Project No. S2851-05-01
August 5, 2024

Jada, Inc.
124 Clydesdale Court
Grass Valley, California 95945

Attention: Aaron Beyer, General Manager

Subject: PRELIMINARY GEOTECHNICAL EVALUATION
JADA WINDOWS
GRASS VALLEY, NEVADA COUNTY, CALIFORNIA

Mr. Beyer:

Geocon Consultants, Inc. (Geocon) is pleased to provide Jada, Inc. with this Preliminary Geotechnical Evaluation (PGE) in support of the proposed Jada Windows development to be located on Nevada County assessor's parcel numbers (APN) 009-680-050 and -056 (the site) south of Whispering Pines Lane in Grass Valley, Nevada County, California. The 7.74-acre site is zoned light industrial (M-1).

We performed this preliminary evaluation in accordance with our Proposal No. SA-24-1144-P-GT dated June 14, 2024, and the professional services agreement dated July 9, 2024. Our opinion is that the project is feasible from a geotechnical engineering standpoint, provided that the findings and recommendations of a design-level geotechnical engineering report are incorporated into the project design and construction. Our primary concern, from a geotechnical engineering standpoint, is the presence of resistant bedrock outcrop and shallow resistant bedrock in the central portion of the site, which may adversely impact grading and excavation operations for foundations and utilities. In addition, we recommend that the condition of existing fill be confirmed during site development because formal documentation of the prior earthwork grading performed in 2013 was not available.

Our conclusions and preliminary recommendations are based on our site reconnaissance, literature review, and experience in the area, and are intended for planning purposes only. The project design and construction should be based on the findings and recommendations of a design-level geotechnical engineering report, which is beyond the scope of this study.

INTRODUCTION

This section describes the evaluation purpose, scope, and guiding principles.

Purpose and Scope of Services

The purpose of the PGE was to assess the feasibility of the proposed development from a geotechnical engineering standpoint. Our evaluation was a "desktop study" that included literature review, field reconnaissance, and preliminary engineering analysis. Our scope of services included:

- Review of geologic maps and literature pertaining to geologic conditions at the site;
- Review the results of available geotechnical studies for the site and nearby developments;

- Review of records related to previous earthwork grading;
- Site reconnaissance to observe existing surface conditions; and
- Preparation of this letter, which:
  - Describes the site and the anticipated subsurface conditions;
  - Summarizes previous geotechnical investigation and earthwork grading records;
  - Presents a preliminary geologic hazards evaluation; and
  - Presents preliminary geotechnical engineering recommendations.

Guiding Principles

The following principles are an integral part of the geotechnical engineering practice.

Subsurface Investigation Is Recommended

This preliminary evaluation did not include a subsurface investigation. Subsurface investigation has been performed in the past by others in 2010, prior to earthwork grading in 2013. Draft field reports and draft field density test results are available for the grading, although field density test locations are not recorded. Because the test locations are not known and a summary letter documenting the grading is not available, we recommend that the absence of uncontrolled fill be confirmed by the geotechnical engineer of record before or during site development. Uncontrolled fill should be identified and reworked prior to additional earthwork grading. In addition, exploratory trenching and/or geophysical analysis may be useful to determine rock excavation characteristics in the central portion of the site.

Locations Are Approximate

The approximate feature locations depicted on the attached figures were not determined by survey and should be considered approximate. The locations were estimated based by global positioning system (GPS) and our review of historical maps and previous investigation reports.

Subsurface Conditions May Vary

Our services are intended to assist with the project's planning process and are not a warranty or guarantee regarding subsurface conditions. To reduce uncertainties regarding the subsurface conditions, we should be retained to perform confirm the conditions by subsurface exploration, review plans and specifications, and perform observation and testing during project development.

Geo-Environmental Concerns Are Addressed Separately

This geotechnical evaluation does not address the potential for hazardous materials.

SITE DESCRIPTION

This section describes the site and its physical setting, proposed improvements, previous investigations, and previous earthwork grading. We performed a surface reconnaissance on July 17, 2024. Photographs 1 through 14 are attached.

The 7.74-acre light industrial (M-1) site is in Grass Valley, Nevada County, California. Grass Valley is approximately 50 miles northeast of Sacramento, near the junction of State Routes 49 and 20 (Figure 1). The site is immediately south of Whispering Pines Lane and approximately 200 feet west of its intersection with Clydesdale Court (Figure 2). The site includes Nevada County APNs 009-680-050 and -056. According to a parcel report accessed via Nevada County Geographic Information Systems (GIS; https://www.nevadacountyca.gov/560/Geographic-Information-Systems) the site was previously referenced by APNs 09-680-49, -50, and -53 until a merger and boundary line adjustment in 2007.

Physical Setting

Referencing the United States Bureau of Land Management (BLM) National Public Land Survey System, the site is primarily in the southwest ¼ of the northwest ¼ of Section 25, Township 16 North, Range 8 East based on the Mount Diablo geodetic datum. The western end of the site, outside of the proposed development area, extends into Section 26.

Topography

The site is on a narrow tabular ridgetop that protrudes west from the vicinity of Whispering Pines Lane (Photo 1). According to the *Preliminary Site Plan for Jada Windows* (Nelson Engineering, 2024), site elevations range from approximately 2,580 feet above mean sea level (MSL) near its western end, outside of the proposed development area, to approximately 2,650 feet above MSL near its northeastern corner at Whispering Pines Lane. Adjacent land to the north, west, and south is lower in elevation.

Earthwork cut and fill associated with previous site grading lowered the elevation of central portion of the site up to approximately 15 feet, and the current elevation is approximately 2,640 feet above MSL. The central portion of the development area is in cut native soil, although resistant bedrock outcroppings extend up to approximately 10 feet above the current grade (Photos 2 through 7).

The site contains three areas of identified fill at the perimeter of the proposed development area (Figure 2):

- an approximately 1-acre area on the southeast end of the proposed development area has an estimated maximum depth of 20 feet;
- an approximately ½-acre area on the northern edge of the proposed development area has an estimated maximum fill depth of approximately 15 feet; and
- an approximately ⅓-acre area on the southwestern edge of the proposed development area has an estimated maximum fill depth of approximately 5 feet.

Boulder piles resulting from the previous grading/earthwork are near the southeast and northwest site boundaries (Figure 2; Photos 8 and 9). The boulders are typically up to approximately five feet in greatest dimension.

An apparent soil/rock stockpile is located in the northeastern portion of the site near the site entrance (Figure 2). The stockpile surface is approximately four feet above the surrounding ground surface. Dense vegetation growing on the stockpile obscured its contents.

We observed a shallow, densely vegetated depression (Figure 2; Photo 10) west of the proposed development area, near the western end of the site. Historical mining maps (see the "Historical Mining Features" section below) depict a vertical mine shaft in this vicinity. We did not observe evidence of a shaft portal, such as concrete structures or mine waste, at the historically recorded shaft location. However, Holdrege & Kull (H&K, 2010) observed a segment of partially buried ore cart track extending from the edge of the surface depression during a geotechnical investigation performed in 2010.

We observed a concrete basin (Figure 2; Photos 11 and 12) near the northwestern site boundary. The concrete basin appears to be on adjacent, downslope property. The purpose of the concrete basin is not known.

Regional Physiographic Conditions

The site is in the Sierra Nevada Foothills on the western slope of the Sierra Nevada geomorphic province. The Sierra Nevada province is an elongate, northwest-trending structural block that is tilted upward to form a steep scarp above the adjacent Basin and Range province to the east. The western slope of the Sierra Nevada dips gently westward and extends beneath sediment of the Great Valley province. Uplift and erosion of the Sierra Nevada contribute to sediment within the Great Valley.

The western foothills of the Sierra Nevada are a complex assemblage of igneous and metamorphic rocks. The regional structure of the foothills is characterized by the north-northwest trending Foothills Fault System, a feature formed during the Mesozoic era (dating from 65 to 230 million years ago) in a compressional tectonic environment. A change to an extensional tectonic environment during the Late Cenozoic (last 9 million years) resulted in normal faulting which has occurred coincident with some segments of the older faults.

Geology

The *Geologic Map of the Chico Quadrangle* (Saucedo and Wagner, 1981) and the *Geologic Map of the Grass Valley-Colfax Area* (Tuminas, 1983) depict the site as being underlain primarily by diabase (microgabbro), mafic intrusive rock associated with the Mesozoic (252 to 66 million years ago) Lake Combie complex. Tuminas (1983) maps Lake Combie serpentinite (ultramafic rock) extending approximately 170 feet into the site from its northeastern corner.

Historical Mining Features

The *Geologic Map of the Grass Valley Quadrangle and Adjacent Area* (Johnston, 1939) maps a historical vertical mine shaft near the western end of the site. Various historical maps indicate that the shaft is in the lower, western end of the proposed open space portion of the site (Figure 2) or beneath the present-day alignment of Whispering Pines Lane. Johnston (1939) maps an underground incline extending at depth from the vertical mine shaft to the southeast.

Johnston's *The Gold Quartz Veins of Grass Valley, California* (Geological Survey Professional Paper 194; 1940), indicates that the vertical mine shaft mapped near the western end of the site is associated with the historical workings of the Idaho Maryland Mine, and the underground incline is the Canyon (or Cañon) winze, which rakes to the east from the 1000 level as far as the 1900 level (commonly measured in feet along the incline).

The portal of the Idaho Main Shaft was located approximately 600 feet northwest of the site, near Idaho Maryland Road, and the shaft inclined to the 1,000 level (commonly measured in feet along the shaft incline) at an angle of 70 degrees. A tunnel at the 1,000 level extended from the Idaho Main Shaft to the Canyon winze, and the vertical shaft mapped near the western end of the site extended from this intersection.

Plate II of the *Plan of Underground Workings of Idaho-Maryland Development Co., Grass Valley, California* (Adams, W.J., undated) does not depict a vertical shaft extending to the ground surface, but depicts tunnels extending from the inclined winze at depth beneath the site at the 1,000, 1,100, 1,200, 1,300, and 1,400 levels. A tunnel also extends from the Idaho Main Shaft beneath the northern edge of the site at the 700 level.

The *Composite Map of Idaho-Maryland Mine to 2000 Level* (anonymous, 1950) depicts subsurface mining features similar to those depicted by Adams.

Historical aerial photographs (USGS, 1939, 1947, and 1952) and historical topographic maps (USGS, 1901 and 1950) do not depict evidence of mining at the site.

The *Supplemental Master Title Plat for Sections 25, 26, 35, and 36, Township 16 North, Range 8 East* (United States Bureau of Land Management, 1996) depicts a portion of the historical Schofield Gold Quartz Claim (Mineral Survey Plat No. 30) in the northeastern portion of the site. Mineral Survey Plat No. 30 (United States Department of the Interior, September 1867) depicts a 50-foot-deep shaft north of the site under the present-day Whispering Pines Road, and a suspected mineral-bearing vein crossing the northeast corner of the site near the contact of the diabase and serpentinite. No mining features are depicted by the plat at the site.

Regional Faulting

The online Fault Activity Map of California (CGS, 2024) depicts a segment of the Grass Valley Fault near the site, near the eastern edge of the Foothills Fault System in the site vicinity. The Foothills Fault System is designated as a Type C fault zone with low seismicity and a low rate of recurrence.

CGS (2024) indicates that the northwest-to-southeast-trending Grass Valley Fault is pre-Quaternary (older than 1.6 million years without recognized Quaternary displacement). The late Quaternary Wolf Creek Fault and Giant Gap fault (fault displacement during the past 700,000 years) are mapped approximately 6 miles south of the site and 12 miles east of the site, respectively. The nearest mapped faults with evidence of Holocene displacement (during the past 11,700 years) are near Oroville (30 miles northwest) and Truckee (45 miles east).

Special Publication 42 (CGS, 2018) is intended to promote uniform and effective statewide implementation of the evaluation and mitigation elements of the Alquist-Priolo Earthquake Fault Zoning Act. Pursuant to CGS (2018) guidance, we used the online California Earthquake Hazards Zone Application (EQZ App; https://maps.conservation.ca.gov/cgs/EQZApp/) to determine whether the site is located within a designated Earthquake Fault Zone (also known as Alquist-Priolo Zone, or A-P Zone). A-P Zones are regulatory zones that encompass traces of Holocene-active faults to address hazards associated with surface fault rupture. The site is not mapped within an A-P Zone.

Soil

The United States Department of Agriculture (USDA) *Web Soil Survey* application (https://websoilsurvey.nrcs.usda.gov/app/) characterizes site soil predominantly as Sites very stony loam. Much of the soil profile was removed from the central portion of the development area and placed on the perimeter of the development area as engineered fill during previous earthwork grading.

The soil survey describes Sites very stony loam as medium to high acid soil that may be highly corrosive to concrete and uncoated steel. A typical profile is described as heavy loam from 0 to 1 foot, underlain by clay loam, clay, and light clay loam from 1 to 6.5 feet. Variably weathered metasedimentary and basic rock is commonly encountered at depths greater than 6.5 feet. Up to one quarter of the soil profile is described as cobbles. Runoff is described as medium with a slight to moderate erosion hazard.

The Web Soil Survey maps alluvial land at the western end of the site. The mapping of alluvial land may be associated with the historical water conveyance ditch described below, and was generally altered by the previous earthwork grading. Clayey soil associated with alluvium, as well as seasonal surface water and shallow groundwater seepage, may be present in the lower, southeast corner of the site, where a road is to be constructed that extends off-site to the south.

Prior to the earthwork grading performed in 2013, H&K (2010) excavated 10 exploratory trenches at the site to depths up to 9 feet. Exploratory trench locations are depicted on Figure 2, and soil conditions encountered in the exploratory trenches are described below.

- Trenches T1 and T2 were advanced in the northeastern portion of the site and revealed fill generally consisting of silty sand with gravel, angular cobble-sized rock fragments, and small boulders to depths up to 7 feet. The fill was generally medium-dense and dry. The fill in trench T1 was underlain by severely weathered rock, and in T2 by sandy fat clay.
- Trenches T3 and T4 were advanced in the southeastern portion of site and encountered damp, clayey, native soil underlain by variably weathered rock. Trench T3 encountered refusal on resistant rock at approximately 4.6 feet. Groundwater seepage was encountered in T3 at 3.9 feet.
- Trench T5 and T10 were advanced in the north-central portion of the site and encountered silty sand with gravel, underlain at 1 to 2.5 feet by weathered bedrock. The bedrock encountered in T10 was resistant to excavation at a depth of 3 feet.
- Trenches T6 and T7 were advanced at a hilltop that was subsequently removed, except for large bedrock outcroppings.
- Trenches T8 and T9 were advanced in the western portion of the proposed development area and exposed silt with fine sand underlain at 4 feet by weathered rock.

Surface Water

No surface water bodies are present at the site. USGS topographic maps from 1949 to 1993 depict the historical Idaho-Maryland Ditch, a former water conveyance ditch, crossing the west side of the site from north to south. The ditch is no longer present as a result of previous earthwork grading at the site. The *Geologic Map of the Grass Valley Quadrangle and Adjacent Area* (Johnston, 1939) maps a historical, 0.15-acre, rectangular water reservoir near the site center. The reservoir is no longer present as a result of previous earthwork grading at the site. Wolf Creek is 600 feet north of the site at an elevation approximately 100 feet lower than the site elevation, and flows west.

Groundwater

The depth to groundwater at the site is not known. The California Department of Water Resources (DWR) Well Completion Report Map Application (DWR, 2024) depicts two monitoring wells approximately 500 feet north of the site at an approximate elevation of 2,530 feet above MSL (110 feet lower than the site elevation) where groundwater was encountered within 10 feet of the ground surface. These monitoring wells were near Wolf Creek. Information provided by Rise Gold Corporation indicates that the water level in the abandoned Idaho Maryland Mine workings is approximately 2,500 feet above MSL. Seasonal seepage and wet soil conditions have been reported near the lower, southwestern corner of the site.

Proposed Improvements

The 7.74-acre site is zoned light industrial (M-1). The Preliminary Site Plan prepared by Nelson Engineering (July 5, 2024) includes 72,500 square feet (sf) of proposed building coverage and an additional 12,800 sf of future building coverage; 97,761 sf of pavement area; and 14,000 cubic yards of earthwork cut and fill. Based on the grades depicted on the Preliminary Site Plan, we anticipate that 5 to 7 feet of cut are proposed in the building areas and up to approximately 15 feet of fill is proposed at the perimeter of the development area.

Previous Investigations

We obtained the following previous investigation reports from NV5, Inc. and from local government records.

Preliminary Geotechnical Study

H&K performed a preliminary geotechnical study in 2003 of a 66-acre property that included the site. Findings are presented in the *Preliminary Geotechnical Engineering Report, Milco and Platner Property, Between Whispering Pines Lane and East Bennett Road, Nevada County, California* (H&K, April 22, 2003).

Design-Level Geotechnical Study

H&K performed a design-level geotechnical study of the site in 2010, prior to site grading, for a previously proposed commercial development. Findings are presented in the *Geotechnical Engineering Report, Milco Business Park, Phase III, Whispering Pines Lane, APNs 09-680-49, -50, and -53, Nevada County, California* (H&K, November 8, 2010). H&K performed the following laboratory testing:

- A direct shear test (ASTM D 3080) performed on a soil sample obtained from exploratory trench T3 at a depth of 2.5 feet below the 2010 ground surface resulted in a shear friction angle of 21.5 degrees and a cohesion of 2,083 pounds per square feet (psf).
- An Atterberg Limits determination (ASTM D 4318) performed on a soil sample obtained from 6 to 7 feet in exploratory trench T2 resulted in a liquid limit of 126, a plastic limit of 30, and a plasticity index of 96 for the portion of the sample passing the No. 40 sieve. H&K classified the soil as sandy fat clay (Unified Soil Classification System [USCS] symbol CH).
- An expansion index test (ASTM D 4829) performed on a soil sample obtained from six feet in exploratory trench T2 by remolding a portion of the sample in a 1.0-inch-high ring and submerging it in water under an applied load of 144 psf and measuring the change in height with a dial micrometer. The test result of 75 indicated that the sample exhibited medium expansion potential pursuant to Uniform Building Code (UBC) guidelines.

- A Resistance Value (R-Value) test (ASTM D 2844) performed on a bulk soil sample (described as light brown sandy clay, predominantly granular) obtained from 2 to 4 feet in exploratory trench T6 resulted in a R-value of 21 as calculated by exudation pressure.

Earthwork Grading

Earthwork grading was performed at the site in 2013 by C&D Contractors. H&K performed testing and observation during the earthwork grading. Draft field reports and field density test results indicate that 91 field density tests were performed, and all test results met or exceeded 90 percent of the ASTM D1557 maximum dry density. No test locations or summary letter for the grading project were available.

GEOLOGIC HAZARDS

This section discusses the likelihood of geologic hazards identified by our literature review and site reconnaissance.

Abandoned Mine Features

The findings of our historical research and site reconnaissance did not identify evidence of historical mining in the proposed development area. Deep underground mine workings extend beneath the site and are associated with the historical Idaho Maryland Mine and Canyon winze, which inclined southeast beneath the site from the 1,000 level (typically measured in feet along the incline of the shaft) of the Idaho-Maryland shaft. Based on the recorded depth of the underground mine workings beneath the site, we do not anticipate that the underground workings would impact the proposed site development from a geotechnical engineering standpoint.

Historical maps depict a vertical mine shaft on or near the western end of the site at the approximate location depicted on Figure 2, outside of the development area. If improvements are planned within 100 feet of the recorded vertical shaft location, we recommend that the shaft location be determined by survey and physically closed with a concrete slab or plug. Physical closure, if performed, should be performed under permit with Nevada County and according to an engineered design.

Faulting and Seismicity

The site is not located on any known “active” earthquake fault trace. In addition, the site is not contained within an A-P Zone. Therefore, fault rupture is not considered a hazard for the site. As discussed in the Regional Faulting section of this letter, CGS (2024) maps no faults with identified Holocene displacement within approximately 30 miles of the site. For preliminary seismic design purposes, the site may be considered Site Class “D” in accordance with Section 1613.2.2 of the 2022 California Building Code (CBC). We assume that the proposed buildings are Risk Category II per CBC Section 1604.5. Pursuant to CBC Section 1613 and the Structural Engineers Association of California (SEAOC) Seismic Design Maps web application (www.seismicmaps.org), the calculated Peak Ground Acceleration modified for Site Class (PGA_M) is expected to be approximately 0.33g for the site.

Liquefaction

Liquefaction is a phenomenon in which saturated, cohesionless soils are subject to a temporary loss of shear strength due to pore pressure buildup under the cyclic shear stress associated with earthquakes. Liquefaction is more likely under strong ground shaking (from a large and nearby seismic source), when relatively clean, loose, granular soil (primarily poorly graded sands and silty sands) is present, and under saturated soil conditions.

As discussed in the Regional Faulting section of this letter, the site is not in a designated Seismic Hazard Zone for liquefaction. We are not aware of any reported historical instances of liquefaction in the Grass Valley area. The site is not located near a large seismic source, subsurface conditions appear to be primarily granular, compacted fill and bedrock, and groundwater is relatively deep. Therefore, we expect that the potential for liquefaction and significant adverse impacts from liquefaction is low.

Landslides and Slope Stability

The proposed improvements include engineered, 2:1 (horizontal:vertical) cut and fill slopes. Based on competent native materials at the site and the nature of the proposed improvements, we consider deep-seated slope instability to be unlikely. However, near-surface soil, undocumented fill, and highly weathered bedrock are subject to instability, particularly under saturated conditions and/or seismic forces. Therefore, we should assess the potential for slope instability during project design.

Expansive Soil

A relatively thin layer of clay soil was identified by H&K (2010). The soil was classified as fat clay (CH) and had a liquid limit of 126, a plastic limit of 30, and a plasticity index of 96, and exhibited medium expansion potential (75) pursuant to UBC guidelines. We anticipate that the layer of potentially expansive clay soil was, to a large extent, removed and blended during previous earthwork grading. However, we should observe soil conditions during earthwork improvements and foundation excavation to verify that the potentially expansive soil does not remain with a few feet of sensitive improvements.

Naturally Occurring Asbestos

The referenced geologic maps indicates that the northeastern corner of the site is underlain by serpentinite, an ultramafic rock often associated with naturally occurring asbestos (NOA). If ultramafic rock, serpentinite, or NOA-containing minerals are encountered at the site, site grading would be regulated under California Air Resources Board (CARB) Regulation 93105, *Asbestos Airborne Toxic Control Measure for Construction, Grading, Quarrying, and Surface Mining Operations* (ATCM). If NOA is encountered during grading in the northeastern corner of the site we anticipate that, as a minimum, dust mitigation measures such as limiting site access, restricting onsite construction vehicle speeds, covering stockpiled soil, and liberal use of water during grading would be required during grading to prevent the generation of dust from the site. We can prepare an asbestos dust mitigation plan (ADMP), if required, for project planning and approval purposes.

Soil Corrosion Potential

Soil corrosion testing was not performed as part of the previous geotechnical engineering investigation; however, soil survey information indicates that site soil may be highly corrosive to concrete and uncoated steel. To reduce the likelihood of corrosion problems, materials used for underground utilities, foundation systems, and other permanent buried improvements should be selected based on local experience and practice. If alternative or new construction methods or materials are being proposed, it may be appropriate to have the selected materials evaluated by a corrosion engineer for compatibility with the onsite soil and groundwater conditions. Soil index testing (site-specific sampling and analysis) can be performed to evaluate the potential for corrosive soil conditions.

CONCLUSIONS AND PRELIMINARY RECOMMENDATIONS

We performed the Preliminary Geotechnical Evaluation in general accordance with our proposal dated June 14, 2024. Our opinion is that the proposed industrial development project is feasible from a geotechnical engineering standpoint, provided that the findings and recommendations of a design-level geotechnical engineering report are incorporated into the project design and construction.

Our primary concern, from a geotechnical engineering standpoint, is the presence of shallow resistant bedrock and outcrop in the central portion of the site, which may adversely impact grading and excavation operations for foundations and utilities. In addition, we recommend that the condition of existing fill be confirmed during site development because formal documentation of the earthwork grading performed in 2013 was not available. Preliminary recommendations are presented below.

Soil Excavation Characteristics

Resistant bedrock is present at the ground surface in the central portion of the site, and resistant bedrock outcroppings extend up to approximately 10 feet above the existing ground surface in the proposed improvement area. Based on the grades depicted on the Preliminary Site Plan, we anticipate that 5 to 7 feet of cut are proposed in the building areas. The selection of a higher finish subgrade elevation may reduce the amount of rock excavation required. At the current grade, we anticipate that resistant rock may be encountered during excavation for foundations and utilities requiring splitting and/or blasting.

Oversize rock may be encountered during excavation. Oversize rock may be removed and used in landscape areas, incorporated into slope protection, and/or used as fill in accordance with specific recommendations from the geotechnical engineer of record.

Clayey, alluvial soil, as well as seasonal surface water and shallow groundwater seepage, may be present in the lower, southeast corner of the site, where a road is to be constructed that extends off-site to the south. Significant drying effort to attain moisture content suitable for compaction should be anticipated regardless of the time of year.

In addition to the potentially wet soil conditions near the lower, southeastern corner of the site, moist to saturated soil conditions may be encountered in excavations advanced during and following the rainy season, particularly in excavations that reveal the soil/weathered rock transition. If grading occurs during or after the wet season (typically winter and spring), or in periods of precipitation, in-place and excavated soils will likely be wet. Earthwork contractors should be aware of moisture sensitivity of clayey and fine-grained soils and potential compaction/workability difficulties.

Uncontrolled Fill

Records indicate that the earthwork grading performed in 2013 removed most if not all of the previous uncontrolled fill at the site. Because the field density test locations are not known, we recommend that exploration be performed before or during site development to identify locations of uncontrolled fill, if present, and rework the fill according to recommendations of the geotechnical engineer of record.

Abandoned Mine Feature

If future improvements are planned within 100 feet of the recorded vertical shaft location at the lower, western end of the site (outside of the currently proposed development area, see Figure 2), we recommend that the shaft location be determined by survey and physically closed with a concrete slab or plug. Physical closure, if performed, should be performed under permit with Nevada County and according to an engineered design. The location of the closed feature should be surveyed and recorded along with as-built closure documentation.

Underground Utilities

We anticipate that indurated diabase rock will be encountered in the central portion of the site that is resistant to conventional excavation methods for underground utility installation.

Foundations

Provided that the absence of uncontrolled fill is confirmed, we anticipate that the existing native soil and engineered fill will be suitable for support of the proposed lightly loaded structures with conventional shallow foundations and interior concrete slabs-on-grade will be suitable for support of the proposed, lightly loaded structures. Foundations should be embedded at least 18 inches. Allowable soil bearing capacity on the order of 3,000 psf may be used for preliminary foundation sizing. Specific foundation recommendations should be provided as part of the design-level geotechnical investigation.

Concrete Flatwork and Pavement

Interior concrete flatwork should be designed with a capillary break and moisture barrier. Exterior concrete flatwork placed over reworked granular fill materials will not likely require an aggregate layer.

Conventional flexible pavement structural sections consisting of hot mix asphalt (HMA) over compacted Class 2 aggregate base (AB) may be used provided they are properly designed (i.e., thick enough) for the soil conditions at the site. A previous R-Value (21) for light brown sandy clay at the site appears suitable for design of alternative pavement sections and should be confirmed based on the specific subgrade soil characteristics encountered during site development.

Design-Level Geotechnical Investigation and Analysis

A design-level geotechnical investigation was performed by H&K in 2010, prior to the earthwork grading performed in 2013. In general, we agree with the conclusions and recommendations presented in H&K's report. However, because formal records are not available for the earthwork grading, it is appropriate to confirm that uncontrolled fill is not present in the development area. In addition, exploratory trenching and/or geophysical analysis may be useful to determine rock excavation characteristics in the central portion of the site. Soil corrosion testing may be performed to identify potentially corrosive conditions.

CLOSURE

The preliminary conclusions and recommendations contained herein are based on a limited field reconnaissance, review of available information, and our geotechnical experience in the project area. This report is intended for your project planning and due-diligence purposes only. Additional geotechnical investigation and laboratory testing are required for project design and construction. Our professional services were performed, our findings obtained, and our recommendations prepared in accordance with generally accepted geotechnical engineering principles and practices used in this area at this time. We make no warranty, either express or implied.

We appreciate the opportunity to assist Jada, Inc., with this important project. Please contact the undersigned with any comments or questions regarding the conclusions and recommendations presented in this report.

Sincerely,

GEOCON CONSULTANTS, INC.

Jason Muir, PE, GE
Senior Engineer

Jeremy Zorne, PE, GE
Senior Engineer

Attachments: References
Figure 1, Site Location Map
Figure 2, Site Plan
Photographs (1 through 14)

REFERENCES

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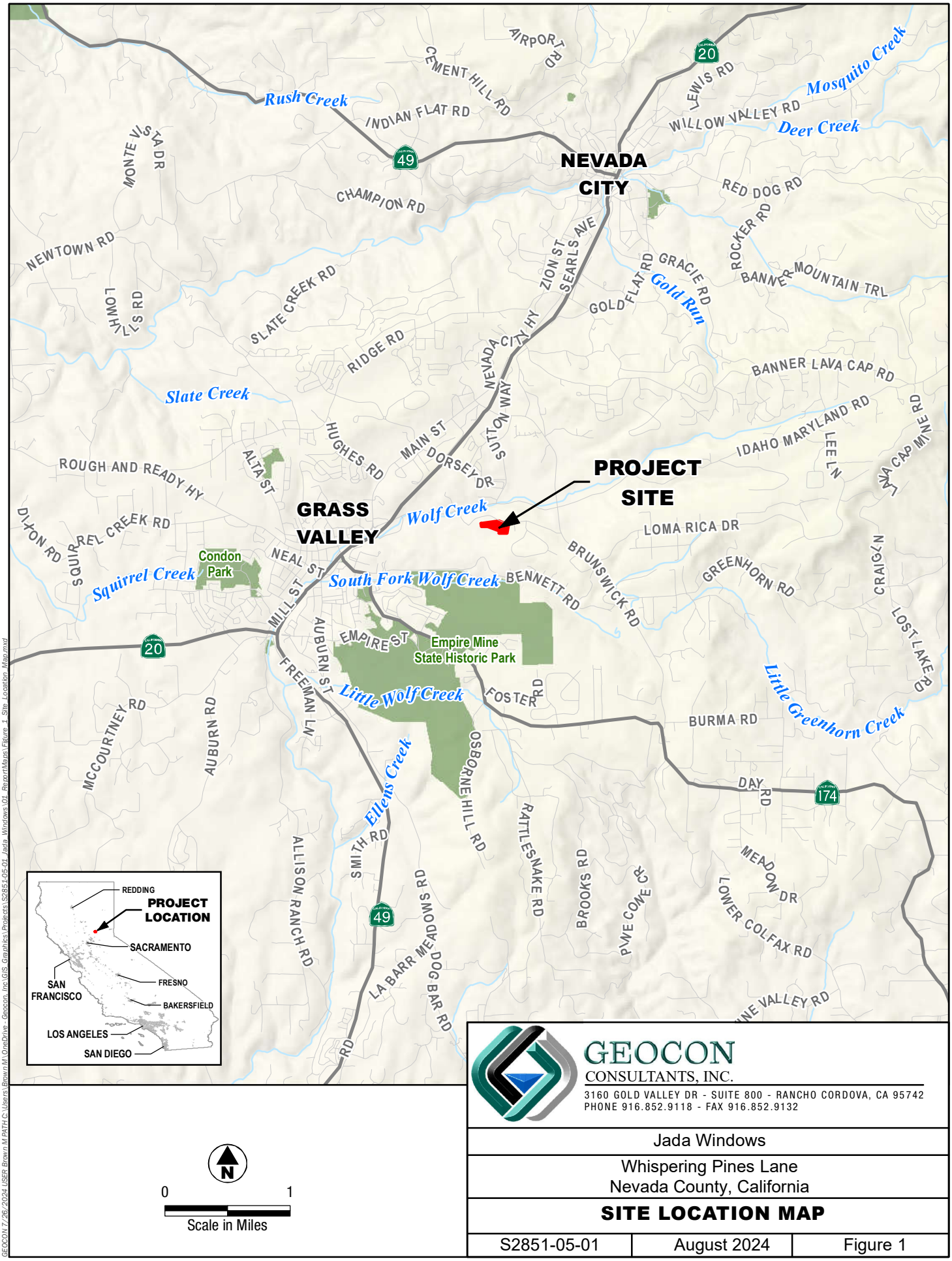

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Jada Windows

Whispering Pines Lane
Nevada County, California

SITE LOCATION MAP

S2851-05-01	August 2024	Figure 1

Legend

- Approximate Exploratory Trench Location (Holdrege & Kull, 2010)
- Historically Recorded Vertical Mine Shaft
- Bedrock Outcropping
- Proposed structure (Nelson Engineering, 2024)
- Concrete Basin
- Approximate Fill Area
- Boulder Stockpile
- Possible Fill Stockpile
- Approximate Site Boundary

N

0 100

Scale in Feet

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SITE PLAN

S2851-05-01	August 2024	Figure 2

GEOCON 7/26/2024 USER Brown M PATH C:\Users\Brown M\OneDrive - Geocon, Inc\GIS_Graphics\Projects\S2851-05-01 Jada Windows\01_Report\Maps\Figure_2_Site_Plan.mxd

Photo 1 – View of the site to the west from near the northwestern corner of the site. Whispering Pines Lane is visible to the right.

Photo 2 – Rock outcrop, approximately 10 feet above grade, in the central portion of the site.

Photo 3 – Rock outcrop, approximately 4 feet above grade, in the central portion of the site.

Photo 4 – Typical rock outcrop in the central portion of the site.

Photo 5 – Typical rock outcrop in the central portion of the site.

Photo 6 – Typical rock outcrop in the central portion of the site.

Photo 7 – Typical rock outcrop in the central portion of the site.

Photo 8 – View to the southwest of boulders, typically up to three feet in maximum dimension, stockpiled in the southeastern portion of the site during previous earthwork grading.

Photo 9 – View to the west of boulders, typically up to five feet in maximum dimension, stockpiled near the northwestern site boundary during previous earthwork grading.

Photo 10 – View to the west of the historically mapped Canyon shaft location in the western end of the site. The area is a shallow, densely vegetated depression. No mine rock or concrete was identified.

Photo 11 – View to the west of a concrete basin, possibly on adjacent property, near the northwestern site boundary.

Photo 12 – View to the south of the concrete basin near the northwestern site boundary.

Photo 13 – View to the east of an unpaved road on adjacent property to the north of the site.

Photo 14 – View to the west-northwest from the site towards Whispering Pines Lane and adjacent properties.