsafe	Ladder is unsafe due to missing rungs, not securely attached to basin wall, misalignment, rust, cracks, or sharp edges.	Ladder meets design standards and allows maintenance person safe access.
Metal Grates (If Applicable)	Grate opening Unsafe	Grate with opening wider than 7/8 inch.	Grate opening meets design standards.
	Trash and Debris	Trash and debris that is blocking more than 20% of grate surface inletting capacity.	Grate free of trash and debris.
	Damaged or Missing.	Grate missing or broken member(s) of the grate.	Grate is in place and meets design standards.

APPENDIX I

Drainage Plan

SE 1/4, NE 1/4, SEC.17, T.28N, R.04E, W.M.
MUKILTEO, WASHINGTON



LEGEND

- EXISTING BUILDING (OFF-SITE)
- EXISTING BUILDING
- EXISTING CONCRETE
- PROPOSED BUILDING W/ ROOF OVERHANG
- PROPOSED DRIVEWAY
- EXISTING PROPERTY BOUNDARY
- XXX EXISTING CONTOUR (MAJOR)
- EXISTING EDGE OF ASPHALT
- SD PROPOSED STORM DRAIN LINE
- SSMHX PROPOSED SANITARY SEWER MANHOLE (SSMH)
- CBX PROPOSED STORM DRAIN CATCH BASIN (CB)
- PROPOSED CONCRETE WALL

HARDSCAPE AREA CALCULATION

TOTAL PROPERTY AREA: 60,470 (1.388 AC)

ON-SITE HARDSCAPE

PROP. SFR ROOF	2,394 SF.
PROP. GARAGE ROOF	621 SF.
PROP. WALKWAYS/PATIOS	800 SF.
PROP. DWY	425 SF.
TOTAL	4,040 SF.

OFF-SITE HARDSCAPE

PROP. DWY APRON	940 SF.
TOTAL	940 SF.

TOTAL NEW/REPLACED HARDSCAPE: 4,980 SF.

DRAINFIELD NOTE:

ACCORDING TO SNOHOMISH COUNTY HEALTH DISTRICT RECORDS THERE ARE NO KNOWN DRAINFIELDS WITHIN 100 FEET OF THE SITE.

CONTOUR & FEATURES NOTE

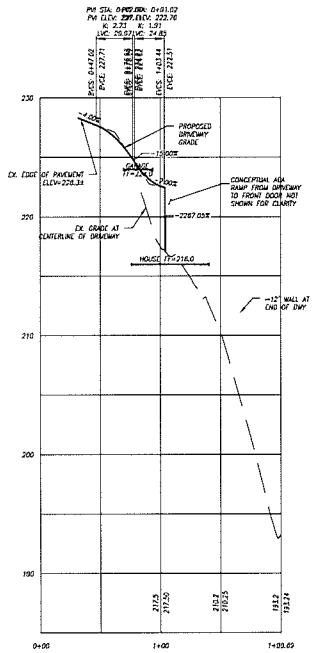
CONTOURS AND EXISTING STRUCTURES SHOWN BASED ON SURVEYING PERFORMED BY GREENE LAND SURVEYING.

BOUNDARY LINE NOTE

BOUNDARY LINES BEARINGS AND DISTANCES SHOWN PER RECORD OF SURVEY FILED UNDER AFN 005369000202100. NO SURVEYING CONDUCTED BY W.E.S.I. FOR W/D SHOWN.

DRAWNING NOTE

ENTIRE BOUNDARY OF PROPERTY NOT SHOWN FOR CLARITY.



DRIVEWAY PROFILE
SCALE:
VERT: 1"=5'
HORZ: 1"=30'

WE HEREBY DECLARE THAT THE ROAD AND STORM DRAINAGE IMPROVEMENTS ARE LOCATED AS SHOWN ON THESE RECORD DRAWINGS.

BY: _____
Project Engineer/Surveyor — Date

BY: _____
Plat Developer/Owner — Date

UTILITY CONFLICT NOTE:

CAUTION:

THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION, DIMENSION, AND DEPTH OF ALL EXISTING UTILITIES WHETHER SHOWN ON THESE PLANS OR NOT, BY POTHOLING THE UTILITIES AND SURVEYING THE HORIZONTAL AND VERTICAL LOCATION PRIOR TO CONSTRUCTION. THIS SHALL INCLUDE CALLING UTILITY LOCATE @ 1-800-424-5555 AND THEN POTHOLING ALL OF THE EXISTING UTILITIES AT LOCATIONS OF NEW UTILITY CROSSINGS TO HYDROLOGY MODIFY WHETHER OR NOT CONFLICTS EXIST. LOCATIONS OF SAID UTILITIES AS SHOWN ON THESE PLANS ARE BASED UPON THE UNVERIFIED PUBLIC INFORMATION AND ARE SUBJECT TO VARIATION. IF CONFLICTS SHOULD OCCUR, THE CONTRACTOR SHALL CONSULT WESTERN ENGINEERS, INC. TO RESOLVE ALL PROBLEMS PRIOR TO PROCEEDING WITH CONSTRUCTION.

SNOHOMISH COUNTY
PLANNING AND DEVELOPMENT SERVICES
APPROVED FOR CONSTRUCTION

BY: _____
NAME

R/W PERMIT NUMBER: _____

Western Engineers & Surveyors (425) 356-2700
SURVEYORS • PLANNERS • ENGINEERS
LAND USE CONSULTANTS
CIVIL ENGINEERS • LAND SURVEYORS
*** 9740 EVERGREEN WAY • EVERETT • WA • 98204 ***

CALL 811 TWO (2) BUSINESS DAYS BEFORE YOU DIG

COPYRIGHT© 2018

TAX ACCOUNT NO.(S): 005369000202100

SITE ADDRESS: 9180 63RD PL W MUKILTEO, WA 98275

PFN 18-_____

DRAINAGE PLAN FOR:
KAKAR PROPERTY
SE 1/4, NE 1/4, SEC.17, T.28N, R.04E, W.M.
MUKILTEO, WASHINGTON

DRAWN BY	DATE	REV. BY	DATE	PROJECT MANAGER	SCALE
EMH	04/24/18			J. JARRELL	VARIES
DRAWING FILE NAME		CHECKED BY	F.B. NO.	JOB NUMBER	SHEET NO.
171715ASBC.DWG		JAJ	-	17-1715-A	3 OF 4

APPENDIX II

SOIL INFORMATION

SOIL LOG INFO.

SOIL STUDY WAS COMPLETED ON MAY 7 AND 8, 2008 BY GEO GROUP NORTHWEST, INC. FOR SOIL INFORMATION SEE GEOTECH REPORT.

BORE LOG #1

0-2'	Mottled Silt, Moist, Soft
2'-15'	Gray Silt, Dry to Moist, Medium Stiff to Stiff
15'-23'	Gray Silt, Moist, Very Stiff
23'-31'	Gray Silt, Moist, Hard

BORE LOG #2

0-7'	Brown Silt, Moist, Soft
7'-12'	Gray Silt, Dry to Moist, Medium Stiff to Stiff
12'-15'	Gray Silt, Moist, Hard
15'-17'	Gray Silt, Moist, Very Stiff
23'-31'	Gray Silt, Moist, Hard

Kakar

Snohomish County Area, Washington (WA661)

Snohomish County Area, Washington (WA661)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
4	Alderwood-Everett gravelly sandy loams, 25 to 70 percent slopes	2.8	100.0%
Totals for Area of Interest		**2.8**	**100.0%**

Snohomish County Area, Washington

4—Alderwood-Everett gravelly sandy loams, 25 to 70 percent slopes

Map Unit Setting

National map unit symbol: 2hyy
Elevation: 50 to 800 feet
Mean annual precipitation: 25 to 60 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 180 to 220 days
Farmland classification: Not prime farmland

Map Unit Composition

Alderwood and similar soils: 60 percent
Everett and similar soils: 25 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Alderwood

Setting

Landform: Till plains
Parent material: Basal till

Typical profile

H1 - 0 to 7 inches: gravelly ashy sandy loam
H2 - 7 to 35 inches: very gravelly ashy sandy loam
H3 - 35 to 60 inches: gravelly sandy loam

Properties and qualities

Slope: 25 to 70 percent
Depth to restrictive feature: 20 to 40 inches to densic material
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B
Hydric soil rating: No

Description of Everett

Setting

Landform: Terraces, plains
Parent material: Glacial outwash

Typical profile

H1 - 0 to 6 inches: gravelly ashy sandy loam
H2 - 6 to 18 inches: very gravelly ashy sandy loam
H3 - 18 to 60 inches: extremely gravelly sand

Properties and qualities

Slope: 25 to 70 percent
Depth to restrictive feature: 14 to 20 inches to strongly contrasting textural stratification
Natural drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 2.1 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: A
Hydric soil rating: No
Minor Components
Mckenna
Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes
Norma, undrained
Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes
Terric medisaprists, undrained
Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Snohomish County Area, Washington
Survey Area Data: Version 19, Mar 29, 2018
Map Unit Description: Alderwood-Everett gravelly sandy loams, 25 to 70 percent slopes--- Snohomish County Area, Washington
Natural Resources Conservation Service Web Soil Survey National Cooperative Soil Survey

APPENDIX III

SOIL AMENDMENT

SECTION FIVE

GUIDE TO DEVELOPING A SOIL MANAGEMENT PLAN

This section outlines steps for professional specifiers to prepare a Soil Management Plan (SMP) to meet the provisions of BMP T5.13 in the Department of Ecology's Stormwater Manual for Western Washington. The main steps to creating the SMP are:

Step 1: Review Site Landscape Plans and Grading Plans.

Examine all areas that will not be covered by structures, impervious surfaces, or stormwater detention / infiltration structures, to assess how grading will impact soil conditions and determine areas where different soil treatments may be applied.

Those allowed soil treatment options are:

Option 1: Areas where native soil and/or vegetation will be retained in place;
Option 2: Areas where topsoil or subsoil will be amended in place;
Option 3: Areas where topsoil will be stripped and stockpiled prior to grading for reapplication, and;
Option 4: Areas where imported topsoil will be applied.

Step 2: Visit Site to Determine Soil Conditions

Working with plans, check the soil in each area to identify information outlined in the chart below.
Identify compaction of subgrade in each area by digging down to a level that will be 12" below finished grade.
Use a shovel or "rod penetrometer" driven solely by the your weight, as described in Section 3, and illustrated in Section 6 "Field Guide to Verifying Soil Quality and Depth."

Areas	Assess Conditions	Include Information on SMP
Native vegetation / undisturbed soil to be preserved	✓ Established native plants. ✓ Undisturbed topsoil and duff layer.	✓ Identify those areas to be left undisturbed and fenced during construction.
Topsoil not requiring grading, but cleared of native vegetation	✓ Depth of compacted layers less than 12 inches deep. ✓ Presence of organic matter that may make amendment unnecessary, or allow calculation of reduced amendment rate. ✓ If planning to use calculated amendment rate, sample and test soil as described in Step 4.	✓ Will scarification be needed? What depth of scarification is required to allow compost incorporation and achieve 12 inches uncompacted depth? ✓ Will area be amended with compost or topsoil at "pre-approved" rate, or custom calculated rate? ✓ Can areas be protected from compaction during construction?
Areas to be cut during grading	✓ Quantity of topsoil that can pbe stockpiled and reapplied. ✓ Depth of any compacted layer less than 12 inches below ultimate finished grade. ✓ Presence of organic matter in subgrade or topsoil that may make amendment unnecessary, or allow calculation of reduced amendment rate. ✓ If planning to use calculated amendment rate, sample and test soil as described in Step 4.	✓ Will scarification be needed? What depth of scarification is required to allow compost incorporation and achieve 12 inches uncompacted depth? ✓ Will topsoil be stockpiled during grading and reapplied? Will it require supplemental topsoil or compost to achieve 8 inches depth at specified organic content? ✓ Will area be amended with compost or topsoil at "pre-approved" rate, or at custom calculated rate?
Areas to be filled during grading	✓ Estimate what subgrade conditions will be when fill is in place. ✓ Depth of any compacted layer less than 12 inches below ultimate finished grade. ✓ Presence of organic matter in fill soil that may make amendment unnecessary, or allow calculation of reduced amendment rate. ✓ If planning to use calculated amendment rate, sample and test soil as described in Step 4.	✓ What depth of scarification is required to allow compost incorporation and achieve 12 inches uncompacted depth? ✓ Will area be amended with compost or topsoil at "pre-approved" rate, or custom calculated rate?

Step 3: Select Amendment Options.

The most convenient and economic method for achieving the Soil Quality and Depth guidelines depends on: site soil conditions, grading, and resulting subgrade compaction; the practicality of stockpiling topsoil during grading; and site access issues.

"Pre-Approved" or custom calculated rates?
Use of "Pre-Approved" amendment rates may simplify planning, however custom calculated rates can save substantial effort and expense—easily repaying the expense of testing and calculations. (See testing required for custom rates at right and on next page, and calculation method in Section 7 "Resources".)

Often pasture or woodland soils have adequate organic matter if existing organic layers are preserved. Also, compost products will frequently provide the desired soil organic matter content at lower applications than the Pre-Approved rates (which are based on "average" conditions).

Identifying Options on the Site Plan and SMP form

- Identify the areas where each amendment option will be applied by outlining each area on the site plan with a dark, thick-line pen.
- Assign each area an identifying number or letter (A, B, C…) on the plan, and on the Soil Management Plan form.

Step 4: Identify Compost, Topsoils and Other Organic Materials for Amendment and Mulch.

Amendments for Pre-Approved rates must be compost meeting the definition for "Composted Materials" in WAC 173-350, section 220, (available online at www.ecy.wa.gov/programs/swfa/organics/soil.html) or topsoil manufactured from these composts plus clean sand or sandy loam soil. Products must be identified on the Soil Management Plan form, and recent product test results must be provided showing that they meet the additional requirements in this Guide for organic matter content and carbon to nitrogen ratio (see specification in Section 3).

For Custom Calculated amendment rates (see right, next page, and formula in Section 7 "Resources"), organic matter may be provided by:

- Compost (as defined above), or
- Other by organic materials with a carbon to nitrogen ratio under 25:1 (35:1 for native plantings), meeting the same contaminant standards as "Composted Materials" in WAC 173-350, section 220.

These products must be identified on the Soil Management Plan form, and recent test results provided showing that they meet these requirements.

Step 5: Calculate Amendment, Topsoil and Mulch Volumes on SMP form

- For Pre-Approved amendment rates, figure the square footage of each area and complete the simple calculation to convert inches of amendment into cubic yards.
- To compute custom calculated amendment rates, use soil and amendment test results and the *Model Amendment Rate Calculator Spreadsheet* and/or the *Equation for Calculating Compost Application Rates* (both are in Section 7 "Resources") to achieve the target Soil Organic Matter content (10% SOM for landscape beds, or 5% SOM for turf areas).

Site Assessment Supplies

- Copy of site grading plan
- Sturdy shovel
- Tape measure

If using custom calculated amendment rates requiring soil tests:

- Clean bucket or stainless steel bowl for mixing soil samples
- Sealable bags for soil samples, and indelible ink pen to label

Sampling and Testing for Custom Calculated Amendment Rates

Soil and amendments submitted for testing should be a composite of samples taken from several spots on a site or in a pile of amendment.

Soil:

Gather samples from soil that will be the subgrade after all grading operations are completed, before placement of imported topsoil or amendments.

- Take samples from 10-12 spots in each area. Imagine a line dividing the area in half lengthwise, then divide each half into five near equal sized widths. Take samples near the middle of each subsection.
- At each sampling spot dig a spades-width hole at least 8 inches deep, then shave a 1 inch slice from the side of the hole to use in the composite sample.
- Thoroughly mix the 10-12 samples from each turf or planting area together in a clean plastic bucket or bowl. Place 2 cups of the mix into a sealable plastic bag for testing (some tests may require more soil, ask laboratories).
- Label the bag with the site information, area of sample; plus your name, address and phone number.

Amendment:

Producers of composts and manufactured topsoils can usually provide test results for their products. If tests are

nonexistent or incomplete, conduct necessary tests on each proposed amendment.

- Take samples from 10-12 spots in pile of material. Imagine a line dividing the pile in half lengthwise, then gather samples from five spots equally spaced along the length of each side of the pile.
- At each sampling spot, dig a spades-width hole at least 8 inches deep. Use a clean cup or trowel to collect a cup of amendment from the bottom of each hole.
- Thoroughly mix the 10-12 samples from each pile together in a clean plastic bucket or bowl. Place 2 cups of the mix into a sealable plastic bag for testing (some tests may require more compost, ask laboratories).
- Label the bag with the product and supplier information; plus your name, address and phone number.

Tests to Conduct for Custom Calculated Amendment Rates:

Soil	Compost Amendment
- Bulk Density	- Bulk Density
- Percent Organic Matter (by "loss on ignition" method)	- Percent Organic Matter (by "loss on ignition" method)
	- Moisture Content as is
	- Carbon to Nitrogen Ratio (C:N)
	- Heavy Metals Analysis (per WAC 173-350, section 220)

Model SOIL MANAGEMENT PLAN for BMP T5.13

(available as MS Word file at www.SoilsforSalmon.org)

PROJECT INFORMATION **Page # ____ of ____ pages**

Complete all information on page 1; only site address and permit number on additional pages.

Site Address / Lot No.: 9180 63rd Pl W, Mukilteo, Wa 98275	
Permit Type: Building	**Permit Number:**
Permit Holder: Mahmood Kakar	**Phone:** (510) 709-5962
Mailing Address: 13426 46th Pl W, Mukilteo, Wa 98275	
Contact Person: Jesse Jarrell	**Phone:** (425) 356-2700
Plan Prepared By: Eric Haines	

ATTACHMENTS REQUIRED *(Check off required items that are attached to this plan)*

- ✓ **Site Plan showing, to scale:** ___ Areas of undisturbed native vegetation (no amendment required); ___ New planting beds and turf areas (amendment required); ___ Type of soil improvement proposed for each area
- ___ **Soil test results (required if proposing custom amendment rates)**
- ___ **Product test results for proposed amendments**

AREA # 1 *(should match Area # on Site Plan)*

PLANTING TYPE ✓ Turf ___ Undisturbed native vegetation ___ Planting Beds ___ Other: ____

SQUARE FOOTAGE OF THIS AREA: 1,360 square feet

SCARIFICATION ___ Subsoil will be scarified	___ inches (depth) of scarification needed to achieve finished total 12" loosened depth.	
PRE-APPROVED AMENDMENT METHOD: ___ Topsoil import ✓ Amend with compost ___ Stockpile and amend (____ cu. yds. stockpiled)	1.75 inches of compost or imported topsoil applied X 3.1 *(conversion factor, inches to cubic yards)* 1.360 cu. yards per 1,000 sq. ft. X 1 ,000s sq.ft. in this area 5.4 = cubic yards of amendment → → → → → *(needed to cover this area to designated depth)*	PRODUCT: ____ QUANTITY: 8 CU. YDS.
CUSTOM AMENDMENT ___ Topsoil import ___ Topsoil & compost lift ___ Amend ___ Stockpile and amend (____ cu. yds. stockpiled)	**Attach test results and calculations.** ____ inches organic matter or topsoil import X 3.1 ____ = cu. yards / 1,000 sq. ft. X ___ ,000s sq.ft. in this area ____ = cubic yards of amendment → → → → →	PRODUCT: ____ QUANTITY: ____ CU. YDS.
MULCH	___ ,000 sq.ft. X 6.2 *(conversion, to give 2 inch mulch depth)* ____ = cubic yards of mulch → → → → → →	PRODUCT: ____ QUANTITY: ____ CU. YDS.

TOTAL AMENDMENT/TOPSOIL/MULCH FOR ALL AREAS *(complete on page 1 only, totaling all areas/pages in this Plan)*

- ❑ **Product #1:** ____ ❑ **Quantity:** ____ **cu. yds.**
- ❑ **Test Results:** ___ **% organic matter** ___ **C:N ratio <25:1** (except mulch, or <35:1 for native plants) ___ **"stable"** (yes/no)
- ❑ **Product #2:** ____ ❑ **Quantity:** ____ **cu. yds.**
- ❑ **Test Results:** ___ **% organic matter** ___ **C:N ratio <25:1** (except mulch, or <35:1 for native plants) ___ **"stable"** (yes/no)
- ❑ **Product #3:** ____ ❑ **Quantity:** ____ **cu. yds.**
- ❑ **Test Results:** ___ **% organic matter** ___ **C:N ratio <25:1** (except mulch, or <35:1 for native plants) ___ **"stable"** (yes/no)

Date:	Inspector:	Approved:	Revisions Required:
Date:	Inspector:	Approved:	Revisions Required:

COMMENTS: ____

Subject/Type	First Name	Last Name	Company
Critical Areas - Shorelines, Streams, Wetlands	Dennis	Vrabek	Harbour Pointe Limited Partnership
Critical Areas - Shorelines, Streams, Wetlands	Dan	Hammer	
Critical Areas - Shorelines, Streams, Wetlands	Kevin	Bartoy, Environmental/Permitting Mgr	Washington State Ferries
Critical Areas - Shorelines, Streams, Wetlands	Paula	Sullivan	
Critical Areas - Shorelines, Streams, Wetlands	Linda	Wooding	
Critical Areas - Shorelines, Streams, Wetlands	Laura	Gurley	Port of Everett
Critical Areas - Shorelines, Streams, Wetlands	Fred	Baxter	Fred Baxter & Associates
Critical Areas - Shorelines, Streams, Wetlands	Kristin	Kelly	Futurewise
Critical Areas - Shorelines, Streams, Wetlands	Ryan O.	Ike, Community Mitigation Program Specialist, WA	Federal Emergency Management Agency - Region 10
Land Use Development Permits	Land Use Development Permits	01/05/2016	Krystene
Land Use Development Permits	Land Use Development Permits	01/05/2016	Veva
Land Use Development Permits	Land Use Development Permits	11/20/2015	Jeff
Land Use Development Permits	Land Use Development Permits	5/17/2016	Linda
Land Use Development Permits	Land Use Development Permits	5/17/2016	Paula

Land Use Development Permits	Land Use Development Permits	1/5/2018	Doug
Land Use Development Permits	Land Use Development Permits	1/8/2018	Ron
Land Use Development Permits	Land Use Development Permits	1/16/2018	Richard
Land Use Development Permits	Land Use Development Permits	1/29/2018	Clark
Land Use Development Permits	Land Use Development Permits	2/21/2017	Kevin
1183	Planning Commissioner	3/17/2014	Commissioner
Planning Commissioner	Planning Commissioner	3/17/2014	Commissioner
Planning Commissioner	Planning Commissioner	3/17/2014	Commissioner
Planning Commissioner	Planning Commissioner	3/17/2014	Commissioner
Planning Commissioner	Planning Commissioner	5/08/2014	Commissioner
Planning Commissioner	Planning Commissioner	02/21/217	Commissioner
Planning Commissioner	Planning Commissioner	6/8/2017	Tim
Beacon Tribune	Beacon Tribune		

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