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STAFF REPORT

Date: January 14, 2021

To: TRPA Hearings Officer

From: TRPA Staff

Subject: MJD Development/Boatworks at Tahoe LLC Land Capability Challenge; 740, 760, and 790 North Lake Boulevard, Placer County, California; APNs 094-090-001, 094-090-029, 094-090-042; TRPA File Nos. LCAP2020-0067, LCAP2020-0068, LCAP2020-0069

Staff Recommendation:

Staff recommends the TRPA Hearings Officer review and approve the proposed land capability challenge on the parcel changing the land capability from Class 1B and Class 3 to Class 1B and Class 6. The net change of Class 3 to Class 6 in Bailey land capability is 125,335 sf. (majority of project area).

Background:

This land capability challenge consists of three parcels (aka project area) consisting of several buildings, hotel, parking areas, open spaces, and Lake Tahoe shoreline. The buildings include Boatworks Mall (shops and offices), Tahoe City Branch Library, and the Inn at Boatworks. The open spaces include an unnamed creek along the east project boundary and a landscaped area west of the Boatworks building. The center of the project consists of a large parking lot. The hotel and library have smaller parking lots adjacent to those facilities. The shoreline portion of the project area consists of a seawall, pedestrian path, and landscaping. The project area is bounded by California Highway 28 to the north; Safeway and other offices to the east; restaurants and shops to the west; and Tahoe City Marina to the south. The project area amounts to 3.34 acres.

The TRPA Land Capability Overlay Maps (aka Bailey Land Capability maps, Attachment A) show the project having Class 3 soils. The Soil Conservation Service Soil Survey of Tahoe Basin Area, California-Nevada (Rogers, 1974) places the project area within Jabu stony sandy loam, moderately fine subsoil variant, 2 to 15% slopes (JhC). The Jabu soil is composed of mixed alluvium and glacial outwash derived from granitic and volcanic parent material. The vicinity of the project has a geomorphic mapping of E-2 for outwash, till and lake deposits (low hazard lands).

A land capability verification was conducted for the Boatworks portion of the project area on November 18, 2008, which concluded the site was consistent with Jabu coarse sandy loam, seeped, 2 to 15% slopes (JbD, Class 3). The land capability verification did not examine soil conditions nor document soil characteristics (profile descriptions). Subsequent TRPA documents indicates that Class 5 soil was also considered present within the Boatworks parcel (094-090-029). The soil investigation was conducted by Davis2 Consulting Earth Scientists (Sidney Davis and Denny Churchill) on November 5, 2019. Their technical report and mapping were completed on January 14, 2019. A land capability challenge application was filed with TRPA on February 13, 2020. Initial TRPA review and discussion with Davis2

Consulting resulted in three site visits. During the last visit on October 9, 2020, a supplemental soil pit was excavated, and a previous soil pit was re-excavated. The application review and follow-up site visits were conducted by TRPA contractor Terra Science, Inc. (Phil Scoles, Soil Scientist). Mr. Scoles reviewed the consultant's soil descriptions prepared by the applicant's soil consultant and engaged in interactive dialogue, which focused on landform interpretation, soil drainage (depth to season high water table), land capability designations, historical SEZ location, past disturbance (such as soil alterations), and soil mapping.

Findings:

This land capability challenge was extraordinarily difficult due to historic disturbances that ultimately resulted in 95% of the land developed with building and paving. The presence of the buildings, parking lot, and former underground fuel tank(s) altered the soil by removing a portion of the native topsoil and staining the soil by fuel hydrocarbons. Two of the soil consultant soil pits had strong fuel odors and discoloring that made those soils unrecognizable or comparable to soil types described in the 1974 soil survey. Only soil texture and gravel volume estimates from those two pits provided insight to the original condition. As such, the TRPA contractor requested an additional soil pit on the south side of the hotel building and re-examination of the soil pit located north of the Boatworks building. While the TRPA contractor concluded differently about several aspect of the applicant's soil consultant analysis, the differences did not change the conclusion that the vast majority of property qualifies as Class 6 soil.

The upper third of the property is the foot slope of a glacial outwash and alluvial fan that originates in the small valley formed by the unnamed creek (upgradient to the south). This landform is composed of cobbly and gravelly parent material that often evolves into Jorge-Tahoma soils (as currently mapped by the 2007 soil survey update). The soil conditions observed at soil pit 11/5/19-1 and the supplemental soil pit on the south side of the hotel have similar subsoil characteristics. Specifically, these soils have gravelly to cobbly sandy loam to loam textures with reddish-brown matrix colors. Both soil pit locations lack any indication of water table in the upper five feet and both lack root restricting layers. Given past disturbances, these soils generally match the Jorge-Tahoma soils described in the 1974 soil survey. Such soils are Class 6 for slopes 2 to 15%.

The center and south portion of the project area was evaluated using soil pit 11/5/19-3 located north of the Boatworks building. The upper two feet of this soil is fill material that has variable colors, texture, and gravel content. The underlying soil has olive gray to gray matrix colors with common to many iron stains (aka redoximorphic concentrations). These colors and staining form over hundreds of years when the soil is waterlogged for many months each year. These colors become permanent when the waterlogging ceases. For this location, it appears the unnamed creek along the east property line naturally downcut into the alluvial deposits and slowly lowered the water table. Consequently, this natural downcutting converted an ancient marsh to a drained marsh. The observed water table was approximately five feet below the surface during two separate site visits by the applicant's soil consultant and TRPA contractor. The importance of such observation is that the soil colors and staining could not have formed if the water table were historically at five feet – the water level would need to be closer to two feet below the surface. Such condition is unusual, but it has been observed in the Kings Beach area by the TRPA contractor. This condition is too infrequent and variable to have been mapped by the 1974 soil survey, so this vicinity is considered an unnamed soil (XXX) for land capability purposes. Although a relict hydric soil, this soil qualifies as Class 6.

Soils within and adjacent to the unnamed creek are naturally variable due to stream migration, sediment/gravel bedload, and past encroachment by urban development (i.e., adjacent parking lot and

Boatworks building). The soils were not examined with a soil pit or auger since the presence of flowing water and native vegetation qualified this corridor as Stream Environment Zone (SEZ). Nonetheless, observations within the downcut creek channel indicate the substratum is gravelly to cobbly sandy loam – typical alluvium for small, moderate gradient streams in the north parts of Lake Tahoe watershed. At the confluence with Lake Tahoe (immediately offsite to the east), the SEZ widens, which is common for most streams. The historic shoreline of Lake Tahoe for the project area has been replaced by a seawall, pedestrian path, and landscaping. The 2008 LCV mapped a backshore line and SEZ area parallel to the Lake using observations of the shoreline and SEZ still remaining immediately east of the project. Such mapping involved interpretation and possible use of old aeriels. This mapping was transcribed to the land capability map. The SEZ and backshore areas qualify as Class 1B.

Project area soils evaluated for this land capability challenge are different than the central concepts of the Jabu stony sandy loam variant (JhC), as mapped by the 1974 Soil Survey of the Lake Tahoe Basin, plus the Jabu coarse sandy loam (JbD), as indicated in the 2008 LCV. The soil conditions at two excavator-dug test pits indicate the upper third of the project area are similar to the Jorge-Tahoma complex (JtD) described in the 1974 soil survey. As per the Bailey land classification system, the JtD soils qualify as Class 6 for slopes 2 to 15%.

The soils in the center and south portion of the project area also do not match the JhC or JbD soils, as determined by the 2008 LCV or 1974 soil survey. This vicinity has naturally drained hydric soils, as evident by the water table observed at approximately five feet. Such conditions are unusual and situated in places where natural downcutting has occurred. The 1974 soil survey does not have a category for drained hydric soil. Lacking a near-surface water table, these unnamed soils (XXX) qualify as Class 6.

The soils along the east and south edges of the project area are associated with an unnamed creek and the historic shoreline of Lake Tahoe. The creek and shoreline have been extensive altered by fill placement and channelization – variable conditions that do not match the 1974 soil survey. The creek contains sufficient water flow to meet a primary hydrology indicator for SEZ. The adjacent banks and riparian areas support native trees and shrubs that meet a primary vegetation indicator for SEZ. And the shoreline portion of the SEZ was transcribed from the 2008 LCV which estimate historic conditions based on partially disturbed SEZ condition on the adjacent property to the east). The following tables itemize the changes in land capability categories for each APN. The last table (next page) summarizes the same category for the entire project area (all parcels combined), as concluded by this land capability challenge.

Land Capability Findings for APN 094-090-001 (Inn at Boatworks):

Land Capability District	Area (sq. ft.) TRPA Land Capability Map	Area (sq. ft.) 2020 Land Capability Map	Net Change (sq. ft.)
Class 5 (JhC, 2 to 9% slopes)	20,909	0	-20,909
Class 6 (JtD, 2 to 15% slopes)	0	20,909	+20,909
Total Parcel Area	20,909	20,909	0

Land Capability Findings for APN 094-090-029 (Boatworks Building):

Land Capability District	Area (sq. ft.) 2008 TRPA LCV Map	Area (sq. ft.) 2020 Land Capability Map	Net Change (sq. ft.)
Class 1B (SEZ, any slopes)	20,020	20,156	+136
Class 3 (JbD, 2 to 15% slopes)	84,524	0	-84,524
Class 6 (JtD, 2 to 15% slopes)	0	23,951	+23,951
Class 6 (XXX, 0 to 16% slopes)	0	60,437	+60,437
Total Parcel Area	104,544	104,544	0

Land Capability Findings for APN 094-090-042 (Tahoe City Library):

Land Capability District	Area (sq. ft.) TRPA Land Capability Map	Area (sq. ft.) 2020 Land Capability Map	Net Change (sq. ft.)
Class 5 (JhC, 2 to 9% slopes)	20,038	0	-20,038
Class 6 (JtD, 2 to 15% slopes)	0	20,038	+20,038
Total Parcel Area	20,038	20,038	0

SUMMARY Land Capability Findings for all APNs:

Land Capability District	Area (sq. ft.) TRPA LCV+Land Capability Map	Area (sq. ft.) 2020 Land Capability Map	Net Change (sq. ft.)
Class 1B (SEZ, any slopes)	20,020	20,156	-136
Class 3 (JbD, 2 to 15% slopes)	84,524	0	-84,524
Class 5 (JhC, 2 to 9% slopes)	40,947	0	-40,947
Class 6 (JtD, 2 to 15% slopes)	0	64,898	+64,898
Class 6 (XXX, 0 to 16% slopes)	0	60,437	+60,437
Total Parcel Area	145,491	145,491	0

BAILEY LAND CAPABILITY CHALLENGE FINDINGS

Site Information	
Assessor's Parcel Numbers (APNs)	094-090-001, 094-090-029 and 094-090-042
TRPA File No. / Submittal Date / Completion Date	LCAP2020-0067, 2020-0068 and 2020-0069/ February 13, 2020 / January 07, 2021
Owner or Applicant	MJD Development/Boatworks at Tahoe LLC. 1412 "S" Street, Sacramento, CA. 95811. Agent/Representative: Ogilvy Consulting Land Use & Development Strategies.
Address	740, 760 and 790 North Lake Blvd., Tahoe City, Placer County, CA

Environmental Setting	
Bailey Soil Mapping Unit¹ / Hydrologic Soil Group (HSG) / Land Class / Geomorphic Hazard Unit	E2 – Outwash, till and lake deposits (low hazard lands as per 1974 Bailey LC Report)
Landform and Geology	Glacial outwash and Holocene alluvium; relict marsh (naturally drained). Orig. topo. modified decades ago.
Soil Parent Material	Granitic and volcanic alluvium (mixed mineralogy)
Slopes and Aspect	5 to 7% slopes
Elevation and Datum	6229 to 6260 msl (Lake Tahoe datum, assumed)
Rock Outcrops and Surface Configuration	No outcrops. Surface topography significantly modified many decades ago. See report discussion.
SEZ and Hydrology Source	TRPA mapped SEZ. Unnamed creek fed by small, upgradient valley. Creek meets primary indicators for water flow, while adjacent riparian land meets primary vegetation indicators. Some urban runoff discharges to creek, but not extensively. Relict marsh soil appears naturally drained, so it does not qualify as SEZ.
Vegetation	Upland: Jeffrey pine, white fir, incense cedar, wild currant, thimbleberry, creeping snowberry, and landscaped areas. SEZ Corridor: Black cottonwood, alder, willow, sedges, willowherb, and related forbs.
Ground Cover Condition	Majority of ground cover is paving and buildings. SEZ corridor has fair cover (25-foot setback), while landscaped areas have good cover.
Site Features	Boatworks building, City library, hotel, open space along creek, landscaping, and vehicle access / parking.

Field Investigation and Procedures	
Consultant and Address	Sidney Davis, Davis2 Consulting Earth Scientists Post Office Box 734; Georgetown, CA. 95634. (530) 559-1405; davis2consulting@sbcglobal.net
Consultant TRPA Field Dates	Nov. 14, 2019, Sept. 16 and October 09, 2020
SEZ Mapping / NRCS Hydric Soil	Yes. SEZ identified by TRPA for 2008 LCV. No NRCS hydric soil mapping for project area.
Additional or Repetitive TRPA Sample Locations	TRPA contractor examined additional soil pit on October 09, 2020. Also, re-excavated soil pit no. 11/15/19-3.
Notable Soil Features and Depth	Vicinity of Boatworks building and parking lot constructed atop a relict marsh with hydric soils that appear naturally drained. See report discussion.
Areas Not Examined	Buildings, parking lots, shoreline pathway, and most landscaped areas.

TRPA Findings	
1974 Soil Survey Map Unit and	Jabu stony sandy loam, moderately fine subsoil variant,

¹ TRPA currently relies upon the Soil Survey of Tahoe Basin, California-Nevada (Rogers and Soil Conservation Service, 1974), which the Bailey Land Capability system is predicated upon.

Hydrologic Soil Group (HSG)	2 to 9% slope (JhC, HSG-C).
2007 Soil Survey Map Unit	7222 – Tahoma-Jorge complex, 2 to 15% slopes for entire parcel (HSG-B).
Consultant Soil Mapping Determination and Rationale	The project area has three soil types – Jorge-Tahoma soils upper part (JtD, Class 6); SEZ soils along the east and south edges (SEZ, Class 1B); and an unnamed relict marsh soil in center and south part (XXX, Class 6). These soils reflect the presence of glacial outwash and alluvial deposits in the upper part and a creek along the east boundary. These differ significantly from the 1974 soil survey which mapped Jabu soils that have a subsurface fragipan and diminished soil drainage. The 1974 mapping did not have site-specific investigation to reveal the presence of a relict (buried) marsh that was buried atop many decades ago. See report discussion.
Slope Determination	5 to 7%
TRPA Conclusion(s)	Primarily Class 6 (HSG-B) and Class 1B (HSG-D)
Applicable Area	See map (Attachment B, January 2021)

Contact Information:

This staff report was jointly prepared by TRPA subcontractor Phil Scoles (Terra Science, Inc.) and TRPA Senior Planner, Julie Roll. For questions regarding this agenda item, please contact Julie Roll at (775) 589-5247 or jroll@trpa.org.

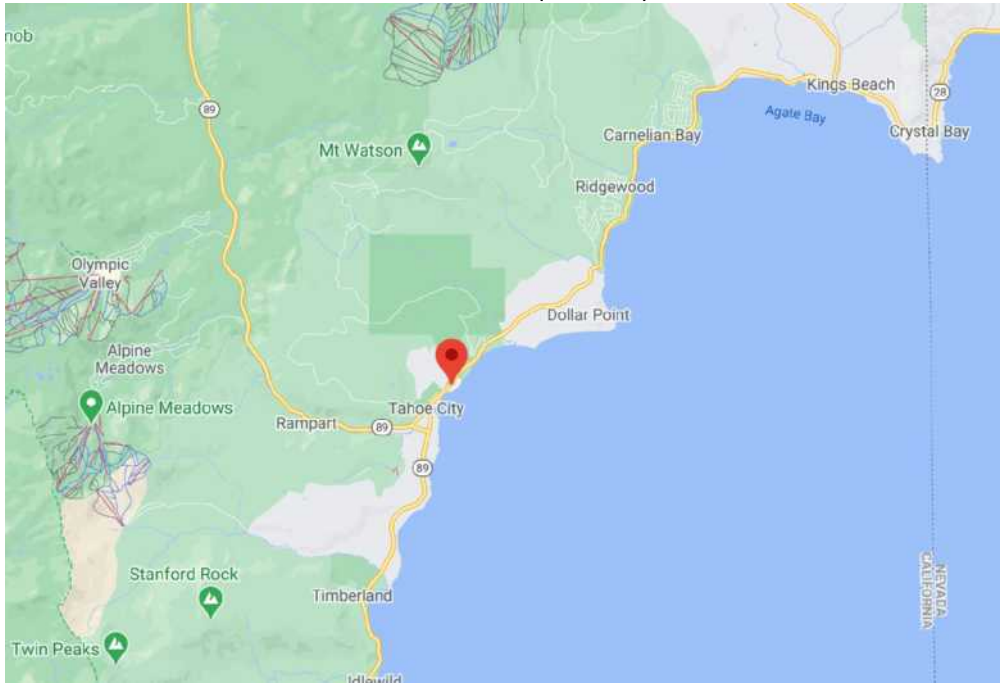
Attachments:

- A. Vicinity Map and TRPA Land Capability Mapping
- B. Site Plan Showing Proposed Land Capability Challenge Recommendations
- C. Site Photographs
- D. Applicant’s Soil Consultant Land Capability Soil Report

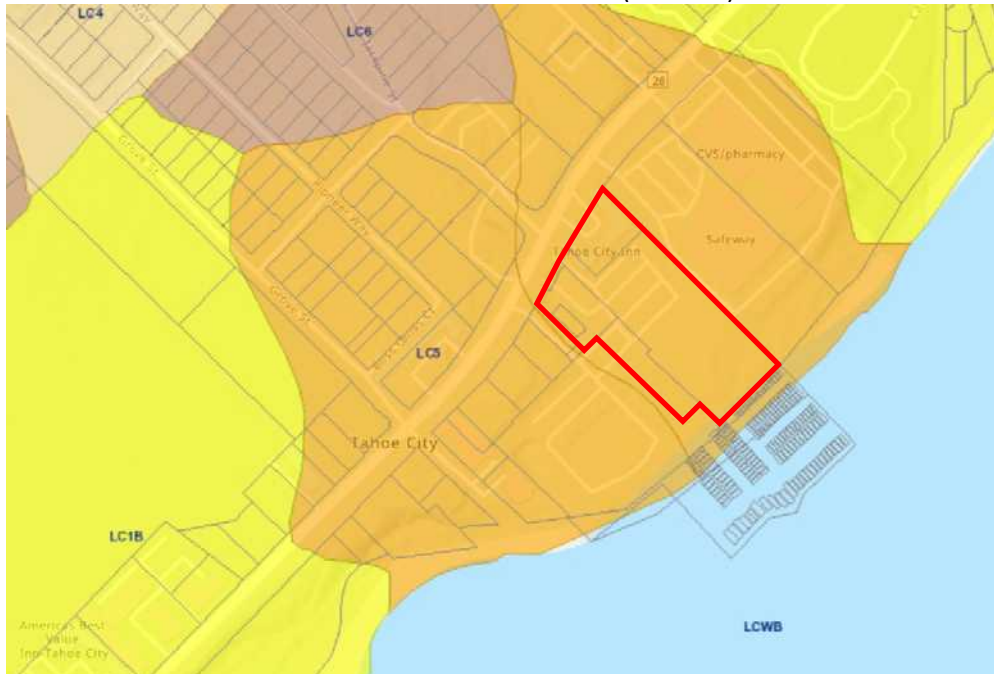
Attachment A

Vicinity Map and TRPA Land Capability Mapping

VICINITY MAP (no scale)



TRPA LAND CAPABILITY MAP (no scale)

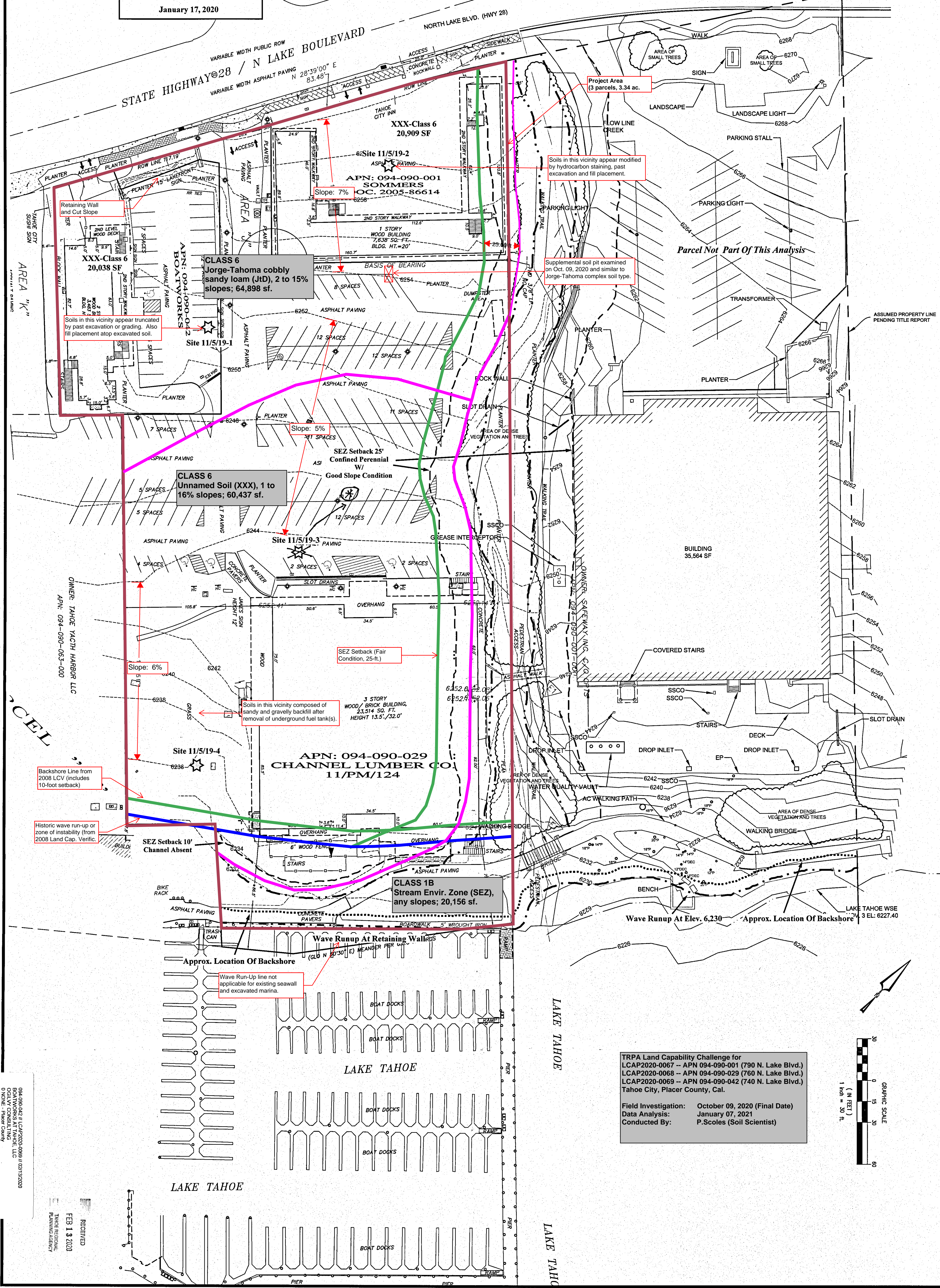


Attachment B

Site Plan Showing Proposed
Land Capability Challenge Recommendations

Land Capability Assessment
For
Placer APN 094-090-001, 029, 042
760 N. Lake Blvd., Tahoe City, Calif
January 17, 2020

DAVIS2
CONSULTING EARTH SCIENTISTS, INC.
P.O. Box 734, Georgetown, CA 95634
Tel. (530) 559-1405; email: davis2consulting@sbcglobal.net



Retaining Wall and Cut Slope
Soils in this vicinity appear truncated by past excavation or grading. Also fill placement atop excavated soil.

CLASS 6
Jorge-Tahoma cobbly sandy loam (JtD), 2 to 15% slopes; 64,898 sf.

CLASS 6
Unnamed Soil (XXX), 1 to 16% slopes; 60,437 sf.

CLASS 1B
Stream Env. Zone (SEZ), any slopes; 20,156 sf.

Soils in this vicinity appear modified by hydrocarbon staining, past excavation and fill placement.

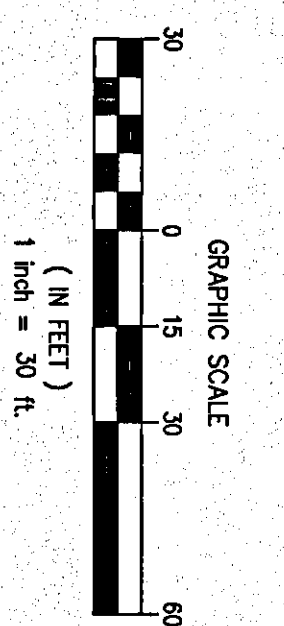
Supplemental soil pit examined on Oct. 09, 2020 and similar to Jorge-Tahoma complex soil type.

Backshore Line from 2008 LCV (includes 10-foot setback)

Historic wave run-up or zone of instability (from 2008 Land Cap. Verific.)

Wave Run-Up line not applicable for existing seawall and excavated marina.

TRPA Land Capability Challenge for
LCAP2020-0067 -- APN 094-090-001 (790 N. Lake Blvd.)
LCAP2020-0068 -- APN 094-090-029 (760 N. Lake Blvd.)
LCAP2020-0069 -- APN 094-090-042 (740 N. Lake Blvd.)
Tahoe City, Placer County, Cal.
Field Investigation: October 09, 2020 (Final Date)
Data Analysis: January 07, 2021
Conducted By: P.Scoles (Soil Scientist)



094-090-042 // LCAP2020-0069 // 02/17/2020
BOATWORKS AT TAHOE, LLC
OWNER: Placer County
079 - Land Capability Challenge

RECEIVED
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TAHOE REGIONAL PLANNING AGENCY

Project: BOATWORKS	Drawn By: PDB	Checked By: DLH	Date: AS NOTED	Scale: AS NOTED	Sheet Number:
DRAFT SITE PLAN					
WELSH-HAGEN A S O C I A T E S ENGINEERING-PLANNING-SURVEYING 299 S. Rock Blvd. Suite 118 Reno, Nevada 89502 (775) 853-7776 www.welshhagen.com			BOATWORKS & SAFEWAY LIQUOR APN: 083-172-009-000		
OWNER OF RECORD 850 WEST LAKE BLVD. TAHOE CITY, CA 96145					

Attachment C

Site Photographs

BOATWORKS PROJECT AREA, 740, 760 & 790 NORTH LAKE BLVD. PHOTOGRAPHS (MULTIPLE APNs)



Photo 1 – Aerial view of project area, which consists of 3 parcels. The hotel is situated in the northeast corner; city library in the northwest corner; Boatworks building in the south; and the unnamed creek along the east edge. Paved land and buildings compose majority of project area.



Photo 2 – View east to southeast from northwest corner of APN 094-090-029 (760 North Lake Blvd). Inn at Boatworks hotel at far left edge of photo. This vicinity of the parking lot is glacial outwash and alluvial fan.



Photo 3 – Soil profile for supplemental soil pit located on south side of hotel. This soil is similar to 11/19/19-1 and best resembles the Jorge-Tahoma soils in the 1974 soil survey.



Photo 4 – Soil profile for soil pit 11/15/19-3 that was re-excavated on October 09, 2020. The upper 2 feet consists of fill material and subsoil has hydric soil characteristics. Water table just below 5-foot depth.



Photo 5 – View east to southeast from northwest corner of APN 094-090-001 (790 N. Lake Blvd.). This parcel is essentially 100% covered with paved land, buildings and landscaping.



Photo 6 – View west along south side of hotel (property line between 094-090-001 and 094-090-029). This soil pit is partially disturbed, but to a lesser degree than other soil pits.



Photo 7 – View south to southwest from northeast corner of APN 094-090-042 (740 N. Lake Blvd.). The north edge of this parcel has a 10-foot high retain wall; parking lot excavated.

Imagine. plan. achieve.



Photo 8 – View north to northwest from east edge of APN 094-090-029 (760 N. Lake Blvd.). Unnamed creek at far right, which appears naturally downcut and effectively draining adj. land.



Photo 9 – View north from northeast corner of Boatworks building (post at far left). The creek in this vicinity is channelized and likely had a wider riparian area than present day.



Photo 10 – View south from east property line and mid-point of Boatworks building. The historic soil and SEZ could not be investigated due to past encroachment (fill material placement).



Photo 11 – View west to northwest from northeast corner of Boatworks building. Soil pit 11/15/19-3 was excavated in parking lot, approximately near burgundy colored truck.



Photo 12 – View northwest to north from pedestrian path along south edge of APN 094-090-029. This vicinity was extensively altered when originally developed and later when fuel tank removed.



Photo 13 – View east from southwest corner of APN 094-090-029. The original shoreline of Lake Tahoe was filled decades ago and replaced by seawall, pedestrian path and landscaping.

Imagine. plan. achieve.

Attachment D

Applicant's Soil Consultant Land Capability Soil Report

DAVIS²
CONSULTING EARTH SCIENTISTS

P.O. Box 734 · Georgetown, CA 95634 · Tel. (530) 559-1405; davis2consulting@shcglobal.net

Boatworks at Tahoe City
Land Capability Challenge
APNs 094-090-001, 029, 042

January 14, 2020

INTRODUCTION

A soil investigation was conducted on the above referenced APNs on November 5, 2019. The objective of the study was to identify soils and other features and relate them to Land Capability, which is administered by the Tahoe Regional Planning Agency (TRPA) for the purpose impervious coverage regulation, by Chapter 30 of the Code of Ordinances.

The parcels support existing commercial business on 3.34 acres of land. This work is advanced at the request of Ogilvy Consulting, agent for the project owners.

Soil information contained in this report is for the strict use of land capability and it should not be used for building foundation design, slope stability, hazard waste assessment or seismic analyses.

ENVIRONMENTAL SETTING

The site is known as the Boatworks Mall, located within the northeastern townsite of Tahoe City between Highway 28 and the shoreline of Lake Tahoe. Native vegetation consists of Jeffrey pine, manzanita and ornamentals inside planters. The area is mostly paved parking lot surrounding commercial buildings. Slopes range between 3 and 6 percent on a southeasterly aspect. Star Harbor Creek is located just offsite along the northeast property line.

Soils are shown on TRPA map sheet C-7 as JhC (Jabu moderately fine subsoil variant, 2 to 9 percent). A 2008 Land Capability Verification labels the site as JbD (Jabu loamy coarse sand, seeped, 2 to 15 percent slope) and delimits the stream environment zone (SEZ) along the northeast property line. Geology (Mathews, 1968) is characterized as Qlo (Older lake beds).

Bailey's (1974) geomorphic analysis shows the parcel within E₂ (Outwash, till and lake deposits).

METHODOLOGY

The parcel was surveyed as well as areas nearby. Sites considered representative of the landform were chosen and excavations were placed to open and examine the soil profiles in detail (Fig. 1). Standards of the National Cooperative Soil Survey were used to describe and interpret soil physical properties. Information gathered at the site was compared to the *Soil Survey of the Lake Tahoe Basin, California-Nevada* (Rogers et al, 1974) and to the *Land-Capability Classification of the Lake Tahoe Basin, California-Nevada* (Bailey, 1974) for proper placement in the appropriate land capability class. A

detailed topographic base map supplied by Welch-Hagaen Associates was available in the field for ground control and slope analysis. Information pertaining to land capability districts is shown on the base map (Attached).

Historic mapping and aerial photos were examined in relation to present-day photos and maps to determine the long-term location of the stream bordering the southeastern project area. Truckee Quadrangle, USGS, 1932 (Fig. 10) and aerial photography from 1952 (Payless litigation documentation) (Fig. 11) were examined to determine the alignment of the stream over time. TRPA Parcel Tracker for properties directly upslope and above Highway 28 were researched. A land capability challenge on APN 094-110-023 performed in 2004 was reviewed, as well as information on fuel tank removal on APN 094-021-21. A Low Threat Closure document produced by HGD Services (3/30/2016) on the subject parcel was provided by the agent for review.

FINDINGS

Soils are found to be well drained, members of Soil Hydrologic Group B. They can be characterized having roughly four inches of asphalt concrete over gravel subgrade varying from 8 to 30 inches in thickness underlain by compact truncated subsoils consisting of dark reddish brown, dark olive brown or very dark grayish brown very gravelly sandy loam, very gravelly clay loam or very gravelly loam to approximately 65 inches depth. No groundwater is identified at Stop 1, groundwater is measured at 70 inches depth at Stops 2 and 3; 64 inches depth at Stop 4. Stop 4 appeared to be completely disturbed with laminated, stratified sand fill above jumbled very gravelly sandy clay loam to 65 inches depth.

None of the profiles observed represent the Jabu moderately fine subsoil variant because remnant subsoils are very gravelly throughout. There is no indication of a restrictive layer capable of impeding the downward movement of water within 64 inches of the surface, and the truncated soils viewed have a separation of greater than 40 inches between the disturbed engineered fill and measured groundwater beyond 65 inches.

Records provided by the project agent show that the site was the subject of a Low Threat Closure Request postdating a former Chevron Bulk Plant fuel distribution facility in operation from 1931 through 1973. From 1968 through 1973 six above ground storage tanks, one building, a pump house, loading racks, two 2,000-gallon underground storage tanks were used and removed. From 1973 through 1978 Standard Oil operated one 1,000-gallon underground storage tank onsite. From 1979 through 1995 the marina facility included two underground storage tanks, 3,000- and 8,000-gallon and 500-gallon above ground storage tanks (GHD Services, Inc., 2016).

The Lake Tahoe Railway and Transportation Company operated from 1900 to 1925 and the Southern Pacific Railroad roundhouse facility was operated from 1926 to 1943 (Truckee Donner Summit Historical and Railroad Societies, 2019). The site has a long history of industrial use.

Two years of groundwater monitoring in 1994 and 1995, reported by GHD (Fig. 12), shows similar results as what is seen onsite in November 2019, groundwater below 5 feet depth across the site.

Asphalt concrete has sealed the site from the atmosphere for at least 20 years prohibiting gas exchange and moisture release from beneath the parking lot areas. The TRPA Parcel Tracker web site mentions that an underground tank was removed from the parcel immediately north (APN 094-110-021) in 1993. The GHD report also speculates that petroleum product could have come from offsite. Darkness of soil color throughout the profiles and few to common redoximorphic concentrations in Stops 2, 3 and 4 are interpreted to be due to redox potential caused by hydrocarbon contamination in conjunction with the prolonged moisture as a result of high humidity retained by sealing of the surface parking lot paving. When natural gas or petroleum displaces the oxygen from the soil atmosphere, vigorous microbial activity may result in an increase of substances in a chemically reduced state (Contamination of Soils by Petroleum Hydrocarbons, Ellis and Adams, 1961). Soil profiles described in the Land Capability Challenge two parcels upgradient, at APN 094-110-023, are well drained with similar subsoil textures but with color values and chroma 4/4 or 4/6 (oxidized) to 60 inches depth, interpreted to be of similar landform. It is also notable to mention that the soil survey (Soil Conservation Service, 1974 and Natural Resource Conservation Service 2007) failed to identify wet soils in the Boatworks locale in either of the 1974 or 2007 reports.

The site profiles of very gravelly sandy loam or very gravelly sandy clay loam subsoil texture together with subangular blocky structure together render estimates of Moderately High (0.14 cm/hr – 1.4cm/hr) hydraulic conductivity; active groundwater is interpreted to move downgradient at depths below 5 feet, where finer textures are documented by GHS monitoring data (Fig. 12).

The location of the stream along the northeast property boundary appears to be unchanged from year 1932 forward. Inspection of the USGS Truckee Quadrangle, rectified using Benchmarks on it and present-day Topographic Quads, pins the alignment in the same place (Figs. 1 and 10). Additionally, inspection of a 1952 aerial photograph (Fig. 11) georeferenced to the 2016 NAIP photography (Fig. 1) place the stream in the same alignment. The SEZ boundary is top of bank and the appropriate setback is 25 feet. The wave runup / backshore is interpreted to terminate at the engineered wall of the marina at the shoreline.

CONCLUSIONS AND RECOMMENDATIONS

Soils found are unnamed, well drained, members of Hydrologic Soil Group B and place in Land Capability Class 6 based on *Table 4 – Basis of capability classification for Lake Tahoe basin lands* (Bailey, 1974). The SEZ along the northeast border is offsite but its setback influences a limited portion of the project.

Table 1 -Coverages

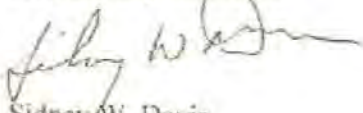
DAVIS² CONSULTING EARTH SCIENTISTS, INC. • Georgetown, California

Boatworks at Tahoe City Land Capability Challenge APNs 094-090-001, 029, 042

APN 094-090-001 (20,909 SF)
XXX-Class 6: 20,909 SF
SEZ-Class 1b: 0 SF
APN 095-090-029 (104,544 SF)
XXX-Class 6: 91,147 SF
SEZ-Class 1b: 13,397 SF
APN 094-090-042 (20,038 SF)
XXX-Class 6: 20,038
SEZ-Class 1b: 0 SF
Project Area (145,491 SF)
XXX-Class 6: 132,094
SEZ-Class 1b: 13,397

Please refer to the following soil profile descriptions that support the findings and the attached map showing the spatial distribution of the appropriate land capability classes on the parcel.

Respectfully submitted,



Sidney W. Davis,
CPSS /SC No. 1031

Boatworks Land Capability Project



Figure 1- Project Site

Representative Soil Profile Descriptions
Stop No. 1

- Cu1 0 – 4 inches, AC pavement; strong coarse platy structure; abrupt wavy boundary.
- Cu2 4 – 12 inches, fill with angular gravels; massive; common fine medium roots; many very fine, and interstitial pores; abrupt wavy boundary.

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Cu3 12 – 32 inches, dark brown (10YR 3/3) variegated with strong brown (7.5YR 4/6) moist; very gravelly clay loam, moderate medium subangular blocky structure; hard, friable, soft and sticky; common fine medium roots; common fine medium tubular pores; forty percent gravel; abrupt wavy boundary.

2Bw1 32 – 56 inches, dark brown (7.5YR 3/3) moist; very gravelly loam; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common and fine medium coarse roots; common fine medium tubular pores; forty percent gravel and ten percent stones; clear wavy boundary.

2Bw2 56 – 60 inches, dark brown (7.5YR 3/3) moist; very gravelly loam; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine medium and few coarse roots; common fine medium tubular pores; forty percent gravel and five percent stones.

Notes: Surface is paved over engineered fill. Beheaded buried subsoil at 32 inches. Faint odor of fuel in engineered fill above truncated subsoil.

Soil Series: Unnamed

Soil Classification: Fine-loamy, mixed frigid, Ultic Haploxeralfs

Soil Drainage Class: Well drained

Hydrologic Soil Group: B



Figure 2 - Stop 1 profile.



Figure 3 - Stop 1 upslope.

Stop No. 2

Cu1 0 – 6 inches, AC pavement; abrupt smooth boundary.

Cu2 6 – 12 inches, gravel subgrade, reddish volcanic crush rock; common fine interstitial roots; abrupt smooth boundary.

Cu3 12 – 20 inches, very dark gray (5Y 3/1) mix volcanic material moist; common fine medium roots; common fine medium interstitial pores; abrupt smooth boundary.

2Ab 20 – 32 inches, dark reddish brown (5YR 3/2) moist; very gravelly sandy clay loam; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; common medium and few coarse roots; common fine and medium tubular pores; forty percent gravel and five percent stones.

2Bt 32 – 70 inches, dark reddish brown (5YR 3/2) moist; very gravelly clay loam; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; common fine medium and common coarse roots; common fine and medium tubular pores.

Notes: Paving and engineered fill over truncated subsoil. Groundwater seepage at 60 inches. Roots diminish at 44 inches. No restrictive layer within 60 inches. Color darkness due to hydrocarbons (?). GW at 70 inches. Noticeable petrochemical odor at depth.

Soil Series: Unnamed

Soil Classification: Fine-loamy, mixed, frigid, Ultic Haploxeralfs

Soil Drainage Class: Well drained

Hydrologic Soil Group: B

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Figure 4 - Site 2 profile.



Figure 5 - Upslope of Stop 2 (building across Hwy 28 is former gas station site).

Stop No. 3

Cu1 0 – 5 inches, AC pavement; strong coarse platy structure; abrupt wavy boundary.

Cu2 5 – 8 inches, mixed volcanic aggregate fill; massive; common fine medium roots; common fine interstitial pores; abrupt wavy boundary.

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Cu3 8 – 20 inches, mixed fill; massive; many fine medium roots, common fine interstitial pores; abrupt wavy boundary.

2Bw1 20 – 36 inches, few fine distinct dark olive gray (5Y 3/2) mottled with dark brown (7.5YR 3/4) moist; very gravelly coarse sandy loam; moderate fine subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; common fine medium and few coarse roots; twenty percent stones and thirty-five percent gravel; gradual wavy boundary.

2Bw2 36 – 60 inches, dark olive gray (5Y 3/2) mottled with dark brown (7.5YR 3/4) moist; very gravelly coarse sandy loam; weak fine subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; few fine roots; thirty-five percent gravel and ten percent stones; gradual wavy boundary.

3C 60+ inches, dark gray (5Y 4/1) moist; clay; massive; hard, friable, sticky and plastic.

Notes: 20 inches of paving and engineered fill. Beheaded subsoil. Darkness of color due to former hydrocarbon impregnation (?). GW at 70 inches. Noticeable petrochemical odor.



Figure 6 - Stop 3 profile.



Figure 7 - Stop 3 upslope.

Stop No. 4

Cn1 0 – 2 inches, lawn; sandy loam; moderate fine granular structure; soft, loose, nonsticky and nonplastic; many very fine and fine roots; many fine interstitial pores; abrupt smooth boundary.

Cn2 2 – 6 inches, volcanic fill; massive; abrupt smooth boundary.

Cn3 6 – 32 inches, laminated fill; sand; single grain; soft, loose, nonsticky and slightly plastic; many very fine and fine interstitial pores; abrupt smooth boundary.

Cn4 32 – 44 inches, very dark grayish brown (10YR 3/2) moist; very gravelly sandy clay loam; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and nonplastic; common very fine and fine few medium roots; common fine tubular pores; twenty-five percent stones and twenty-five percent gravel; gradual wavy boundary.

Cn5 44 – 60 inches, very dark grayish brown (10YR 3/2) moist; very gravelly sandy clay loam; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and nonplastic; few fine roots; common fine tubular pores.

Notes: Pronounced petrochemical odor. Entire profile appears to be manipulated. GW at 64 inches.

Soil Series: unnamed

Soil Classification: Fine-loamy, mixed, frigid, Anthralite Xerorthents

Soil Drainage Class: Well drained

Hydrologic Soil Group: B

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Figure 8 - Stop 4 profile.



Figure 9 - Stop 4, downslope landscape.

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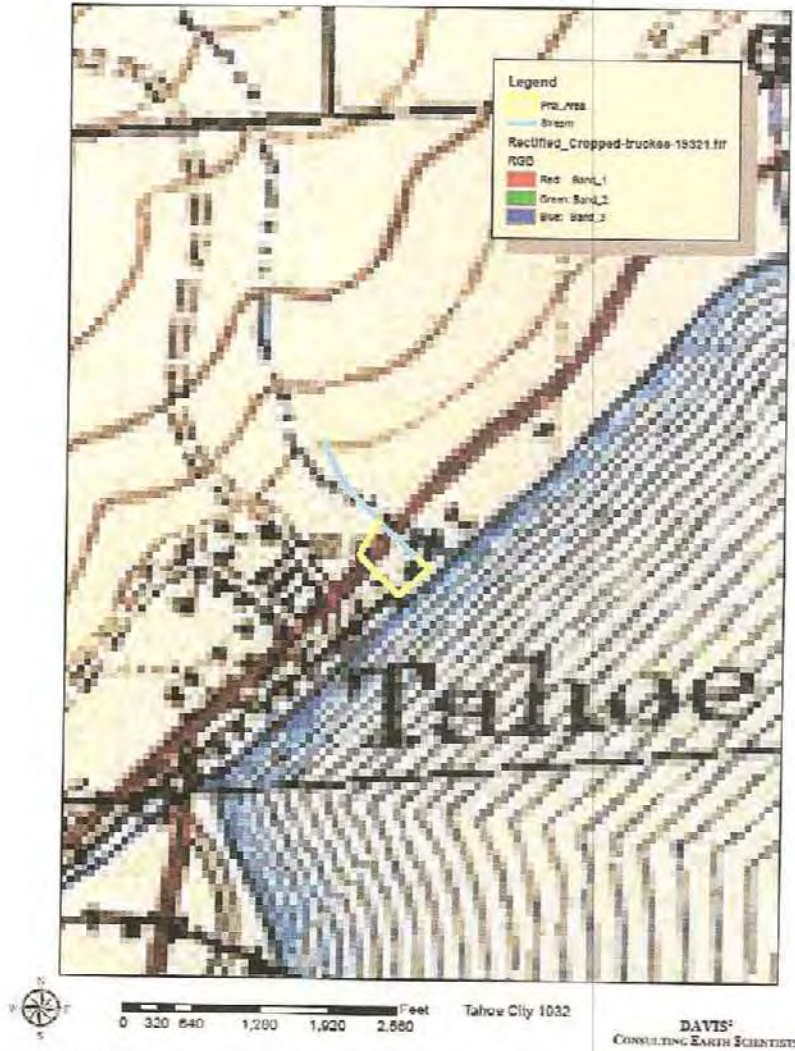


Figure 10 - Boatworks site in relation to unnamed creek in 1932.

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Figure 11 - Boatworks site and stream location, 1952.

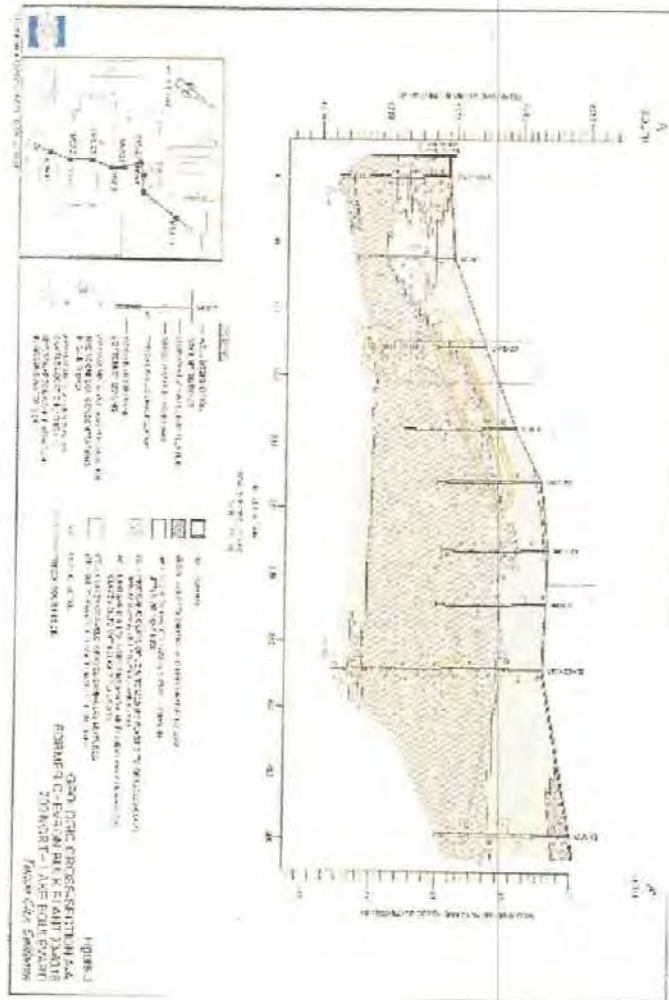


Figure 12 - Groundwater Monitoring graphic (GHD Services, 2016)

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