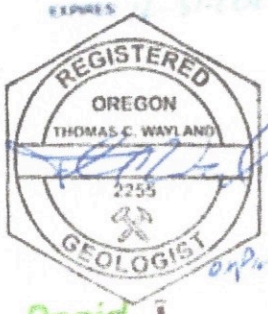
Geotechnical Report

NW Jetty Avenue
Next to 5209 NW Jetty Avenue
Lincoln City, OR

Prepared for

Terry Reede

11 February 2021



Rapid Soil Solutions INC

3915 SW Plum St
Portland, OR
503-816-3689

PROJECT AND SITE DESCRIPTIONS

Introduction

Rapid Soil Solutions Inc (RSS) has prepared this geotechnical report, as requested, for the proposed development of the vacant Lincoln County Map currently assigned the state tax lot identification number of 06-11-34-DD-01000-00. The site is situated in the northern end of Lincoln City, in the Roads End district (R-1-RE, Residential Roads End zoning district). The site is not currently assigned a street address. It is located on the western edge of NW Jetty Ave roughly 470 feet beyond (north) its intersection with NW 50th Street The western edge of the site abuts the beach; the site is separated from the beach sand by an 80-foot-tall bluff. Adjacent properties include 5209 NW Jetty Ave (north) and 5141 NW Jetty Ave (south). The property facing the subject site from the eastern side of NW Jetty Ave is also undeveloped (06-11-34-DD-02500-00/Barrigar Crest, block 2, lot 4).

The subject site can be found in the southeast quarter of the southeast quarter of Section 34, Township 6-South, Range 11-West (W.M.) in Lincoln County, and can be distinguished by the lot number 1000. The property is part of the Barrigar Crest subdivision of government lot 31, recorded in 1950. The property occupies lot 4 in block 1 of this subdivision. The site is located 0.09 miles north of NW 50th Street, 0.17 miles southwest of NE Logan Road, 0.55 miles northwest of the Oregon Coast Highway (HWY 101), and 1.6 miles south of Roads End Point. The latitude and longitude of the site are 45.002878 and -124.010146 (45°00'10.4"N, 124°00'36.5"W). The site is positioned in the southeastern corner of the Neskowin OE W 7.5-minute quadrangle, just off the southwestern corner of the Neskowin 7.5-minute quadrangle (SW corner of the Nestucca bay quadrangle 1:62500 scale).

SITE CONDITIONS

Surface Conditions

The subject site is located in a residential neighborhood of Roads End, in the northern end of Lincoln City. The local zoning is Zoning R-1-RE (Residential Roads End) and local development is consistent with the zoning. The site is positioned within a row of residential parcels sandwiched between NW Jetty Ave and an ocean-facing bluff. The local parcels are generally 100 feet deep and at least 50 feet wide; originally platted at 50' wide sone of the tax parcels comprise more than a single plated lot. Dwellings in the local block range in age, with original construction dates as early as 1940. NW Jetty Ave is a relatively narrow, asphalt-paved street without curbs, sidewalks or shoulders. The grade of NW Jetty Ave is generally consistent with the surrounding soils. The neighborhood contains a slight east-ascending slope. No large trees are present in the local slopes; some small trees, typical of coastal vegetation, are scattered through he local neighborhood.

The bulk of the Lincoln County shoreline, including the shoreline in front of the subject site, consists of prominent coastal bluffs, formed in Tertiary sediments, and fronted by wide, gently sloping, sand beaches composed of predominantly fine-grained beach sediments. The region has a long and problematic historic with bluff erosion; much of the shoreline along Lincoln Beach as been protected by a combination of riprap structures and to a less extend, vertical seawalls.

General Site Conditions

The subject site consists of a single Lincoln County tax parcel. The site is bound to the east by NW Jetty Road and to the west by the beach and the Pacific Ocean. Single-family residential dwellings abut the northern and southern side of the subject site.

This parcel is vacant and undeveloped. The stie contains a handful of scattered small, evergreen trees surrounded by thick low vegetation. The vegetation on site is a mix of native and non-native plants.

The slopes within the subject parcel are relatively low and descend slightly towards the west. No standing or flowing water is present on the subject site. No standing or flowing water is mapped or was historically mapped at the subject site.

The western end of the subject parcel abuts an 80-foot-tall sea bluff. No shoreline protective structures have been constructed along the bluffs edge. The adjacent beach is a sandy beach, extending from the base of the bluff into the ocean. Literature suggests the beach gradient can reach roughly 7 degrees in winter. The lower slopes of the bluff are buried by a vegetated, sand- and silt-dominated debris pile. Aerial imagery suggests that this debris pile is roughly 20 feet wide. The majority of the bluff contains nearly vertical, unvegetated, outcroppings of variably consolidated sedimentary deposits. The slope break at the top of the bluff is abrupt. At the subject site, the slope break is positioned roughly 110-120 feet west of NW Jetty Ave.

The coastline in front of the subject site, as measured by Allan et al (2015), is a dissipative sand beach fronting a moderately high bluff. The two closest beach transects have a 'most likely winter profile' with a beach slope of 0.049 and 0.073.

Historic Site Conditions

Historic aerial imagery dating back to 1982 was referenced as part of this investigation. This imagery indicates that local development began prior to 1982 (earlies homes are dated around 1940s) and continued slowly and intermittently through the most recent image. Roughly half of the buildable lots appear to be developed in 1982. By 2000, nearly all of the buildable lots in the local neighborhood were developed.

No substantial changes to the subject site were observed in historic aerial imagery. The low-laying vegetation appears to have been cleared form the inside of the site between 2005 and 2007, but was then permitted to regrow.

Images from 04/04/2007 and 09/03/2012 include some evidence of seeps flowing to the beach from the base of the bluff. The more substantial seep is positioned roughly 130 feet north of the subject site. A less substantial seeps, only observed in the 2007 imagery, is located 110 feet south of the subject site.

Slopes

The slopes within the subject parcel are relatively low. The site is perched upon a marine terrace, and internally the slopes are less than 5% descending to the southeast. The Google Earth DEM suggests that the internal slopes on the subject site are roughly 2%.

The slopes ascending east of the subject site gently step up through the residential neighborhood, gaining roughly 80 feet of elevation over a horizontal distance of roughly 950 feet.

The western edge of the site abuts an ocean-facing bluff. This bluff stands about 80 feet tall. The majority of the grade change is accommodated by non-vegetated, vertical slopes. The debris pile at the base of the appear to be roughly 20 feet wide. The Google Earth DEM suggests that the debris pile is roughly 30 feet tall.

Figure 1: Slopes at the subject site, as presented by Google Earth.

Figure 2: Image of the subject site and adjacent parcels, excerpt from O-15-06. Original caption read: Oblique aerial photo of homes perched along the cliff top at Roads End, Lincoln City, Oregon. Dark banding in the upper terrace face reflects ground water seepage down through the terrace sediments, where it comes in contact with the less permeable tertiary siltstones of the Yamhill Formation. Note the recent slump failure in mid photo (photo: E, Harris, DOGAMI, 2011).

Regional Geology

Current geologic literature classifies the slopes at the subject site as Quaternary marine terrace deposits. These deposits generally consist of unconsolidated to semi-consolidated sands, with some gravel and silt beds. Locally these deposits are overlain by fine grained dune deposits. Typically, the sedimentary materials comprising these terraces were emplaced in high-energy, nearshore environments. Portions of the local marine terraces contain colluvium emplaced by landslides, debris slides, mudflows, and soil creep. The marine terrace deposits overlay tuffaceous siltstone and sandstone of the Nestucca Formation.

Geologic History

The site is tucked along the westernmost edge of the Oregon Coast Range, just before it plunges into the ocean. The Oregon Coast Range is an uplifted belt of land spanning roughly 200 miles and comprised of moderately high mountains (averaging 1,500' in elevation with a maximum of 4,097') that occupies a roughly 30- to 40-mile-wide swath of land along the Pacific Ocean. The mountains rising above the subject site are comprised primarily of accreted oceanic sediments and synchronously deposited igneous rocks (where the sediments overlay, underlay and are intruded by the volcanic flows). After the accretion of the Siletz Terrane to the edge of North America, a thick pile of silt, sand, and mud accumulated on the adjacent sea floor. Over tens of millions of years, sediment accumulation continued alongside tectonic impacts of the Cascadia subduction zone and sea level fluctuations. Over time the sedimentary material was scraped onto the edge of the continental plate; uplift, faulting and folding (associated with margin-parallel shortening in the Cascadia

subduction zone) lifted the thick stack of sedimentary rock into the heights of the modern mountain range.

The western flank of the Coast Range, which includes the area around the subject site, generally contain varied topography, typically dominated by rugged mountains, bold headlands and marine embayments. Steep canyons cut through the local uplands, emptying into the lowland areas along the coast. The lowland areas of the coastal range include marine embayments, coastal plains and dune areas built up along spits and beaches. The local stretch of coast falls within the lowland category, containing of a bluff-backed sandy beach with adjacent lands underlain by a marine terrace.

During periods of higher sea level elevation, typical erosional impacts along the coastline occurred at a higher elevation than their modern counterparts. The ongoing wave erosion at these higher elevations cut platforms and benches on the bedrock; as sea level changed these landforms were buried in sediment and abandoned as terraces. When sea level rose, sediments were deposited atop the benches, when sea levels subsequently lowered again, the terrace was left behind. Typical terrace deposits were laid down over wave-cut benches during interglacial stages of the Pleistocene Epoch, when sea level was relatively high. The local terrace was emplaced during the most recent interglacial stage (the Sangamon, just prior to the Wisconsin glacial stage); the local deposits represent a remnant of this terrace. The terraces along the Oregon coast are widest and longest where the local bedrock is sedimentary.

Site Geology

Along the Oregon coast, marine terrace deposits are comprised primarily of loosely cemented sand stone with occasional conglomerates and siltstone beds. Gravels are most commonly found at the base of the formation, directly above the bedrock contact. Interbedded gravels and conglomerates are less common. In some places, wood is abundant. Where the terraces abut basaltic headlands, layers of angular basalt fragments are present; these fragments represent talus deposits that were emplaced concurrent with the main body of the terrace. The subject site is near the northern end of a long terrace segment; this segment begins at Siletz Bay and extends to the northern edge of Lincoln City, nearly to Roads End Point. Sea cliffs at Lincoln City reach heights of greater than 100 feet. The sandstones are commonly capped by dune sand.

Peterson et al (1993) describes the sedimentary deposits exposed ocean-facing bluff as containing convoluted heavy-mineral layers emplaced in a planer foreshore environment. The upper sections of the outcrop include transitional backshore to eolian dune sands, typical of marine transgression.

The local terraces are underlain by the lower Eocene Nestucca Formation. The Nestucca Formation is a tertiary aged siltstone. The unit contains siltstone and sandstone horizons, and is typically thin bedded and tuffaceous. Some sandstone dikes and sills are present in the upper portion of the unit. Thick-bedded arkosic sandstone is observed in places near the base of the unit. Locally this unit appears to dip about 15-20 degrees to the west-northwest.

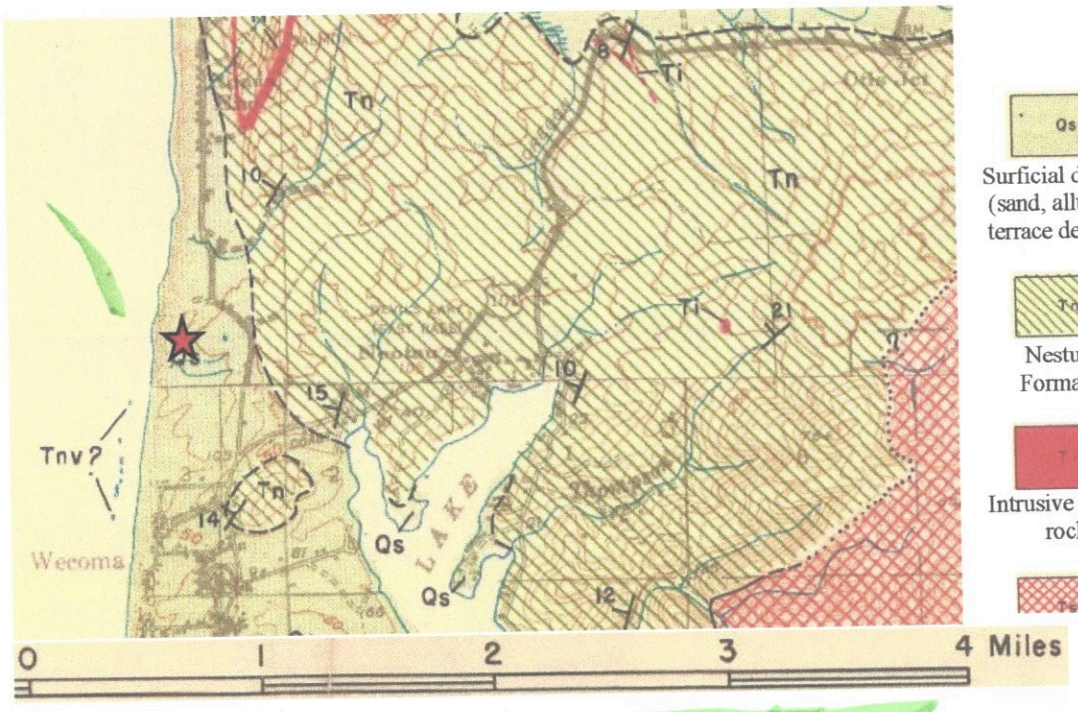


Figure 3: Geology at the subject site, excerpt from Snavely and Vokes (1949).

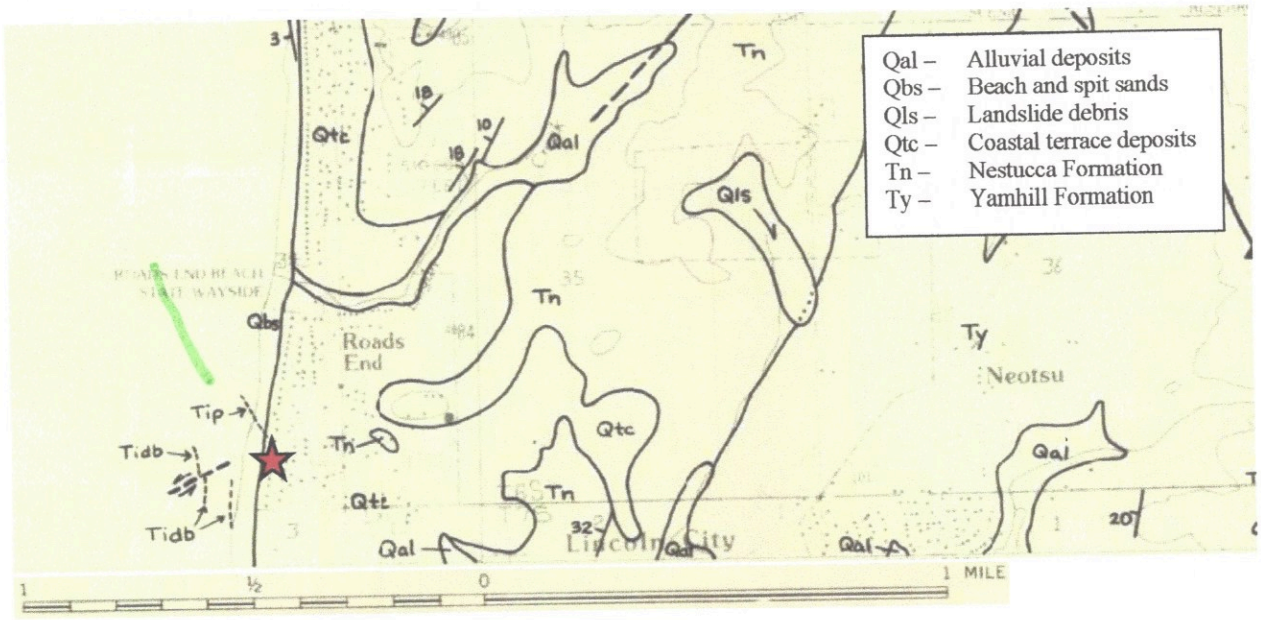


Figure 4: Geology at the subject site, excerpt from Snavely et al (1990).

Geohazard Document Review

Chronic coastal hazards for the Lincoln sandy shore include ocean flooding and erosion, inlet migration, landsliding, sloughing, and sand inundation. Catastrophic hazards include earthquakes and the associated groundshaking, subsidence, landsliding, liquefaction, and tsunamis.

The Oregon HazVu: Statewide Geohazard Viewer was reviewed on 05 February 2021 to investigated mapped geological hazards.

This review indicates that the 100-year floodplain, as mapped by FEMA, extends partway up the base of the bluff adjacent to the subject site.

The expected earthquake-shaking hazard is classified as 'very strong' across the entirety of the parcel. The earthquake liquefaction hazard is classified as 'low'. The site is additionally classified as containing a 'severe' level of expected shaking during a Cascadia earthquake event. The statutory Tsunami inundation line extends through the western end of the subject site. The nearest active fault, classified as such by DOGAMI, is located roughly 5 miles south of the subject site. Numerous additional faults cross cut the Oregon Coast Range much closer to the subject site.

The subject stie is not mapped as situated within a large historic landslide or landslide complex. Most of the marine terrace upon which Lincoln City is constructed, is free of the massive landslides that are pervasive along the Oregon Coast and in the Oregon Coast Range. Minor slides and slumps are extraordinarily commonly along the bluffs of bluff-backed beaches. Local mapping does not resolve small scale slides, such as would be observed in the steep outcrops adjacent to the subject site. The debris piles at the base of the bluff adjacent to the site is the product of slope failures.

The landslide susceptivity at the subject site is classified as moderate (eastern side of the site) to high (western side of the site).

Beach Sediment Transport and Coastal Erosion

The subject site is located within the Lincoln littoral cell. This littoral cell extends from Cascade Head, 3 miles north of the subject site, to Cape Foulweather, 15 miles south of the subject site. Sediment transport outside the Lincoln littoral cell is believed to be extremely limited; the pronounced headlands effectively make the 24-km long beach a very large pocket beach. Longshore variations in grain size occurs within the littoral cell. The subject site is positioned near the northern end of the system, with beach sand comprised of finer grained materials and generally less affected by seasonal beach profile variolations. Shih & Komar (1994) notes that "the profiles of fine-grained beaches differ little in overall form between summer and winter, being nearly uniform in slope with only a small degree of concavity."

The nearest headlands impacting local sediment transport is positioned about 1.5 miles to the north of the site.

Local drainages discharging to the beach include Logan Creek, 0.4 miles north of the subject site, and D River, roughly 2.2 miles south of the subject site. Additional small drainages appear to be present within the Roads End area. No streams were observed in the direct vicinity of the subject site.

Erosion along the Oregon coast is complex, reflecting processes operating over both short- and long-time scales, and over large spatial scales. Beach, dune and bluff erosion are a common and chronic hazard along the regional coastline, including at the subject site. Erosion is typically gradual, but produces a substantial amount of cumulative damage. Severe weather may dramatically increase the rate and impact of erosion as it produces high surf, heavy rainfall, and/or high winds. Climactic cycles (e.g. El Niño Southern Oscillation and longer-term climate cycles associated with the Pacific Decadal Oscillation) also impact rates or erosion. Erosion of coastal duns and bluffs cause them to retreat landwards, erosion rates impact retreat rates.

The subject site is located directly adjacent to a mapped Active Erosion Hazard Zone (Priest & Allan, 2004: OFR O-04-09). The zone extends from the shoreline to the top of the edge the bluff, and/or to the headwall of active and potentially active shoreline landslides. Consistent with the current understanding of beach process, building within and along the upper edges of bluff-backed shorelines reflects a considerable risk from direct wave attack at the bluff toe and slope instability. The site spans across high-risk, moderate-risk, and low-risk hazard zones. The high-risk zone represents a best-case scenario for erosion, assuming a gradual mean erosion rate over 60 years while maintaining a slope at the angle of repose for talus. The low-risk zone represents a possible extent of bluff retreat assuming a maximum erosion rate for 100 years paired with a maximum slope failure (slough/landslide).

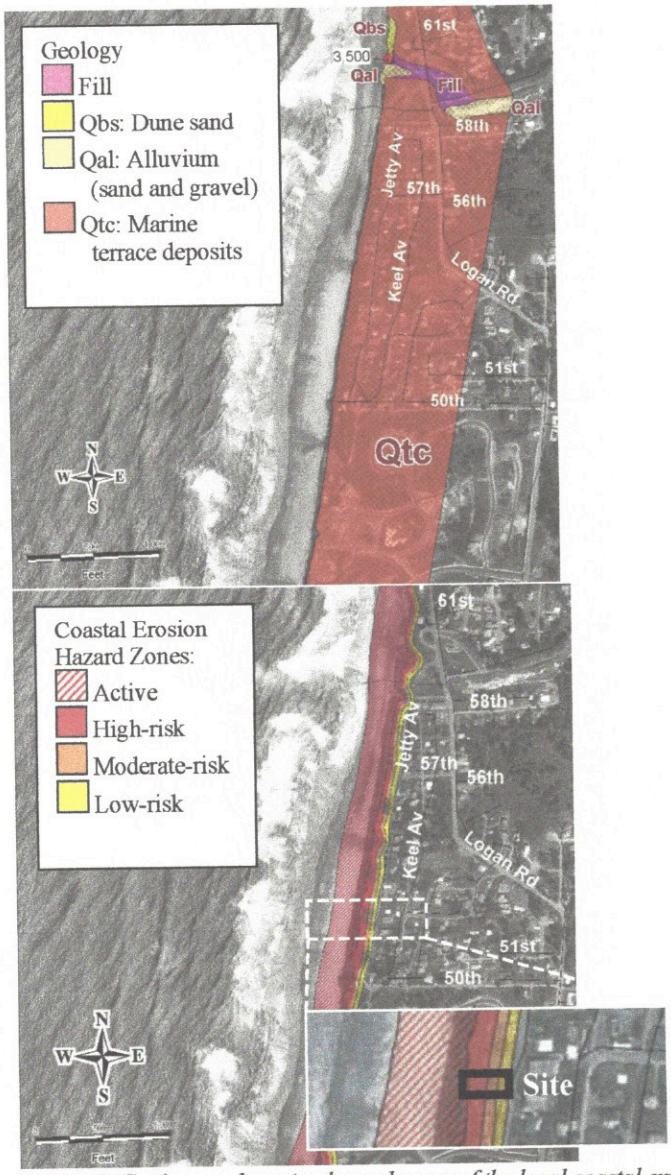


Figure 5: Geology and erosion hazard zones of the local coastal environment. Excerpt from Priest and Allan (2004: O-04-09).

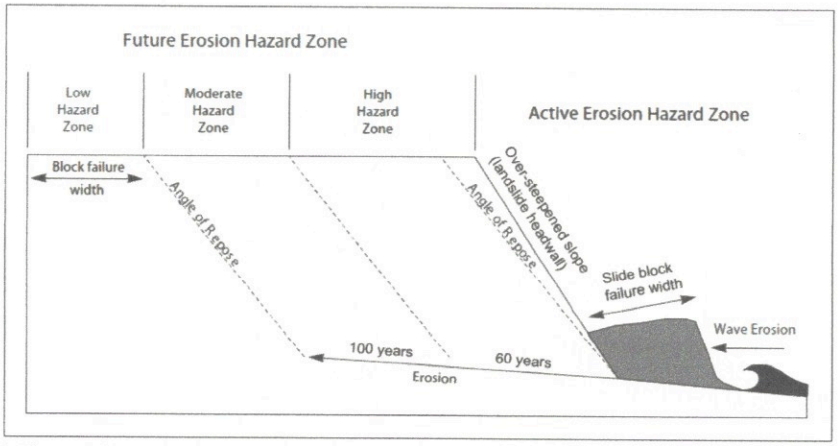


Figure 6: Erosion hazard zones schematic illustration, excerpt from Priest and Allan (2004: O-04-09).

The ocean facing side of the subject site contains a steep oceanfront bluff slope. This slope formed as a result of wave erosion and is subject to ongoing impacts from wave erosion, wind impacts, rain impacts, sloughing, and landsliding. Mapping indicates that the cliff face is roughly 80 feet tall. Priest et al (1994) suggests a local erosion rate of around 0.27±0.34 feet per year. The western edge of the site is positioned within a high-risk coastal erosion hazard zone and abuts the active coastal erosion hazard zone. It should be noted that both the studies conducted by Priest et al (1994) and Priest & Allan (2004) were intended for regional planning use, not site-specific hazard identification.

.34 X 20 yrs = 6.8 feet

Coastal Flooding

The risk from coastal flooding is considered to be generally low due to the presence of bluff backed beaches.

Field Exploration and subsurface conditions

A total of two (2) borings were excavated with a hand auger. The locations of the borings are shown on above site photos. A engineer in training (EIT) excavated, and logged the subsurface materials. A professional engineer review the soil logs .RSS found fine grained medium dense sandy SILT with moisture contents that vary from 8.3% to 12.6% See figure 3 for locations.

Mapped Soils

The soils on the subject site, as mapped by the USDA National Resource Conservation Service Web Soil, are classified as Nelscott loam (3-12% slopes). These soils form on marine terraces from loamy eolian deposits over stratified marine deposits derived from mixed sources. These soils are classified as moderately well drained with a water table often found at depths of 22 to 38 inches. The typical profile is comprised of slightly decomposed plant material (Oi: 0"-1"), loam (H1: 1"-16"), silty clay loam (H2: 16"-30"), loamy fine sand (H3: 30"-37"), cemented material (H4: 37"-49"), and stratified fine sand to silt loam (H5: 49"-60").

Foundation Design

Based on the field exploration and our experience with this soil formation it is our opinion that the foundation should consist of foundations into the SAND. Please allow up to 48 hours' notice for RSS to come to the site and check the foundation excavation.

The new footings should be designed for a maximum allowable bearing pressure of 2,500 pounds per square foot (psf) as per scribed in 2018 IBC code book under section 1804.2 Table 2 Allowable Foundation and Lateral Pressures. Lateral pressures may be resisted by friction between the bases of the footings and the underlying ground surface.

Engineering values summary

Bearing capacity	2,500psf
Friction angle	35
Active pressure	40pcf
Passive pressure	300pcf

Retaining Wall and loadings

Default lateral soil load for the design of basement and retaining walls supporting level backfill shall be 35 psf/ft for laterally unrestrained retaining walls and 60 psf/ft for laterally restrained retaining walls.

For embedded building walls, a superimposed seismic lateral force should be calculated based on a dynamic force of $9H^2$ pounds per lineal foot of wall, where H is the height of the wall in feet, and applied at 1/3 H from the base of the wall. The coefficient of friction for allowable lateral sliding can be taken as 0.35. If one foot of soil is removed and replaced with 1ft of compacted ¾" minus rock the friction factor can be 0.45.

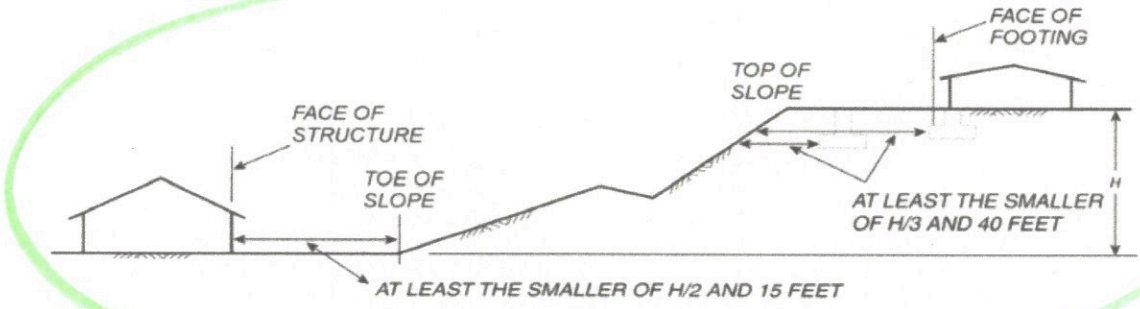
The wall footings should be designed in accordance with the guidelines provided in the "Foundation Design" section of this report. These design parameters have been provided assuming that back-of-wall drains will be installed to prevent buildup of hydrostatic pressures behind all walls.

The backfill material placed behind the walls and extending a horizontal distance equal to at least half of the height of the retaining wall should consist of granular retaining wall backfill as specified in the "Structural Fill" section of this report. The wall backfill should be compacted to a minimum of 95 percent of the maximum dry density, as determined by ASTM D698. However, backfill located within a horizontal distance of 3 feet from the retaining walls should only be compacted to approximately 92 percent of the maximum dry density, as determined by ASTM D698. Backfill placed within 3 feet of the wall should be compacted in lifts less than 6 inches thick using hand-operated tamping equipment (e.g., jumping jack or vibratory plate compactors). If flat work (e.g., sidewalks or pavements) will be placed atop the wall backfill, we recommend that the upper 2 feet of material be compacted to 95 percent of the maximum dry density, as determined by ASTM D698.
A minimum 12-inch-wide zone of drain rock, extending from the base of the wall to within 6 inches of finished grade, should be placed against the back of all retaining walls. Perforated

collector pipes should be embedded at the base of the drain rock. The drain rock should meet the requirements provided in the "Structural Fill" section of this report. The perforated collector pipes should discharge at an appropriate location away from the base of the wall. The discharge pipe(s) should not be tied directly into storm water drain systems, unless measures are taken to prevent backflow into the wall's drainage system. Settlements of up to 1 percent of the wall height commonly occur immediately adjacent to the wall as the wall rotates and develops active lateral earth pressures.

Slope setbacks

Given the close proximately to the crest of the large slope, RSS requests that the house met the setback figure shown below. From our site photos shown below this could be possible. Please adjust the final site plan to meet these setbacks.



ot = 304.8 mm.

FIGURE 1808.7.1
FOUNDATION CLEARANCES FROM SLOPES

Seismic Design Criteria

The seismic design criteria for this project found herein is based on the ASCE 7-16, on the USGS Earthquake Hazards Program. A summary of seismic design criterion below using Latitude: 45.002878, Longitude: -124.010146. Null – see section 11.4.8

	Short Period	1 Second
Maximum Credible Earthquake Spectral Acceleration	Ss = 1.318g	S1 = 0.683
Adjusted Spectral Acceleration	Sms = 1.582	Sm1 = null
Design Spectral Response Acceleration Perimeters	Sds = 1.005	Sd1= null

Settlement

Based on our knowledge of the project scope, and for footings designed as described in the preceding paragraphs, maximum settlement should not exceed 1 inch. Differential settlement should be on the order of 50 to 75% of the maximum settlement over 50 feet. Our settlement estimate assumes that no disturbance to the foundation soils would be permitted during excavation and construction, and that footings are prepared as described in the preceding paragraphs.

Drainage

The Contractor should be made responsible for temporary drainage of surface water and groundwater as necessary to prevent standing water and/or erosion at the working surface.

Water should not be allowed to "pond" or collect anywhere on the site. The ground surface around the structure should be sloped to create a minimum gradient of 2% away from the building foundations for a distance of at least 5 feet. Surface water should be directed away from all buildings into drainage swales or into a storm drainage system. "Trapped" planting areas should not be created next to any buildings without providing means for drainage.

RSS will not allow roof drains toe be directly drained to the beach front slope as is what is currently taking place next door. All drain lines shall be run down to level ground and placed into a level spreader.

Conclusions

RSS concludes that as long as the proper setbacks are followed that construction of a house on this lot will not be a hazard to the site. RSS will review a more detailed site plan once it is completed. This site plan shall include contours and setbacks from the toe of the descending slope. RSS will also require a foundation inspection of the house excavation. At that time we will review with the owner/builder placement of the roof drains so they do not cause any erosion.

Limitations

This report has been prepared for the exclusive use of the addressee, and their architects and engineers for aiding in the design and construction of the proposed development. It is the addressee's responsibility to provide this report to the appropriate design professionals, building officials, and contractors to ensure correct implementation of the recommendations. The opinions, comments and conclusions presented in this report were based upon information derived from our literature review, field investigation, and laboratory testing. Conditions between, or beyond, our exploratory borings may vary from those encountered. Unanticipated soil conditions and seasonal soil moisture variations are commonly encountered and cannot be fully determined by merely taking soil samples or soil borings. Such variations may result in changes to our recommendations and may require that additional expenditures be made to attain a properly constructed project. Therefore, some contingency fund is recommended to accommodate such potential extra costs.

If there is more than 2years time between the submission of this report and the start of work at the site; if conditions have changed due to natural causes or construction operations at, or adjacent to, the site; or, if the basic project scheme is significantly modified from that assumed, it is recommended this report be reviewed to determine the applicability of the conclusions and recommendations.

The work has been conducted in general conformance with the standard of care in the field of geotechnical engineering currently in practice in the Pacific Northwest for projects of this

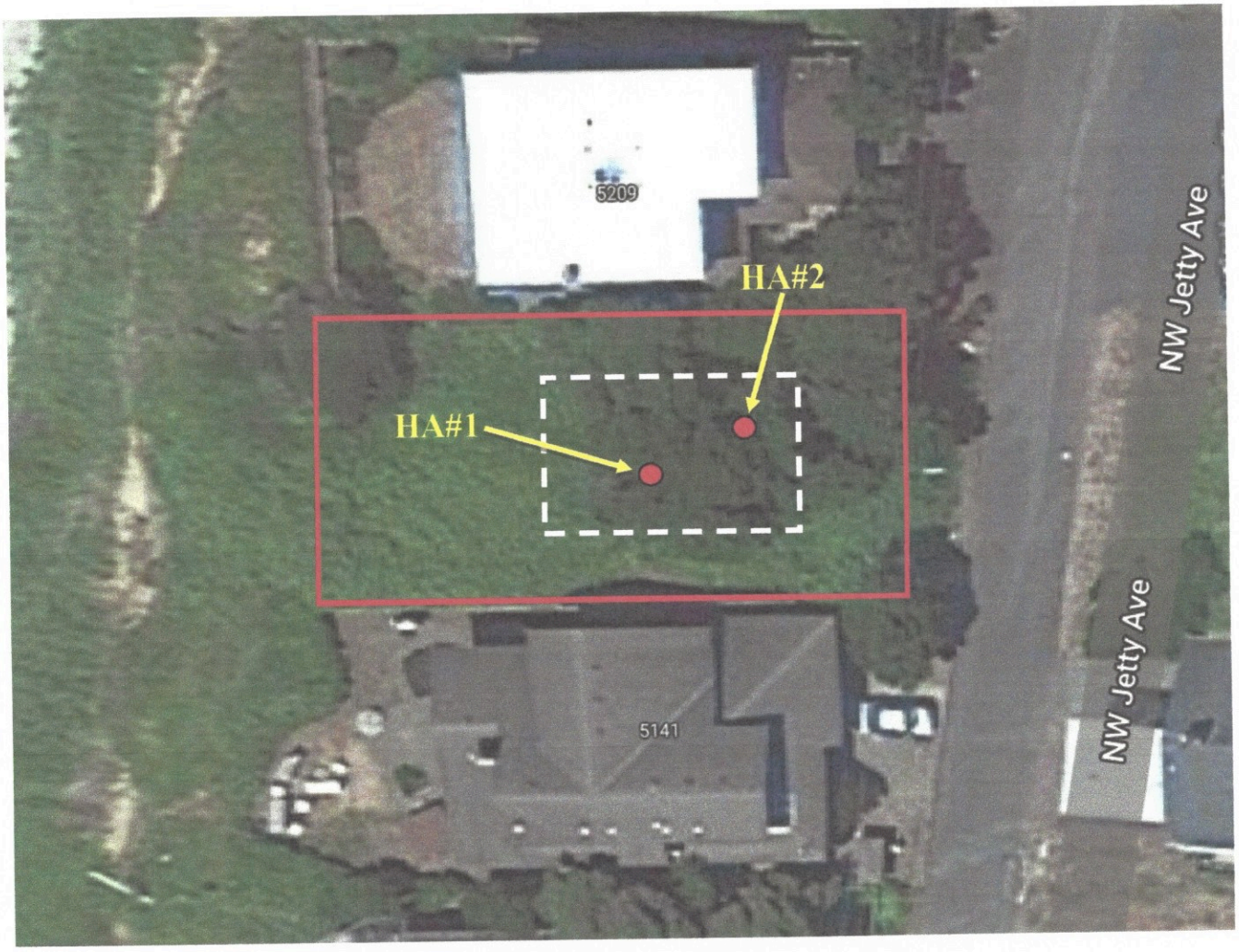


Figure 3: Testing Locations

Lab Results

Project Name: NW Jetty Ave., Lincoln City Sample Date 2/4/2021

Moisture

	Sample number	HA#1A	HA#1B	HA#2		
1	Date and time in oven	2/04/2021 - 4:17PM	2/04/2021 - 4:17PM	2/04/2021 - 4:17PM		
2	Date and time out of oven	2/08/2021 - 10:10AM	2/08/2021 - 10:10AM	2/08/2021 - 10:10AM		
3	Depth (ft)	2	4	4		
4	Tare No.	4	5	6		
5	Tare Mass	233	236	235		
6	Tare plus sample moist	993	952	1114		
7	Tare plus sample dry	908	891	1047		
8	Mass of water (g)	85	61	67		
9	Mass of soil (g)	675	655	812		
10	Water Content (%)	12.6	9.3	8.3		

Grain Size Analysis: Dry Sieve Method

Sample Number: HA#1A

Total Sample Weight (g): 675.00

Sieve #	Weight (g)	% Retained	
>1/4"	2.00	0.30	Gravels and Larger
1/4" to #40	57.00	8.44	Medium-Coarse Sand
#40 to #200	611.00	90.52	Fine Sand
< #200	5.00	0.74	Fines (Silt & Clay)
> #200	675.00	100.00	**Classification: SP-SM**

Sample Number: HA#2

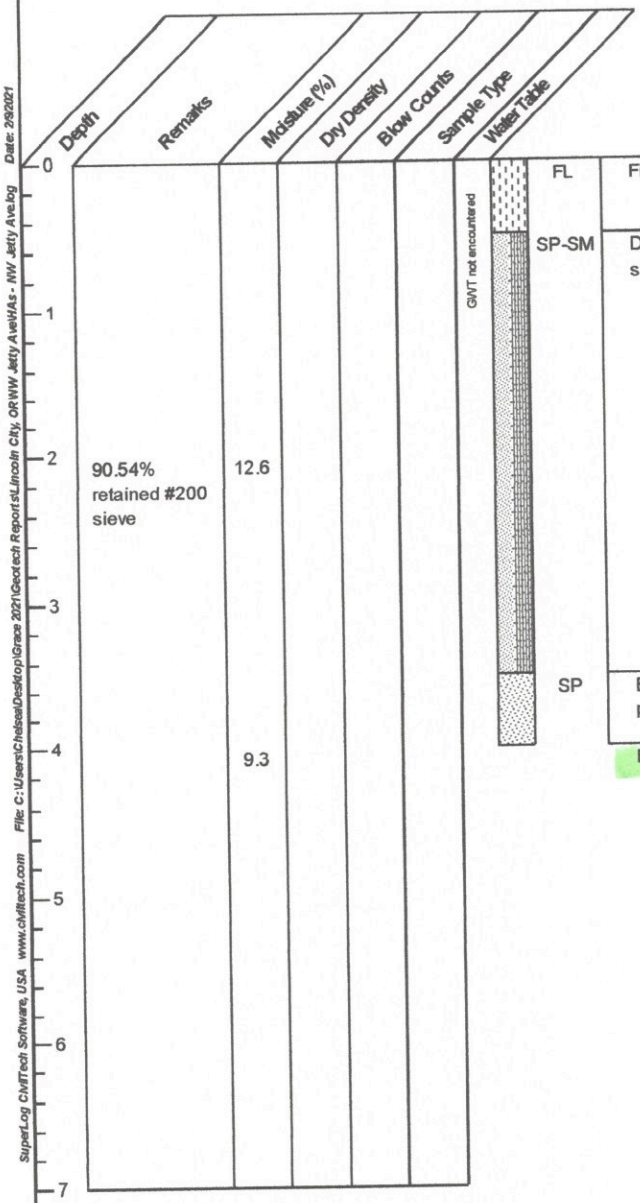
Total Sample Weight (g): 812.00

Sieve #	Weight (g)	% Retained	
>1/4"	0.00	0.00	Gravels and Larger
1/4" to #40	51.00	6.28	Medium-Coarse Sand
#40 to #200	759.00	93.47	Fine Sand
< #200	2.00	0.25	Fines (Silt & Clay)
> #200	812.00	100.00	**Classification: SP**

Rapid Soil Solutions INC

HA-1

Surface Elevation:
Boring Date: 04 February 2021
Boring Location: Lincoln City, OR
Drilling Method: Hand Auger

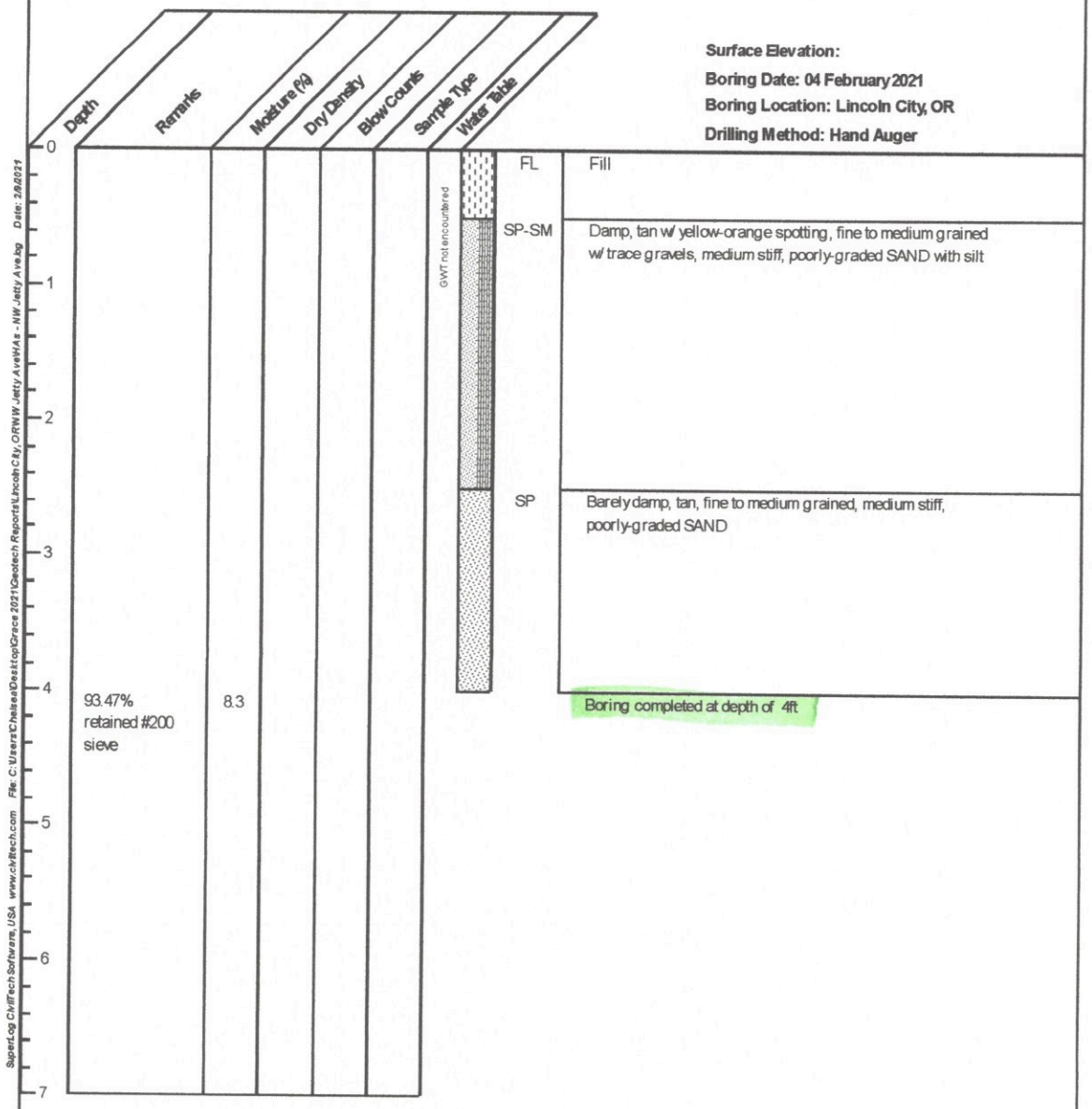


FL	Fill	
SP-SM	Damp, tan, fine to medium grained w/ trace gravels, medium stiff, poorly-graded SAND with silt	
SP	Barely damp, tan, fine to medium grained, medium stiff, poorly-graded SAND	
	Boring completed at depth of 4ft	

LOG OF BORING

Rapid Soil Solutions	NW Jetty Ave. Terry Reede	Plate 1

HA-2



LOG OF BORING

Rapid Soil Solutions	NW Jetty Ave. Terry Reede	Plate 2