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December 3, 2021

Jodi Clouthier
Greenwood Homes
940 Southwood Blvd., Ste 101
Incline Village, Nevada 89451

RE: Incline Village Residential Trip Generation Letter

Dear Ms. Clouthier:

This letter contains the findings of our trip generation review of the proposed 40 multi-family townhomes on the southwest corner of SR 28 (Tahoe Boulevard) and Southwood Boulevard in Incline Village, Nevada.

Trip Generation

Trip generation is the evaluation of the number of vehicle-trips that will either have an origin or destination at the project site. Daily one-way vehicle-trips and peak-hour one-way vehicle-trips must be determined in order to analyze the potential impacts from the proposed project development. Since the project is located in the Tahoe Basin, daily rates are based on The *TRPA Trip Table* (April 2020) which is based on the Institute of Transportation Engineers (ITE) *Trip Generation Manual* 10th Edition.

Reduction for Non-Auto Trips

Non-auto trips, such as trips made to/from the site via bike, walking or transit, reduce the number of vehicle trips generated by the project. *2018 Summer TRPA Travel Mode Share Survey* data was reviewed. Data from the surveys conducted at locations at Incline Village near the Raley's and at the Incline Village Recreation Center. Based on responses from this group (with 60 data points), the non-automotive trip percentage was approximately 40 percent. Due to the project's location relative to commercial and shopping as well as the high school, the connecting bike and pedestrian paths, the nearby employment locations, a reduction of 20 percent non-auto travel is applied to the residential units. The non-auto reduction is less than that found at the commercial center (40 percent) due to the home to work trips and home to recreation trips which were not reflected in the commercial center area.

Trip Generation at Site Driveways

Multiplying the land use quantities by the trip rates and applying reductions for non-auto trips yields the vehicle trips generated at the site driveways for proposed project conditions. As shown in Table A, the proposed land uses are forecasted to generate a total of approximately 174 one-way daily vehicle trips (DVTE) at the site driveways on a weekday, including 14 PM peak-hour vehicle-trips (9 inbound plus 5 outbound).

Conclusion


The project's total peak hour trip generation of 14 trips is well below the 80 peak-hour vehicle-trip threshold where a full traffic study would be required as per the *Community Service Department Planning and Building Administrative Permit Development Application Submittal Requirements* (Washoe County, Nevada, December 2018). Therefore, no further analysis is required.



Please contact our office at (530) 583-4053 with any questions or comments pertaining to this analysis.

Respectfully Submitted,

LSC Transportation Consultants, Inc.

by 

Leslie Suen, PE, Senior Engineer

LSC Transportation Consultants, Inc.

Enclosure: Table A

Table A: Incline Village Residential - Trip Generation

Description	Quantity	Units	ITE Land Use Category	ITE Land Use Code	Trip Generation Rates ¹			Reduction for Non-Auto Access	Vehicle Trips at Site Driveways			
					Daily	PM Peak Hour			Daily	PM Peak Hour		
						In	Out			Total	In	Out
Multi Family Residence	40	DU	Multi Family Housing (Mid-Rise)	221	5.44	Fitted Curve		20%	174	9	5	14

DU= Dwelling Unit
 Note 1: TRPA daily rates follow ITE for these land uses. ITE Peak hour rate.
 Source: LSC Transportation Consultants, Inc., Tahoe Regional Planning Agency (TRPA) Trip Table, and Institute of Transportation Engineers Trip Generation (10th Edition)

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July 1, 2021
Project No. 21073.001

Mr. Kevin Hanna
PAL CAP FIFF Tahoe I, LLC
940 Southwood Boulevard, Suite 101
Incline Village, Nevada 89451
Email: kevin@greenwood-homes.com

Subject: **Geotechnical Assessment
Southwood Condominiums
941 and 947 Tahoe Boulevard
Incline Village, Washoe County, Nevada 89451
APN's: 132-231-09 and 132-231-10**

Dear Mr. Hanna:

This report presents the results of Reno Tahoe Geo Associates' (RTGA's) geotechnical assessment for a proposed 5-story condominium building to be located on two adjoining parcels at 941 Tahoe Boulevard and 947 Tahoe Boulevard in Incline Village, Washoe County, Nevada (APN's: 132-231-09 and 132-231-10). This report provides the information required by Washoe County. The project location is shown on Plate 1.

A limited subsurface field investigation was included in this geotechnical assessment. Therefore, it is important that RTGA be involved during grading and construction to confirm that the site conditions are as anticipated and to make any necessary revisions to our recommendations.

PROJECT DESCRIPTION

The proposed project site is composed of two adjoining irregularly shaped parcels totaling 1.987 acres located at 941 Tahoe Boulevard and 947 Tahoe Boulevard (corner parcel), Incline Village, Washoe County, Nevada. The parcels are bounded to the north by Tahoe Boulevard, to the east by Southwood Boulevard, and to the south and west by developed privately owned parcels. Access is by existing paved and gravel private driveways from Tahoe Boulevard and Southwood Boulevard. A site plan

including the existing property lines and the proposed condominium building footprint is presented on Plate 1.

The two parcels are currently undeveloped, unoccupied, and without above ground structures. The corner lot, 947 Tahoe Boulevard, was formerly occupied by a Chevron gas station. 941 Tahoe Boulevard is located on the south and west sides of 947 Tahoe Boulevard and formerly had a building used as a restaurant located in the north-central portion of the parcel near Tahoe Boulevard. The southern portion of this parcel does not appear to have undergone any historic development. An approximately 4-foot high retaining wall located on the west edge of the corner lot along its north-south property line. The formerly developed portions of each parcel are approximately level and the levelled portion of 947 Tahoe Boulevard is approximately 8 feet lower than the levelled portion of the western parcel. From Tahoe Boulevard, the combined parcels slope from approximately 6,406 feet at the northwest corner to 6,379 feet at the southeast corner where they meet Southwood Boulevard, resulting in an overall site slope of approximately 7 percent to the southeast.

We understand that a new, 5-story condominium complex with covered parking will be constructed with anticipated cuts of up to 20 feet and fills on the order of 8 feet or less. E-mail correspondence indicates the complex will be supported on concrete slab with a concrete and steel structure. Structural loads were not available at the time of this report and were assumed for the purposes of this proposal. Estimated vertical structural loads are not expected to exceed 50 kips at isolated columns and 2 kips to 4 kips per linear foot along continuous wall foundations for long-term loading conditions. Once plans are made available, we may need to modify our recommendations if the actual construction scope differs.

REFERENCES

The following information was provided to RTGA in the course of this investigation and serves as the basis of our understanding of the project type and scope.

- Topographic Survey, Arnett & Associates, Inc., 941 & 7 947 Tahoe Boulevard, Washoe County, Nevada, October 30, 2020.

- ALTA/NSPS Land Title Survey, 941 & 7 947 Tahoe Boulevard, Washoe County, Nevada, October 30, 2020.

The following published and unpublished references were also reviewed during preparation of this report.

- ASCE, 2019, ASCE 7 Hazard Tool, accessed June 2021;
- Natural Resources Conservation Service (NRCS) *Web Soil Survey in Google Earth*, accessed June, 2021;
- *Washoe County Real Property Assessment Data*, Washoe County website accessed June 2021;
- Saucedo, George J. 2005, *Geologic Map of the Lake Tahoe Basin, California and Nevada*, California Geological Survey;
- United State Geologic Survey (USGS), Quaternary Fault and Fold Database of the United States, (<http://earthquake.usgs.gov/hazards/qfaults/>), accessed August 2020.

We also reviewed nearby projects and our previous experience in the project area in developing these recommendations.

FIELD EXPLORATION

Our selection of field exploration locations was based on the anticipated project layout and site access. The subsurface exploration consisted of three test pits and a shear-wave velocity survey, which were located in the field by visual sighting and/or measuring from existing features at the site. The exploration locations shown on Plate 1 should be considered accurate only to the degree implied by the methods used.

Refraction Microtremor Survey (ReMi)

A Refraction Microtremor (ReMi) geophysical array was utilized to obtain shear-wave velocity measurements to determine the Seismic Design Category and estimate the depth to competent bedrock. ReMi provides a means to obtain a basic subsurface profile in an essentially continuous profile without physical investigations across the explored location. The results of the ReMi survey are presented both as a one-dimensional vertical profile and a two-dimensional transect on Plate 2.

Test Pit Excavation

Three test pits were excavated using a Link-Belt 145 X 2 excavator. Our engineer visually classified soils encountered in the test pit according to the Unified Soil Classification System (USCS) and obtained bulk samples for further identification and laboratory testing. Soil conditions encountered are presented on the test pit logs on Plates 3 through 5. A description of the USCS used to identify the site soils and a test pit log legend are presented on Plate 6.

After the test pits were completed, they were backfilled with excavated soil using the equipment on site. Backfill was loosely placed and not compacted to the requirements typically specified for engineered fill. Structures, slabs supported on grade, or pavements located over these areas may experience excessive settlement. Removal and re-compaction of test pit backfill may be required prior to construction of improvements over this area.

LABORATORY TESTING

Laboratory tests were performed on selected samples to aid in soil classification and to evaluate physical properties of the soils, which may affect the geotechnical aspects of project design and construction. Gradation analysis and plasticity index (Atterberg Limits) was performed for a sample of site soils. Laboratory test results can be found on the test pit logs (Plates 3 through 5) and on Plates 7 and 8 at the end of this report. In addition, one soil sample of sandy lean clay collected from 12 feet depth in TP-01 was submitted for soil corrosivity analysis. Results of laboratory testing for this sample will be reported under separate cover when they are received.

SOIL AND GEOLOGIC CONDITIONS

According to Saucedo et al. (2005), the site is underlain by unnamed gravels, sand, and alluvium of Pliocene and/or Pleistocene age. Based on published information by NRCS and site observation, the native soils have been categorized as Inville gravelly coarse sandy loam, 2 to 9 percent slopes, stony, and within the hydrologic soil group A. The soil is well drained, with a saturated permeability of 2 to 6 inches per hour. According to Saucedo et al. (2005), the site is underlain by undivided glacial outwash deposits of Holocene or Pleistocene age.

Based on test pit excavations, laboratory analysis of soil samples, and the seismic survey conducted at the site, the subsurface conditions consist of greater than 15 feet thickness of silty gravel with sand,

cobbles, and boulders, over highly-weathered bedrock. Sandy lean clay was logged between 11 and 13 feet depth in test pit TP-1. Clayey sand with gravel was encountered below 13 feet in test pit TP- 1.

The upper portion of bedrock, if encountered, may consist of intermixed weathered and permeable zones with harder boulder or zones where jointing is widely spaced. The bedrock typically transmits infiltrated water vertically to joint systems to sills or geologic contacts at depth, and rarely have springs or surface runoff. Boulders and bedrock may exhibit variations in density and hardness within the planned excavation.

The weighted average soil shear-wave velocity measured in the upper 100 feet of the soil horizon is 1,385 feet per second (fps) based on the ReMi measurement. Based on the shear-wave velocity profile, the soil at the ground surface is dense (material shear-wave velocities of about 800 fps to 1,000 fps). The ReMi data suggests that soft to hard rock (material greater than 1,200 fps to 2,800 fps shear-wave velocity) is present at approximately 16 to 26 feet in depth. Very hard excavation conditions may be present at shallow depths. The contractor should anticipate shallow large boulders and possibly bedrock in excavations.

No groundwater was observed in the test pits.

Seismicity and Faulting

Lake Tahoe lies within an area with moderate to high potential for strong ground shaking from large earthquakes (moment magnitude 7 or larger) in northern Nevada and California. Ground shaking can result in secondary seismic hazards such as liquefaction, seismic settlement, differential compaction, seismically induced slope instability, and rock falls. None of these hazards are present in this site due to dense soils, moderate slopes, and absence of tall rock outcrops or surface boulders. Due to the high potential for strong ground shaking from earthquakes, all structures should be designed for seismic loads in accordance with the most recently adopted International Building Code/International Residential Code.

Saucedo et al. (2005) and the USGS Fault and Fold Database indicate the nearest fault is the Incline Village Fault approximately 7,400 feet west, (Saucedo, 2005). This fault zone is assigned as a Class A Fault of undifferentiated Quaternary Age. Based on review of the above-referenced published sources, no evidence was found that would indicate the presence of active faults trending through the subject property. No portion of any active Holocene age faulting is known to cross the site at this time, nor has any direct evidence of on-site faulting been observed in the field during the subsurface exploration of this project. No additional fault studies or fault setback requirements are needed for the subject parcel.

RECOMMENDATIONS AND DISCUSSION

From a geotechnical engineering standpoint, the site may be developed as a condominium structure as planned. Based upon our review of the above-referenced material, we have developed the following conclusions. These conclusions may change if additional information becomes available or the design is changed. *Please note, it is recommended that the soil and rock conditions presented in this report be verified during construction by the project geotechnical engineer.*

- The presence of shallow boulders is expected to be a significant constraint which will result in additional costs and difficulties during construction. No other soil or groundwater constraints were observed which will preclude the development as planned.
- Soils are a loose to medium dense silty sand with varying gravel, cobble, and boulder content. Boulders greater than 6 feet diameter were encountered in test pit TP-1 and smaller boulders were found to be common in the subsurface across the site. The contractor should anticipate boulders during excavation of the planned subgrade parking area, footings, and trenches.
- In most cases, native soils, if screened to <6 inches, are suitable for reuse as structural fill under structural areas or floor slabs. This excludes clayey soils such as those found below 11 feet depth in TP-1. Native soil is suitable for subgrade below footings or slabs if in a relatively undisturbed state. The Contractor may choose to use onsite material in structural areas but should be made aware that these soils may prove difficult to moisture condition and compact. It will be far easier to backfill narrow excavations, such as between building walls and excavations, with drain rock, aggregate base, or other readily specified compactable materials.

- Imported structural fill, if required, should consist of granular material nearly free of organic debris, with a liquid limit of less than 35, a plasticity index less than 12, 100 percent passing the 4-inch sieve, and less than 30 percent passing the No. 200 sieve. All imported fill materials should be approved by the project Soils Engineer prior to being transported to the site.
- Fill should be uniformly moisture conditioned to within 2 percent of optimum moisture content and placed in layers of 8 inches or less in loose thickness. Each lift should then be compacted with appropriate compaction equipment to achieve at least 90 percent relative compaction*, unless specified otherwise. No fill material should be placed, spread, or rolled while it is frozen, thawing, or during unfavorable weather conditions.
- Fills with more than 30 percent of particles greater than ¾-inch diameter and composed of durable stone or rock fragments, including drain rock and, likely, native materials, are not applicable to conventional compaction testing and is considered “rock fill”. These materials should be uniformly moisture conditioned to above optimum moisture content and placed in thin layers not exceeding one foot in loose thickness. They should be compacted with a minimum of five passes with a large sheepsfoot compactor, such as Caterpillar 825, a large excavator with a compaction wheel, or a minimum of five passes with hand held compaction equipment in trenches or other small excavations. Compaction shall continue until no further densification or change in volume is noted. Any fill material within this category should be placed only under continuous observation and approval of the soil engineer. It is also noted that other types and sizes of compaction equipment may require thinner lifts of material.
- The 2018 International Building Code or International Residential Code should be implemented for the project seismic design. A Site Class C, per the IBC, is applicable for site soils due to the proximity of bedrock to the surface. For design purposes, the seismic criteria in the following table should be implemented.

* Wherever referenced in this report, relative compaction should be determined by comparing to the maximum density and optimum moisture content determination in accordance with ASTM D1557 Test Method for compaction curves.

SEISMIC DESIGN CRITERIA USING ASCE 7-16 <i>SOUTHWOOD CONDOMINIUM PROJECT, INCLINE VILLAGE, NEVADA</i>	
Approximate Latitude of Site	39.24874
Approximate Longitude of Site	-119.947296
Spectral Response Acceleration at Short Period (0.2 second), S_s	1.805 g
Spectral Response Acceleration at 1-Second Period, S_1	0.618 g
Site Class Selected for this Site	C
Site Coefficient, F_a	1.2
Site Coefficient, F_v	1.4
Site Spectral Response Acceleration at Short Period, S_{MS}	2.166 g
Site Spectral Response Acceleration at Long Period, S_{M1}	0.866 g
Design Spectral Acceleration Parameters, S_{DS}	1.44
Design Response Spectrum, S_{D1}	0.58
Peak Ground Acceleration (PGA)	0.77 g

- We recommend that all foundations be bottomed at a minimum depth of 24 inches below the existing ground surface. This depth will provide adequate foundation support and protect against shallow ground loosening due to frost heave.
- Foundations bottomed at least 2 feet below the final ground surface may be designed for an allowable bearing pressure of 3,000 psf, assuming a minimum footing width of 12 inches. Bearing capacity can be increased by 500 psf for each foot of increase in thickness up to 4,500 psf. Footings at greater than 10 feet depth can be designed for an allowable bearing pressure of 6,000 psf where they are on bedrock.
- The allowable bearing pressure may be increased by one-third for total loading conditions, including wind and seismic forces. For balanced backfill, the allowable bearing pressure is a net value; therefore, the weight of the foundation which extends below grade and the overlying backfill may be neglected when computing dead loads.
- Total settlement of an individual foundation will vary depending on the plan dimensions of the foundation and the actual load supported. Based upon anticipated foundation dimensions and loads, we estimate that total post-construction settlement of footings designed and

constructed in accordance with the recommendations of this report will be ½-inch. Differential settlement between similarly loaded, adjacent footings is expected to be ¼-inch, provided footings are founded on similar materials (e.g., all on native soil). Settlement of all foundations is expected to occur rapidly, generally during the construction time frame for the building. Improvements supported on non-structural fill may experience larger settlements.

- **All footing excavations should be observed by the project Soils Engineer** prior to placing reinforcing steel for concrete to verify the underlying soil conditions and recommendations contained herein are implemented during construction.
- Excavations from the surface to 15 or more feet below surface are likely to encounter boulders with intervening soil filled voids. Soil and altered rock temporary excavations may potentially be in the range of 1H:1V to 1.5H:1V. Slopes to 1H:3V feet may be generally stable below this depth, provided chain link netting is used to prevent loosening of boulders. However, RTGA should closely observe excavations below the bedrock surface to verify that loose or over-steepened zones are not present which could allow rock wedges or boulders to slide into the excavation. Steeper excavations can be implemented if required, but will generally require either soil-nail and shotcrete facing in soil and weathered bedrock, or spot nailing of bedrock blocks and wedges in intact bedrock (without shotcrete)
- If required, rock anchors or soil nails may be needed to stabilize unstable areas within the excavation wall. Rock anchors or soil nails commonly used in the area are hollow bars with 1½-inch outer diameter fitted with a drill bit of 3 to 3½-inches diameter. Soil nails are typically drilled 5 feet or more into the bedrock surface. Neat cement grout is pumped through the hollow center of the bar and create a 3½-inch-diameter annulus of grout around the bar back to the surface. For design of soil nails the ultimate grout to soil/bedrock interface is expected to be approximately 30 psi in soil to 60 psi for depths greater than 5 feet into the bedrock surface (FHA, 2005).
- Soil nail walls in theory could be used for permanent support of the uphill side of the excavation, however practically the excavation will not be neat and the excavation line will likely vary widely outside of the building line due to uneven rock joints and fractures. Careful consideration would be required for drainage and removal of groundwater seepage behind the shotcrete face so that it does not affect interior building components.

- If required, subterranean structures and retaining walls, including foundations, should be designed to resist the lateral earth pressure exerted by the retained, compacted backfill plus any additional lateral force that will be applied to the wall due to surface loads placed at or near the wall. The table below presents a list of soil design parameters for these structures.

TABLE 2 - LATERAL EARTH PRESSURES	
<u>Earth Pressure</u>	<u>Equivalent Fluid Density (pcf)</u>
Active Pressure	
Retained Slope = Level to 4H:1V	30
Retained Slope = 4H:1V to 2H:1V	40
At-Rest Pressure	
Rigidly Restrained	60
Seismic Active	
Retained Slope = Level to 4H:1V	60
Retained Slope = 4H:1V to 2H:1V	80
Allowable Passive Pressure	
Retained Slope = Level	350
Allowable Coefficient of Friction	0.45

- Surcharge loads behind walls are not factored into the recommended equivalent fluid pressures. Any anticipated surcharge load should be factored into the design in addition to the above-mentioned pressures.
- The active pressure can be used for flexible walls with a potential to dislocate. At-rest pressure should be used for building walls or restrained walls. The seismic active pressure is applicable for the earthquake condition for both at-rest and active walls.
- The values do not include hydrostatic pressures that might be caused by collected runoff water trapped behind the structure. Accordingly, wall backfill should be free draining and provisions should be made to collect and dispose of excess water that may accumulate behind earth retaining structures.
- Adequate drainage of backfill in the form of subdrains should be provided at the base of exterior walls (preferably below the joint between wall and footing) to collect and dispose of

excess water which can accumulate behind the retaining structures. The subdrain should be placed in the drain rock and be enveloped in filter fabric as shown on Plate 9. Drain rock should be densified to a non-yielding condition by placing in lifts and compacting in a manner which does not damage the waterproofing material or structurally damage the wall. Dripline trenches or surface drains should not be connected to the exterior foundation drain.

- Heavy compaction equipment or other loads which may result in lateral pressures higher than those recommended above should not be allowed within proximity to the wall, unless planned for in the structural design.
- Where retaining walls will enclose useable interior space or floors below grade, the wall should be waterproofed. Waterproofing material should consist of rubberized asphalt, polymer-modified asphalt, butyl rubber, or other approved materials capable of bridging nonstructural cracks. Joints in the membrane should be lapped and sealed in accordance with the manufacturer's recommendations. Extra attention should be paid to concrete cold joints between the wall and footing. A manufactured water-stop or key should be placed at all cold joints.
- The drain system should discharge into a properly designed infiltration trench, storm drain system, or other approved exterior location. Filter fabric (Mirafi 140N or approved alternate) should separate the drain rock from overlying fill materials to prevent sand or fines from migrating into the drain rock.
- Due to the potential for water seepage and moisture migration through concrete slab-on-grade floor and to reduce the potential for build-up of hydrostatic pressure, we recommend a drain system be constructed under slab-on-grade floors. In general, the under-slab drain system should consist of 3-inch-diameter (minimum) perforated pipe placed in at least 8-inches of drain rock and spaced at a maximum 24 feet apart. The subgrade should slope toward the perforated drainpipes and the pipes should have at least a one-percent slope.
- Crawl spaces must be built with permanent drainage, including sloped interior surfaces and/or a perimeter drain trench filled with drain rock. Positive drainage should be provided from all portions of the crawlspace to the lowest part of the crawlspace, and then under or through the perimeter footing to discharge down gradient from the structure and exterior flatwork. The

discharge should be into a properly designed infiltration trench, the storm drain system, or other approved exterior location.

- Radon is a naturally occurring, dense, odorless gas that is generated from radioactive degradation of uranium in granitic rocks decaying into isotopes which can contribute to lung cancer. Active or passive radon venting of below-grade spaces should be considered, including crawlspaces, to reduce potential for radon to diffuse into living spaces. The subfloor perforated pipe vent system under the slab-on-grade floor can be considered for passive radon mitigation.
- Finished grades should be sloped to prevent ponding of water and to direct surface water away from foundations. Impervious surfaces adjacent to the building foundation should slope away from the building at a minimum 5 percent gradient for at least 5 feet. The dripline trench should not be in direct communication with the foundation drain layer.

LIMITATIONS

This report has been prepared for design purposes for specific application to the currently proposed project in accordance with the generally accepted standards of practice at the time the report was written. If the scope of the proposed construction changes from those described, our recommendations should be reviewed by us and may require modification. No warranty, express or implied, is made.

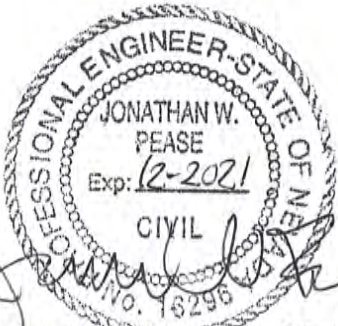
All parties to the project including the designer, contractor, subcontractors, etc., should be made aware of this report in its entirety. The use of information contained in this report for bidding purposes should be done at the Contractor's option and risk.

CLOSURE

We trust the report provides you with the information you require. If there are any questions, please contact our office.

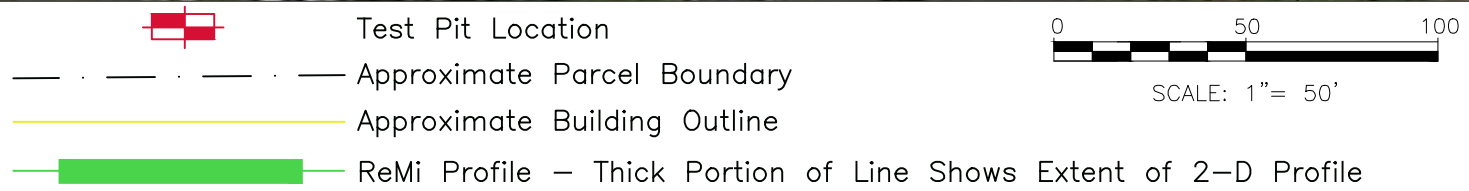
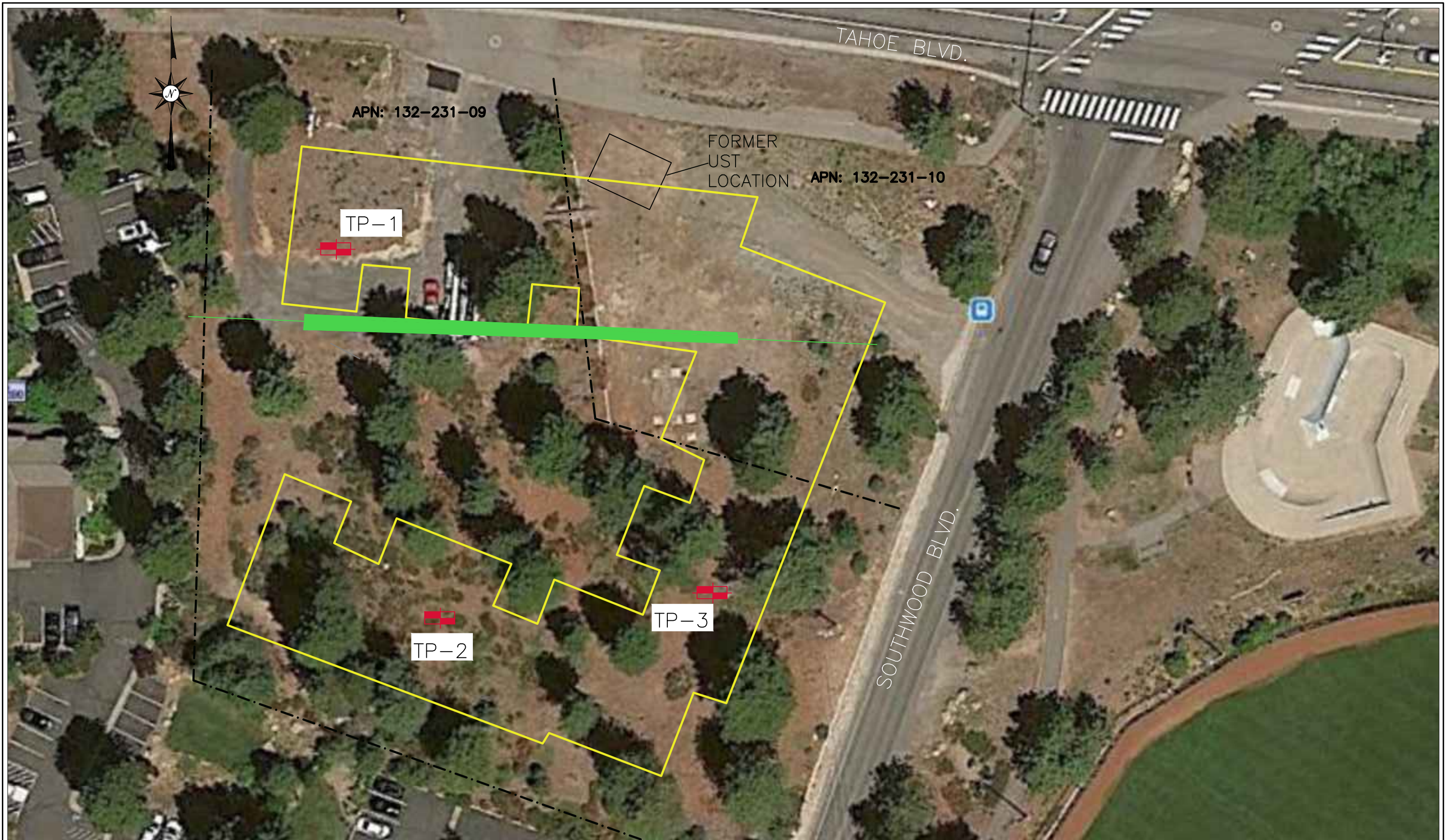
Sincerely,
Reno Tahoe Geo Associates, Inc.


Shane Mulvaney
Senior Geologist


Jonathan W. Pease, PhD, PE, GE
Principal Engineer NV 16296
6-30-21

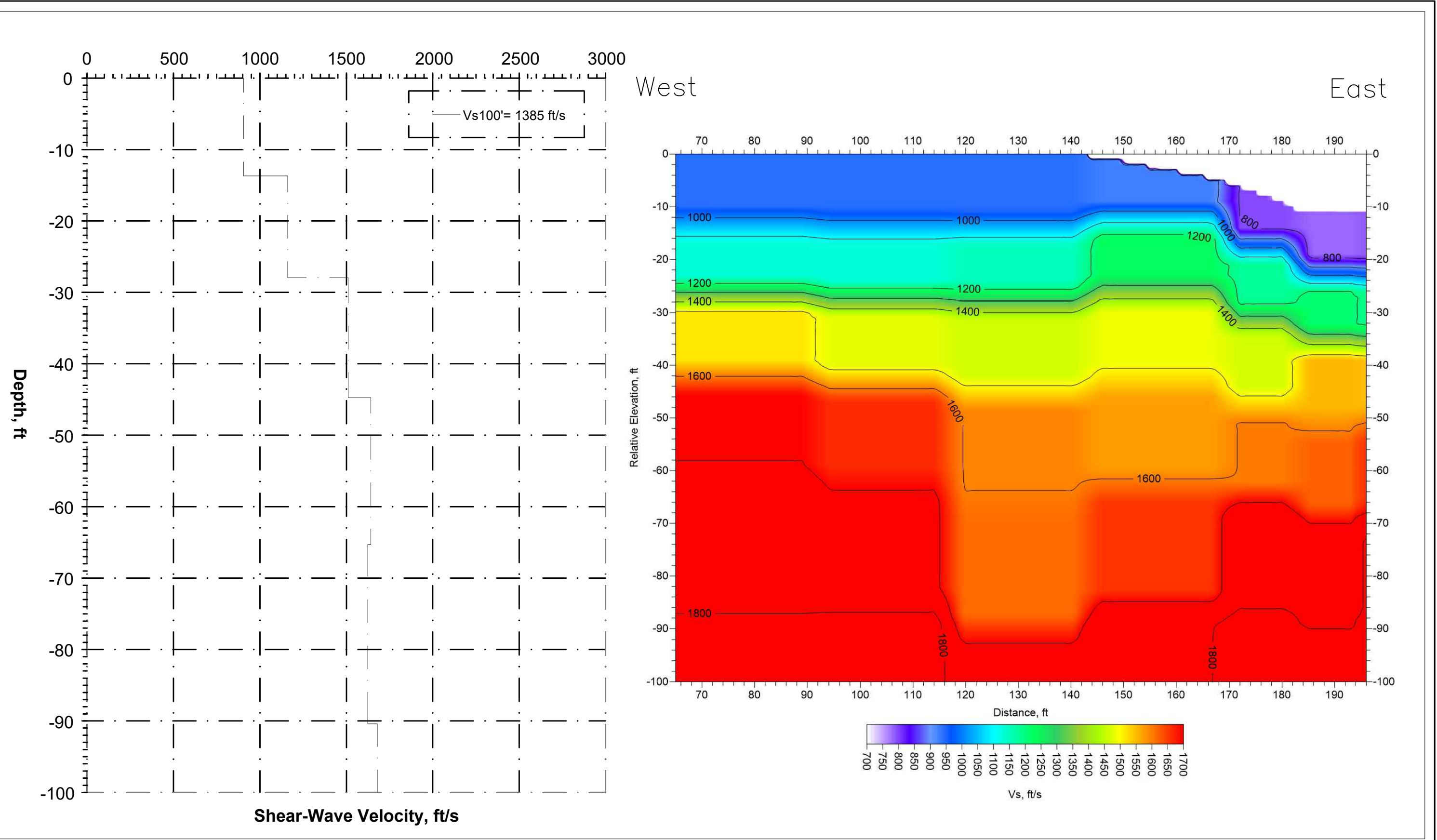
Plates:	Plate 1 -	Site Map
	Plate 2 -	ReMi 1D & 2D Results
	Plate 3 -	Log of Test Pit TP-1
	Plate 4 -	Log of Test Pit TP-2
	Plate 5 -	Log of Test Pit TP-3
	Plate 6 -	Soil Classification Chart
	Plate 7 -	Grain Size Analysis
	Plate 8 -	Atterberg Limits
	Plate 9 -	Typical Back of Wall Drain

PLATES




Reno Tahoe Geo Associates, Inc.
 CONSULTING CIVIL ENGINEERS
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 JOB # 21073.001 APPR: _____ DATE: 05/13/2021

SITE MAP		PLATE 1
GEOTECHNICAL ASSESSMENT SOUTHWOOD CONDOMINIUMS INCLINE VILLAGE		
WASHOE COUNTY	CALIFORNIA	



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REMI LINE RESULTS
 GEOTECHNICAL ASSESSMENT
 SOUTHWOOD CONDOMINIUM PROJECT
 INCLINE VILLAGE
 WASHOECOUNTY NEVADA

PLATE
2

LOG OF TEST PIT TP-1

LOCATION NORTHWEST QUADRANT OF SITE

EQUIPMENT LINK-BELT 145 X 4

ELEVATION _____ DATE 6/10/21

LABORATORY TESTS

FIELD BLOWS
/6in

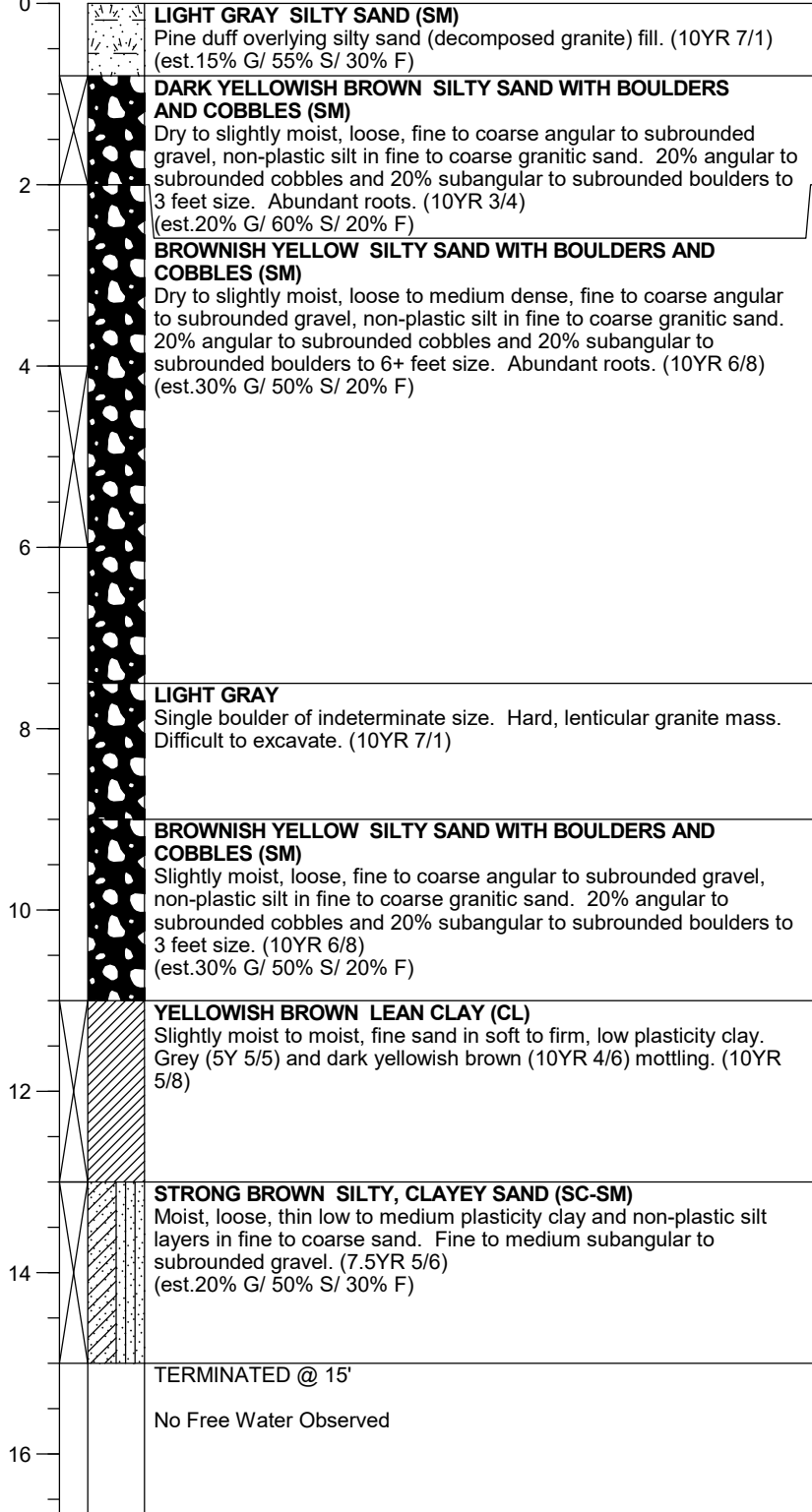
BLOWS/FT

MOISTURE
CONTENT (%)

DRY DENSITY
(pcf)

DEPTH (ft)

SAMPLE



SA, Percent Passing #200 = 51%
Liquid Limit = 35
Plasticity Index = 14

1 LOG LETTER SIZE SOUTHWOOD CONDOS.GPJ MED DATA TEMPLATE 2015A.GDT 7/1/21



P. O. Box 18449 CONSULTING CIVIL ENGINEERS TEL (775) 853-9100
Reno, Nevada 89511 FAX (775) 853-9199

JOB # 21073.001 APPR: _____ DATE: 6/11/21

LOG OF TEST PIT TP-1

GEOTECHNICAL ASSESSMENT
SOUTHWOOD CONDOMINIUMS
INCLINE VILLAGE

PLATE

3

WASHOE COUNTY

NEVADA

LOG OF TEST PIT TP-2

LOCATION SOUTHWEST QUADRANT OF SITE

EQUIPMENT LINK-BELT 145 X 4

ELEVATION _____ DATE 6/10/21

LABORATORY TESTS

FIELD BLOWS
/6in

BLOWS/FT

MOISTURE
CONTENT (%)

DRY DENSITY
(pcf)

DEPTH (ft)

SAMPLE

0

2

4

6

8

10

12

14

16

0	<p>DARK REDDISH BROWN SILTY SAND (SM) Dry, loose, angular to subrounded gravel, non-plastic silt, in fine to coarse sand. Pine duff overlying topsoil. (2.5YR 3/4) (est.15% G/ 60% S/ 25% F)</p>
2	<p>DARK YELLOWISH BROWN SILTY SAND WITH COBBLES AND BOULDERS (SM) Dry to slightly moist, loose matrix, fine to coarse angular to subrounded gravel, non-plastic silt in fine to coarse granitic sand. 25% angular to subrounded cobbles and 20% subangular to subrounded boulders to 3 feet size. Abundant roots. (10YR 4/6) (est.20% G/ 60% S/ 20% F)</p>
8	<p>YELLOWISH BROWN SILTY SAND WITH COBBLES AND BOULDERS (SM) Dry to slightly moist, loose matrix, fine to coarse angular to subrounded gravel, non-plastic silt in fine to coarse granitic sand. 30% angular to subrounded cobbles and 5% subangular to angular boulders to 3 feet size. (10YR 5/6) (est.25% G/ 55% S/ 20% F)</p>
13	<p>TERMINATED @ 13'</p> <p>No Free Water Observed</p>

1 LOG LETTER SIZE SOUTHWOOD CONDOS.GPJ MED DATA TEMPLATE 2015A.GDT 7/1/21



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JOB # 21073.001 APPR: _____ DATE: 6/11/21

LOG OF TEST PIT TP-2

GEOTECHNICAL ASSESSMENT
 SOUTHWOOD CONDOMINIUMS
 INCLINE VILLAGE

WASHOE COUNTY

NEVADA

PLATE

4

LOG OF TEST PIT TP-3

LOCATION SOUTHEAST QUADRANT OF SITE

EQUIPMENT LINK-BELT 145 X 4

ELEVATION _____ DATE 6/10/21

LABORATORY TESTS

FIELD BLOWS
/6in

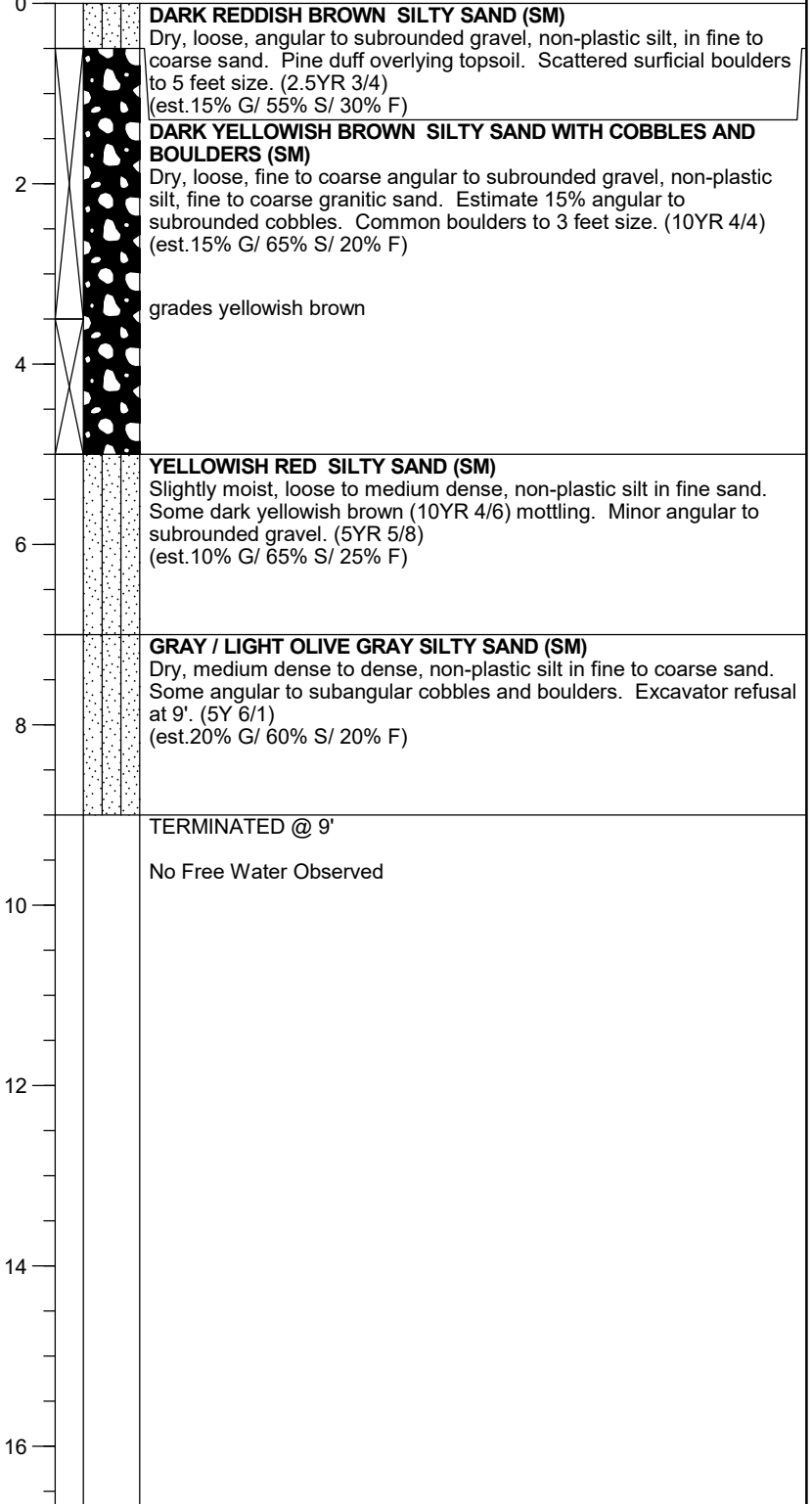
BLOWS/FT

MOISTURE
CONTENT (%)

DRY DENSITY
(pcf)

DEPTH (ft)

SAMPLE



1 LOG LETTER SIZE SOUTHWOOD CONDOS.GPJ MED DATA TEMPLATE 2015A.GDT 7/1/21



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LOG OF TEST PIT TP-3

GEOTECHNICAL ASSESSMENT
SOUTHWOOD CONDOMINIUMS
INCLINE VILLAGE

PLATE

5

WASHOE COUNTY

NEVADA

UNIFIED SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			TYPICAL NAMES		
COARSE GRAINED SOILS	GRAVELS More than half coarse fraction is larger than No.4 sieve size	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW		WELL GRADED GRAVELS, GRAVEL SAND MIXTURES
		GRAVELS WITH OVER 12% FINES	GP		POORLY GRADED GRAVELS, GRAVEL SAND MIXTURES
			GM		SILTY GRAVELS, POORLY GRADED GRAVEL-SAND-SILT MIXTURES
		GC		CLAYEY GRAVELS, POORLY GRADED GRAVEL-SAND-SILT MIXTURES	
	SANDS More than half coarse fraction is smaller than No.4 sieve size	CLEAN SANDS WITH LITTLE OR NO FINES	SW		WELL GRADED SANDS, GRAVELLY SANDS
		SANDS WITH OVER 12% FINES	SP		POORLY GRADED SANDS, GRAVELLY SANDS
			SM		SILTY SANDS, POORLY GRADED SAND-SILT MIXTURES
			SC		CLAYEY SANDS, POORLY GRADED SAND-SILT MIXTURE
FINE GRAINED SOILS	SILTS AND CLAYS Liquid limit less than 50	ML		INORGANIC SILTS & VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS, OR CLAYEY SILTS WITH SLIGHT PLASTICITY	
		CL		INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS	
		OL		ORGANIC CLAYS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY	
	SILTS AND CLAYS Liquid limit greater than 50	MH		INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS	
		CH		INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS	
		OH		ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS	
	HIGHLY ORGANIC SOILS	Pt		PEAT AND OTHER HIGHLY ORGANIC SOILS	
ROCK				COBBLES/BOULDERS	
				GRANITIC BEDROCK	
				VOLCANIC BEDROCK	

KEY TO TEST DATA

LL - Liquid Limit (in %)	Tx	320	(2600)	Shear Strength, psf	Unconsolidated Undrained Triaxial
PL - Plastic Limit (in %)	TxCU	320	(2600)	Confining Pressure, psf	Consolidated Undrained Triaxial
Gs - Specific Gravity	UC	2000			Unconfined Compression
SA - Sieve Analysis					
Consol - Consolidation	DS	36°	400	Friction Angle; Cohesion, psf	Consolidated Drained Direct Shear

SAMPLE DESIGNATION

	STANDARD PENETRATION TEST SAMPLE		SHELBY TUBE SAMPLE		OTHER "UNDISTURBED" SAMPLE
	2 1/2" OD MODIFIED CALIFORNIA SAMPLE		AUGER CUTTINGS SAMPLE		OTHER BULK OR CLASSIFICATION SAMPLE
	3" OD MODIFIED CALIFORNIA SAMPLE		LOCATION OF ROCK CORING		

KEY TO SYMBOLS

	OBSERVED WATER LEVEL
--	----------------------



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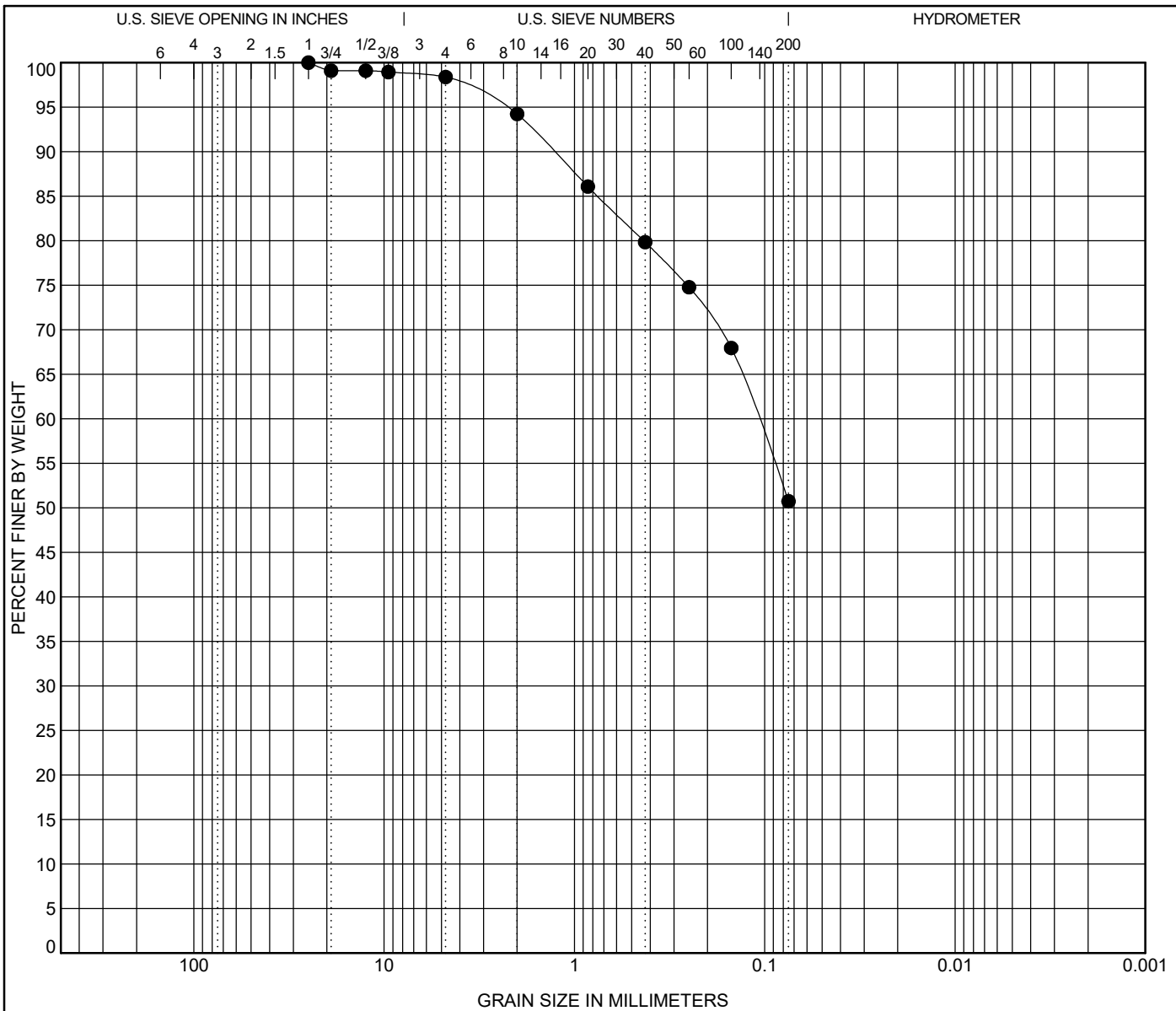
JOB # **21073.001** APPR: **JWP** DATE: **05/18/2021**

SOIL CLASSIFICATION CHART

**GEOTECHNICAL ASSESSMENT
 SOUTHWOOD CONDOMINIUMS
 INCLINE VILLAGE**

WASHOE COUNTY NEVADA

PLATE
6



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Classification	LL	PL	PI	Cc	Cu
● TP-1C 11.0	SANDY LEAN CLAY(CL)	35	21	14		

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● TP-1C 11.0	25	0.109			1.6	47.6	50.7	

GRAIN SIZE GEOTECH.GPJ MED DATA TEMPLATE 2015A.GDT 6/18/21



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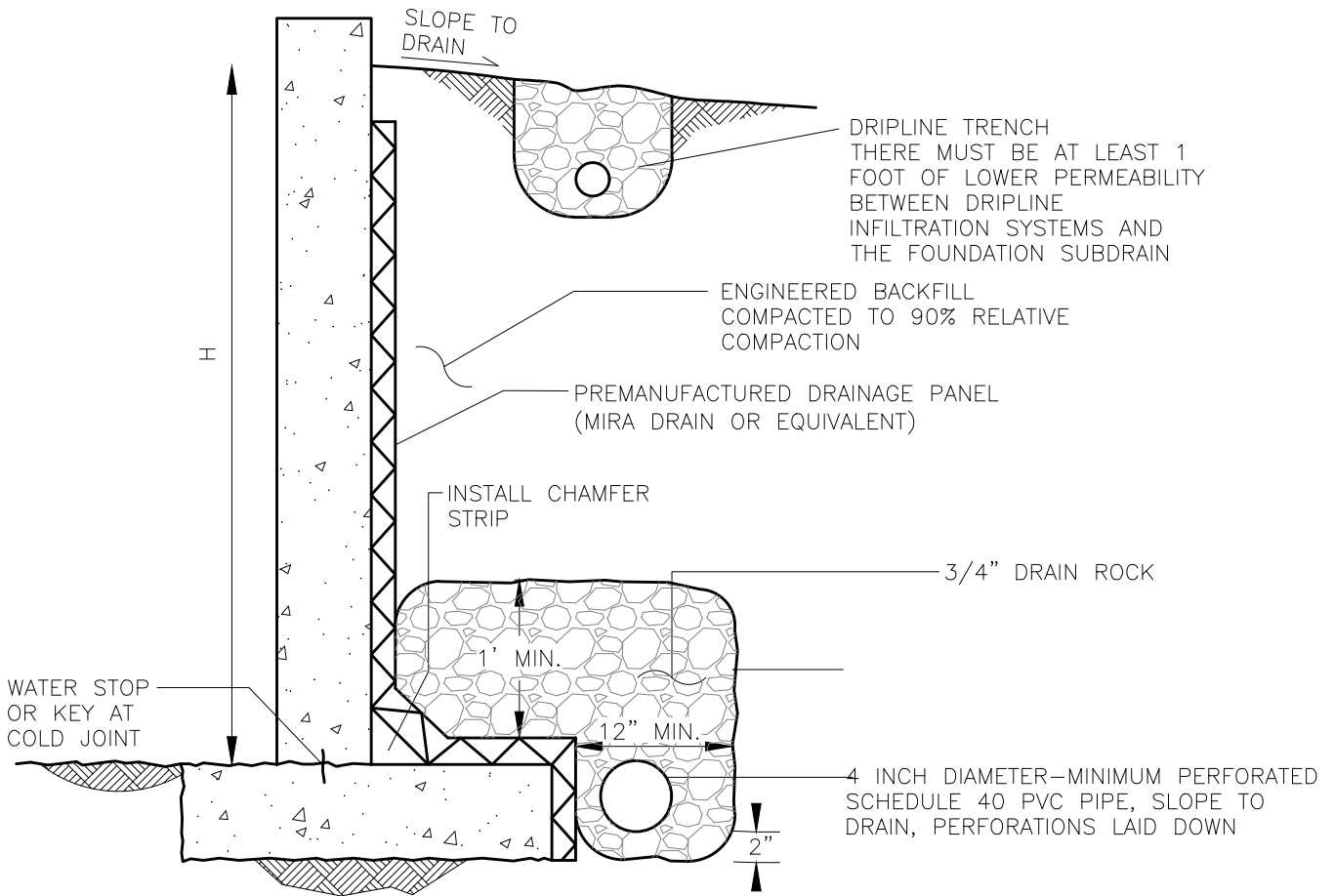
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GRAIN SIZE ANALYSIS

GEOTECHNICAL ASSESSMENT
SOUTHWOOD CONDOMINIUMS
INCLINE VILLAGE

PLATE
7

WASHOE COUNTY NEVADA



NOT TO SCALE

Consulting Civil Engineers
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Reno, Nevada 89511
PH (775) 853-9100
FAX (775) 853-9199

September 7, 2021
Project No. 21073.001

Tahoe Regional Planning Agency
128 Market Street
Stateline, Nevada 89449

Subject: **Soils/Hydrologic Scoping Report
Proposed Condominium Complex
941 and 947 Tahoe Boulevard
Incline Village, Washoe County, Nevada
(APN's: 132-231-09 and 132-231-10)**

Dear Reviewer:

Reno Tahoe Geo Associates, Inc, (RTGA) is requesting approval of an excavation depth for the attached soils/hydrology application based on previous approvals for nearby parcels, information within our files, and relevant published soil, and geological and topographic information. This letter is transmitted with the completed scoping application and describes the soil and hydrologic conditions at the location of the proposed Southwood Condominium Complex to be located at 941 and 947 Tahoe Boulevard, Incline Village, Washoe County (APN's: 132-231-09 and 132-231-10), (Plates 1 and 2). This letter includes our professional opinion that the proposed excavation will not intercept groundwater.

REFERENCES

The following published and unpublished references were reviewed and serve as the basis of our understanding of the project type and scope:

- Tahoe Regional Planning Agency (TRPA) Spatial Data Downloader, produced by the TRPA accessed May 2021;
- TRPA, 1987 Plan Area Statement Maps, www.trpa.org, assessed May 24, 2021;
- George J. Saucedo, et al., 2005. *Geologic Map of the Lake Tahoe Basin – California and Nevada*;

- Natural Resources Conservation Service (NRCS) *Web Soil Survey in Google Earth*, accessed June 2021;
- *Washoe County Real Property Assessment Data*, Washoe County website accessed June 2021;
- *Soil Hydrologic Approval - Waiver, IVGID Ballfield Improvement Project, 948 Incline Way, Washoe County, NV, APN 127-030-15, TRPA File Number LCAP2019-066*, Tahoe Regional Planning Agency, dated April 23, 2019;
- *Soil Hydrologic Approval - Waiver, 900 Tahoe Boulevard, Washoe County, NV, APN 132-012-04, TRPA File Number LCAP2019-135*, Tahoe Regional Planning Agency, dated June 25, 2019;
- *Soil Hydrologic Approval, Incline Business Park LLC, 919 Incline Court, Washoe County, NV, APN 132-232-15, TRPA File Number LCAP2009-0209*, Tahoe Regional Planning Agency, dated September 17, 2009;
- *Soil Hydrologic Investigation - Approval, 930 Tahoe Boulevard, Washoe County, NV, APN 132-012-02, TRPA File Number LCAP2018-00182*, Tahoe Regional Planning Agency, dated July 23, 2018;
- *Approval of Excavation for Proposed Project Based on Completed Investigation, Educational Field Studies Office, 926 Incline Way, Washoe County, APN 132-231-15, TRPA File #970281*, Tahoe Regional Planning Agency, dated June 3, 1997.

SITE CONDITIONS

The project site is shown on Plate 2. The proposed project site consists of two adjoining parcels located on the southwest corner of the east intersection of Southwood Boulevard and Tahoe Boulevard in Incline Village, Washoe County, Nevada. The corner parcel (947 Tahoe Boulevard) was formerly occupied by a Chevron gas station. The adjoining parcel (941 Tahoe Boulevard) is located on the south and west sides of the corner parcel and formerly had a building used as a restaurant located in the north-central portion of the lot near Tahoe Boulevard. There are existing driveways on both lots. An approximately 4-foot-high retaining wall is located on the west edge of the corner lot along its north-south property line. The formerly developed portions of each lot are approximately level, and the levelled portion of the corner lot is approximately 8 feet lower than the levelled portion of the western lot. The southern portion of this parcel does not appear to have undergone any historic development. Geotechnical test pit locations are shown on Plate 2.

The site is vegetated, where it has not been disturbed, with pine trees, manzanita shrubs, and other xeric upland species. No hydrophilic vegetation (such as firs, willows, or alders) was observed.

There is a single willow bush on the edge of Southwood Boulevard at the driveway entrance to the site, at about Elevation 6,379 feet, adjacent to a storm drain inlet. No other hydrophilic vegetation was noted along the right-of-way for Southwood and Tahoe Boulevard.

PROPOSED IMPROVEMENTS

We understand that a new, five-story condominium complex will be founded with a basement garage. The plan will be approximately C-shaped with three legs approximately 140 to 250 feet long and 60 feet wide. The front face of the building will be approximately 100 feet from Tahoe Boulevard and 30 feet from Southwood Boulevard. The garages will be built on two levels, with an entrance from the uphill, northwest corner to the upper garage level, and an entrance at the southeast corner into a lower garage level. The developer would like to extend the lower parking level under the south and east wings, and as far as approved, under the north wing as well.

The building outline and topographic contours for the site are shown on Plate 3. From Tahoe Boulevard the combined parcels slope from Elevation 6,406 feet at the northwest corner down to Elevation 6,380 feet at the southeast corner where they meet Southwood Boulevard, resulting in an overall site elevation change of 27 feet and an average slope of approximately 7 percent to the southeast. The existing grade within the building footprint varies from Elevation 6,403 feet to 6,382 feet.

The plan (Plate 3) shows the location of two cross sections cut on Plate 4. The finished floor level of the bottom garage level is proposed to be Elevation 6,384, and the bottom footings assuming cantilever concrete retaining walls would conservatively 4 feet lower or Elevation 6,380 feet. Total excavation depth would be 23 feet from existing grade at 6,304 feet. The southern wing would have a maximum excavation depth of approximately 14 feet due to being situated further down the slope.

NEARBY STREAM ENVIRONMENTS

Plate 5 is a map showing that the nearest Stream Environment Zone (SEZ). No springs, seeps, or hydrophilic plants are present on the subject site. Most of the vegetation is dry upland species such as pine and manzanita. The nearest SEZ, Land Capability Zone (Zone 1b) is a minor tributary of Third Creek which drains northwest to southeast approximately 160 feet northeast of the site. The

tributary of Third Creek is incised about 8 to 10 feet below adjacent upland ground surface and Tahoe Boulevard at the intersection with Northwood Boulevard. Based on the topographic elevations using a level survey, the creek level is approximately Elevation 6,378.50 to 6375 feet just north of the intersection. There are rushes and meadow grass to 4378 to 4381 feet on the edge of the creek which represent the stream environment zone vegetation. It is expected that the creek is recharging the adjacent groundwater, so that groundwater surface will dip away from the creek bed and will decrease in elevation under the site.

SOIL AND GEOLOGIC CONDITIONS

Based on published information by NRCS and site observation, the native soils have been categorized as Inville gravelly coarse sandy loam, 2 to 9 percent slopes, stony, and with the hydrologic soil group A. The soil is well drained, with a saturated permeability of 2 to 6 inches per hour. According to Saucedo et al. (2005), the site is underlain by undivided glacial outwash deposits of Holocene or Pleistocene age (Plate 7).

RTGA performed geotechnical test pits in June 2021, which are included on Plates 8 through 10. Test pit TP-1 near the northeast corner of the north wing extended to 15 feet depth, the maximum depth available to the excavator. Soils were generally a yellow brown to brownish yellow silty sand to sandy clay throughout, which was only slightly darker hue at the bottom of the test pits (7.5YR 5/6) compared to soils at 2 feet depth (10YR 6/8). A lower-permeability clay layer at 11 to 13 feet depth showed weathered sand and gravel particles but did not include mottling.

TP-2 under the south wing did not encounter the lower permeability layer nor any mottling to 13 feet or Elevation 6,375 feet, the maximum depth explored. There is no sign of hydrophilic vegetation along the adjacent edge of Southwood Boulevard with a surface at Elevation 6,376 feet at this location. TP-3 at the southeast corner of the proposed building encountered mottled soil at 5 feet depth or approximately Elevation 6,379 feet, however there is no surface evidence of hydrophilic vegetation at this location which would occur if seasonal or recent past groundwater was this high.

PROPOSED EXCAVATION DEPTH

The elevations of the building basement garage relative to the site contours are shown on Plates 3 and 4. The garage floor of the eastern leg is expected to be at about Elevation 6,384 feet and maximum depth of excavations for footings are expected to be no more than 4 feet lower (6,380 feet). For the entire length of the east leg, the depth of excavation would be approximately 5 feet on the downhill edge and 10 feet on the uphill edge, but is above the grade of adjacent Southwood Drive, which varies from Elevation 6,376 to 6,380 feet ground surface along the entire eastern edge.

The northwest wing of the building at Elevation 6,380 feet as shown on the top of Plate 4 profile X1 would be approximately 23 feet to bottom of excavation at the northwest corner but is roughly 5 feet depth at the northeast corner and is at adjacent grade of Southwood Boulevard at the east corner.

The southwest wing of the building as shown on the bottom of Plate 4 profile X2 would be approximately 15 feet to bottom of excavation at the northwest corner and 5 feet depth at the southeast corner but is above the adjacent grade of Southwood Boulevard a short distance from the east corner.

A review of TRPA records indicates eight previously approved soils/hydrologic applications, within 1,200 feet of the subject site (Plate 6). Approval letters for five requests show excavation depths ranging from 6 to 12 feet (Attachment 2). Approvals for three other parcels, APN's 132- 231-05, 132-231-06, and 132-231-18 were not found during our online search. None of the parcels showed a similar depth of approved excavation, however that may reflect the maximum depth required rather than the actual limit due to high groundwater.

We recommend that the east leg of the building parallel to Southwood Boulevard can be excavated to Elevation 6,376 feet without additional exploration, where the west edge of Southwood Boulevard shows no sign of spring activity or hydrophilic vegetation within 30 feet of the building footprint. It is logical that the maximum depth of excavation for the eastern leg of the building is above water level, as Southwood Boulevard is below the foundation level.

We recommend the southeastern wing of the building under the southern undeveloped portion of the site shows no evidence of hydrophilic vegetation to Elevation 6,380 feet and test pit TP-2 has no clayey or mottled layers, therefore excavation to Elevation 6,380 feet should be approved without additional excavation.

TABLE 1: NEARBY PROJECTS AND APPROVED EXCAVATION DEPTHS			
<i>Location</i>	<i>Proximity to Project Site</i>	<i>Approved TRPA Excavation Depth</i>	<i>Subsurface Exploration Method</i>
926 Incline Way TRPA File # 970281 APN 132-231-15	190 ft Southwest	9 Feet	Test Pit
948 Incline Way TRPA File LCAP2019-0066 APN 127-030-15	220 ft Southeast	12 Feet	Waived
930 Tahoe Boulevard TRPA File LCAP2018-0182 APN: 132-012-02	680 ft Northwest	7.5 Feet	Test pit
919 Incline Court TRPA File # LCAP2009-0209 APN: 132-232-15	725 ft Southwest	6 Feet	Test Pit
900 Tahoe Boulevard TRPA File # LCAP2019-0135 APN: 132-012-04	1,200 ft Northwest	7 Feet	Waived

We recommend the northeastern wing of the building depth of maximum past groundwater was not present in the test pit to 15 feet depth or Elevation 6,387 feet. While there are strong chroma soils in test pit TP-1, they do not vary substantially from 2 to 15 feet, as shown on the photo in Plate 11. We do not propose that the groundwater level is at 2 feet depth based on chroma, therefore the same coloring is not indicative of past shallow groundwater at 15 feet either. Vegetation at the ground surface is dry and not hydrophilic.

Alternatively, it is possible that the site was a shallow marsh area developing high chroma soils prior to grading of Tahoe Boulevard, diversion of the creek, and the culvert crossing at the intersection. However, based on the dry vegetation that has grown up on the site over the past 50-plus years, we consider any groundwater lowering and vegetation changes due to Lakeshore Boulevard are permanent at this point and should not reflect recent activity of high groundwater level.

We request approval of a maximum excavation depth to 23 feet depth to support the garage excavation. Excavation of test pits deeper than about 15 feet depth is impractical, and soil borings would be required if more information is requested.

APPLICATION CHECKLIST

- a) *Land Capability*: Class 6 based on 2008 verification.
- b) *Proposed Maximum Excavation (below existing grade)*: 12 feet for the east leg to Elevation 6,376 feet, 15 feet for the south wing or Elevation 6,380 feet, and 11 feet for the north wing or Elevation 6,391 feet.
- c) *Explanation of methodology in selection of test pits*: No additional exploration is proposed.
- d) *Volume of Spoil Material*: Approximately 7,000 cubic yards.
Temporary Spoil Storage: Hauled off site to an approved fill location.
- e) *Stream Environment Zones*: The excavation described above is not in a Stream Environment Zone. The nearest possible SEZ is an unnamed shallow channel which drains to Third Creek located approximately 160 feet northeast across Tahoe Boulevard (Plate 5).
- f) *Cross-Section through Proposed Excavation*: See Plate 4.
- g) *Nearby Approved Parcels*: See Plate 6
- h) *Statement of Need*: The proposed excavation is required to allow new construction of spread footings and parking for multiple condominium units.
- i) *Photographs*: See Plates 11, 12, 13, 14, and 15.
- j) *Vegetation*: Pine trees and manzanita. No hydrophilic or wetland species were observed.
- k) *Soil Type*: Inville gravelly coarse sandy loam, 2 to 9 percent slopes, stony.
- l) *Geologic Information*: Quaternary outwash deposits – includes Tioga and Tahoe age deposits as well as pre-Tahoe and possibly younger (Holocene) glacial deposits.
- m) *Topography*: 20H:1V in proposed building area.

CLOSURE

We trust that the information provided in this report provides the necessary information to favorably review this scoping report. If you have any questions regarding this report, please contact our office.

Sincerely,

Reno Tahoe Geo Associates, Inc.



Shane Mulvaney
Senior Geologist

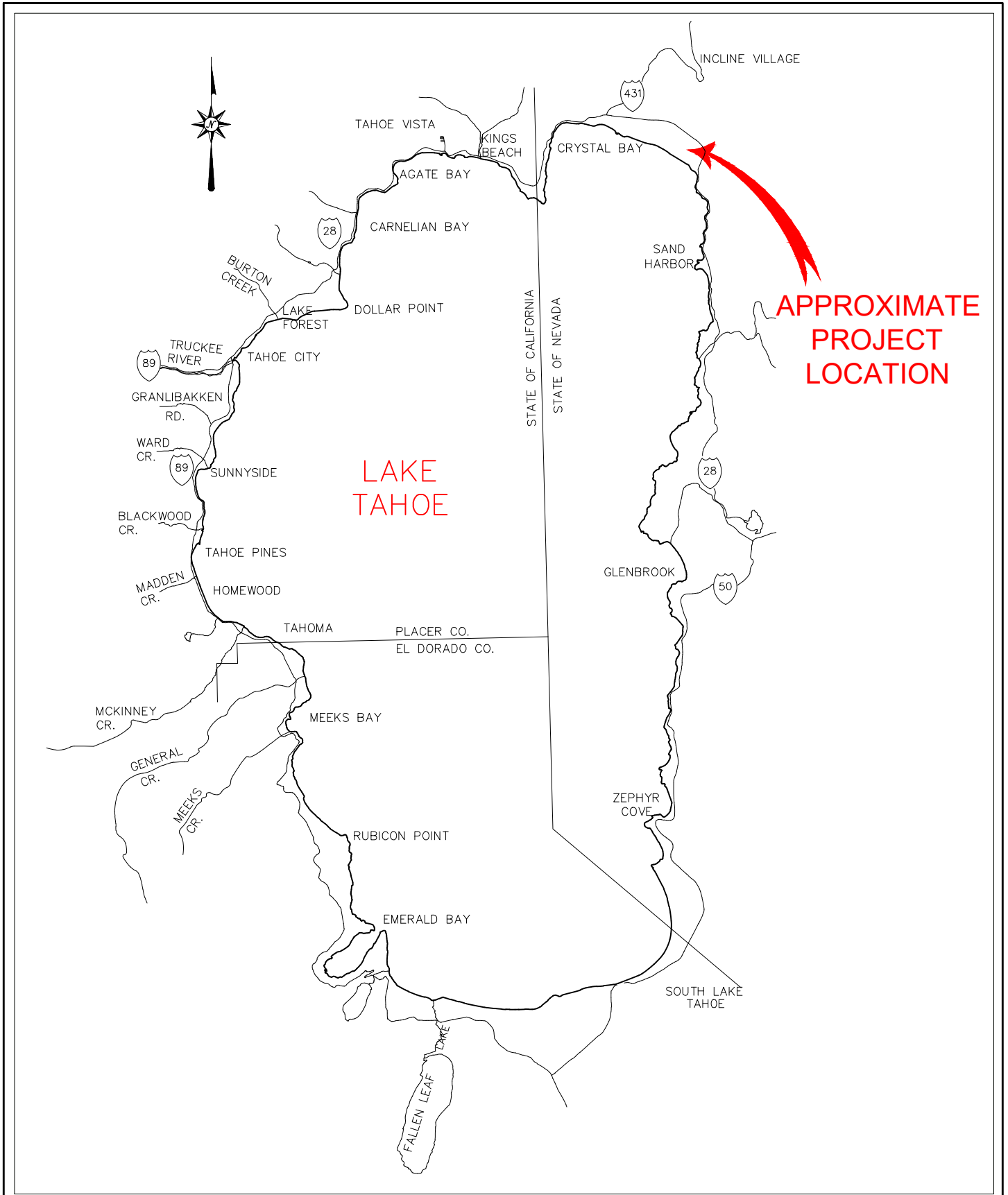


Jonathan W. Pease, Ph.D., P.E., G.E.
Civil Engineer, (NV) 16296

Plates: Plate 1	Vicinity Map
Plate 2	Site Plan
Plate 3	Basement Layout
Plate 4	Cross-Sections
Plate 5	SEZ Locations
Plate 6	Nearby Soils/Hydrologic Approvals
Plate 7	Geologic Map
Plates 8-10	Logs of Test Pits
Plate 11	Photo of Test Pit TP-1
Plates 12-16	Site Photos

Attachments: TRPA Soils/Hydrologic Approval Letters for Nearby Parcels
Soils/Hydrology Scoping Report Application

PLATES



**APPROXIMATE
PROJECT
LOCATION**

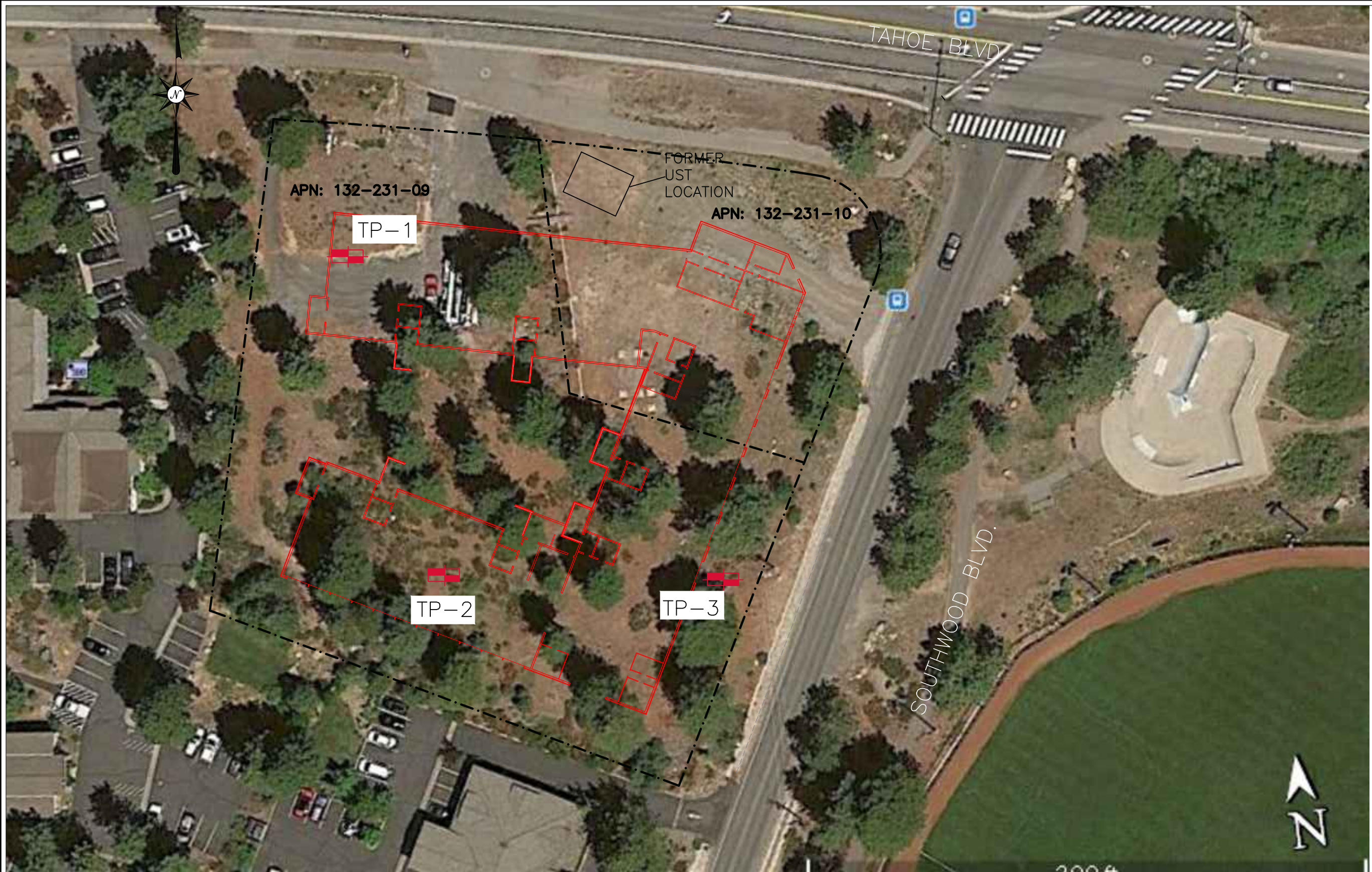
**LAKE
TAHOE**





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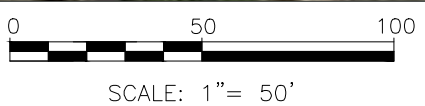
VICINITY MAP
SOIL HYDROLOGIC SCOPING REPORT
SOUTHWOOD CONDOMINIUMS
INCLINE VILLAGE

PLATE
1
 WASHOE COUNTY NEVADA

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-  Test Pit Location
-  Approximate Parcel Boundary
-  Approximate Building Outline



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SITE MAP
 SOIL HYDROLOGIC SCOPING REPORT
 SOUTHWOOD CONDOMINIUMS
 INCLINE VILLAGE

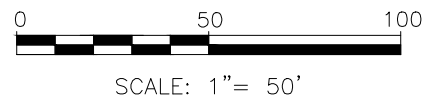
WASHOE COUNTY CALIFORNIA

PLATE
2

J:\2021\21073.001 - Southwood Condos Incline Village\Drawings and Plans\Site Cross sections Plates 3 4.dwg 9/06/21



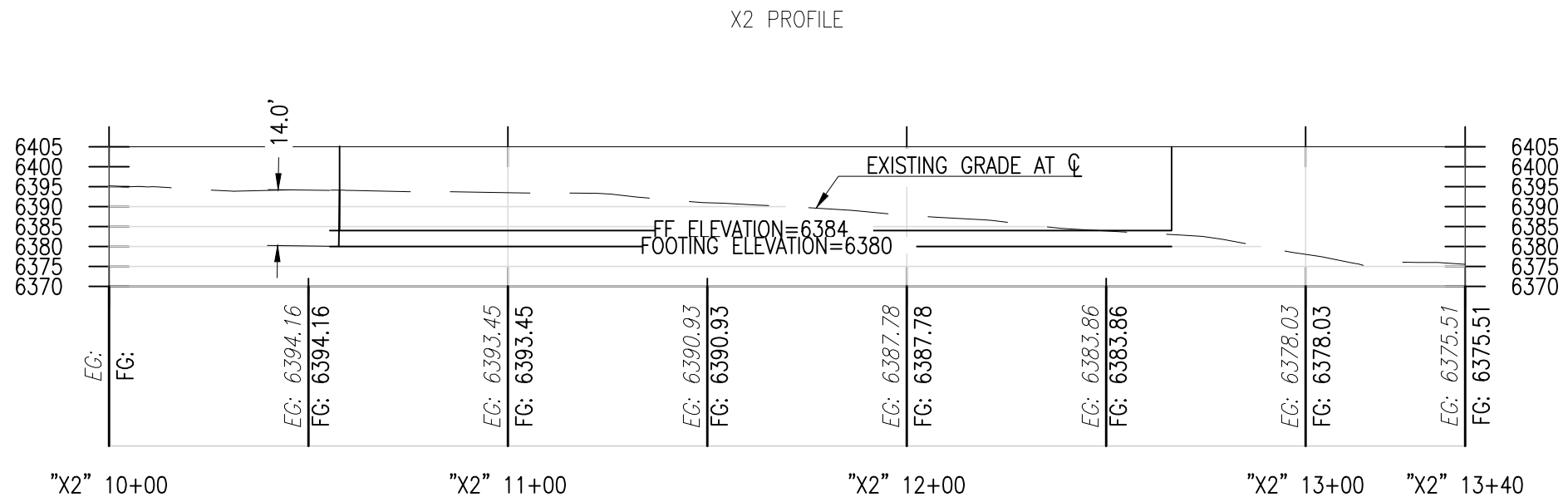
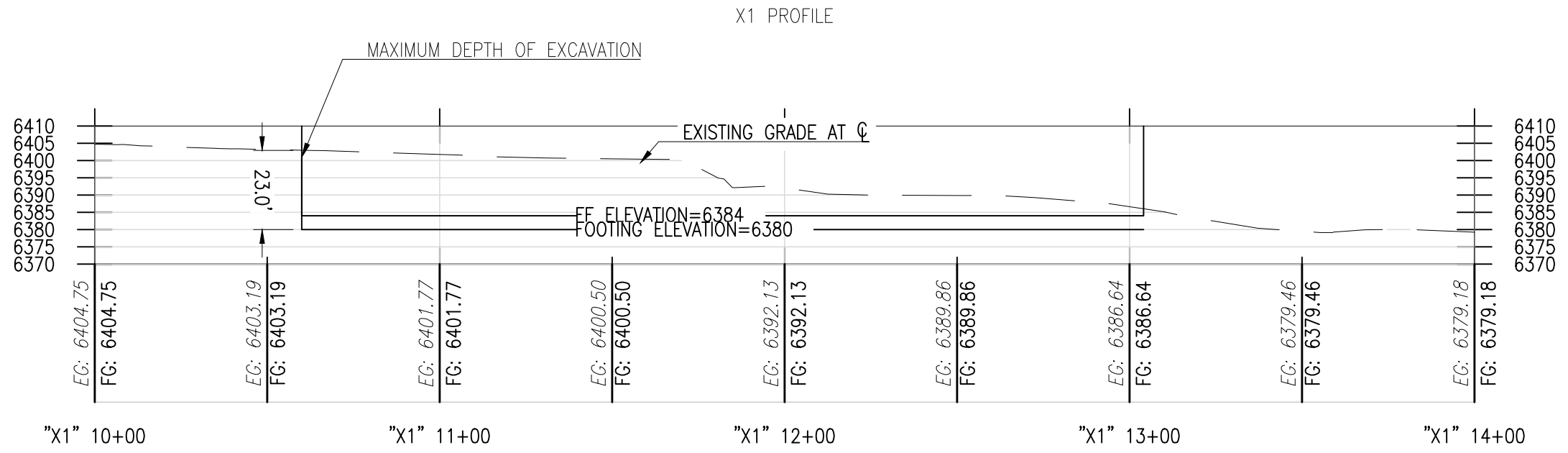
PROPOSED BASEMENT FLOOR ELEVATION 6384 FT
 PROPOSED BOTTOM OF FOOTING 6380 FT



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BASEMENT LAYOUT
 SOIL HYDROLOGIC SCOPING REPORT
 SOUTHWOOD CONDOMINIUMS
 INCLINE VILLAGE
 WASHOE COUNTY NEVADA

PLATE
3



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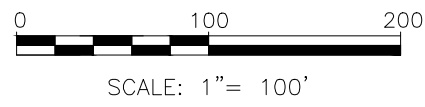
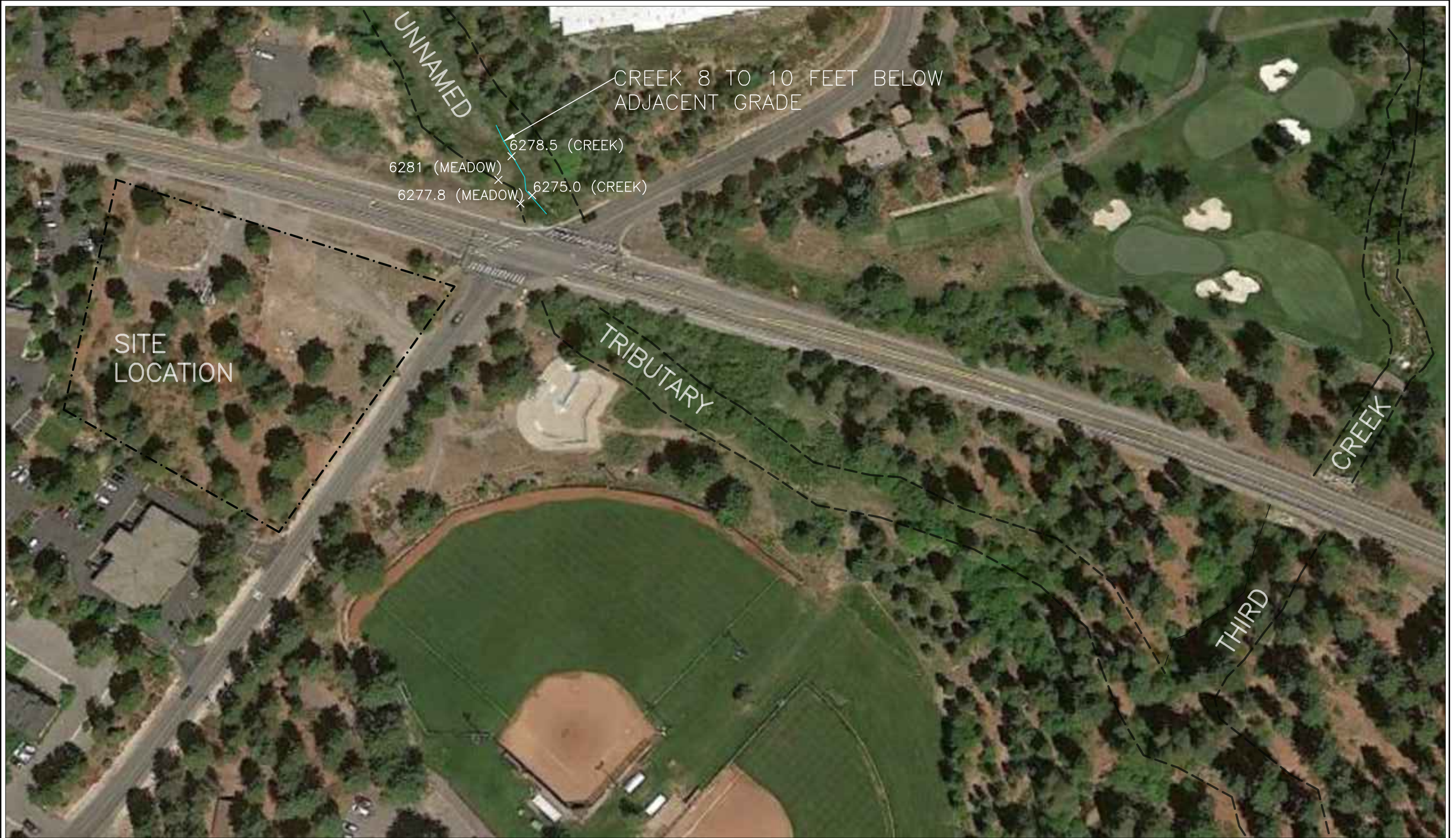
JOB # 21073.002 APPR: _____ DATE: 07/08/2021

CROSS SECTIONS

SOIL HYDROLOGIC SCOPING REPORT
 SOUTHWOOD CONDOMINIUMS
 INCLINE VILLAGE

WASHOE COUNTY NEVADA

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SEZ LOCATIONS

SOIL HYDROLOGIC SCOPING REPORT
 SOUTHWOOD CONDOMINIUMS
 INCLINE VILLAGE

WASHOE COUNTY NEVADA

PLATE
5

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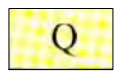
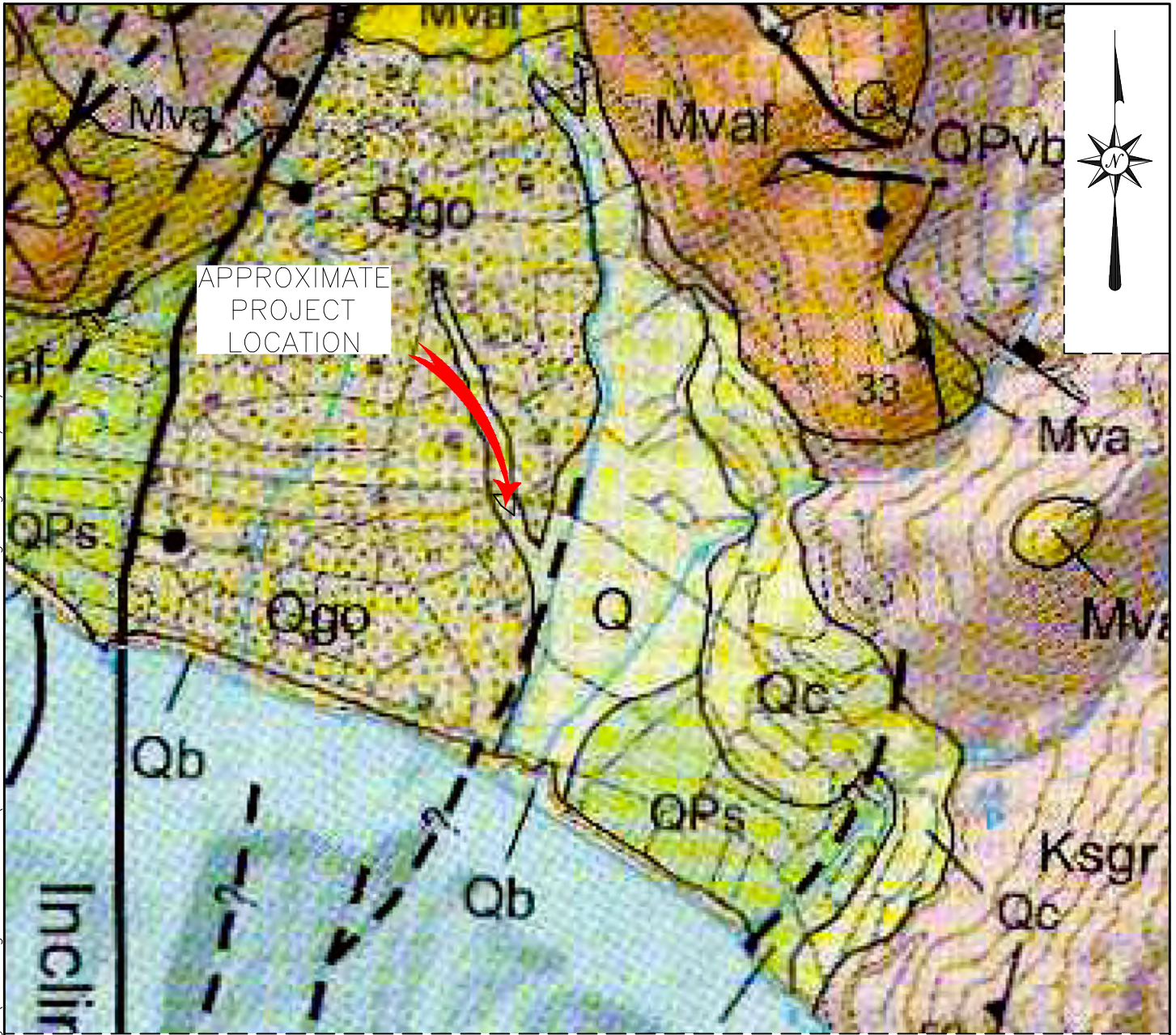


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NEARBY SOIL HYDROLOGIC APPROVALS
 SOIL HYDROLOGIC SCOPING REPORT
 SOUTHWOOD CONDOMINIUMS
 INCLINE VILLAGE
 WASHOE COUNTY NEVADA

PLATE
6

J:\2021\21073.001 - Southwood Condos Incline Village Drawings and Plans\Southwood Geotech Drawings.dwg 9/06/21



ALLUVIUM (HOLOCENE & PLEISTOCENE)



OUTWASH DEPOSITS (PLEISTOCENE AND HOLOCENE?)



COLLUVIUM (HOLOCENE)



UNNAMED GRAVELS, SAND, AND ALLUVIUM (PLIOCENE AND (OR) PLEISTOCENE)



SCALE: 1" = 2,000'

REFERENCE: GEOLOGIC MAP OF THE LAKE TAHOE BASIN - CALIFORNIA AND NEVADA, 2005, PREPARED BY GEORGE J. SAUCEDO

Reno Tahoe Geo Associates, Inc.
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GEOLOGIC MAP
 SOIL HYDROLOGIC SCOPING REPORT
 SOUTHWOOD CONDOMINIUMS
 INCLINE VILLAGE
 WASHOE COUNTY NEVADA

PLATE
7

LOG OF TEST PIT TP-1

LOCATION NORTHWEST QUADRANT OF SITE

EQUIPMENT LINK-BELT 145 X 4

ELEVATION 6402.0 DATE 6/10/21

LABORATORY TESTS

FIELD BLOWS
/6in

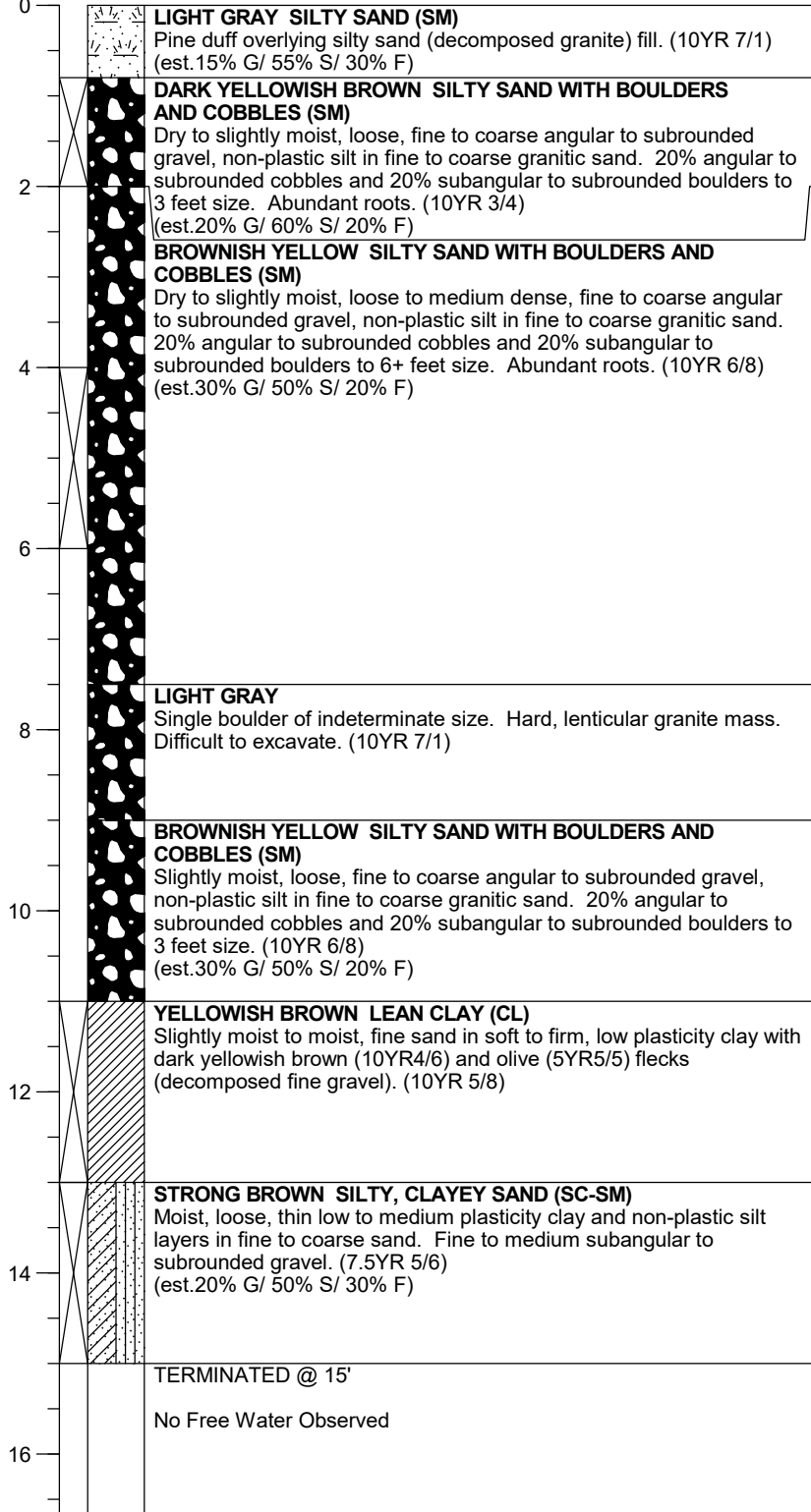
BLOWS/FT

MOISTURE
CONTENT (%)

DRY DENSITY
(pcf)

DEPTH (ft)

SAMPLE



SA, Percent Passing #200 = 51%
Liquid Limit = 35
Plasticity Index = 14

1 LOG LETTER SIZE SOUTHWOOD SOILS HYDRO.GPJ_MED DATA TEMPLATE 2015A.GDT 9/7/21



P. O. Box 18449 CONSULTING CIVIL ENGINEERS TEL (775) 853-9100
Reno, Nevada 89511 FAX (775) 853-9199

JOB # 21073.001 APPR: _____ DATE: 6/11/2021

LOG OF TEST PIT TP-1

SOIL HYDROLOGIC SCOPING REPORT
SOUTHWOOD CONDOMINIUMS
INCLINE VILLAGE

PLATE

8

WASHOE COUNTY

NEVADA

LOG OF TEST PIT TP-2

LOCATION SOUTHWEST QUADRANT OF SITE

EQUIPMENT LINK-BELT 145 X 4

ELEVATION 6388.0 DATE 6/10/21

LABORATORY TESTS

FIELD BLOWS
/6in

BLOWS/FT

MOISTURE
CONTENT (%)

DRY DENSITY
(pcf)

DEPTH (ft)

SAMPLE

0
2
4
6
8
10
12
14
16



DARK REDDISH BROWN SILTY SAND (SM)
Dry, loose, angular to subrounded gravel, non-plastic silt, in fine to coarse sand. Pine duff overlying topsoil. (2.5YR 3/4)
(est.15% G/ 60% S/ 25% F)

DARK YELLOWISH BROWN SILTY SAND WITH COBBLES AND BOULDERS (SM)
Dry to slightly moist, loose matrix, fine to coarse angular to subrounded gravel, non-plastic silt in fine to coarse granitic sand. 25% angular to subrounded cobbles and 20% subangular to subrounded boulders to 3 feet size. Abundant roots. (10YR 4/6)
(est.20% G/ 60% S/ 20% F)

YELLOWISH BROWN SILTY SAND WITH COBBLES AND BOULDERS (SM)
Dry to slightly moist, loose matrix, fine to coarse angular to subrounded gravel, non-plastic silt in fine to coarse granitic sand. 30% angular to subrounded cobbles and 5% subangular to angular boulders to 3 feet size. (10YR 5/6)
(est.25% G/ 55% S/ 20% F)

TERMINATED @ 13'
No Free Water Observed

1 LOG LETTER SIZE SOUTHWOOD SOILS HYDRO.GPJ_MED DATA TEMPLATE 2015A.GDT 9/7/21



P. O. Box 18449 CONSULTING CIVIL ENGINEERS TEL (775) 853-9100
Reno, Nevada 89511 FAX (775) 853-9199

JOB # 21073.001 APPR: _____ DATE: 6/11/2021

LOG OF TEST PIT TP-2

SOIL HYDROLOGIC SCOPING REPORT
SOUTHWOOD CONDOMINIUMS
INCLINE VILLAGE

PLATE

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WASHOE COUNTY

NEVADA

LOG OF TEST PIT TP-3

LOCATION SOUTHEAST QUADRANT OF SITE

EQUIPMENT LINK-BELT 145 X 4

ELEVATION 6384.0 DATE 6/10/21

LABORATORY TESTS

FIELD BLOWS
/6in

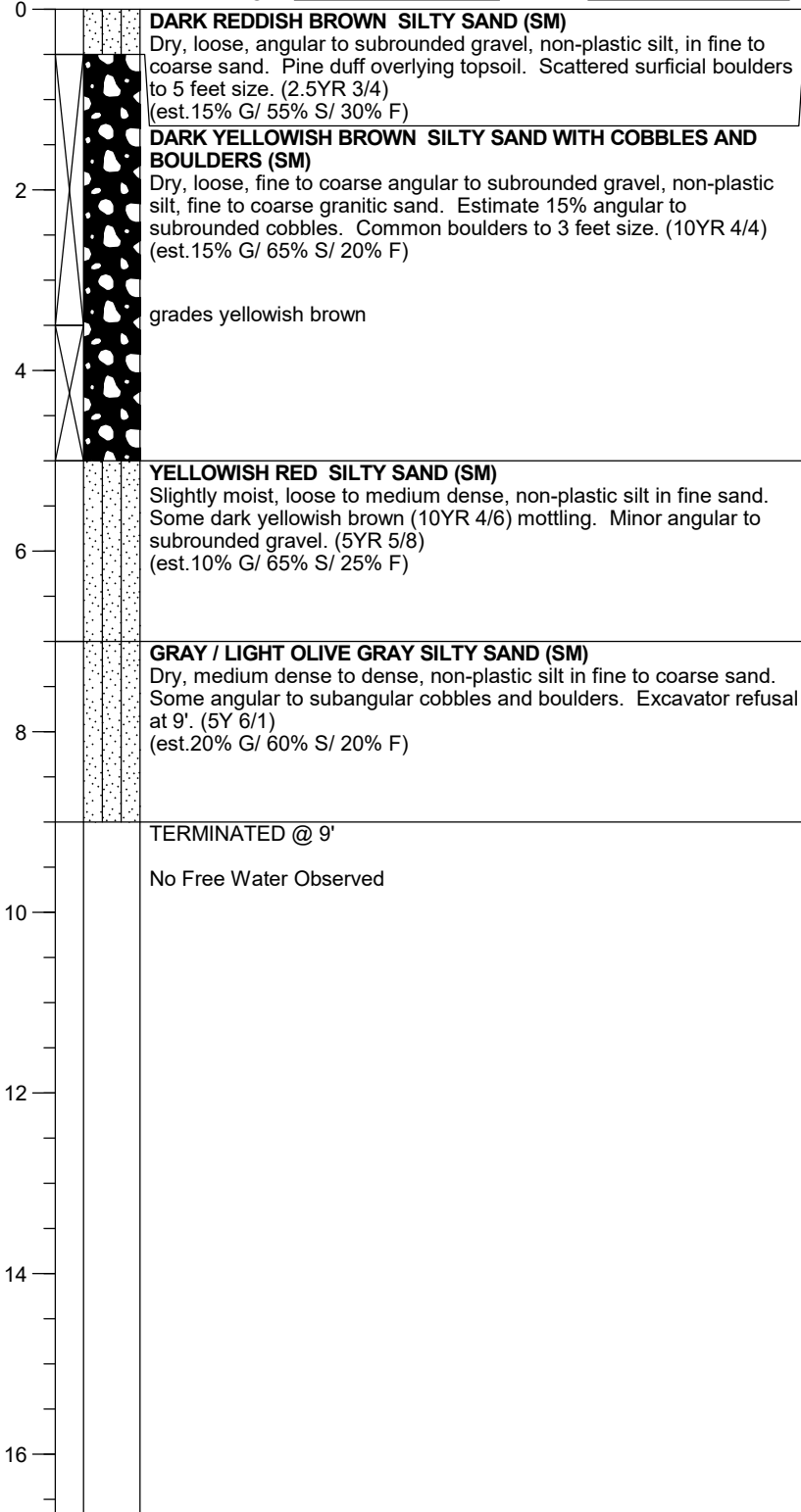
BLOWS/FT

MOISTURE
CONTENT (%)

DRY DENSITY
(pcf)

DEPTH (ft)

SAMPLE



1 LOG LETTER SIZE SOUTHWOOD SOILS HYDRO.GPJ_MED DATA TEMPLATE 2015A.GDT 9/7/21



P. O. Box 18449 CONSULTING CIVIL ENGINEERS TEL (775) 853-9100
Reno, Nevada 89511 FAX (775) 853-9199

JOB # 21073.001 APPR: _____ DATE: 6/11/2021

LOG OF TEST PIT TP-3

SOIL HYDROLOGIC SCOPING REPORT
SOUTHWOOD CONDOMINIUMS
INCLINE VILLAGE

PLATE

10

WASHOE COUNTY

NEVADA



SOME LIGHTER
COLORS NEAR
SURFACE RESULT
FROM DRY DUST
FALLING DOWN
FROM TOP
LAYER (LOWER
ARROW MORE
REPRESENTATIVE)

BOULDERS AT
7 TO 9 FT DEPTH

2021. 6.11 1:39


Reno Tahoe Geo Associates, Inc.
 P.O. Box 18449 CONSULTING CIVIL ENGINEERS TEL (775)853-9100
 Reno, Nevada 89511 FAX (775)853-9199

JOB # **21073.001** APPR: **JWP** DATE: **09/06/2021**

PHOTO OF TEST PIT TP-1

**SOIL HYDROLOGIC SCOPING REPORT
SOUTHWOOD CONDOMINIUMS
INCLINE VILLAGE**

PLATE


11

WASHOE COUNTY

NEVADA




Looking SE from NW Property Corner

 <p>Reno Tahoe Geo Associates, Inc. P.O. Box 18449 CONSULTING CIVIL ENGINEERS TEL (775)853-9100 Reno, Nevada 89511 FAX (775)853-9199</p>	SITE PHOTO	PLATE
	SOIL HYDROLOGIC SCOPING REPORT SOUTHWOOD CONDOMINIUMS INCLINE VILLAGE	12
JOB # 21073.001 APPR: JWP DATE: 07/07/2021	WASHOE COUNTY	NEVADA




Looking NE from Center of Property

 <p>Reno Tahoe Geo Associates, Inc. P.O. Box 18449 CONSULTING CIVIL ENGINEERS TEL (775)853-9100 Reno, Nevada 89511 FAX (775)853-9199</p>	SITE PHOTO	PLATE
	SOIL HYDROLOGIC SCOPING REPORT SOUTHWOOD CONDOMINIUMS INCLINE VILLAGE	13
JOB # 21073.001 APPR: JWP DATE: 07/10/2021	WASHOE COUNTY	NEVADA



Looking SE from Center of Property

 <p>Reno Tahoe Geo Associates, Inc. P.O. Box 18449 CONSULTING CIVIL ENGINEERS TEL (775)853-9100 Reno, Nevada 89511 FAX (775)853-9199</p>	SITE PHOTO	PLATE
	SOIL HYDROLOGIC SCOPING REPORT SOUTHWOOD CONDOMINIUMS INCLINE VILLAGE	14
JOB # 21073.001 APPR: JWP DATE: 07/10/2021	WASHOE COUNTY	NEVADA



Corner of Southwood and Tahoe Blvd. Looking Across Former Chevron Station Parcel

Reno Tahoe Geo Associates, Inc.
 P.O. Box 18449 CONSULTING CIVIL ENGINEERS TEL (775)853-9100
 Reno, Nevada 89511 FAX (775)853-9199


JOB # **21073.001** APPR: **JWP** DATE: **07/07/2021**

SITE PHOTO
SOIL HYDROLOGIC SCOPING REPORT
SOUTHWOOD CONDOMINIUMS
INCLINE VILLAGE
WASHOE COUNTY **NEVADA**

PLATE
15



Looking North Along Retaining Wall, West Edge of Former Chevron Parcel

 Reno Tahoe Geo Associates, Inc. <small>P.O. Box 18449 Reno, Nevada 89511</small>	<small>CONSULTING CIVIL ENGINEERS</small> <small>TEL (775)853-9100 FAX (775)853-9199</small>	SITE PHOTO	PLATE
	SOIL HYDROLOGIC SCOPING REPORT SOUTHWOOD CONDOMINIUMS INCLINE VILLAGE		16
JOB # 21073.001 APPR: JWP DATE: 07/07/2021		WASHOE COUNTY	NEVADA

ATTACHMENTS



**TAHOE
REGIONAL
PLANNING
AGENCY**

Mail
PO Box 5310
Stateline, NV 89449-5310

Location
128 Market Street
Stateline, NV 89449

Contact
Phone: 775-588-4547
Fax: 775-588-4527
www.trpa.org

April 23, 2019

Andrew Haney
Incline Village General Improvement District
1220 Sweetwater
Incline Village, NV 89451

**SOIL HYDROLOGIC APPROVAL – WAIVER
IVGID BALLFIELD IMPROVEMENT PROJECT
948 INCLINE WAY, WASHOE COUNTY, NEVADA
APN 127-030-15, TRPA FILE NUMBER LCAP2019-0066**

Dear Mr. Haney:

Tahoe Regional Planning Agency (TRPA) staff has reviewed the Soils/Hydrologic Scoping Report Application submitted in association with the Incline Village General Improvement District Ballfield Improvement project. The proposed excavation of **12 feet below ground surface** is for installation of two pole foundations for the scoreboard. Although the excavation may intercept groundwater, the excavation is allowed pursuant to TRPA Code of Ordinances Sections 33.3.6.A.2.a (accommodation of engineering requirements for above-ground structures).

Please note that it is possible that variations in the soil or groundwater conditions could exist that are different than what has been investigated or reported. Although it is not anticipated that groundwater will be encountered during the proposed fall construction time period, if conditions are found to be wetter than expected, contact TRPA to discuss options for dewatering.

Pursuant to Rule 11.2 of the TRPA Rules of Procedure, this soils/hydrological approval may be appealed within twenty-one (21) days from the time TRPA releases any final decision.

If you have any questions, please contact me by phone at (775) 589-5247 or by email at jroll@trpa.org.

Sincerely,

Julie Roll
Senior Planner



**TAHOE
REGIONAL
PLANNING
AGENCY**

Mail
PO Box 5310
Stateline, NV 89449-5310

Location
128 Market Street
Stateline, NV 89449

Contact
Phone: 775-588-4547
Fax: 775-588-4527
www.trpa.org

June 25, 2019

Ryan Burlt Construction
1455 Deming Way #1
Sparks, NV 89431

SOIL HYDROLOGIC APPROVAL - WAIVER
900 TAHOE BOULEVARD, WASHOE COUNTY, NEVADA
APN 132-012-04, TRPA FILE NUMBER LCAP2019-0135

Dear Mr. Burlt:

The Tahoe Regional Planning Agency (TRPA) staff has reviewed the Soils/Hydrologic Scoping Report Application submitted in association with the Bank of America light fixture upgrade. The proposed excavation of **7 feet below ground surface** is for installation of six light poles in the bank parking lot. It is not expected that groundwater will be encountered in this location and the excavation is allowed pursuant to TRPA Code of Ordinances Sections 33.3.6.A.2.a (accommodation of engineering requirements for above-ground structures) and 33.3.6.A.2.d (public health and safety).

Please note that it is possible that variations in the soil or groundwater conditions could exist that are different than what has been investigated or reported. If conditions are found to be wetter than expected, contact TRPA immediately to discuss options for dewatering.

Pursuant to Rule 11.2 of the TRPA Rules of Procedure, this soils/hydrological approval may be appealed within twenty-one (21) days from the time TRPA releases any final decision.

If you have any questions, please contact me by phone at (775) 589-5247 or by email at jroll@trpa.org.

Sincerely,

A handwritten signature in black ink that reads "Julie Roll".

Julie Roll
Senior Planner

C. Laura Fabrizio
3328 Newbliss Cir.
Ormond Beach, FL 23174

TAHOE REGIONAL PLANNING AGENCY

128 Market Street
Stateline, Nevada
www.trpa.org

P.O. Box 5310
Stateline, Nevada 89449

(775) 588-4547
Fax (775) 588-4527
Email: trpa@trpa.org

September 17, 2009

Huldrege & Kull
Pam Raynak
10775 Pioneer Trail #213
Truckee, CA 96161

RE: SOIL HYDROLOGIC APPROVAL
INCLINE BUSINESS PARK LLC, 919 INCLINE CT., WASHOE COUNTY
APN 132-232-15, TRPA FILE NUMBER LCAP2009-0209

Dear Ms. Raynak:

The Tahoe Regional Planning Agency (TRPA) staff's Land Capability Program has reviewed the Soils/Hydrologic Scoping Report Application submitted September 2, 2009. Upon reviewing the application and site visit to observe a test pit, **TRPA staff hereby approves the excavation for an infiltrating BMP to 6 feet below ground surface.**

Please note that it is possible that variations in the soil or groundwater conditions could exist at the site that are different than what has been investigated or reported. Also, changes in site conditions could occur at some time in the future due to variations in rainfall, snowfall, temperature, regional water usage, or other factors. These variations and/or changes could cause the groundwater level to be higher than interpreted. ***Because of this, the applicant is required to notify the TRPA immediately if significantly different subsurface conditions are encountered than what has been interpreted from the investigation.***


This letter only approves the depth of the excavation and does not represent approval for the project.

The TRPA has the following recommendations for the project:

1. Temporary Best Management Practices (BMPs) are to be installed and maintained prior to excavation and during all phases of the proposed project.
2. All excavated materials shall be hauled away from the site to a legally acceptable location. No fills or recontouring, other than backfill for the cut-retaining structures, shall be allowed.
3. Blasting of rocks should be kept to an absolute minimum to avoid damage to surrounding rocks and vegetation.

Pursuant to Rule 11.2 of the TRPA Rules of Procedure, this soils/hydrological approval may be appealed within twenty-one (21) days from the time TRPA releases any final decision. Thank you for your cooperation. Should you have any questions about these matters, please contact this office at (775) 589-5313.

Sincerely,


Heather Gustafson
Senior Planner / Land Capability Program Manager
Environmental Review Services
Tahoe Regional Planning Agency



**TAHOE
REGIONAL
PLANNING
AGENCY**

Mail
PO Box 5310
Stateline, NV 89449 5310

Location
128 Market Street
Stateline, NV 89449

Contact
Phone: 775 588 4547
Fax: 775 588 4527
www.trpa.org

July 23, 2018

Kevin Provance
Black & Veatch
5885 Meadows Rd, Ste. 700
Lake Oswego, OR 97035

**SOIL HYDROLOGIC INVESTIGATION - APPROVAL
930 TAHOE BOULEVARD, WASHOE COUNTY, NEVADA
APN: 132-012-02 TRPA FILE NUMBER LCAP2018-0182**

Dear Mr. Provance:

Tahoe Regional Planning Agency (TRPA) staff reviewed the Soils/Hydrologic Report Application submitted June 26, 2018. Field conditions were evaluated onsite by TRPA contractor Phil Scoles on July 17, 2018 (exposed excavation on this date). The soil thickness is greater than 7 feet deep. No evidence of ground water (i.e. iron staining, gray soil, etc.) was observed; however, the decaying stones and boulders contain oxidized iron deposits. Such deposits are not evidence of a seasonal water table – they are a product of the natural breakdown of the rock mineralogy. There are also several soil/hydrologic investigations that occurred nearby that also lacked groundwater in the upper 9 feet (or deeper). Based on the field investigation, TRPA staff hereby approves an excavation of 7.5 feet below ground surface for the proposed retaining wall parallel to the east property line (behind the Tesla Supercharging Station currently under construction).

Please note that it is possible that variations in the soil or groundwater conditions could exist at the site that are different than what has been investigated or reported. Also, changes in site conditions could occur at some time in the future due to variations in rainfall, snowfall, temperature, regional water usage, or other factors. These variations and/or changes could cause the groundwater level to be higher than interpreted. ***Because of this, the applicant is required to notify the TRPA immediately if significantly different subsurface conditions are encountered than what has been interpreted from the investigation.***

This letter only approves the depth of the excavation and does not represent approval for the project. TRPA has the following recommendations for the project:

1. Temporary Best Management Practices (BMPs) are to be installed and maintained prior to excavation and during all phases of the proposed project.
2. All excavated materials shall be hauled away from the site to a legally acceptable location. No fills or recontouring, other than backfill for the cut-retaining structures, is allowed.

imagine. plan. achieve

3. Blasting of rocks should be kept to an absolute minimum to avoid damage to surrounding rocks and vegetation.

Pursuant to Rule 11.2 of the TRPA Rules of Procedure, this soils/hydrological approval may be appealed within twenty-one (21) days from the time TRPA releases any final decision (**August 13, 2018**).

If you have any questions, please contact me by phone at (775) 589-5249 or by email at jroll@trpa.org.

Sincerely,



Julie Roll
Senior Planner
Current Planning Department

Cc: Andrew Levy
Tesla Motors, Inc.
3500 Deer Creek Road
Palo Alto, CA 94304

Joel Korotkin
6029 Monet Way
El Dorado Hills, CA 95762

TAHOE REGIONAL PLANNING AGENCY

308 Doria Court
Elks Point, Nevada

P.O. Box 1038
Zephyr Cove, Nevada 89448-1038

(702) 588-4547
Fax (702) 588-4527
Email: trpa@sierra.net

June 3, 1997

MR PAUL KALETA
BASIN STRATEGIES
POST OFFICE BOX 11945
ZEPHYR COVE NEVADA 89448

Dear Mr. Kaleta:

APPROVAL OF EXCAVATION FOR PROPOSED PROJECT BASED ON COMPLETED INVESTIGATION, EDUCATIONAL FIELD STUDIES OFFICE, 926 INCLINE WAY, WASHOE COUNTY, APN 132-231-15, TRPA FILE #970281

The Tahoe Regional Planning Agency (TRPA) staff's Ground Water Technical Advisory Committee (GWTAC) has reviewed the final report, dated May 30, 1997, that was prepared by Darlene Barlow of Nortech. The GWTAC hereby approves the final report and agrees with the conclusions that no evidence was found to show that the proposed excavation to a total depth of 9.0 feet below ground surface (bgs) would intercept the highest recorded groundwater levels.

No groundwater, mottled, gleyed, or reduced areas in the soil profile were observed in the soil test pits to indicate seasonal groundwater levels. The GWTAC approves the depth of the proposed excavation to not exceed 9.0 feet bgs for the project.

Please note that it is possible that variations in the soil or groundwater conditions could exist at the site that are different than what has been investigated or interpreted. Also, changes in site conditions could occur at some time in the future due to variations in rainfall, snowfall, temperature, regional water usage, or other factors. These variations and/or changes could cause the groundwater level to be higher than interpreted. Because of this, the applicant is required to have a TRPA GWTAC member inspect the completed excavation to verify that it does not intercept existing or historic groundwater levels.

This letter only approves the depth of the excavation and does not represent approval for the project. A copy of this letter has been forwarded to the appropriate project reviewing department for inclusion in the project file. The project reviewing department will review the project for conformance with other applicable ordinances to determine if a conditional permit can be issued and will use this letter as an approval of the depth of the excavation only.

The TRPA GWTAC has the following recommendations for the project:

1. All excavated materials shall be hauled away from the site to a legally acceptable location. No fills, or recontouring, other than backfills for the cut-retaining structures, shall be allowed.

Mr. Paul Kaleta
June 3, 1997
Page Two

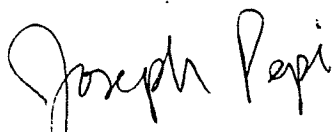
2. The excavation for the project shall be visually inspected by a TRPA GWTAC member to verify that the excavation is above the highest recorded existing or seasonal groundwater level. If groundwater is intercepted, then the excavation and foundation design shall be immediately revised to not intercept groundwater. The revised depth shall be subject to approval by the GWTAC.

Thank you for your cooperation. Should you have any questions about these matters, please contact this office at (702) 588-4547.

Sincerely,



Douglas F. Smith
TRPA GWTAC Lead Geologist
California Registered Geologist No. 6540



Joseph Pepi
TRPA GWTAC Lead Soil Scientist
Certified Professional Soil Scientist, No. 2372

DFS/jsd

c: Ms. Darlene Barlow, PE, NORTECH, 390 Freeport Blvd. #12, Sparks NV 89431
Bear Ridge Developers, Inc., PO Box 7097, Incline Village NV 89452-7097
Paul Pettersen, TRPA Senior Planner

132-231-15-3jun97-3