

# GEOTECHNICAL SITE ASSESSMENT

24(01) GOSS RIDGE ROAD  
FREELAND, WASHINGTON 98249

R32906-250-0200; ICID# 497778  
WHIDBEY ISLAND, ISLAND COUNTY, WASHINGTON

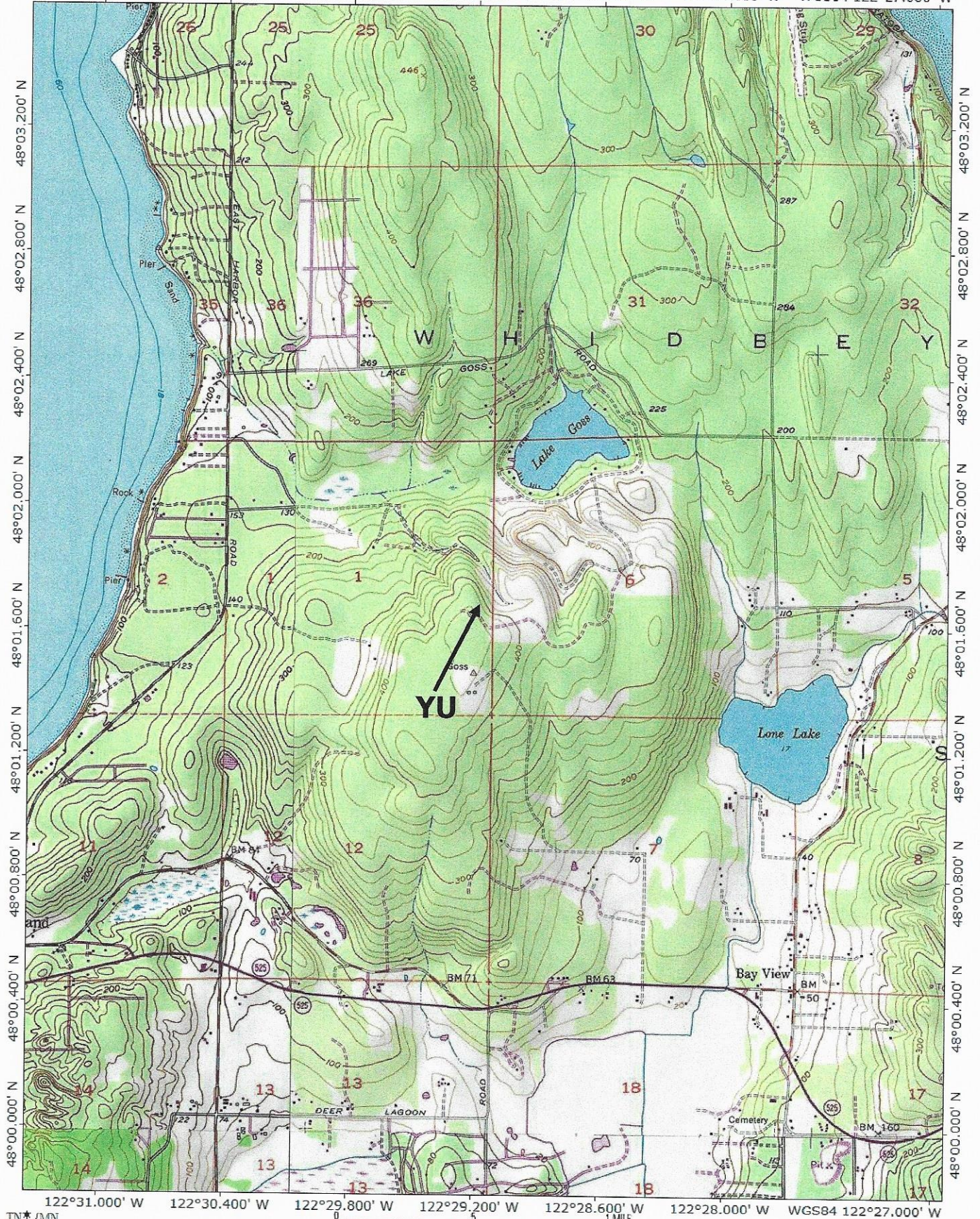
for

Stanley Chiu Tung Yu and Kit Tee Yu  
PO Box 336  
Clinton, Washington 98236-0336

by

Clinton Hollingsworth, LG  
WSGL# 1902  
[clinton.hollingsworth@gmail.com](mailto:clinton.hollingsworth@gmail.com)  
(360) 770-7809

TOPO! map printed on 06/08/20 from "Washington.tpo" and "Untitled.tpg"  
122°31.000' W 122°30.400' W 122°29.800' W 122°29.200' W 122°28.600' W 122°28.000' W WGS84 122°27.000' W



IN MN  
16½°

0 1000 FEET 0 500 1000 METERS  
Printed from TOPO! ©2001 National Geographic Holdings (www.topo.com)



# Island County Assessor & Treasurer

## 497778 YU CO TRUSTEE, CHIU TUNG for Year 2020 - 2021

### Property

#### Account

|              |        |                                |                                                                                                                                                                                                          |
|--------------|--------|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Property ID: | 497778 | Abbreviated Legal Description: | IN GL6 SEC 6-29-3E & SEC 1-29-2E: BG W/4 CR SEC 6 S89*W128.02' S59.90' TPB S625.26' N89*E28.84' S42*E 213.65' S75*E181.26' N1*W 796.38' N84*W320' TPB TGW SUB EZ (TR 13 UNREC RIDGEVIEW EST) FR 220-9500 |
|--------------|--------|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Geographic ID: R32906-250-0200

Type: Real

Tax Area: 719 - APPRAISER-S Whid Schl Dist, outside Langley, vacant & 50 acres or less

Open Space: N

Historic Property: N

Multi-Family Redevelopment: N

Township: 29

Range: R3

Agent Code:

Land Use Code 91

DFL N

Remodel Property: N

Section: 06

#### Location

Address:

Neighborhood: Cycle 3

Neighborhood CD: 3

Mapscot:

Map ID: 737

#### Owner

Name: YU CO TRUSTEE, CHIU TUNG

Mailing Address: KIT YEE YU CO TRUSTEE  
BOX 336  
CLINTON, WA 98236-0336

Owner ID: 52390

% Ownership: 100.0000000000%

Exemptions:

### Pay Tax Due

### Taxes and Assessment Details

### Values

### Taxing Jurisdiction

### Improvement / Building

### Sketch

### Property Image

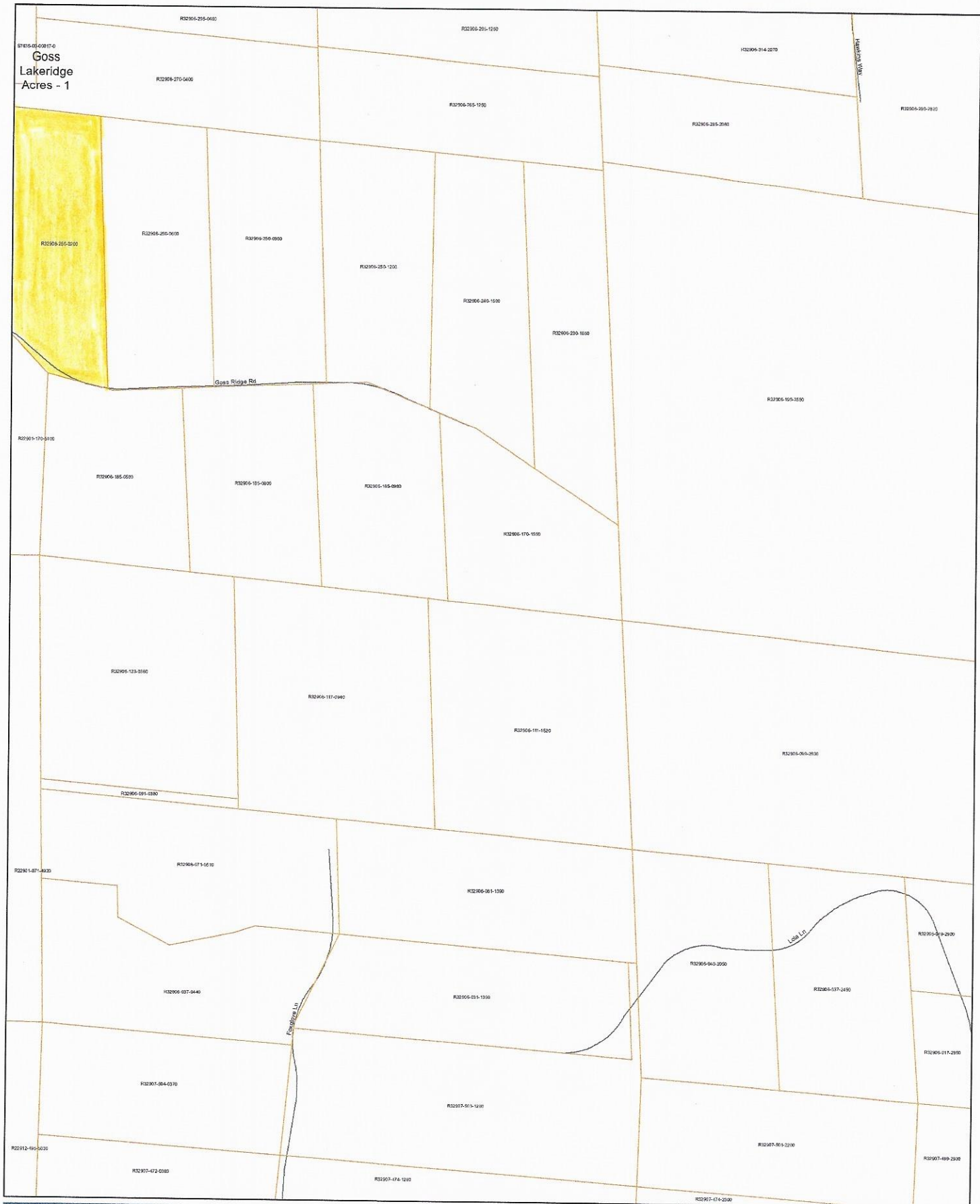
### Land

### Roll Value History

### Deed and Sales History

### Payout Agreement

This year is not certified and ALL values will be represented with "N/A".



**Legend**

R13105-139-1591 Geographic Number (Parcel Number)

25 Platted Lot Number

Island County Parcels

Quarter Section Boundary

City/Town Limits

Roads

Water

## SW Part Sec.6 Twp.29 R.3E



These maps were created from available public records and existing map sources, and from different surveyors and their surveys. Map features from all sources have been adjusted to achieve a "best fit" registration to the Ownership parcels. While great care was taken in this process, maps from different sources rarely agree as to the precise location of geographic features. The relative positioning of map features to one another results from combining different map sources without field "ground truthing".

DO NOT USE AS A LEGAL DOCUMENT

Map ID: 737



Island County Assessor's Maps  
Updated: 9/26/2018

Adjacent Maps by Map ID

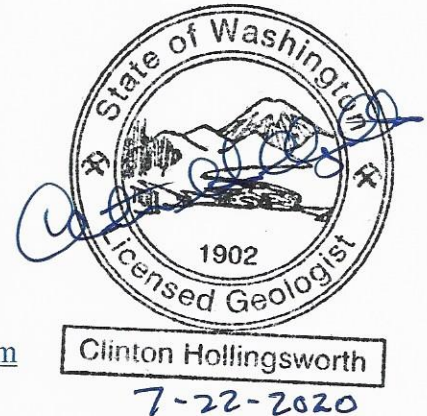
|     |     |     |
|-----|-----|-----|
| 284 | 739 | 740 |
| 282 | 737 | 738 |
| 320 | 744 | 65  |

## Geotechnical Site Assessment

R32906-250-0200; ICID# 497778  
Whidbey Island, Island County, Washington  
~2401 Goss Ridge Road  
Freeland, WA 98249

for  
Stanley Chiu Tung  
and Kit Yee Yu  
Box 336  
Clinton, WA. 98236-0336

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### Purpose

(ICC 11.02.140.B.2.c)

The owners wish to develop a single-family residence homesite with access on this wooded property north of Freeland, Washington. The property consists of a lateral slope of a relict meltwater drainage ravine with most gradients ranging from 22% to 39%. The preliminary work will involve widening an existing access dozed trail from Goss Ridge Road to a low relief homesite in about the center of the parcel. The homesite will be leveled and trees removed on the site and along the enhanced driveway. Island County ordinances require a geotechnical assessment to assist in the issuance of early development permits.

### Location

The Yu property Goss Ridge Road access point lies at global coordinates:  
48°01' 39.26"N by 122°29' 07.20" W

It is .46 miles and S17°W from the intersection of Sanctuary Lane and Lakeside Drive at the southwest tip of Goss Lake; and 2.3 miles N56°E from the intersection of East Harbor Drive and Main Street in Freeland, Washington.

Access is by way of East Harbor Road from Freeland and north 2 miles to a right onto Goodell Road; then .25 miles to a right onto Goss Ridge Road. Proceed for 1.2 miles on Goss Ridge Road to the centerline of the subject property.

### Site Description

(ICC 11.02.140.B.2.b)

The Yu parcel is about 772-feet long on its north-south long axis, and about 330-feet wide. It is a continuous slope, with a lateral fall line trending easterly, that covers about 5.6 acres of horizontal footprint. The footprint spans the slope of the west side of a relict meltwater drainage trough incised into glacial and periglacial sediments during the melt-off of the last continental glacial advance some 11,000 years BP. It is not an active drainage.

The slopes have a varying slope gradient typically about 39%, or 21°, in the upper portion of the slope on the west side and gradually diminishing to about 22%, or 13°, toward the east side of the property. A lower gradient area resides at about the center of the plot which is the planned area for a future residence.

The entire lot is covered with secondary forest, mostly of alder with some maple hemlock fir and typical Island County indigenous understory vegetation.

## Geology

(ICC 11.02.140.A.1,2; B.2.a)

The geological history associated with the property segment is a direct result of late-Pleistocene glacial activity and subsequent post-glacial erosion in the Puget Lowland. Most of the Puget Lowland is dominated by glacial sediment and lacks bedrock exposures. Much of the Island County region and surrounding lowland areas are covered by glacial and nonglacial sediment overlying presumed Miocene bedrock (Johnson et al., 1996). Advance outwash of the Vashon Stade (Fraser Glaciation) began to bury the Puget Lowland no sooner than about 20ka based on radiocarbon dates (Booth, 1994, Polenz et al., 2005a; Johnson et al., 2001).

**Qgtv: Till** - Nonstratified, dense to very dense diamicton consisting of clay, silt, sand, and gravel in various proportions, with scattered cobbles and boulders; rare lenses of sand or gravel; dark yellowish brown to brownish gray. Some clasts derived from the Coast Plutonic Complex of British Columbia (Easterbrook, 1962). Till unconformably overlies bedrock, advance outwash, and much less commonly, older glacial and nonglacial units. Below the glaciomarine limit of 340 to 400 ft (104– 122 m) elevation, Vashon till very commonly underlies glaciomarine drift. Dragovich et al., 2002 describe these thick deposits as the result of an extensive and buried dead-ice terrain in which lodgment till, ablation, and/or flow till were all deposited, resulting in a thick composite section of diamicton.

**Qgav: Advance outwash** - Stratified, moderately to well-sorted, moderately to very dense, medium to coarse sand, pebbly sand, and sandy gravel, with minor amounts of fine silty sand or sandy silt, and clay interbeds with scattered lenses and layers of pebble-cobble gravel; thinly to very thickly bedded with subhorizontal bedding or generally south-dipping cross-stratification; localized cut-and-fill structures and trough and ripple cross-beds; thinly bedded silts locally display overturned folds with an overall fold geometry consistent with north to south (simple) shear folding during Vashon ice advance. Sands are typically medium or light gray when dried and weather tan or pale yellowish brown. Sand grains are mostly quartzo-feldspathic lithic clasts (~21%), quartz-mica tectonite, greenstone, and greenschist undivided metamorphic lithic clasts (~19%), monocrystalline quartz, polycrystalline quartz, and chert (~27%), plagioclase (~13%), and sedimentary lithic clasts (~8%). Coast Mountains (B.C.) quartzo-feldspathic granitic and metamorphic provenance, with lesser locally derived clasts.

The topography, ground truthing, and lack of surface signs of flowing water on the property segment indicates that the underlying material is suitably permeable and highly compacted. Factors which suggest long-term stability of the landforms within the parcel, include:

- Lack of running water and stable vegetation.
- No evidence for erosion.
- Trees do not exhibit soil creep.
- The substrate lithologic materials are well-consolidated and not prone to migration or being easily mobilized.
- Moderate to low seismicity in the local area and minimal tectonic activity without measurable physical change.

**Citation:** Schasse, Henry W., Michael L. Kalk, Bradley B. Petersen, and Michael Polenz, 2009, "Geologic Map of the Langlely and Western Part of the Tulalip 7.5-minute Quadrangles, Island County, Washington": Washington division of Geology and Earth Resources Geologic Map GM-69, 1 sheet, scale 1:24,000.

## **Soil Analysis**

Analysis collected from soil samples on the property produced a sand content of about 71%, silt 20%, and clay 2%. The Unified Soil Classification System calls this type SM, silty sands, and the USDA soil classification system indicates that this soil type is loamy sand.

## **Expected Load**

**(ICC 11.02.140.B.2.g.h.)**

The expected future residential load on the property segment is for single-family residential housing. No adverse effects of this type of building load, position, or typical water use and disposal are problems in this area. The load will not be an over-use or increase of burden on the soils and sediments within the property segment. It is reasonable to expect that the residential load will be successful for this parcel and have no impact on the property or destabilization of the parcel. No adverse effects related to load on the build site are expected. Adjacent properties will not be affected. Residential water disposal from meteoric precipitation will be best dispersed onto splash blocks at the bottom of each rain leader. Placed at the end of each gutter run, this distribution will most closely place absorption points near where normal predevelopment rain is successfully handled at present.

## **Seismicity**

The lithologic units represented at the parcel segment are not subject to liquefaction. They are well-drained, non-swelling, and do not exhibit solifluction or other water retention issues. These units are resistant to seismic shaking and are undisturbed by larger earthquakes that have occurred in the region.

The subject property is well-consolidated and historically was stable through previous seismic events. Its overall stability precludes disruption or damage from the typical seismic disturbances experienced in this region.

## **Vegetation**

**(ICC 11.02.140.B.2.f.)**

The vegetation on the tract is primarily that of a secondary reforestation of alder. The center of the plot contains a small grove of primarily hemlock trees which occupy an area that is somewhat lower in gradient than the rest of the area. Overall, the land is covered with a typical alder forest which small local variation of trees and understory vegetation typical to Whidbey Island.

## **Surface Water and Groundwater**

**(ICC 11.02.140.B.2.d.)**

- Running or standing water was not present on the property at the time of investigation. The field work for this particular project has been taken during the wettest part of this winter. The duff and soils are damp, but not moist, muddy, or slippery. This emphasizes that the permeability of the soils is great enough to absorb all or most of the meteoric precipitation falling on the lot. That being the case, water from roof drains of the planned home will be best dispersed onto splash blocks at the bottom of each rain leader. There is no upland source of drainage water except seasonal or daily precipitation:

- Any runoff from daily precipitation is captured by a ditch along Goss Ridge Road and directed eastward to another meltwater trough.
- Precipitation on the site is readily absorbed into the deep soils developed on the low angle slopes of advance outwash.
- There is no active water running at the bottom of the ravine at present.

## **Slope Control**

**(ICC 11.02.140.A.4,5; B.2.i.j.)**

Vegetation management is the best plan for managing the upland low angle slopes. The slope area will require some tree management. Areas from which vegetation is removed should be monitored to assure that barren areas experience revegetation whether natural or supplemental to maintain the pervasive cover of root matrices. Any stumps left must remain in place and all debris from vegetation management or other must be removed from the bluff slope, or burned. Areas that have been left bare for construction should be regraded and replanted with indigenous vegetation or as landscaped areas with discretionary exotic plantings according to the desires of the owner.

Areas on the bluff on nearby properties have been cleared for view enhancement. When replanted, these areas have remained static and stable, attesting to the superior consolidation of the geologic strata comprising the bluff and island firmament.

## **Wastewater**

Wastewater management will be assessed within future development planning and design.

## **Setback**

**(ICC 11.02.140.B.2.e.)**

The area set aside for future residential occupancy is reasonable low in gradient and below the threshold for being considered a critical slope. However once a building plan is developed for the site, the uphill and downhill sides of the footprint of the home will require analysis to assure that adequate safe setbacks are planned for the placement of the footprint of the home.

## **Recommendations**

**(ICC 11.02.140.B.2.i.j.k.)**

The development of this parcel segment will be well-supported in its geologic environment if:

- future calculated setbacks are adhered to if necessary, and
- appropriate measures are taken to mitigate potential erosion from meteoric precipitation, and
- reasonable vegetation management.

## **Disclaimer**

This report is by no means meant to be a guarantee of continuing slope stability on this or adjacent properties. It is basically, a description and analysis of geotechnical conditions as they exist based on known characteristics of the geologic units present here, and their nature and disposition here and elsewhere. The author does not assume responsibility for future changes to the property or its environment, and accept no liability for loss due to negligence, natural changes to the environment, or acts of God.

# PLOT PLAN

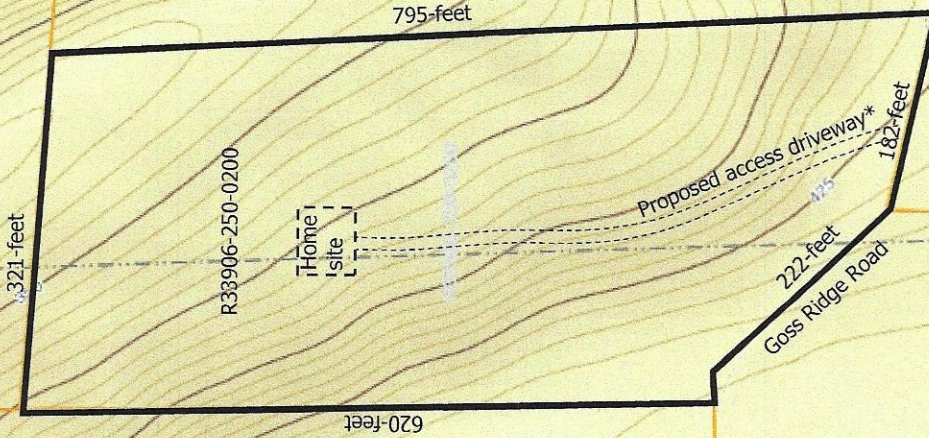
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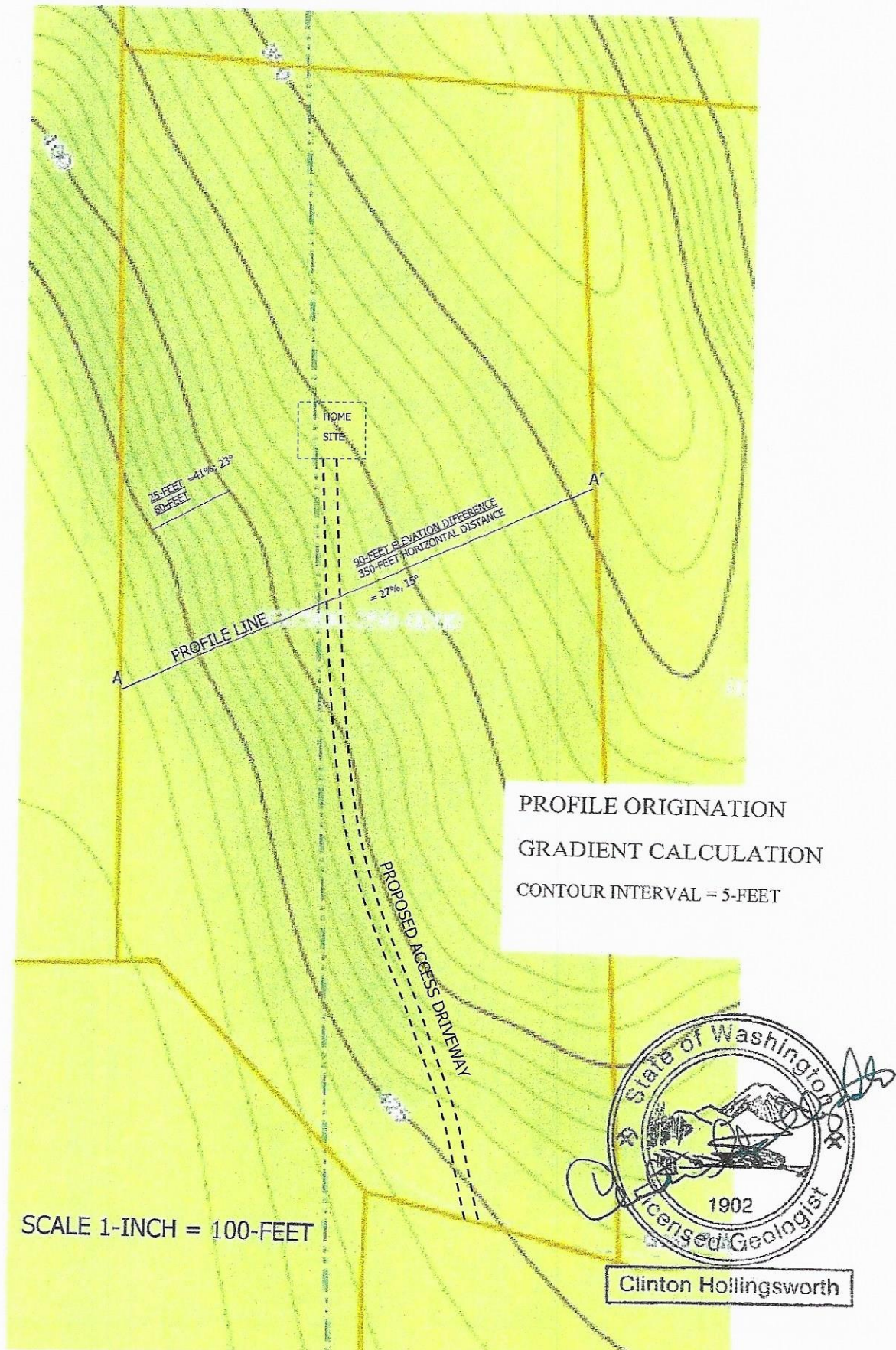
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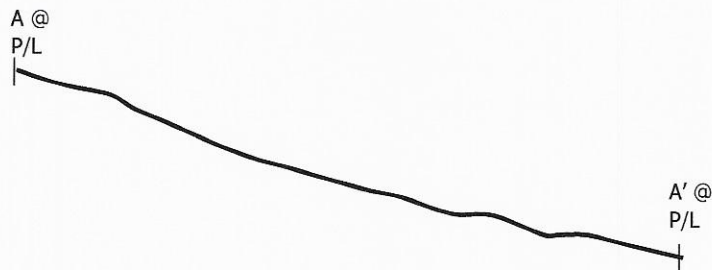
Clinton Hollingsworth

\*Proposed driveway location to be adjusted to a topographic fit, to provide a smooth low gradient accessway, as shown.

## Yu site drawing showing gradient differentials



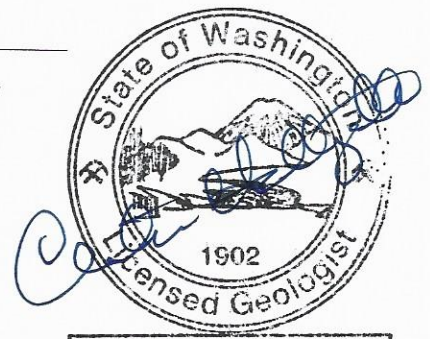
Slope profile from the central portion of the Yu parcel, as shown on the previous topographic drawing.



Elevation = 0'

El. 440' 425' 400' 375' 350' 345'

Scale: 1-inch = 100-feet



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