APPENDIX J Geotechnical Report

GEOTECHNICAL INVESTIGATION

CARMEL MOUNTAIN RANCH GOLF COURSE SAN DIEGO, CALIFORNIA

PREPARED FOR

NEW URBAN WEST, INCORPORATED SAN DIEGO, CALIFORNIA

> OCTOBER 25, 2019 PROJECT NO. 03071-32-45A



GEOTECHNICAL ENVIRONMENTAL MATERIALS GEOTECHNICAL E ENVIRONMENTAL MATERIAL



Project No. 03071-32-45A October 25, 2019

New Urban West, Incorporated 16935 West Bernardo Drive, Suite 260 San Diego, California 92127

Attention: Mr. Jonathan Frankel

Subject: GEOTECHNICAL INVESTIGATION CARMEL MOUNTAIN RANCH GOLF COURSE SAN DIEGO, CALIFORNIA

Dear Mr. Frankel:

In accordance with your request, and our Proposal No. LG-18210 dated March 22, 2019, we have performed a geotechnical investigation on the subject golf course property. The accompanying report presents our findings, conclusions and recommendations relative to the geotechnical aspects of developing the property as presently proposed. The results of our study indicate that the site can be developed as planned, provided the recommendations of this report are incorporated into the design and construction of the project.

If there are any questions regarding this report, or if we may be of further service, please contact the undersigned at your convenience.

Very truly yours,

GEOCON INCORPORATED



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GEOTECHNICAL INVESTIGATION

1. PURPOSE AND SCOPE

This report presents the results of a geotechnical investigation on the Carmel Mountain Ranch Golf Course located in San Diego, California (see *Vicinity Map*, Figure 1). The purpose of the study was to investigate the soil and geologic conditions at the site, as well as evaluate geotechnical constraints, if any, that could impact the proposed development. The main focus of the field investigation was to identify and evaluate the extent and distribution of surficial deposits that will require remedial grading during future site development. Figure 2, *Overall Site Plan and Geologic Map*, presents an overall view of each hole studied as well as the geologic and geotechnical information collected during this study.

The initial phase of this study performed between April 23 and May 23, 2019, encompassed a broader proposed development area of the golf course than that shown on the current plan. For this reason, some of the holes on our maps present the geologic conditions where there is no proposed development. As part of our geologic/geotechnical characterization of the overall property, we have included the boring and trench logs as well as laboratory test results from these areas.

The scope of our study consisted of the following:

- Reviewing readily available published and unpublished geologic literature as well as previous geotechnical reports by Geocon relating to the site.
- Reviewing the digital plans prepared by Project Design Consultants.
- Performing 152 exploratory trenches using a rubber tire backhoe to evaluate the general extent and condition of the surficial deposits (see Appendix A).
- Down-hole logging and sampling 22 large-diameter borings (see Appendix A).
- Performing laboratory tests on selected soil samples to evaluate their physical and chemical characteristics for engineering analysis (see Appendix B).
- Coordinating and contracting with Southwest Geophysics to perform 6 seismic traverses to assess the apparent rippability of the underlying rock materials. (see Appendix C).
- Preparing this report, geologic cross sections and a geologic map presenting our exploratory information and our conclusions and recommendations regarding the geotechnical aspects of developing the property as presently proposed.

The approximate locations of the subsurface information are shown on the *Geologic Maps*, Figures 3 through 9. *Geologic Cross-Sections* A-A' through X-X' (Figures 10 through 13) represent our interpretation of the geologic conditions across the areas of proposed development.

2. PREVIOUS SITE DEVELOPMENT

The Carmel Mountain Golf Course and surrounding residential development areas were graded between March 1984 and January 1988. The majority of the observation and testing services conducted during these operations was performed by Geocon Incorporated as discussed in the referenced reports below. This information and the recent subsurface investigation served as the basis for our interpretation of the geologic conditions, fill geometries and our recommendations discussed herein.

- 1. Final Report of Testing and Observation Services During Mass Grading Operations for Carmel Mountain Ranch Golf Course, San Diego, California, dated October 10, 1985 (Project No. D-3071-T02).
- 2. Final Report of Testing and Observation Services During Mass Grading Operations for Carmel Mountain Ranch Golf Course Clubhouse Area, San Diego, California, dated August 1, 1985 (Project No. D-3071-T05).
- 3. Final Report of Testing and Observation Services During Mass Grading Operations for Carmel Mountain Ranch Golf Course Maintenance Yard, San Diego, California, dated June 19, 1985 (Project No. D-3071-T02).
- 4. Final Report of Testing and Observation Services During Mass Grading Operations for Carmel Mountain Ranch Parksite, San Diego, California, dated August 12, 1987 (Project No. D-3071-T23).
- 5. Final Report of Testing and Observation Services During Mass Grading Operations for Carmel Mountain Ranch Unit No. 3, San Diego, California, dated March 26, 1987 (Project No. D-3071-T13).
- 6. Final Report of Testing and Observation Services During Mass Grading Operations for Carmel Mountain Ranch Unit 4 and 36, T.M. 84-0467 W.O. 860538, San Diego, California, dated July 8, 1987, revised January 31, 1989 (Project No. D-3071-T13).
- 7. Final Report of Testing and Observation Services During Mass Grading Operations for Carmel Mountain Ranch Unit Nos. 5 and 5A, San Diego, California, dated September 8, 1986 (Project No. D-3071-T08).
- 8. Final Report of Testing and Observation Services During Mass Grading Operations for Carmel Mountain Ranch Unit No. 6A, San Diego, California, dated February 27, 1987 (Project No. D-3071-T06).
- 9. Final Report of Testing and Observation Services During Mass Grading Operations for Carmel Mountain Ranch Unit No. 10, T.M. 85-0401 W.O. 850401, San Diego, California, dated November 6, 1986 (Project No. D-3071-T10).
- 10. Final Report of Testing and Observation Services During Mass Grading Operations for Carmel Mountain Ranch Unit 13, San Diego, California, dated October 19, 1987 (Project No. D-3071-T15).

11. Final Report of Testing and Observation Services During Mass Grading Operations for Carmel Mountain Ranch Unit 17, T.M. 86-0376 W.O. 860376, San Diego, California, dated February 10, 1988 (Project No. D-3071-T21).

3. SITE AND PROJECT DESCRIPTION

The Carmel Mountain Ranch Golf Course property consists of 164.5-gross acres of land located within San Diego, California. The golf course operated from 1986 until its closure in July 2018. However, the clubhouse is still maintained, which can be rented out and used for special events.

Topographically, the site consists of gentle to moderately sloping terrain. Vegetation primarily consists of previously maintained grass and landscape areas utilized for the golf course along with numerous mature trees scattered about the property. Man-made improvements consist of the clubhouse, restroom facilities on the course, cart paths, and golf course related features such as greens, tee boxes, and sand traps. In addition, several utility easements (e.g. storm drain, water main) are located throughout the course.

It is our understanding that approximately 51 acres of the property will be developed to create 1,204 multi-family homes with heights ranging from 30 to 40-feet and the remaining approximately 113 acres would include a mix of open space and recreational uses. A multi-use, 6-mile trail system is also proposed that would circulate throughout the project with a trail staging area that would provide a bike station, picnic tables, shade areas and other amenities.

Based on our understanding, the raw grading volume estimate provided by Project Design Consultants consist of approximately 290,000 cubic yards of cut and 340,000 cubic yards of fill. However, the total yardage, which includes remedial grading and foundation spoils is estimated to be 1,017,150 cubic yards. No import or export is anticipated except to Hole Nos. 7 and 15 for spoils generated during fine grading and foundation construction. Maximum cut and fill depths prior to remedial grading will be on the order of 25 feet (Hole Nos. 2 and 8) and 34 feet (Hole No. 6), respectively. Cut and fill slopes are designed at 2:1 (horizontal:vertical) or flatter, with a maximum height of approximately 36 feet (Hole No. 2).

The locations and descriptions of the site and proposed development are based on our field investigation, site reconnaissance, a review of the available plans, and our understanding of the project. If project details vary significantly from those described, Geocon Incorporated should be consulted to provide additional recommendations and/or analysis.

4. SOIL AND GEOLOGIC CONDITIONS

The geologic units encountered during our investigation include golf course fill, previously placed compacted fill, topsoil, alluvium, colluvium, Mission Valley Formation, Statdium Congolmerate, Friars Formation, and granitic rock. Each of the units is described below in order of increasing age. Their mapped extents (with the exception of topsoil) are shown on the *Geologic Maps*.

4.1 Golf Course Fill (Qgcf)

Fill deposits associated with the previous golf course grading are widespread across the site and vary in thickness from a thin veneer to approximately 34 feet (Boring No. LB-1). Only the fill deposits, estimated to be over 3 feet thick were mapped on the *Geologic Maps*. The materials encountered during our study consisted of mixtures of silty to clayey sands to silty to sandy clays with minor amounts of gravel, cobble and boulder size rock fragments. In addition, portions of the fills contain construction debris and vegetation that will require special handling, mechanical and/or hand removal and exportation from the site.

The majority of these fill deposits are unsuitable for additional fill loads and will require remedial grading. However, portions of the deeper fill deposits (below 10 feet) observed and evaluated on Hole Nos. 2 and 8 are suitable in their present condition to support the proposed development, which is discussed further herein.

4.2 Previously Placed Compacted Fill (Qpf)

Previously placed compacted fill associated with the surrounding residential developments is located along the perimeter for the golf course. Testing and observation services during placement of the majority of these embankments were provided by Geocon Incorporated (see previous referenced reports in *Section 2*). In some cases, the structural fill areas were extended onto the golf course property as shown on the *Geologic Maps* and *Geologic Cross Sections*.

The previously placed compacted fill consists of mixtures of silty to clayey sands to silty to sandy clays. Boulders and a "rock fill" were encountered within Trench Nos. T-59, T-60 and T-69.

4.3 Topsoil (Unmapped)

Topsoil was encountered in several of the exploratory borings and trenches with a maximum thickness of 5 feet (Trench No. T-141). The topsoils are characterized as loose to stiff, silty/clayey sands and sandy clays with varying amounts of gravel and cobble. A relatively limited thickness of topsoil was also encountered beneath the embankments on Hole No. 2 (Boring Nos. LB-2 and LB-3) and Hole No. 8 (Boring Nos. LB-4, LB-5 and LB-6). These deposits are very stiff to medium dense and moist to very moist.

4.4 Alluvium (Qal)

Alluvial soils were encountered within the excavations and mapped based on topographic expression within the low-lying drainage areas on Hole Nos. 5 and 15. Where encountered, these deposits have a maximum thickness of 12 feet (Boring No. LB-19) and primarily consist of silty to sandy clays and silty to clayey sands with varying amounts of gravel and cobble. Alluvium was also encountered beneath the embankments on Hole No. 2 (Boring No. LB-1) and Hole No. 8 (Boring No. LB-7). These deposits are very stiff to medium dense and moist.

4.5 Colluvium (Qc)

Colluvial deposits were encountered in several of the exploratory borings and trenches with a maximum thickness of 17 feet (Trench No. T-150). These deposits, in general, consist of silty to clayey sands and silty to sandy clays.

4.6 Mission Valley Formation (Tmv)

The Eocene-age Mission Valley Formation was encountered on Hole Nos. 1, 2, 10, 11, and 16 through 18 and consists of hard claystones and siltstones, and dense sandstones. The claystones and siltstones typically possess a medium to high expansion potential and low shear strength, compared to the sandstone units that have a low expansion potential and higher shear strength properties.

Proposed cut slopes exposing the weaker claystones and siltstones are prone to surficial instability and may require stability fills. In addition, some portions of the borings encountered weathered bedrock zones, which will require deeper remedial grading in order to provide a competent surface to support proposed fills.

As observed in several of the subsurface excavations, the Mission Valley Formation often exhibits highly cemented zones which may result in excavation difficulty during grading and construction of site improvements (i.e. underground utility lines, building foundations, etc.). Although blasting is not anticipated, moderate to heavy ripping should be expected in portions of this formation to facilitate excavation. Generation of oversize materials requiring special handling and placement techniques should also be expected.

4.7 Stadium Conglomerate (Tst)

The Eocene-age Stadium Conglomerate was encountered on Hole Nos. 15 and 16, which overlies the Friars Formation and underlies the Mission Valley Formation. As encountered in exploratory borings and trenches, this deposit generally consists of a sandy to clayey, conglomerate with interbedded silty to gravelly sandstone. In addition, some of the excavations advanced through this unit encountered difficulty and refusal due to cemented layers and boulders.

4.8 Friars Formation (Tf)

The Eocene-age Friars Formation was encountered within the southern portion of Hole No 15 and underlies the Stadium Conglomerate. This formation typically consists of dense sandstones, hard claystones, and siltstones. Based on the limited extent of this unit and the location of the proposed development, excavations within the Friars Formation are not anticipated.

4.9 Granitic Rock (Kgr)

Cretaceous-age granitic rock was encountered on Hole Nos. 1, 2, 7, 8 and 13. Based upon the subsurface excavations, seismic traverses, site reconnaissance and experience with similar geologic conditions in the area, the rock materials exhibit a variable weathering pattern ranging from completely weathered, decomposed granite to outcrops of fresh, extremely strong, hard rock.

The soils derived from excavations within the decomposed granitic rock are expected to consist of very low to low expansive (Expansion Index $[EI] \le 50$), silty, medium- to coarse-grained sands. Excavations within the bedrock will generate boulders and oversize materials (rocks greater than 12 inches) that will require special handling and placement as recommended hereinafter and discussed in the *Rippability and Rock Considerations* section of this report.

5. RIPPABILITY AND ROCK CONSIDERATIONS

To aid in evaluating the rippability characteristics of the rock within the project site, subsurface exploration consisting of a rubber tire backhoe and seismic traverses were utilized. The exploratory trench logs are presented in Appendix A and Appendix C contains the seismic refraction survey report and six seismic traverses (S-1 through S-6) conducted by Southwest Geophysics.

As previously discussed, our initial study encompassed areas that are no longer contemplated for development. This situation pertains to the seismic refraction survey conducted on Hole Nos. 7 and 13, which was based on the previous development plan. It should be noted that the proposed 20-foot-high granitic rock cut slope on Hole No. 2 was added after the completion of our study, therefore, was not evaluated for rippability.

In general, the results of this study indicate that the granitic rock materials observed within the site have a variable weathering pattern ranging from completely weathered to slightly weathered rock. Rock rippability is a function of natural weathering processes that can vary vertically and horizontally over short distances depending on jointing, fracturing, and/or mineralogic discontinuities within the bedrock.

It is expected that the excavations within the granitic rock, where encountered, will experience very difficult ripping and/or blasting conditions as excavations are extended beyond the rippable weathered mantle. Excavations, undercutting and blasting techniques (if required) can be expected to generate oversized rock (rocks greater than 12-inches in dimension), which will necessitate typical hard rock handling and placement procedures during grading operations. Perspective contractors should use their own judgment to evaluate the rippability and should review the trench logs and seismic survey report presented in Appendices A and C, respectively.

Earthwork construction should be carefully planned to efficiently utilize available rock placement areas. Roadway/utility corridors and lot undercutting criteria should also be considered when calculating the volume of hard rock. Oversize materials should be placed in accordance with rock placement procedures presented in Appendix D of this report and City of San Diego.

6. EMBANKMENT EVALUATION/ COMPRESSION TESTING

The golf course fill and underlying surficial deposits encountered below 10 feet from existing grade on Hole Nos. 2 and 8 (within Boring Nos. LB-1 through LB-9) consist of moist to very moist, medium dense, clayey to gravely sands and very stiff, silty to gravelly clays. Although identified as nonstructural fill (Referenced report dated October 10, 1985), our downhole observations revealed uniform moisture and density conditions that appear to have adequate strength characteristics to support the proposed fill soils and/or structural improvements.

Based on a detailed review of our documentation, the golf course embankments on Hole Nos. 2 and 8 were placed concurrently with structural fill for the adjacent residential developments. The compaction tests taken during placement of these embankments approximately 35 years ago have an average relative compaction of 89.3 percent. It is our opinion that the nearly saturated to saturated conditions, and consolidation (primary and secondary) that has occurred within these embankments over the past 35 years has allowed for further densification of these embankments.

Table 6 compares the average relative compaction and degree of saturation of the fills tested in 1984 and 2019 on Hole Nos. 2 and 8. The comparison is based on the relative compaction test results taken during grading and the in-situ moisture and density information from drive samples collected during this study. The laboratory test results used in this comparison are presented in our referenced report dated October 10, 1985, and Table B-1 (Appendix B) and the in-situ moisture-density information is presented on the boring logs in Appendix A.

TABLE 6AVERAGE RELATIVE COMPACTION AND DEGREE OF SATURATION COMPARISONBETWEEN 1984 AND 2019 FOR HOLE NOS. 2 AND 8

Hole No.	Average Relative Compaction of Fill in 1984	Average Relative Compaction of Fill in 2019	Average Degree of Saturation of Fill in 1984	Average Degree of Saturation of Fill in 2019
2	89.3%	93.2%	71.8%	89.5%
8	89.3%	90.1%	71.5%	96.0%

Similar to the lower portion of the golf course fill and underlying surficial deposits, the colluvial deposits encountered below 5 feet of existing grade on Hole No. 5 consist of damp to moist, dense, silty sands and also appear to have adequate strength to support fill soils and/or structural loads.

A compression study was performed to evaluate the future settlement potential of the golf course fill and the underlying surficial deposits (Hole Nos. 2 and 8) and colluvium (Hole No. 5) considering the proposed grading. The purpose of the study was to determine the extent of remedial grading required in these areas and the expected compression once new embankments are placed. 32 relatively undisturbed samples obtained at various intervals within the surficial deposits on Hole Nos. 2, 5 and 8 were subjected to consolidation testing. The laboratory test results are presented as Figures B-1 through B-32 in Appendix B. The results of the analyses are summarized in *Section 10.2* below.

7. SETTLEMENT

Estimates of potential settlement are generally based on the thickness of compressible materials leftin-place and the thickness of additional fill to achieve finish grade. The lower portions of previouslyplaced golf course fill, and topsoil and alluvial deposits beneath the embankments on Hole Nos. 2 and 8 were found to have a low compression potential when subjected to increased vertical stress. Similar low compression characteristics were found within the colluvium on Hole No. 5.

Laboratory consolidation tests were performed on samples of the existing golf course fill and colluvium to aid in evaluating the magnitude of settlement that could occur from the proposed fill and building loads presently planned. Based on our test results and analysis, it is estimated that up to approximately 2-inches of total settlement could occur beneath Hole Nos. 2, 5, and 8 as a result of proposed fill and building loads. Differential settlement is expected to be approximately one-half the total fill settlement across each building.

It should be noted that the magnitude of the total settlement will not be uniform throughout the site due to the variable thickness and compressibility of the underlying golf course fill and surficial deposits. In addition, the variable thickness of proposed fill will also affect the magnitude of differential settlement.

8. GROUNDWATER/SEEPAGE

Groundwater/seepage was encountered within several of the exploratory trenches and borings performed during the field investigation. Groundwater/seepage was found as shallow as 7 feet in Trench No. T-126 and as deep as 32 feet in Boring No. LB-14. However, due to the geologic conditions and the natural and artificial water sources inherent to the property, groundwater conditions are expected to fluctuate seasonally.

9. GEOLOGIC HAZARDS

9.1 Faulting and Seismicity

Based on our recent exploratory borings and a review of published geologic maps and reports, the site is not located on any known "active," "potentially active" or "inactive" fault traces as defined by the California Geological Survey (CGS).

The Newport-Inglewood Fault and Rose Canyon Fault Zone, located approximately 13 miles west of the site, are the closest known active faults. The CGS considers a fault seismically active when evidence suggests seismic activity within roughly the last 11,000 years. The CGS has included portions of the Rose Canyon Fault zone within an Alquist-Priolo Earthquake Fault Zone. Based upon a review of available geologic data and published reports, the site is not located within a State of California Earthquake Fault Zone.

9.2 Seismicity-Deterministic Analysis

We used the computer program *EZ-FRISK* (Version 7.65) to determine the distance of known faults to the site and to estimate ground accelerations at the site for the maximum anticipated seismic event.

According to the results of the computer program *EZ-FRISK* (Version 7.65), 7 known active faults are located within a search radius of 50 miles from the property. We used acceleration attenuation relationships developed by Boore-Atkinson (2008) NGA USGS2008, Campbell-Bozorgnia (2008) NGA USGS, and Chiou-Youngs (2008) NGA in our analysis. The nearest known active faults are the Newport-Inglewood and Rose Canyon Fault Zones, located approximately 13 miles west of the site and are the dominant sources of potential ground motion. Table 9.2.1 lists the estimated maximum earthquake magnitudes and PGA's for the most dominant faults for the site location calculated for Site Class D as defined by Table 1613.3.2 of the 2016 California Building Code (CBC).

		Maximum	Peak Ground Acceleration		
Fault Name	Distance from Site (miles)	Earthquake Magnitude (Mw)	Boore- Atkinson 2008 (g)	Campbell- Bozorgnia 2008 (g)	Chiou- Youngs 2008 (g)
Newport-Inglewood	13	7.5	0.24	0.19	0.23
Rose Canyon	13	6.9	0.20	0.17	0.18
Elsinore	25	7.85	0.20	0.13	0.17
Coronado Bank	27	7.4	0.16	0.11	0.12
Palos Verdes Connected	27	7.7	0.18	0.12	0.15
Earthquake Valley	32	6.8	0.12	0.08	0.07
San Jacinto	46	7.88	0.13	0.09	0.11

TABLE 9.2.1 DETERMINISTIC SPECTRA SITE PARAMETERS

We used the computer program *EZ-FRISK* to perform a probabilistic seismic hazard analysis. The computer program *EZ-FRISK* operates under the assumption that the occurrence rate of earthquakes on each mappable Quaternary fault is proportional to the faults slip rate. The program accounts for fault rupture length as a function of earthquake magnitude, and site acceleration estimates are made using the earthquake magnitude and distance from the site to the rupture zone. The program also accounts for uncertainty in each of following: (1) earthquake magnitude, (2) rupture length for a given magnitude, (3) location of the rupture zone, (4) maximum possible magnitude of a given earthquake, and (5) acceleration at the site from a given earthquake along each fault. By calculating the expected accelerations from considered earthquake sources, the program calculates the total average annual expected number of occurrences of site acceleration greater than a specified value. We utilized acceleration-attenuation relationships suggested by Boore-Atkinson (2008) NGA USGS, Campbell-Bozorgnia (2008) NGA USGS, and Chiou-Youngs (2008) in the analysis. Table 9.2.2 presents the site-specific probabilistic seismic hazard parameters including acceleration-attenuation relationships and the probability of exceedence.

TABLE 9.2.2 PROBABILISTIC SEISMIC HAZARD PARAMETERS

	Peak Ground Acceleration				
Probability of Exceedence	Boore-Atkinson, 2007 (g)	Campbell-Bozorgnia, 2008 (g)	Chiou-Youngs, 2008 (g)		
2% in a 50 Year Period	0.45	0.37	0.42		
5% in a 50 Year Period	0.35	0.28	0.31		
10% in a 50 Year Period	0.28	0.22	0.24		

While listing peak accelerations is useful for comparison of potential effects of fault activity in a region, other considerations are important in seismic design, including the frequency and duration of motion and the soil conditions underlying the site.

9.3 Geologic Hazard Category

Based on our review of the 2008 City of San Diego Seismic Safety Study Map Sheet 44, the site is located within Geologic Hazard Categories 23, 27, 32 and 53. Category 23 (*Slide-Prone Formations*) indicates Friars: neutral or favorable geologic structure; Category 27 (*Slide-Prone Formations*) indicates: *Otay, Sweetwater, and others*; Category 32 (*Liquefaction*) indicates: *Low Potential-fluctuating groundwater minor drainages,* and Category 53 (*Other Terrain*) indicates: *Level or sloping terrain, unfavorable geologic structure, low to moderate risk.*

9.4 Liquefaction

Liquefaction typically occurs when a site is located in a zone with seismic activity, onsite soils are cohesionless, groundwater is encountered within 50 feet of the surface, and soil densities are less than about 70 percent of the maximum dry densities. If all four criteria are met, a seismic event could result in a rapid increase in pore water pressure from the earthquake-generated ground accelerations. The potential for liquefaction at the site is considered to be negligible due to the dense formational material encountered, remedial grading recommended, and lack of a shallow groundwater condition.

9.5 Landslides

No evidence of landslide deposits was encountered at the site during the geotechnical investigation.

10. CONCLUSIONS AND RECOMMENDATIONS

10.1 General

- 10.1.1 No soil or geologic conditions were encountered that, in the opinion of Geocon Incorporated, would preclude the development of the property as proposed, provided the recommendations of this report are followed.
- 10.1.2 The site is underlain by surficial deposits (golf course fill, topsoil, alluvium, colluvium) and weathered bedrock that the majority of which are unsuitable in their present condition and will require remedial grading where improvements are planned (see exception in *Section 10.1.3*). The approximate and estimated thickness and extent of surficial soils requiring remedial grading is shown on the *Geologic Maps*. In addition, removal and/or heavy benching of the outer three feet of previously placed fill embankments (Qpf) will be required where additional fill loads are proposed.
- 10.1.3 Laboratory compression testing and our downhole observations indicate that the golf course fill (Qgcf) below 10 feet from existing grade on Hole Nos. 2 and 8, and the colluvium below 5 feet of existing grade on Hole No. 5 are suitable to be left in-place beneath the proposed improvements. The current average relative compaction of material suitable to be left in place for Hole No. 2 is 93.2% and Hole No. 8 is 90.1%. A Category III foundation for structures in these areas will be required considering the potential estimated total and differential settlements.
- 10.1.4 The majority of the surficial soils within the areas of planned development are clayey and at or near a saturated moisture content. This condition will require mixing with drier material and/or drying prior to their placement as properly compacted fill. In addition, portions of the fills contain construction debris and vegetation that will require special handling, mechanical and/or hand removal and exportation from the site.
- 10.1.5 Hard granitic rock, cemented sedimentary bedrock, concretions and surface boulders were encountered within the excavations and/or observed during our site reconnaissance. These materials could create difficult ripping conditions and excavation difficulties that generate rock fragments requiring special handling and placement effort where encountered.
- 10.1.6 Cut slopes should be observed during grading by an engineering geologist to verify that the soil and geologic conditions are suitable and do not differ significantly from those anticipated. Particular attention should be given to the slopes excavated in golf course fill and Mission Valley Formation. Stability fills may be necessary if unsuitable materials are exposed in these slopes. Recommendations for stability fills are provided in Appendix D.

- 10.1.7 Evaluation of the soil types (i.e. clays, sand, etc.) and grading requirements (e.g. capping material requirements, fill slope construction, oversize material placement) will require careful management during construction. Special handling and stockpiling may be necessary to achieve the project recommendations.
- 10.1.8 Existing utilities (i.e. storm drain, water main) and the underlying soils in areas of planned development will need to be removed or evaluated to determine their sensitivity to compression related settlement that may occur if left in place.

10.2 Settlement Considerations

- 10.2.1 Fill soil, even when properly compacted, may experience settlement over the lifetime of the improvements that it supports. The ultimate settlement potential of the fill is a function of the soil classification, placement relative compaction, and subsequent increases in the soil moisture content and the geometry of the fill embankment.
- 10.2.2 Due to variable fill thickness and recommendation of leaving portions of existing golf course fill and surficial deposits in-place, a potential for settlement across the proposed buildings and underground improvements exists. Category III foundation design criteria, as discussed herein, are recommended for structures located in these areas on Hole Nos. 2, 5 and 8.
- 10.2.3 Based on our settlement calculations, buildings or improvements supported by the lower portion of golf course fill and proposed compacted fill (new and existing) on Hole Nos. 2 and 8, and structures or improvements supported on colluvium left in-place beneath Hole No. 5 may experience total settlement up to approximately 2-inches thick. Differential settlement is expected to be approximately one half of the total settlement across the building.

10.3 Excavation and Soil Characteristics

- 10.3.1 Excavation of the surficial deposits (golf course fill, previously placed compacted fill, topsoil, alluvium, colluvium) should be possible with light to moderate effort using conventional heavy-duty equipment. The majority of the surficial soils within the golf course are clayey and are at or near saturation, which will require mixing with drier material or drying prior to their placement as properly compacted fill.
- 10.3.2 Excavating within the granitic rock and to a lesser extent the Mission Valley Formation and Stadium Conglomerate, will generally vary in difficulty with the depth of excavation and depending on the degree of weathering. Moderate to heavy ripping should be expected in

portions of these units to facilitate excavation. As previously discussed, the proposed 20-foot high cut slope on Hole No. 2 was not evaluated for rippability, therefore, difficult excavation and/or possible blasting may be encountered.

- 10.3.3 Oversize materials (defined as material greater than 12 inches in nominal dimension) may be generated during grading that will require special handling and placement techniques. Oversize rock and/or cemented concretions generated from the Mission Valley Formation or Stadium Conglomerate should be placed in accordance with *Recommended Grading Specifications* (Appendix D) and the requirements of the City of San Diego. Oversize rock may require breakage to acceptable sizes or exportation from the property.
- 10.3.4 The soils encountered in the field investigation are considered to be "non-expansive" (expansion index [EI] of 20 or less) and "expansive" (expansion index [EI] of 130 or more) as defined by 2016 California Building Code (CBC) Section 1803.5.3. The soil materials collected and tested for expansion index indicate a "very low" to "very high" expansion, which are defined in Table 10.3 below.

Expansion Index (EI)	ASTM 4829 Expansion Classification	2016 CBC Expansion Classification	
0 – 20	Very Low	Non-Expansive	
21 - 50	Low		
51 - 90	Medium		
91 - 130	High	Expansive	
Greater Than 130	Very High		

 TABLE 10.3

 EXPANSION CLASSIFICATION BASED ON EXPANSION INDEX

10.4 Corrosion

10.4.1 Laboratory testing was performed on select soil samples collected from the site to evaluate the percentage of water-soluble sulfate content. The test results indicate the on-site materials at the locations tested possess a "Not Applicable" and "S0" to "Severe" and "S2" sulfate exposure to concrete structures as defined by 2016 CBC Section 1904 and ACI 318-14 Chapter 19 (see Appendix B for test results). Table 10.4 presents a summary of concrete requirements set forth by 2016 CBC Section 1904 and ACI 318. The presence of water-soluble sulfates is not a visually discernible characteristic; therefore, other soil samples from the site could yield different concentrations. Additionally, over time landscaping activities (i.e., addition of fertilizers and other soil nutrients) may affect the concentration.

Exposure Class	Water-Soluble Sulfate (SO4) Percent by Weight	Cement Type (ASTM C 150)	Maximum Water to Cement Ratio by Weight ¹	Minimum Compressive Strength (psi)
S0	SO4<0.10	No Type Restriction	n/a	2,500
S1	0.10 <u><</u> SO ₄ <0.20	II	0.50	4,000
S2	0.20 <u><</u> SO ₄ <u><</u> 2.00	V	0.45	4,500
S3	SO ₄ >2.00	V+Pozzolan or Slag	0.45	4,500

TABLE 10.4 REQUIREMENTS FOR CONCRETE EXPOSED TO SULFATE-CONTAINING SOLUTIONS

¹ Maximum water to cement ratio limits do not apply to lightweight concrete

10.4.2 Geocon Incorporated does not practice in the field of corrosion engineering; therefore, further evaluation by a corrosion engineer may be needed to incorporate the necessary precautions to avoid premature corrosion of underground pipes and buried metal in direct contact with the soils.

10.5 Slope Stability

- 10.5.1 Slope stability analyses for the proposed cut and fill slopes were performed utilizing average drained direct shear strength parameters from the laboratory test results. These analyses indicate that the proposed 2:1 cut and fill slopes, constructed of on-site materials, should have calculated factors of safety of at least 1.5 under static conditions for both deep-seated failure and shallow sloughing conditions to heights of at least 40 feet, respectively. Generalized slope stability calculations for both deep-seated and surficial slope stability are presented on Figures 14 through 16.
- 10.5.2 Cut slopes in rock materials do not lend themselves to conventional slope stability analyses. Based on experience with similar rock conditions, 2:1 cut slopes to the planned heights should possess a factor of safety of at least 1.5 with respect to slope instability, if free of adversely oriented joints or fractures.
- 10.5.3 Although rare, the most common mode of instability for rock slopes are shallow wedge failures from intersecting fault planes or clay filled joints/fractures dipping out of slope. In this regard, the structural measurements obtained during our studies did not reveal such conditions. It is recommended, however, that all slope excavations proposed on the site be observed during grading by an engineering geologist to confirm that geologic conditions are observed, stabilization recommendations can be provided.

- 10.5.4 Fill slopes should be compacted by backrolling with a loaded sheepsfoot roller at vertical intervals not to exceed 4 feet and should be track-walked at the completion of each slope such that the fill soils are uniformly compacted to at least 90 percent relative compaction to the face of the finished sloped. Alternatively, the fill slope may be over-built at least 3 feet and cut back to yield a properly compacted slope face.
- 10.5.5 Where fill slopes and fill-over-cut slopes are planned, a 15-foot-wide, 2-foot-deep, undrained keyway should be constructed prior to placing compacted fill. The keyway should be constructed with a minimum 5 percent inclination away from the toe of slope.
- 10.5.6 All slopes should be landscaped with drought-tolerant vegetation, having variable root depths and requiring minimal landscape irrigation. In addition, all slopes should be drained and properly maintained to reduce erosion.

10.6 Canyon Subdrains

10.6.1 The construction of canyon subdrains will not be required based on the proposed development plans. However, the <u>existing</u> canyon subdrains located on Hole Nos. 2 and 8 will need to be protected in place, if encountered during remedial grading. The precise location and depth of these drains presented on the *Geologic Maps* and *Geologic Cross Sections* were not surveyed during the previous grading operations and should be considered approximate.

10.7 Grading

- 10.7.1 All grading should be performed in accordance with the attached *Recommended Grading Specifications* (Appendix D). Where the recommendations of this section conflict with Appendix D, the recommendations of this section take precedence. All earthwork should be observed, and all fills tested for proper compaction by Geocon Incorporated.
- 10.7.2 Prior to commencing grading, a preconstruction conference should be held at the site with the owner or developer, grading contractor, civil engineer, and geotechnical engineer in attendance. Special soil handling and/or the grading plans can be discussed at that time.
- 10.7.3 Site preparation should begin with the removal of all deleterious material and vegetation. The depth of removal should be such that material exposed in cut areas or soils to be used as fill are relatively free of organic matter. Material generated during stripping and/or site demolition should be exported from the site.

- 10.7.4 All potentially compressible surficial soils (golf course fill, topsoil, alluvium and colluvium), and weathered bedrock deposits within areas where structural improvements are planned, or where discussed herein, should be removed to firm natural ground and properly compacted prior to placing additional fill and/or structural loads (see exception in *Section 9.7.5*). Deeper than normal benching and/or stripping operations for sloping ground surfaces will be required where the thickness of potentially compressible surficial deposits exceeds 3 feet. The actual extent of unsuitable soil removals will be determined in the field during grading by the geotechnical engineer and/or engineering geologist. The anticipated "disturbance limits" are shown in green on the *Geologic Maps*.
- 10.7.5 The golf course fill below 10 feet from <u>existing grade</u> on Hole Nos. 2 and 8, and colluvial deposits below 5 feet from existing grade on Hole No. 5 are suitable to be left in-place beneath the proposed improvements based on our observations and laboratory testing analysis. In addition, where golf course fill is exposed at or within 5 feet of finish grade, (after the upper 10 feet has been removed), additional removals will be necessary to achieve a minimum 5-foot compacted fill mat beneath <u>proposed finish grade</u>.
- 10.7.6 The excavations during remedial grading of the golf course fill along the southwestern portion of Hole No. 1 and western portion of Hole No. 2 should extend from the property line down at a 2:1 (horizontal:vertical) projection due to the proximity of existing improvements as shown on the *Geologic Maps*. All other remedial excavations should extend at a 1:1 projection. The anticipated "disturbance limits" are shown in green on the *Geologic Map*. Structural setbacks or modified recommendations may be required if remedial grading cannot extend laterally as recommended.
- 10.7.7 After removal of unsuitable materials is performed, the site should then be brought to final subgrade elevations with structural fill compacted in layers. In general, soils native to the site are suitable for re-use as fill if free from vegetation, debris and other deleterious material. Layers of fill should be no thicker than will allow for adequate bonding and compaction. All fill, including backfill and scarified ground surfaces, should be compacted to at least 90 percent of maximum dry density at or above optimum moisture content, as determined in accordance with ASTM Test Procedure D1557. Fill materials below optimum moisture content will require additional moisture conditioning prior to placing additional fill.
- 10.7.8 Grading operations should be managed to allow for placement of oversize material, if generated, and expansive soils in the deeper fill areas and to cap the upper 5 feet of sheet graded pads (3 feet of ultimate pad grade) with granular materials having a "very low" to "low" expansive potential, if available.

- 10.7.9 Cobbles, rock fragments, and concretions greater than 6 inches in maximum dimension should not be placed within 5 feet of finish grade in sheet graded pad areas (3 feet of ultimate pad grade) or street subgrade. Rock greater than 12 inches in maximum dimension should not be placed within 10 feet of finish pad grade or within 2 feet of the deepest utility.
- 10.7.10 To reduce the potential for differential settlement, it is recommended that the cut portion of cut/fill transition building pads be undercut at least 5 feet and replaced with properly compacted "very low" to "low" expansive fill soils. Where the thickness of the fill below the building pad exceeds 15 feet, the depth of the undercut should be increased to one-fifth of the maximum fill thickness.
- 10.7.11 Cut pads exposing rock or cemented portions of the Mission Valley Formation or Stadium Conglomerate should be undercut at least 5 feet and replaced with properly compacted "very low" to "low" expansive soil. The base of the undercuts should be sloped towards the front of the lots.
- 10.7.12 Undercutting of street areas should be considered to facilitate the excavation of underground utilities where the streets are located in cut areas composed of marginally to non-rippable hard rock or cemented zones within the Mission Valley Formation or Stadium Conglomerate. If subsurface improvements or landscape zones are planned outside these areas, consideration should be given to undercutting these areas as well. This can be evaluated during the grading operations.
- 10.7.13 It is the responsibility of the <u>contractor</u> and their <u>competent person</u> to ensure that all excavations, temporary slopes and trenches are properly constructed and maintained in accordance with applicable OSHA regulations in order to maintain safety and the stability of adjacent existing improvements.
- 10.7.14 Import materials should consist of "very low" to "low" expansive (Expansion Index of 50 or less) soils. Prior to importing the material, samples from proposed borrow areas should be obtained and subjected to laboratory testing to determine whether the material conforms to the recommended criteria. At least 5 working days should be allowed for laboratory testing of the soil prior to its importation. Import materials should be free of oversize rock and construction debris.

10.8 Seismic Design Criteria

10.8.1 We used the Structural Engineers Association of California (SEAOC) and Office of Statewide Health Planning and Development (OSHPD) web application *Seismic Design*

Maps (<u>https://seismicmaps.org/</u>). Table 10.8.1 summarizes site-specific design criteria obtained from the 2016 California Building Code (CBC; Based on the 2015 International Building Code [IBC] and ASCE 7-10), Chapter 16 Structural Design, Section 1613 Earthquake Loads. The short spectral response uses a period of 0.2 second. The building structure and improvements should be designed using a Site Class D. We evaluated the Site Class based on the discussion in Section 1613.3.2 of the 2016 CBC and Table 20.3-1 of ASCE 7-10. The values presented in Table 10.8.1 are for the risk-targeted maximum considered earthquake (MCE_R).

Parameter	Value	2016 CBC Reference
Site Class	D	Section 1613.3.2
MCE _R Ground Motion Spectral Response Acceleration – Class B (short), S _S	0.916g	Figure 1613.3.1(1)
MCE_R Ground Motion Spectral Response Acceleration – Class B (1 sec), S ₁	0.358g	Figure 1613.3.1(2)
Site Coefficient, F _A	1.134	Table 1613.3.3(1)
Site Coefficient, F_V	1.685	Table 1613.3.3(2)
Site Class Modified MCE _R Spectral Response Acceleration (short), S _{MS}	1.038g	Section 1613.3.3 (Eqn 16-37)
Site Class Modified MCE _R Spectral Response Acceleration (1 sec), S_{M1}	0.602g	Section 1613.3.3 (Eqn 16-38)
5% Damped Design Spectral Response Acceleration (short), S _{DS}	0.692g	Section 1613.3.4 (Eqn 16-39)
5% Damped Design Spectral Response Acceleration (1 sec), S _{D1}	0.402g	Section 1613.3.4 (Eqn 16-40)

TABLE 10.8.1 2016 CBC SEISMIC DESIGN PARAMETERS

10.8.2 Table 10.8.2 presents additional seismic design parameters for projects located in Seismic Design Categories of D through F in accordance with ASCE 7-10 for the mapped maximum considered geometric mean (MCE_G).

TABLE 10.	.8.2	
2016 CBC SITE ACCELERA	TION PARAM	IETERS
		(

Parameter	Value	ASCE 7-10 Reference
Mapped MCE _G Peak Ground Acceleration, PGA	0.342g	Figure 22-7
Site Coefficient, FPGA	1.158	Table 11.8-1
Site Class Modified MCE_G Peak Ground Acceleration, PGA_M	0.396g	Section 11.8.3 (Eqn 11.8-1)

10.8.3 Conformance to the criteria in Tables 10.8.1 and 10.8.2 for seismic design does not constitute any kind of guarantee or assurance that significant structural damage or ground failure will not occur if a large earthquake occurs. The primary goal of seismic design is to protect life, not to avoid all damage, since such design may be economically prohibitive.

10.9 Foundation and Concrete Slabs-On-Grade Recommendations

10.9.1 The following foundation recommendations are for proposed one- to three-story residential structures. The foundation recommendations have been separated into three categories based on either the maximum and differential fill thickness or Expansion Index. The foundation category criteria are presented in Table 10.9.1.

Foundation Category	Maximum Fill Thickness, T (feet)	Differential Fill Thickness, D (feet)	Expansion Index (EI)
Ι	T<20		EI <u><</u> 50
II	20 <u><</u> T<50	10 <u><</u> D<20	50 <ei<u><90</ei<u>
III	T <u>></u> 50	D <u>></u> 20	90 <ei<u><130</ei<u>

TABLE 10.9.1 FOUNDATION CATEGORY CRITERIA

- 10.9.2 Final foundation categories for each building or lot will be provided after finish pad grades have been achieved and laboratory testing of the subgrade soil has been completed. However, Category III foundations considering a total settlement of approximately 2-inches are recommended for any structures supported on buildings pads underlain with golf course fill (Holes 2 and 8) or colluvial materials (Hole 5).
- 10.9.3 Table 10.9.2 presents minimum foundation and interior concrete slab design criteria for conventional foundation systems.

Foundation Category	Minimum Footing Embedment Depth (inches)	Continuous Footing Reinforcement	Interior Slab Reinforcement
Ι	12	Two No. 4 bars, one top and one bottom	6 x 6 - 10/10 welded wire mesh at slab mid-point
Π	18	Four No. 4 bars, two top and two bottom	No. 3 bars at 24 inches on center, both directions
III	24	Four No. 5 bars, two top and two bottom	No. 3 bars at 18 inches on center, both directions

TABLE 10.9.2 CONVENTIONAL FOUNDATION RECOMMENDATIONS BY CATEGORY

- 10.9.4 The embedment depths presented in Table 10.9.2 should be measured from the lowest adjacent pad grade for both interior and exterior footings. The conventional foundations should have a minimum width of 12 inches and 24 inches for continuous and isolated footings, respectively. A typical wall/column footing detail is presented on Figure 17.
- 10.9.5 The concrete slabs-on-grade should be a minimum of 4 inches thick for Foundation Categories I and II and 5 inches thick for Foundation Category III. The concrete slabs-on-grade should be underlain by 4 inches and 3 inches of clean sand for 4-inch thick and 5-inch-thick slabs, respectively. Slabs expected to receive moisture sensitive floor coverings or used to store moisture sensitive materials should be underlain by a vapor inhibitor covered with at least 2 inches of clean sand or crushed rock. If crushed rock will be used, the thickness of the vapor inhibitor should be at least 10 mil to prevent possible puncturing.
- 10.9.6 As a substitute, the layer of clean sand (or crushed rock) beneath the vapor inhibitor recommended in the previous section can be omitted if a vapor inhibitor that meets or exceeds the requirements of ASTM E 1745-97 (Class A), and that exhibits permeance not greater than 0.012 perm (measured in accordance with ASTM E 96-95) is used. This vapor inhibitor may be placed directly on properly compacted fill or formational materials. The vapor inhibitor should be installed in general conformance with ASTM E 1643-98 and the manufacturer's recommendations. Two inches of clean sand should then be placed on top of the vapor inhibitor to reduce the potential for differential curing, slab curl, and cracking. Floor coverings should be installed in accordance with the manufacturer's recommendations.
- 10.9.7 As an alternative to the conventional foundation recommendations, consideration should be given to the use of post-tensioned concrete slab and foundation systems for the support of the proposed structures. The post-tensioned systems should be designed by a structural

engineer experienced in post-tensioned slab design and design criteria of the Post-Tensioning Institute (PTI) DC 10.5-12 *Standard Requirements for Design and Analysis of Shallow Post-Tensioned Concrete Foundations on Expansive Soils* or *WRI/CRSI Design of Slab-on-Ground Foundations*, as required by the 2016 California Building Code (CBC Section 1808.6.2). Although this procedure was developed for expansive soil conditions, it can also be used to reduce the potential for foundation distress due to differential fill settlement. The post-tensioned design should incorporate the geotechnical parameters presented in Table 10.9.3 for the particular Foundation Category designated. The parameters presented in Table 10.9.3 are based on the guidelines presented in the PTI DC 10.5 design manual.

Post-Tensioning Institute (PTI),	Foundation Category		
Third Edition Design Parameters	Ι	II	III
Thornthwaite Index	-20	-20	-20
Equilibrium Suction	3.9	3.9	3.9
Edge Lift Moisture Variation Distance, e_M (feet)	5.3	5.1	4.9
Edge Lift, y _M (inches)	0.61	1.10	1.58
Center Lift Moisture Variation Distance, e_M (feet)	9.0	9.0	9.0
Center Lift, y _M (inches)	0.30	0.47	0.66

TABLE 10.9.3POST-TENSIONED FOUNDATION SYSTEM DESIGN PARAMETERS

- 10.9.8 Foundation systems for the lots that possess a foundation Category I and a "very low" expansion potential (expansion index of 20 or less) can be designed using the method described in Section 1808 of the 2016 CBC. If post-tensioned foundations are planned, an alternative, commonly accepted design method (other than PTI DC 10.5) can be used. However, the post-tensioned foundation system should be designed with a total and differential deflection of 1 inch. Geocon Incorporated should be contacted to review the plans and provide additional information, if necessary.
- 10.9.9 The foundations for the post-tensioned slabs should be embedded in accordance with the recommendations of the structural engineer. If a post-tensioned mat foundation system is planned, the slab should possess a thickened edge with a minimum width of 12 inches and extend below the clean sand or crushed rock layer.

- 10.9.10 If the structural engineer proposes a post-tensioned foundation design method other than PTI, Third Edition:
 - The deflection criteria presented in Table 10.9.3 are still applicable.
 - Interior stiffener beams should be used for Foundation Categories II and III.
 - The width of the perimeter foundations should be at least 12 inches.
 - The perimeter footing embedment depths should be at least 12 inches, 18 inches and 24 inches for foundation categories I, II, and III, respectively. The embedment depths should be measured from the lowest adjacent pad grade.
- 10.9.11 Our experience indicates post-tensioned slabs are susceptible to excessive edge lift, regardless of the underlying soil conditions. Placing reinforcing steel at the bottom of the perimeter footings and the interior stiffener beams may mitigate this potential. Current PTI design procedures primarily address the potential center lift of slabs but, because of the placement of the reinforcing tendons in the top of the slab, the resulting eccentricity after tensioning reduces the ability of the system to mitigate edge lift. The structural engineer should design the foundation system to reduce the potential of edge lift occurring for the proposed structures.
- 10.9.12 During the construction of the post-tension foundation system, the concrete should be placed monolithically. Under no circumstances should cold joints be allowed to form between the footings/grade beams and the slab during the construction of the post-tension foundation system.
- 10.9.13 Category I, II, or III foundations may be designed for an allowable soil bearing pressure of 2,000 pounds per square foot (psf) (dead plus live load). This bearing pressure may be increased by one-third for transient loads due to wind or seismic forces.
- 10.9.14 Isolated footings, if present, should have the minimum embedment depth and width recommended for conventional foundations for a particular foundation category. The use of isolated footings, which are located beyond the perimeter of the building and support structural elements connected to the building, are not recommended for Category III. Where this condition cannot be avoided, the isolated footings should be connected to the building foundation system with grade beams.
- 10.9.15 For Foundation Category III, consideration should be given to using interior stiffening beams and connecting isolated footings and/or increasing the slab thickness. In addition, consideration should be given to connecting patio slabs, which exceed 5 feet in width, to the building foundation to reduce the potential for future separation to occur.

- 10.9.16 Special subgrade presaturation is not deemed necessary prior to placing concrete; however, the exposed foundation and slab subgrade soil should be moisture conditioned, as necessary, to maintain a moist condition as would be expected in any such concrete placement.
- 10.9.17 Where buildings or other improvements are planned near the top of a slope steeper than 3:1 (horizontal:vertical), special foundations and/or design considerations are recommended due to the tendency for lateral soil movement to occur.
 - For fill slopes less than 20 feet high, building footings should be deepened such that the bottom outside edge of the footing is at least 7 feet horizontally from the face of the slope.
 - When located next to a descending 3:1 (horizontal:vertical) fill slope or steeper, the foundations should be extended to a depth where the minimum horizontal distance is equal to H/3 (where H equals the vertical distance from the top of the fill slope to the base of the fill soil) with a minimum of 7 feet but need not exceed 40 feet. The horizontal distance is measured from the outer, deepest edge of the footing to the face of the slope. An acceptable alternative to deepening the footings would be the use of a post-tensioned slab and foundation system or increased footing and slab reinforcement. Specific design parameters or recommendations for either of these alternatives can be provided once the building location and fill slope geometry have been determined.
 - If swimming pools are planned, Geocon Incorporated should be contacted for a review of specific site conditions.
 - Swimming pools located within 7 feet of the top of cut or fill slopes are not recommended. Where such a condition cannot be avoided, the portion of the swimming pool wall within 7 feet of the slope face be designed assuming that the adjacent soil provides no lateral support. This recommendation applies to fill slopes up to 30 feet in height, and cut slopes regardless of height. For swimming pools located near the top of fill slopes greater than 30 feet in height, additional recommendations may be required and Geocon Incorporated should be contacted for a review of specific site conditions.
 - Although other improvements, which are relatively rigid or brittle, such as concrete flatwork or masonry walls, may experience some distress if located near the top of a slope, it is generally not economical to mitigate this potential. It may be possible, however, to incorporate design measures which would permit some lateral soil movement without causing extensive distress. Geocon Incorporated should be consulted for specific recommendations.
- 10.9.18 The recommendations of this report are intended to reduce the potential for cracking of slabs due to expansive soil (if present), differential settlement of existing soil or soil with varying thicknesses. However, even with the incorporation of the recommendations presented herein, foundations, stucco walls, and slabs-on-grade placed on such conditions may still

exhibit some cracking due to soil movement and/or shrinkage. The occurrence of concrete shrinkage cracks is independent of the supporting soil characteristics. Their occurrence may be reduced and/or controlled by limiting the slump of the concrete, proper concrete placement and curing, and by the placement of crack control joints at periodic intervals, in particular, where re-entrant slab corners occur.

10.9.19 Geocon Incorporated should be consulted to provide additional design parameters as required by the structural engineer.

10.10 Retaining Walls and Lateral Loads Recommendations

- 10.10.1 Retaining walls not restrained at the top and having a level backfill surface should be designed for an active soil pressure equivalent to the pressure exerted by a fluid with a density of 35 pounds per cubic foot (pcf). Where the backfill will be inclined at 2:1 (horizontal:vertical), an active soil pressure of 50 pcf is recommended. These soil pressures assume that the backfill materials within an area bounded by the wall and a 1:1 plane extending upward from the base of the wall possess an Expansion Index \leq 50. Geocon Incorporated should be consulted for additional recommendations if backfill materials have an EI >50.
- 10.10.2 Retaining walls shall be designed to ensure stability against overturning sliding, excessive foundation pressure and water uplift. Where a keyway is extended below the wall base with the intent to engage passive pressure and enhance sliding stability, it is not necessary to consider active pressure on the keyway.
- 10.10.3 Where walls are restrained from movement at the top, an additional uniform pressure of 8H psf (where H equals the height of the retaining wall portion of the wall in feet) should be added to the active soil pressure where the wall possesses a height of 8 feet or less and 12H where the wall is greater than 8 feet. For retaining walls subject to vehicular loads within a horizontal distance equal to two-thirds the wall height, a surcharge equivalent to two feet of fill soil should be added (total unit weight of soil should be taken as 130 pcf).
- 10.10.4 Soil contemplated for use as retaining wall backfill, including import materials, should be identified in the field prior to backfill. At that time Geocon Incorporated should obtain samples for laboratory testing to evaluate its suitability. Modified lateral earth pressures may be necessary if the backfill soil does not meet the required expansion index or shear strength. City or regional standard wall designs, if used, are based on a specific active lateral earth pressure and/or soil friction angle. In this regard, on-site soil to be used as backfill may or may not meet the values for standard wall designs. Geocon Incorporated should be

consulted to assess the suitability of the on-site soil for use as wall backfill if standard wall designs will be used.

- 10.10.5 Unrestrained walls will move laterally when backfilled and loading is applied. The amount of lateral deflection is dependent on the wall height, the type of soil used for backfill, and loads acting on the wall. The wall designer should provide appropriate lateral deflection quantities for planned retaining walls structures, if applicable. These lateral values should be considered when planning types of improvements above retaining wall structures.
- 10.10.6 Retaining walls should be provided with a drainage system adequate to prevent the buildup of hydrostatic forces and should be waterproofed as required by the project architect. The use of drainage openings through the base of the wall (weep holes) is not recommended where the seepage could be a nuisance or otherwise adversely affect the property adjacent to the base of the wall. The above recommendations assume a properly compacted granular (EI ≤50) free-draining backfill material with no hydrostatic forces or imposed surcharge load. A typical retaining wall drainage detail is presented on Figure 18. If conditions different than those described are expected, or if specific drainage details are desired, Geocon Incorporated should be contacted for additional recommendations.
- 10.10.7 In general, wall foundations having a minimum depth and width of one foot may be designed for an allowable soil bearing pressure of 2,000 psf, provided the soil within three feet below the base of the wall has an Expansion Index \leq 90. The recommended allowable soil bearing pressure may be increased by 300 psf and 500 psf for each additional foot of foundation width and depth, respectively, up to a maximum allowable soil bearing pressure of 4,000 psf.
- 10.10.8 The proximity of the foundation to the top of a slope steeper than 3:1 could impact the allowable soil bearing pressure. Therefore, Geocon Incorporated should be consulted where such a condition is anticipated. As a minimum, wall footings should be deepened such that the bottom outside edge of the footing is at least seven feet from the face of slope when located adjacent and/or at the top of descending slopes.
- 10.10.9 The structural engineer should determine the Seismic Design Category for the project in accordance with Section 1613.3.5 of the 2016 CBC or Section 11.6 of ASCE 7-10. For structures assigned to Seismic Design Category of D, E, or F, retaining walls that support more than 6 feet of backfill should be designed with seismic lateral pressure in accordance with Section 1803.5.12 of the 2016 CBC. The seismic load is dependent on the retained height where H is the height of the wall, in feet, and the calculated loads result in pounds per square foot (psf) exerted at the base of the wall and zero at the top of the wall. A seismic

load of 20H should be used for design. We used the peak ground acceleration adjusted for Site Class effects, PGA_M , of 0.396g calculated from ASCE 7-10 Section 11.8.3 and applied a pseudo-static coefficient of 0.33.

- 10.10.10 For resistance to lateral loads, a passive earth pressure equivalent to a fluid density of 300 pcf is recommended for footings or shear keys poured neat against properly compacted granular fill soils or undisturbed formational materials. The passive pressure assumes a horizontal surface extending away from the base of the wall at least five feet or three times the surface generating the passive pressure, whichever is greater. The upper 12 inches of material not protected by floor slabs or pavement should not be included in the design for lateral resistance.
- 10.10.11 An ultimate friction coefficient of 0.35 may be used for resistance to sliding between soil and concrete. This friction coefficient may be combined with the passive earth pressure when determining resistance to lateral loads.
- 10.10.12 The recommendations presented above are generally applicable to the design of rigid concrete or masonry retaining walls having a maximum height of 12 feet. In the event that walls higher than 12 feet are planned, Geocon Incorporated should be consulted for additional recommendations.

10.11 Slope Maintenance

Slopes that are steeper than 3:1 (horizontal:vertical) may, under conditions that are both 10.11.1 difficult to prevent and predict, be susceptible to near-surface (surficial) slope instability. The instability is typically limited to the outer 3 feet of a portion of the slope and usually does not directly impact the improvements on the pad areas above or below the slope. The occurrence of surficial instability is more prevalent on fill slopes and is generally preceded by a period of heavy rainfall, excessive irrigation, or the migration of subsurface seepage. The disturbance and/or loosening of the surficial soils, as might result from root growth, soil expansion, or excavation for irrigation lines and slope planting, may also be a significant contributing factor to surficial instability. It is, therefore, recommended that, to the maximum extent practical: (a) disturbed/loosened surficial soils be either removed or properly recompacted, (b) irrigation systems be periodically inspected and maintained to eliminate leaks and excessive irrigation, and (c) surface drains on and adjacent to slopes be periodically maintained to preclude ponding or erosion. It should be noted that although the incorporation of the above recommendations should reduce the potential for surficial slope instability, it will not eliminate the possibility, and, therefore, it may be necessary to rebuild or repair a portion of the project's slopes in the future.

10.12 Storm Water Management

- 10.12.1 If low-impact development (LID) integrated management practices (IMP's) are being considered, Geocon should review the design and provide specific geotechnical recommendations to reduce the potential adverse impacts to both on and off-site properties.
- 10.12.2 If not property constructed, there is a potential for distress to improvements and properties located hydrologically down gradient or adjacent to these devices. Factors such as the amount of water to be detained, its residence time, and soil permeability have an important effect on seepage transmission and the potential adverse impacts that may occur if the storm water management features are not properly designed and constructed. Based on our experience with similar soil conditions, infiltration IMP's are considered infeasible due to the poor percolation characteristics of the bedrock. Down-gradient and adjacent properties/improvements may be subjected to seeps, springs, slope instability, raised groundwater, movement of foundations and slabs, or other impacts as a result of water infiltration.
- 10.12.3 Due to the site geologic conditions, a heavy duty, non-permeable liner is recommended beneath any hydro-modification areas or IMP's where water infiltration into the surficial soil is planned. If permeable pavers are planned, the design should include a subdrain to prevent subgrade saturation and pavement distress. The strength and thickness of the membrane, and construction method should be adequate to assure that the liner will not be compromised throughout the life of the system. In addition, civil engineering provisions should be implemented to assure that the capacity of the system is never exceeded resulting in over topping or malfunctioning of the device. The system should also include a long-term maintenance program or periodic cleaning to prevent clogging of the filter media or drain envelope.

10.13 Site Drainage and Moisture Protection

10.13.1 Adequate site drainage is critical to reduce the potential for differential soil movement, erosion and subsurface seepage. Under no circumstances should water be allowed to pond adjacent to footings. The site should be graded and maintained such that surface drainage is directed away from structures in accordance with 2016 CBC 1804.4 or other applicable standards. In addition, surface drainage should be directed away from the top of slopes into swales or other controlled drainage devices. Roof and pavement drainage should be directed into conduits that carry runoff away from the proposed structure.

10.13.2 Underground utilities should be leak free. Utility and irrigation lines should be checked periodically for leaks, and detected leaks should be repaired promptly. Detrimental soil movement could occur if water is allowed to infiltrate the soil for prolonged periods of time.

10.14 Grading and Foundation Plan Review

10.14.1 Geocon Incorporated should review the grading plans and foundation plans for the project prior to final design submittal to evaluate whether additional analyses and/or recommendations are required.

LIMITATIONS AND UNIFORMITY OF CONDITIONS

- 1. The firm that performed the geotechnical investigation for the project should be retained to provide testing and observation services during construction to provide continuity of geotechnical interpretation and to check that the recommendations presented for geotechnical aspects of site development are incorporated during site grading, construction of improvements, and excavation of foundations. If another geotechnical firm is selected to perform the testing and observation services during construction operations, that firm should prepare a letter indicating their intent to assume the responsibilities of project geotechnical engineer of record. A copy of the letter should be provided to the regulatory agency for their records. In addition, that firm should provide revised recommendations concerning the geotechnical aspects of the proposed development, or a written acknowledgement of their concurrence with the recommendations presented in our report. They should also perform additional analyses deemed necessary to assume the role of Geotechnical Engineer of Record.
- 2. The recommendations of this report pertain only to the site investigated and are based upon the assumption that the soil conditions do not deviate from those disclosed in the investigation. If any variations or undesirable conditions are encountered during construction, or if the proposed construction will differ from that anticipated herein, Geocon Incorporated should be notified so that supplemental recommendations can be given. The evaluation or identification of the potential presence of hazardous or corrosive materials was not part of the scope of services provided by Geocon Incorporated.
- 3. This report is issued with the understanding that it is the responsibility of the owner, or of his representative, to ensure that the information and recommendations contained herein are brought to the attention of the architect and engineer for the project and incorporated into the plans, and that the necessary steps are taken to see that the contractor and subcontractors carry out such recommendations in the field.
- 4. The findings of this report are valid as of the present date. However, changes in the conditions of a property can occur with the passage of time, whether they are due to natural processes or the works of man on this or adjacent properties. In addition, changes in applicable or appropriate standards may occur, whether they result from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated wholly or partially by changes outside our control. Therefore, this report is subject to review and should not be relied upon after a period of three years.
| THE GEOGRAPHICAL INFO | | | PPOC | <image/> | | | |
|---|--|-------------------------------|------|---------------------------|--|---------|--------|
| | | VICINII | Γ\ | Y MAP | | | |
| | | 20 | | | | | |
| GEOTECHNIC/
6960 FLANDERS I
PHONE 858 558-0 | AL ENVIRONMENTAL
DRIVE - SAN DIEGO, CALIFORI
6900 - FAX 858 558-6159 | MATERIALS
NIA 92121 - 2974 | | CARMEL /
G(
SAN DIE | MOUNTAIN RA
OLF COURSE
EGO, CALIFORI | | |
| TR / RA | | DSK/GTYPD | | DATE 10 - 25 - 2019 | PROJECT NO. 03071 - 32 | 2 - 45A | FIG. 1 |

Plotted:11/12/2019 6:52AM | By:RUBEN AGUILAR | File Location:Y:\PROJECTS\03071-32-45A Carmel Mnt Ranch Golf Course\DETAILS\03071-32-45A VicinityMap.dwg























1	ALLUVIUM
C	COLLUVIUM
ıv	MISSION VALLEY FORMATION
t	STADIUM CONGLOMERATE
r	GRANITIC ROCK
1	APPROX. LOCATION OF LARGE DIAMETER BORING
1	APPROX. LOCATION OF EXPLORATORY TRENCH
/	APPROX. LOCATION OF GEOLOGIC CONTACT (Queried Where Uncertain)
SM	SILTY SANDSTONE
sc	CLAYEY SANDSTONE
CL	CLAYSTONE
СН	HIGHLY PLASTIC CLAYSTONE
ML	SILTSTONE
ЗM	SANDY CONGLOMERATE
3	GROUNDWATER/SEEPAGE
18	GOLF COURSE HOLE NO.
ĩ	DISTURBANCE LIMITS
PL	PROPERTY LINE
SI	C CROSS - SECTIONS
AR	MFL MOUNTAIN RANCH
	COLE COLIBRE

GEOCON IN CORPORATED GEOTECHINCAL BENVIER OFFORTANDES DEVE-SANDE









GEOCON LEGEND





ASSUMED CONDITIONS :

SLOPE HEIGHT	H = 40 feet
SLOPE INCLINATION	2 : 1 (Horizontal : Vertical)
TOTAL UNIT WEIGHT OF SOIL	γ_t = 125 pounds per cubic foot
ANGLE OF INTERNAL FRICTION	Φ = 29 degrees
APPARENT COHESION	C = 300 pounds per square foot
NO SEEPAGE FORCES	

ANALYSIS :

λcφ	=	$\frac{\gamma_{t} H \tan \phi}{C}$	EQUATION (3-3), REFERENCE 1
FS	=	$\frac{\text{NefC}}{\gamma_t^{\text{H}}}$	EQUATION (3-2), REFERENCE 1
λcφ	=	9.2	CALCULATED USING EQ. (3-3)
Ncf	=	29	DETERMINED USING FIGURE 10, REFERENCE 2
FS	=	1.7	FACTOR OF SAFETY CALCULATED USING EQ. (3-2)

REFERENCES :

GEOTECHNICAL ENVIRONMENTAL MATERIALS

6960 FLANDERS DRIVE - SAN DIEGO, CALIFORNIA 92121 - 2974

- Janbu, N., Stability Analysis of Slopes with Dimensionless Parameters, Harvard Soil Mechanics, Series No. 46, 1954
- Janbu, N., Discussion of J.M. Bell, Dimensionless Parameters for Homogeneous Earth Slopes, Journal of Soil Mechanics and Foundation Design, No. SM6, November 1967.

SLOPE STABILITY ANALYSIS - FILL SLOPES

GEOCON
INCORPORATED

PHONE 858 558-6900 - FAX 858 558-6159



CARMEL MOUNTAIN RANCH GOLF COURSE SAN DIEGO, CALIFORNIA

TR / RA	
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DSK/GTYPD

DATE 10 - 25 - 2019 P

PROJECT NO. 03071 - 32 - 45A FIG. 14

Plotted:11/12/2019 7:09AM | By:RUBEN AGUILAR | File Location:Y:\PROJECTS\03071-32-45A Carmel Mnt Ranch Golf Course\DETAILS\Slope Stability Analyses-Fill (SSAF).dwg

ASSUMED CONDITIONS :

SLOPE HEIGHT	H = Infinite
DEPTH OF SATURATION	Z = 3 feet
SLOPE INCLINATION	2 : 1 (Horizontal : Vertical)
SLOPE ANGLE	$\dot{1}$ = 26.6 degrees
UNIT WEIGHT OF WATER	$\gamma_{\scriptscriptstyle \! W}$ = 62.4 pounds per cubic foot
TOTAL UNIT WEIGHT OF SOIL	$oldsymbol{\gamma}_t$ = 125 pounds per cubic foot
ANGLE OF INTERNAL FRICTION	ϕ = 29 degrees
APPARENT COHESION	C = 300 pounds per square foot

SLOPE SATURATED TO VERTICAL DEPTH Z BELOW SLOPE FACE SEEPAGE FORCES PARALLEL TO SLOPE FACE

ANALYSIS :

FS =
$$\frac{C + (\gamma_t - \gamma_w) Z \cos^2 i \tan \phi}{\gamma_t Z \sin i \cos i} = 2.5$$

REFERENCES :

1......Haefeli, R. *The Stability of Slopes Acted Upon by Parallel Seepage*, Proc. Second International Conference, SMFE, Rotterdam, 1948, 1, 57-62

2.....Skempton, A. W., and F.A. Delory, *Stability of Natural Slopes in London Clay*, Proc. Fourth International Conference, SMFE, London, 1957, 2, 378-81

SURFICIAL SLOPE STABILITY ANALYSIS

GEOCON INCORPORATED GEOTECHNICAL ENVIRONMENTAL 6960 FLANDERS DRIVE - SAN DIEGO, CALIFOF PHONE 858 558-6900 - FAX 858 558-6159	MATERIALS NIA 92121 - 2974		CARMEL G SAN DI	MOUNTAIN RANCH OLF COURSE EGO, CALIFORNIA	
TR / RA	DSK/GTYPD	DATE	10 - 25 - 2019	PROJECT NO. 03071 - 32 - 45A	FIG. 15

Plotted:11/12/2019 7:09AM | By:RUBEN AGUILAR | File Location:Y:\PROJECTS\03071-32-45A Carmel Mnt Ranch Golf Course\DETAILS\Slope Stability Analyses-Surficial (SFSSA).dwg

ASSUMED CONDITIONS:

SLOPE HEIGHT	H = 40 feet
SLOPE INCLINATION	2 : 1 (Horizontal : Vertical)
TOTAL UNIT WEIGHT OF SOIL	γ_t = 135 pounds per cubic foot
ANGLE OF INTERNAL FRICTION	ϕ = 32 degrees
APPARENT COHESION	C = 500 pounds per square foot
NO SEEPAGE FORCES	

ANALYSIS : 、

$\lambda_{c\phi}$	=	$\frac{\gamma_t H \tan_{\phi}}{C}$	EQUATION (3-3), REFERENCE 1
FS	=	$\frac{\text{NefC}}{\gamma_t \text{H}}$	EQUATION (3-2), REFERENCE 1
$\lambda_{c\phi}$	=	6.8	CALCULATED USING EQ. (3-3)
Ncf	=	25	DETERMINED USING FIGURE 10, REFERENCE 2
FS	=	2.3	FACTOR OF SAFETY CALCULATED USING EQ. (3-2)

REFERENCES :

- 1.....Janbu, N., Stability Analysis of Slopes with Dimensionless Parameters, Harvard Soil Mechanics, Series No. 46, 1954
- 2.....Janbu, N., Discussion of J.M. Bell, Dimensionless Parameters for Homogeneous Earth Slopes, Journal of Soil Mechanics and Foundation Design, No. SM6, November 1967.

SLOPE STABILITY ANALYSIS - CUT SLOPES

GEOCON
INCORPORATED

PHONE 858 558-6900 - FAX 858 558-6159



CARMEL MOUNTAIN RANCH **GOLF COURSE** GEOTECHNICAL

ENVIRONMENTAL
MATERIALS SAN DIEGO, CALIFORNIA 6960 FLANDERS DRIVE - SAN DIEGO, CALIFORNIA 92121 - 2974

TR / RA	
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DSK/GTYPD

DATE 10 - 25 - 2019

PROJECT NO. 03071 - 32 - 45A FIG. 16

Plotted:11/12/2019 7:09AM | By:RUBEN AGUILAR | File Location: Y:\PROJECTS\03071-32-45A Carmel Mnt Ranch Golf Course\DETAILS\Slope Stability Analyses-Cut (SSAC).dwg



Plotted:11/12/2019 7:09AM | By:RUBEN AGUILAR | File Location:Y:\PROJECTS\03071-32-45A Carmel Mnt Ranch Golf Course\DETAILS\Wall-Column Footing Dimension Detail (COLFOOT2).dwg



Plotted: 11/12/2019 7:09AM | By:RUBEN AGUILAR | File Location: Y:\PROJECTS\03071-32-45A Carmel Mnt Ranch Golf Course\DETAILS\Typical Retaining Wall Drainage Detail (RWDD7A).dwg





APPENDIX A

FIELD INVESTIGATION

Our field investigation was performed between April 29 and May 23, 2019, and consisted of a site reconnaissance, and the excavation of 152 exploratory trenches and 22 large-diameter borings and performing 6 seismic refraction traverses. The approximate locations of the trenches, borings and seismic lines are shown on the *Geologic Maps*.

The exploratory trenches were advanced by Hillside Excavating using a John Deere 410 rubber-tire backhoe equipped with a 24-inch-wide bucket. Bulk and chunk samples were also collected. Logs of the trenches depicting the soil and geologic conditions encountered are presented on Figures A-1 through A-152.

The 22 large-diameter borings were performed by Dave's Drilling using an EasyBore 120 truckmounted drill rig equipped with a 30-inch-diameter bucket auger. Relatively undisturbed samples were obtained by driving a 3-inch, O.D., split-tube sampler into the "undisturbed" soil mass with the drill rig kelly bar. The sampler was equipped with 1-inch by 2³/₈-inch brass sampler rings to facilitate removal and testing. Bulk samples were also obtained. The logs of the borings depicting the soil and geologic conditions encountered and the depth at which samples were obtained are presented on Figures A-153 through A-174.

The 6 seismic traverses performed by Southwest Geophysics are discussed in greater detail in their report presented in Appendix C.

The soils encountered in the excavations were visually classified and logged in general accordance with American Society for Testing and Materials (ASTM) practice for Description and Identification of Soils (Visual Manual Procedure D 2488).

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			н		TRENCH T 1	ZШ⊖	≻	(%
DEPTH	SAMPLE	OGY	VATI	SOIL		ATIC ANCI S/FT.	NSIT F.)	URE VT (%
IN FEET	NO.	HOL	IdNo	CLASS (USCS)	ELEV. (MSL.) 738' DATE COMPLETED 04-29-2019	IETR SIST, OWS	Y DE (P.C.	OIST
		5	GROU	(0000)	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	BL (BL	DR	ΣÖ
			Ľ					
- 0 -	ļ			<u></u>				
				SM	GOLF COURSE FILL (Qgcf) Loose, damp, brown and reddish brown, Silty, fine to medium SAND			
						_		
- 2 -						-		
L –						_		
4					-4-inch thick, mulch layer and concrete chunks (sidewalk panels) up to 3-feet long present at 3 feet			
- 4 -				SM	-Becomes dark brown below 3.5 feet; electrical line present along contact			
				SIVI	TOPSOIL Loose, damp, dark brown, Silty, fine to medium SAND with some clay	-		
- 6 -					MISSION VALLEY FORMATION (Tmv)	_		
					Dense, damp, light gray, Silty, fine to medium SANDSTONE with calcium			
					caroonate			
- 8 -			<u>`</u>		TRENCH TERMINATED AT 8 FEET			
					Groundwater not encountered			
<u> </u>								
Figure	A-1 ,	ьт 4			of 1	0307	71-32-45A (TF	ENCH).GPJ
	i i renc		I, I	-aye 1				
SAME	PLE SYMB	OLS		SAMP	LING UNSUCCESSFUL STANDARD PENETRATION TEST DRIVE S	AMPLE (UNDI	STURBED)	
	SAMPLE SYMBOLS			🕅 DISTL	RBED OR BAG SAMPLE 🛛 WATER	TABLE OR SE	EPAGE	

		1	-					
DEPTH	SAMPLE	OGY	VATER	SOIL	TRENCH T 2	ATION ANCE 8/FT.)	NSITY F.)	URE VT (%)
IN FEET	NO.		NDN	CLASS (USCS)	ELEV. (MSL.) 745' DATE COMPLETED 04-29-2019	IETR. SIST/	Υ DE (P.C.	OIST
			GROI		EQUIPMENT Rubber Tire Backhoe BY: T. REIST	(BL BL	DR	ZOZ
<u> </u>			\vdash					
- 0 -		l Altra	-	SM	GOLF COURSE FILL (Ogef)			
					Loose to medium dense, damp, brown and gray, Silty, fine to medium SAND with clay	_		
	T2-1					_		
- 4 -						-		
				SM				
- 6 -				SIVI	MISSION VALLEY FORMATION (Tmv)			
			> > >		Dense, damp, light gray, Silty, fine to medium SANDSTONE	-		
- 8 -			, 		TRENCH TERMINATED AT 8 FEFT			
					Groundwater not encountered			
Eigure			1			0203	74 22 454 (75	
	; A- 2, f Trencl	hт 🤉	2. F	Page 1	of 1	0307	1-3∠-45A (1⊦	ENCH).GPJ
			-, •					
SAMF	SAMPLE SYMBOLS			SAMP	LING UNSUCCESSFUL STANDARD PENETRATION TEST DRIVE S	AMPLE (UNDI	STURBED) EPAGE	

(-						
DEPTH		GY	ATER	501	TRENCH T 3	TION VCE FT.)	SITY .)	RE 「(%)
IN FEET	SAMPLE NO.	ОТОН.	MDN	CLASS	ELEV. (MSL.) 750' DATE COMPLETED 04-29-2019	ETRA SISTAN OWS/I	r den (P.C.F	OISTU NTEN1
			GRO	(0000)	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	REN (BL	DR	CON
					MATERIAL DESCRIPTION			
- 0 -	T3-1			SM	TOPSOIL			
					roots	_		
	[SM	MISSION VALLEY FORMATION (Tmv) Dense, damp, light gray, Silty, fine to medium SANDSTONE			
						-		
- 4 -						-		
						-		
- 6 -				$-\overline{CL}$	Hard, moist, maroon and gray, Silty, CLAYSTONE; waxy			
	T3-2					-		
- 8 -	-					-		
					-Some 12-inch concretions present below 8.5 feet	-		
- 10 -								
					Groundwater not encountered			
Figure	A-3 ,					0307	'1-32-45A (TF	RENCH).GPJ
Log o	f Trenc	hT 3	8, F	Page 1	of 1			
SAMF	SAMPLE SYMBOLS							
1	XIVIT EL STIVIDOLS XIVIT EL STIVIDOLS DISTURBED OR BAG SAMPLE N CHUNK SAMPLE Y WATER TABLE OR SEEPAGE							

1		1	-					
		2	TER		TRENCH T 4	CEN CEN	Ł	ίΕ (%)
DEPTH IN FEET	SAMPLE NO.	НОГОО	NDWA	SOIL CLASS	ELEV. (MSL.) 752' DATE COMPLETED 04-29-2019	ETRAT IISTAN DWS/F	DENS (DENS P.C.F.)	DISTUR VTENT
			GROU	(USCS)	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PENF RES (BL0	DRY)	CON
			┢		MATERIAL DESCRIPTION			
- 0 -				SM	TOPSOIL			
					Loose, damp, brown, Silty, fine to medium SAND with roots	_		
- 2 -				SM	MISSION VALLEY FORMATION (Tmv)			
			> > >		Dense, damp, light gray, Silty, fine to medium SANDSTONE with calcium carbonate veins in upper foot	_		
- 4 -						-		
	T4-1		> > >			-		
- 6 -						-		
						-		
- 8 -	. 8					-		
						_		
- 10 -						_		
						-		
- 12 -			<u>,</u>		-Cemented layer at 12 feet	-		
					PRACTICAL REFUSAL AT 12.5 FEET			
					Groundwater not encountered			
Figure	e A-4, f Trenc∣	hT4	1. F	Page 1	of 1	0307	71-32-45A (TR	RENCH).GPJ
3•			, .					
SAMF	SAMPLE SYMBOLS Image: Sampling unsuccessful Image: Standard penetration test Image: Sample (undisturbed) Image: Sample definition of the							



		2	TER		IRENCH I 5	, ⊐CION	Σ	(%)		
DEPTH IN	SAMPLE		AWC	SOIL		RAT TAN VS/F	ENS C.F.)	TUF INT		
FEET	NO.	H	INNC	(USCS)	ELEV. (MSL.) 746' DATE COMPLETED 04-29-2019	ESIS BLOV	RY D (Р.(MOIS		
			GR(EQUIPMENT Rubber Tire Backhoe BY: T. REIST	E R E	Ō	- ö		
			\square		MATERIAL DESCRIPTION					
- 0 -				SM	MISSION VALLEY FORMATION (Tmv)					
					Dense, damp, light gray, Silty, fine to medium SANDSTONE	_				
- 2 -						_				
-										
			Ś			-				
- 4 -			, ,			-				
						_				
- 6 -					-Cemented layer at 6 feet					
					Groundwater not encountered					
Figure	A-5.					0307	71-32-45A (TF	RENCH).GPJ		
Log o	f Trencl	hT 5	5, F	Page 1	of 1					
				SAMP			STURBED)			
SAMPLE SYMBOLS					JRBED OR BAG SAMPLE I CHUNK SAMPLE I WATER T	TABLE OR SE	NDISTURBED) SEEPAGE			

(1	1	1				
DEPTH	SAMPI F	OGY	NATER	SOIL	TRENCH T 6	ATION ANCE S/FT.)	NSITY .F.)	'URE NT (%)
IN FEET	NO.	THOL	ND	CLASS (USCS)	ELEV. (MSL.) 768' DATE COMPLETED 04-29-2019	NETR SIST LOW	Y DE (P.C	10IST NTEI
			GRO		EQUIPMENT Rubber Tire Backhoe BY: T. REIST	BE BE	DR	≥ 0 O
			┢		MATERIAL DESCRIPTION			
- 0 -			<u> </u>	<u>_SM</u>	TOPSOIL			
				CL/CH	Stiff. moist. dark brown, Silty CLAY: plastic	_		
- 2 -				SM	MISSION VALLEY FORMATION (Tmv)	_		
L _					Dense, damp, light gray, Silty, fine to medium SANDSTONE	_		
						_		
4								
					TRENCH TERMINATED AT 5 FEET			
					Groundwater not encountered			
Figure	e A-6,					0307	1-32-45A (TR	ENCH).GPJ
Log o	t Trenc	h T 6	5, F	Page 1	of 1			
SAMF	LE SYMB	OLS		SAMP	PLING UNSUCCESSFUL STANDARD PENETRATION TEST DRIVE SA	AMPLE (UNDI	STURBED)	
	SAMPLE SYMBOLS		LE STIVIDULS					

DEPTH IN FEET	SAMPLE NO.	ГІТНОГОЄУ	GROUNDWATER	SOIL CLASS (USCS)	TRENCH T 7 ELEV. (MSL.) 762' DATE COMPLETED 04-29-2019 EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)	
0					MATERIAL DESCRIPTION				
- 0 -		· · · · ·		SM	TOPSOIL				
- 2 - - 2 - - 4 - - 6 - - 8 - - 8 -				SM	MISSION VALLEY FORMATION (Tmv) Dense, damp, light gray, Silty, fine to medium SANDSTONE; calcium carbonate veins present in upper foot				
- 10 -						-			
					TRENCH TERMINATED AT 11 FEET Groundwater not encountered				
Figure Log o	Figure A-7,03071-32-45A (TRENCH).GPJLog of Trench T 7, Page 1 of 1								
SAMP	SAMPLE SYMBOLS Image: Sampling unsuccessful Image: Standard Penetration Test Image: Standard Penetration Test Sample under the sample of the sample Image: Standard Penetration Test Image: Standard Penetration Test								

DEPTH IN FEET	SAMPLE NO.	ГІТНОГОЄУ	GROUNDWATER	SOIL CLASS (USCS)	TRENCH T 8 ELEV. (MSL.) 766' DATE COMPLETED 04-29-2019 EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
					MATERIAL DESCRIPTION			
- 0 -				SM	TOPSOIL Loose, damp, brown, Silty, fine to medium SAND			
			-					
	T8-1			ML	MISSION VALLEY FORMATION - Weathered (Tmv) Very stiff, damp to moist, white and light brown, fine, Sandy SH T/CH TSTONE with because achieve achieve achieves and access and	_		
- 4 -					SIL 1/SIL I STONE with heavy calcium carbonate replacement	_		
				CL	MISSION VALLEY FORMATION (Tmv)			
- 6 -					Hard, damp to moist, olive green, Silty CLAYSTONE	_		
- 8 -								
	T8-2					_		
- 10 -						-		
					TRENCH TERMINATED AT 11 FEET Groundwater not encountered			
Figure Log o	e A-8, f Trenc	hT 8	8, F	Page 1	of 1	0307	71-32-45A (TF	ENCH).GPJ
SAMF	SAMPLE SYMBOLS Image: Sampling unsuccessful Image: Standard penetration test Image: Sample (undisturbed) Image: Sample symbol Image: Sample symbol Image: Sample symbol Image: Sample symbol Image: Sample symbol Image: Sample symbol Image: Sample symbol Image: Sample symbol Image: Sample symbol Image: Sample symbol Image: Sample symbol Image: Sample symbol Image: Sample symbol Image: Sample symbol							

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DEPTH		∑	ATE	SOIL			ISIT (:	лке %) т
IN	SAMPLE	OLO	N	CLASS		STA WS/	C.F	STL
FEET	NO.	Ĕ	NNO	(USCS)			RYI (P	IOW .
			GR		EQUIPMENT Rubber Tire Backhoe BY: T. REIST	<u>а</u> к.)		0
					MATERIAL DESCRIPTION			
- 0 -		집단학		SM/SC	GOLF COURSE FILL (Ogef)			
					Loose to medium dense, damp, brown, Silty to Clayey, fine to medium SAND	_		
- 2 -					-Becomes moist and gray below 2 feet	-		
- 4 -			-	SM	-Clean contact	_		
				5111	MISSION VALLEY FORMATION (Tmv)			
					Dense, damp, light gray, Silty, fine to medium SANDSTONE with calcium			
- 6 -			'		TRENCH TERMINATED AT 6 FEFT	_		
					Groundwater not encountered			
<u> </u>								
Figure	Э А-9, с т		、 -		- 5 4	0307	'1-32-45A (TR	ENCH).GPJ
LOG O		n I §	9, F	age 1	OT 1			
SAME				SAMP	UING UNSUCCESSFUL STANDARD PENETRATION TEST DRIVE SA	AMPLE (UNDI	STURBED)	
SAIVIP	SAMPLE SYMBOLS			🕅 DISTL	JRBED OR BAG SAMPLE I WATER T	ABLE OR SE	EPAGE	

		1	1						
DEPTH		уду	VATER	SOIL	TRENCH T 10	ATION NNCE (FT.)	чSITY F.)	URE IT (%)	
IN FEET	NO.	НОГ	NDN	CLASS (USCS)	ELEV. (MSL.) 769' DATE COMPLETED 04-29-2019	IETR/ SIST/ OWS	Y DEN (P.C.	OIST	
			GROI	()	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PEN (BL	DR	COM	
			\vdash		MATERIAL DESCRIPTION				
- 0 -				SM	TOPSOIL				
	T10-1			CL/CH	Stiff, moist, dark brown, Silty CLAY; plastic	-			
- 2 -						-			
			,	SM	MISSION VALLEY FORMATION - Weathered (Tmv) Medium dense, damp, gray and white Silty, fine SAND/SANDSTONE with	_			
- 4 -					heavy calcium carbonate replacement	_			
			> >						
- 6 -				SM	MISSION VALLEY FORMATION (Tmv)				
					carbonate veins	-			
- 8 -						-			
						-			
- 10 -			, ,			_			
					TRENCH TERMINATED AT 10 FEET Groundwater not encountered				
Figure	e A-10,					0307	71-32-45A (TF	RENCH).GPJ	
Log o	f Trenc	h T 1	0,	Page 1	of 1				
SAMF	SAMPLE SYMBOLS								
	SAMPLE SYMBOLS			XIII LE OTHIDOLO					



	1	1	1			· ·		
DEPTH		ЭGY	ATER	SOIL	TRENCH T 11	TION NCE (FT.)	ISITY (. ⁼	JRE Т (%)
IN FEET	SAMPLE NO.	HOLO	MON	CLASS (USCS)	ELEV. (MSL.) 783' DATE COMPLETED 04-29-2019	ETRA SISTA OWS,	Y DEN (P.C.F	OISTUNTEN
			GROL	(0000)	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	(BL	DR	ž Ō
			\vdash					
- 0 -		n North	-	SM	GOLE COURSE FILL (Ogef)			
				5141	Loose to medium dense, damp, brown, Silty, fine to medium SAND	-		
- 2 -				SC&SM	Loose to medium dense, moist, gray, Clayey to Silty, fine to medium SAND	_		
- 4 -			• • •	SM	MISSION VALLEY FORMATION (Tmv) Dense, damp, light gray, Silty, fine to medium SANDSTONE	_		
			•		-6-inch cemented lense at 4.5 feet			
					TRENCH TERMINATED AT 5 FEET			
					Groundwater not encountered			
Figure	₽ <mark>A-11</mark> ,					0307	1-32-45A (TF	RENCH).GPJ
Log o	f Trenc	h T 1	1,	Page 1	of 1			
				SAMP			STURBED)	
SAMPLE SYMBOLS				IRBED OR BAG SAMPLE	/E SAMPLE (UNDISTURBED) 'ER TABLE OR SEEPAGE			

DEPTH IN FEET	SAMPLE NO.	ГІТНОГОСУ	GROUNDWATER	SOIL CLASS (USCS)	TRENCH T 12 ELEV. (MSL.) 804' DATE COMPLETED 04-29-2019 EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
					MATERIAL DESCRIPTION			
- 0 - - 2 -				SM&SC	GOLF COURSE FILL (Qgcf) Loose, moist, gray and dark brown, Silty to Clayey, fine to medium SAND	_		
			• • •		-Nested concrete (sidewalk panels) up to 2-feet long present between 4 and 8 feet; abundant voids with moderate to heavy caving	_		
- 6 -						_		
- 8 - 			• • •		-Heavy seepage at 7.5 feet	_		
					IKENCH TEKMINATED AT 10 FEET DUE TO CAVING Seepage encountered at 7.5 feet			
Figure Log o	e A-12, f Trenc	h T 1	2,				71-32-45A (TR	ENCH).GPJ
SAMF	SAMPLE SYMBOLS Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful<							



		1	1					
		S	ATER		TRENCH T 13	TION TION	ытҮ)	RE (%)
IN FEET	SAMPLE NO.	иного	UNDW/	CLASS (USCS)	ELEV. (MSL.) 790' DATE COMPLETED 04-29-2019	JETRA SISTAN OWS/F	Y DEN (P.C.F.	OISTU
			GRO		EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PEN (BL	DR	≥o
			┢		MATERIAL DESCRIPTION			
- 0 -				SM/SC	GOLF COURSE FILL (Qgcf)			
					Loose to medium dense, damp, brown, Silty/Clayey, fine to medium SAND	-		
- 2 -					-Becomes moist and gray below 1.5 feet	-		
- 4 -			0 0 0 0	SM	MISSION VALLEY FORMATION (Tmv) Dense, damp, light gray, Silty, fine to medium SANDSTONE	_		
			•		TRENCH TERMINATED AT 5 FEET			
					Groundwater not encountered			
Figure A-13								
Log of Trench T 13, Page 1 of 1								
			-				STURBED	
SAMPLE SYMBOLS			Image: Strainbard Fene training on social state Image: Image: Strainbard Fene training on social state Image: I			TABLE OR SEEPAGE		

			-					
DEPTH IN FEET	SAMPLE NO.	ГІТНОГОĞY	GROUNDWATER	SOIL CLASS (USCS)	TRENCH T 14 ELEV. (MSL.) 802' DATE COMPLETED 04-29-2019 EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
			Ĺ					
- 0 -	ļ,				MATERIAL DESCRIPTION			
				SM/SC	GOLF COURSE FILL (Qgcf) Loose to medium dense, damp, brown, Silty to Clayey, fine to medium SAND	_		
- 2 -				CL	Stiff to very stiff, moist, dark brown, gray and white, Silty and Sandy CLAY			
- 4 -	T14-1					_		
 - 6 -						_		
						_		
- 8 -								
- 10 -								
		KXX.						
- 12 - 				SM	MISSION VALLEY FORMATION (Tmv) Dense, damp, light gray, Silty, fine to medium SANDSTONE	_		
- 14 -					TRENCH TERMINATED AT 14 FEET Groundwater not encountered			
Figure A-14, 03071-32-45A (TRENCH).GPJ Log of Trench T 14, Page 1 of 1 03071-32-45A (TRENCH).GPJ								
SAMPLE SYMBOLS								

	1		1	1		, I I I I I I I I I I I I I I I I I I I		
DEPTH		ſĠΥ	ATER	SOIL	TRENCH T 15	TION NCE FT.)	SITY (RE Г (%)
IN FEET	SAMPLE NO.	THOLO	UNDW/	CLASS (USCS)	ELEV. (MSL.) 805' DATE COMPLETED 04-29-2019	JETRA SISTAI -OWS/	Y DEN (P.C.F	IOISTU
			GRO		EQUIPMENT Rubber Tire Backhoe BY: T. REIST	(BEP	DR	≥O
			\vdash		MATERIAL DESCRIPTION			
- 0 -				SM	GOLF COURSE FILL (Qgcf)			
				SM&SC	Loose to medium dense, damp, brown, Silty, fine to medium SAND			— — – -
- 2 -					Loose to medium dense, moist, gray, only and erayey, fine to medium orally	_		
			• •	SM	MISSION VALLEY FORMATION (Tmv)			
- 4 -			•		TRENCH TERMINATED AT 4 FEET			
					Groundwater not encountered			
Figure	Figure A-15							
Log of Trench T 15, Page 1 of 1								
							STURBED)	
SAMPLE SYMBOLS				IRBED OR BAG SAMPLE Two water Two wa	TABLE OR SE	EPAGE		

		1	1	1					
			н		TRENCH T 16	Zщ.	≿		
DEPTH	SAMPLE	LOG	WAT	SOIL		ATIC ANC S/FT	ENSIT	TURE NT (9	
FEET	NO.	DHT	IND	CLASS (USCS)	ELEV. (MSL.) 800' DATE COMPLETED 04-29-2019	NETF	кү DE (P.C	AOIS'	
			GRO		EQUIPMENT Rubber Tire Backhoe BY: T. REIST	ER BE	DF	200	
			┢		MATERIAL DESCRIPTION				
- 0 -			:	SP	GOLF COURSE FILL (Qgcf)				
					Loose, damp to moist, gray-brown, fine to medium SAND; low cohesion	-			
- 2 -						-			
		· · · ·		<i>a</i>) (-3 to 4-inch thick, pea gravel layer present along contact				
				SM	MISSION VALLEY FORMATION (Tmv)				
-					Dense, damp, gray, Silty, fine to medium SANDSTONE				
						-			
- 6 -			<u>`</u>		-Cemented at 6 feet				
					REFUSAL AT 6 FEET Groundwater not encountered				
Figure A-16, 03071-32-45A (TRENCH).GPJ									
Log of Trench T 16, Page 1 of 1									
CANE				SAMP	LING UNSUCCESSFUL STANDARD PENETRATION TEST DRIVE SA	AMPLE (UNDI	STURBED)		
SAMPLE SYMBOLS		DISTURBED OR BAG SAMPLE		IRBED OR BAG SAMPLE	TABLE OR SE	EPAGE			
(-						
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DEPTH		GY	ATER	SOIL	TRENCH T 17	TION VCE FT.)	SITY .)	RE Г (%)	
IN FEET	SAMPLE NO.	НОГО	MDN	CLASS	ELEV. (MSL.) 783' DATE COMPLETED 04-29-2019	ETRA SISTAI OWS/	/ DEN (P.C.F	DISTU	
			GROL	(0000)	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PEN (BL	DR)	CON	
			\vdash		MATERIAL DESCRIPTION				
- 0 -				SM	TOPSOIL				
				CL	MISSION VALLEY FORMATION (Tmv)				
- 2 -	T17-1				Hard, moist, blue green, Silty CLAYSTONE	-			
						-			
- 4 -				SM	Dense to very dense, damp, gray, Silty, fine to medium SANDSTONE				
L _						_			
- 6 -	T17-2								
0									
						-			
- 8 -					-Slow difficult trenching; cemented	-			
						-			
- 10 -						-			
						-			
- 12 -						-			
					Groundwater not encountered				
Figure	A-17 ,					0307	′1-32-45A (TR	ENCH).GPJ	
Log o	f Trencl	h T 1	7,	Page 1	of 1				
SAMF	SAMPLE SYMBOLS								
1				WAL DISTL	IRDED UR DAG SAMPLE 🔄 🔜 CHUNK SAMPLE 💆 WATER	I ABLE OR SE	EPAGE		

			К		TRENCH T 18	zwo	~	(0
DEPTH		∑	ATE	SOIL		L IO	ISIT (:	JRE T (%
IN FEET	SAMPLE NO.	THOLO	UNDW	CLASS (USCS)	ELEV. (MSL.) 767' DATE COMPLETED 04-30-2019	JETRA SISTA LOWS/	Y DEN (P.C.F	IOISTL NTEN
			GRO		EQUIPMENT Rubber Tire Backhoe BY: T. REIST	(BEP	DR	CS
					MATERIAL DESCRIPTION			
- 0 -		and the		SM	GOLF COURSE FILL (Ogef)			
					Loose to medium dense, damp, brown, Silty, fine to medium SAND -Irrigation line present at 1-foot	_		
- 2 -			·	SC	Loose to medium dense, moist, gray and dark brown, Clayey, fine to medium SAND			
- 4 -			•	SM	MISSION VALLEY FORMATION (Tmv)			
			0 0 0		Dense to very dense, damp, light gray, Silty, fine to medium SANDSTONE; cemented layers throughout	-		
- 6 -			0 0 0			-		
			0 0 0		-Slow difficult trenching within cemented layers	-		
- 8 -					PRACTICAL REFUSAL AT 8 FEET			
					Groundwater not encountered			
<u> </u>								
Figure	∂ A-18,		•			0307	′1-32-45A (TR	ENCH).GPJ
Log o	t I renc	n ſ 1	8,	Page 1	of 1			
0.4145				SAMP	LING UNSUCCESSFUL STANDARD PENETRATION TEST DRIVE S	AMPLE (UNDI	STURBED)	
SAMP	SAMPLE SYMBOLS		ABOLS					

		1				1		
		<u>≻</u>	rer		TRENCH T 19	Na	Ϋ́	E (%)
DEPTH IN	SAMPLE	OLOG	DWA ⁻	SOIL CLASS		TRATI STANC WS/F1	DENSI .C.F.)	STUR IENT (
FEET	NO.		ROUN	(USCS)	ECHIDMENT Bubber Tim Backboo	(BLO	DRY I (P	MOI
			Ū					
- 0 -					MATERIAL DESCRIPTION			
			•	SM&SC	GOLF COURSE FILL (Qgcf) Loose to medium dense, damp to moist, gray and brown, Silty to Clayey, fine to medium SAND	_		
						_		
- 4 -						_		
- 6 -			• • •	SM	MISSION VALLEY FORMATION (Tmv) Dense to very dense, damp, light gray, Silty, fine to medium SANDSTONE with cemented layers throughout; difficult trenching	_		
			, , ,			_		
- 8 -					PRACTICAL REFUSAL AT 8 FEET Groundwater not encountered			
Figure	A-19, f Trenc	h T 1	9.	Page 1	of 1	0307	71-32-45A (TF	RENCH).GPJ
			- 1				STURRED	
SAMPLE SYMBOLS			IRBED OR BAG SAMPLE CHUNK SAMPLE WATER	TABLE OR SE	EPAGE			

	1		T					· · · · · ·
DEPTH	SAMDLE	OGY	VATER	SOIL	TRENCH T 20	ATION ANCE S/FT.)	NSITY F.)	URE \T (%)
IN FEET	NO.	THOL	NDV	CLASS (USCS)	ELEV. (MSL.) 766' DATE COMPLETED 04-30-2019	LETR, SIST/	Y DEI (P.C.	IOIST NTEN
			GRO		EQUIPMENT Rubber Tire Backhoe BY: T. REIST	(BI	DR	≥o
					MATERIAL DESCRIPTION			
- 0 -	T20-1		:	SM	TOPSOIL			
					Loose, damp, brown, Silty, fine to medium SAND	_		
				SM	MISSION VALLEY FORMATION (Tmv) Dense to very dense, damp, light gray, Silty, fine to medium SANDSTONE; slow difficult trenching due to cemented layers	_		
- 4 -					slow difficult determing due to cemented layers	_		
	120-2							
- 6 -					PRACTICAL REFUSAL AT 6 FEET Groundwater not encountered			
Figure	e A-20,					0307	71-32-45A (TF	RENCH).GPJ
	f Trenc	h T 2	0,	Page 1	of 1			
				SAMP	LING UNSUCCESSFUL STANDARD PENETRATION TEST DRIVE S	AMPLE (UNDI	STURBED)	
				🕅 DISTURBED OR BAG SAMPLE 🛛 🛛 CHUNK SAMPLE 🖉 WATER TABLE OR SEEPAGE				



	-	-							
DEPTH		УGY	ATER	SOIL	TRENCH T 21	TION NCE (FT.)	ISITY (. ⁼	JRE Т (%)	
IN FEET	SAMPLE NO.	DIOH-	MDN	CLASS (USCS)	ELEV. (MSL.) 735' DATE COMPLETED 04-30-2019	ETRA SISTA OWS,	Y DEN (P.C.F	OISTUNTEN	
			GRO	(0000)	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	(BL	DR	ΣÖ C	
			┢		MATERIAL DESCRIPTION				
- 0 -				SM	TOPSOIL				
			-		Loose, damp, brown, Silty, fine to medium SAND	_			
				SM	MISSION VALLEY FORMATION - Weathered (Tmv) Medium dense, damp, white and gray, Silty, fine to medium SAND/SANDSTONE: heavy calcium carbonate replacement	_			
- 4 -				SM	MISSION VALLEY FORMATION (Tmv) Dense, damp, light gray, Silty, fine to medium SANDSTONE	-			
					-1-foot thick, gravel and cobble lense present at 4 feet	-			
- 6 -						-			
						-			
- 8 -				CL	Hard, moist, mottled olive brown and maroon, Silty CLAYSTONE			- — — — – 	
	T21-1					-			
- 10 -						-			
						-			
- 12 -						-			
					TRENCH TERMINATED AT 13 FEET Groundwater not encountered				
Figure	e A-21, f Trenc	h T 2	1,	Page 1	of 1	0307	71-32-45A (TR	ENCH).GPJ	
SAME		019		SAMP	LING UNSUCCESSFUL STANDARD PENETRATION TEST DRIVE SU	AMPLE (UNDI	STURBED)		
	SAMPLE SYMBOLS			🕅 DISTU	IRBED OR BAG SAMPLE 🛛 CHUNK SAMPLE 🛨 WATER	TABLE OR SE	EPAGE		

DEPTH		ЭGY	ATER	SOIL	TRENCH T 22	ATION NCE /FT.)	NSITY Ξ.)	JRE IT (%)
IN FEET	SAMPLE NO.		NDN	CLASS (USCS)	ELEV. (MSL.) 723' DATE COMPLETED 04-30-2019	IETR/ SISTA -OWS	Y DEN (P.C.I	OISTI
			GRO		EQUIPMENT Rubber Tire Backhoe BY: T. REIST	(BI BI	DR	≥o C
			┢		MATERIAL DESCRIPTION			
- 0 -		XX		CL/CH	TOPSOIL Stiff, moist, very dark brown, Silty CLAY: plastic			
	T22-1					-		
- 2 -						-		
	T22-2			ML	MISSION VALLEY FORMATION - Weathered (Tmv)			
- 4 -			•		carbonate replacement	-		
						-		
- 6 -			, ,	SM	MISSION VALLEY FORMATION (Tmv)			
			, , ,		Dense, damp, gray, Silty, fine SANDSTONE	-		
- 8 -			> >			-		
						-		
- 10 -						-		
			> > >			-		
- 12 -						-		
						_		
- 14 -			, 					
				CL	Hard, moist, motiled only green and maroon, Shity CLAYSTONE	_		
- 16 -						_		
					TRENCH TERMINATED AT 17 FEET Groundwater not encountered			
Figure	Figure A-22, 03071-32-45A (TRENCH).GPJ							
	f Trenc	h T 2	2,	Page 1	of 1			
SAMPLE SYMBOLS								

		-	-						
DEPTH	SAMPI E	OGY	NATER	SOIL	TRENCH T 23	ATION ANCE S/FT.)	NSITY .F.)	URE VT (%)	
IN FEET	NO.	THOL	ND	CLASS (USCS)	ELEV. (MSL.) 711' DATE COMPLETED 04-30-2019	NETR SIST LOW:	(P.C	10IST NTEI	
			GRO		EQUIPMENT Rubber Tire Backhoe BY: T. REIST	BIR BIR	DR	C≤ C	
			\vdash		MATERIAL DESCRIPTION				
- 0 -				SM&SC	GOLF COURSE FILL (Qgcf)				
					to medium dense, damp, brown and light brown, slity and Clayey, fine to medium SAND	-			
- 2 -						-			
				CL/CH	Stiff moist very dark brown Silty CLAY: plastic				
- 4 -				CL CH		-			
						_			
6	T23-1								
- 0 -									
						-			
- 8 -						-			
						-			
- 10 -						-			
			_	CM	MISSION VALLEY FORMATION WARdaws J (Terra)				
- 12 -				SIVI	Mission VALLEY FORMATION - weathered (Tmv) Medium dense, damp, white and gray, Silty, fine SAND/SANDSTONE;	_			
			`		heavy calcium carbonate replacement				
				SM	MISSION VALLEY FORMATION (Tmv) Dense, damp, light gray, Silty, fine to medium SANDSTONE; with calcium				
- 14 -					carbonate veins	_			
						-			
- 16 -						-			
			<u> </u>		TRENCH TERMINATED AT 17 FEET				
					Groundwater not encountered				
ΓΙ ΙΙΙΙ Figure Δ-23									
Log of Trench T 23, Page 1 of 1									
				SAMP	LING UNSUCCESSFUL STANDARD PENETRATION TEST DRIVE S.	AMPLE (UNDI	STURBED)		
SAMPLE SYMBOLS				🕅 DISTU	IRBED OR BAG SAMPLE I CHUNK SAMPLE I WATER	TABLE OR SE	EPAGE		



(1				-		
DEPTH IN FEET	SAMPLE NO.	ITHOLOGY	DUNDWATER	SOIL CLASS (USCS)	TRENCH T 24 ELEV. (MSL.) 700' DATE COMPLETED 04-30-2019	ENETRATION ESISTANCE 3LOWS/FT.)	RY DENSITY (P.C.F.)	MOISTURE ONTENT (%)
			GR		EQUIPMENT Rubber Tire Backhoe BY: T. REIST			U
			\square		MATERIAL DESCRIPTION			
- 0 -				SM	TOPSOIL Loose, damp, reddish brown, Silty, fine to medium SAND	_		
- 2 - 				SC/SM	MISSION VALLEY FORMATION - Weathered (Tmv) Medium dense, damp, green-gray, Clayey/Silty, fine SAND/SANDSTONE; heavy calcium carbonate replacement	-		
- 6 -	T24-1		>	SM	MISSION VALLEY FORMATION (Tmv) Dense, damp, gray-green, Silty, fine SANDSTONE	-		
- 8 - - 10 -	. ×		> > > > > > >		-Becomes very dense below 8 feet	-		
						-		
- 12 -					TRENCH TERMINATED AT 12 FEET Groundwater not encountered			
Figure	⊢		1	I		030	 71-32-45A (TF	RENCH).GPJ
Log o	f Trenc	h T 2	4,	Page 1	of 1			
SAMPLE SYMBOLS Image: mathematical symbols Image:								

			-	1		1		
DEPTH		βġλ	ATER	SOIL	TRENCH T 25	TION NCE FT.)	SITY .)	RE Г (%)
IN FEET	SAMPLE NO.	НОГС	MDN	CLASS	ELEV. (MSL.) 701' DATE COMPLETED 04-30-2019	ETRA SISTA OWS/	/ DEN (P.C.F	DISTU NTEN
			GROL	(0000)	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PEN (BL	DR	COL
			┢		MATERIAL DESCRIPTION			
- 0 -		177		CL	TOPSOIL Stiff down to maint known to dark known Silty/Sondy CLAV			
					Stiff, damp to moist, brown to dark brown, Sitty/Sandy CLAT	-		
- 2 -						-		
				CL	MISSION VALLEY FORMATION - Weathered (Tmv)			
- 4 -					Very stiff, damp, white and green, Silty, CLAY/CLAYSTONE; heavy calcium carbonate replacement	-		
						-		
- 6 -				CL	MISSION VALLEY FORMATION (Tmv)			
					Hard, damp to moist, pale green, Silty CLAYSTONE with calcium carbonate veins	-		
- 8 -						-		
						-		
- 10 -				- <u>-</u>	Dense damp mottled alive green and margon Silty fine SANDSTONE			
			。 。 。	5141	Dense, damp, monied on to green and maroon, only, mile on (DDT of the	-		
- 12 -	.		•			_		
			•		TDENICH TEDARIATED AT 12 FEFT			
					Groundwater not encountered			
Figure	A-25,	1	1			0307	71-32-45A (TF	RENCH).GPJ
	f Trenc	h T 2	5,	Page 1	of 1			
SAMPLE SYMBOLS Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful<								

			1						
DEPTH	SAMPLE	LOGY	WATER	SOIL	TRENCH T 26	RATION FANCE S/FT.)	ENSITY (.F.)	TURE INT (%)	
FEET	NO.	0 HTI	IND	(USCS)	ELEV. (MSL.) 692' DATE COMPLETED 04-30-2019	ESIS1	Ч DF (Р.С	MOIS	
			GRO		EQUIPMENT Rubber Tire Backhoe BY: T. REIST	E R B	Ō	- ö	
0					MATERIAL DESCRIPTION				
- 0 -				CL	TOPSOIL Stiff, moist, very dark brown, Silty CLAY				
						-			
- 2 -						-			
			2 > > >	SM	MISSION VALLEY FORMATION - Weathered (Tmv) Medium dense, damp, white and gray, Silty, fine SAND/SANDSTONE;	_			
			> > >		neavy calcium caroonale replacement	_			
- 6 -				ML	MISSION VALLEY FORMATION (Tmv)				
					Hard, damp, gray, fine, Sandy SILTSTONE with calcium carbonate veins	-			
- 8 -			-			-			
			_		TRENCH TERMINATED AT 9 FEET				
					Groundwater not encountered				
Eigur						0205	71 22 /54 /75		
Log o	Log of Trench T 26, Page 1 of 1								
SAMPLE SYMBOLS Image: Sample of the samp									

DEPTH IN FEET	SAMPLE NO.	ГІТНОГОСУ	GROUNDWATER	SOIL CLASS (USCS)	TRENCH T 27 ELEV. (MSL.) 698' DATE COMPLETED 04-30-2019 EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
					MATERIAL DESCRIPTION			
- 0 - 				CL/CH	COLLUVIUM Stiff, moist, very dark brown, Silty CLAY; plastic	_		
- 2 -						_		
- 4 -			•	SM	MISSION VALLEY FORMATION (Tmv) Dense, damp, light brown, Silty, fine to medium SANDSTONE	_		
- 6 -	e A-27,				TRENCH TERMINATED AT 6 FEET Groundwater not encountered	0307	71-32-45A (TR	RENCH).GPJ
	t Trenc	h T 2	7,	Page 1	of 1			
SAMPLE SYMBOLS		SAMF	LING UNSUCCESSFUL STANDARD PENETRATION TEST DRIVE S IRBED OR BAG SAMPLE WATER	AMPLE (UNDI	STURBED) EPAGE			

			_						
DEPTH IN FEET	SAMPLE NO.	ГІТНОГОСУ	GROUNDWATER	SOIL CLASS (USCS)	TRENCH T 28 ELEV. (MSL.) 684' DATE COMPLETED 04-30-2019 EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)	
			\vdash						
- 0 -					MATERIAL DESCRIPTION				
2 -				cL/cli	Stiff, moist, brown to very dark brown, Silty CLAY; plastic	_			
		KXX				-			
- 4 -	T20 1	XXX				_			
	128-1	XXX							
						_			
- 6 -	×					-			
L _									
			Ś	SM	MISSION VALLEY FORMATION - Weathered (Tmv) Medium dense, damp and pale green, Silty, fine SAND/SANDSTONE: heavy				
- 8 -					calcium carbonate replacement	-			
			,			_			
10									
- 10 -			, ,						
			Ś	SM	MISSION VALLEY FORMATION (1mv) Dense, damp, brown, Silty, fine SANDSTONE	-			
- 12 -						_			
		0000			TRENCH TERMINATED AT 13 FEET				
					Groundwater not encountered				
Ε Ι ΙΙ ΙΙ Ι Γίαμτα Δ-28									
Log of Trench T 28, Page 1 of 1									
_				Same					
SAMP	SAMPLE SYMBOLS			SAMPLING UNSUCCESSFUL STANDARD PENETRATION TEST DRIVE SAMPLE (UNDISTURBED)					

		≻	TER		TRENCH T 29	No Hair	≿	е (%)	
DEPTH	SAMPLE	LOG	WA	SOIL		ATI ANC S/FT	ENSI (:F.)	NT (
FEET	NO.	OHTI	INN	CLASS (USCS)	ELEV. (MSL.) 696' DATE COMPLETED 04-30-2019		۲ DE (P.C	NOIS'	
			GRO		EQUIPMENT Rubber Tire Backhoe BY: T. REIST	E E E	ä	20	
			┢		MATERIAL DESCRIPTION				
- 0 -		XX		CL/CH	TOPSOIL				
		<i>XX</i>			Firm, moist to wet, very dark brown, Silty CLAY; plastic	-			
- 2 -		H/X	1			_			
		K K	1						
				CL	MISSION VALLEY FORMATION - Weathered (Tmv)				
- 4 -					very stiff, moist, white and brown, Silty CLAY/CLAYSTONE; heavy calcium carbonate replacement	-			
				CI					
- 6 -				CL	Hard, damp to moist, mottled olive green and maroon, Silty CLAYSTONE;				
- 0 -					with calcium carbonate				
		<u> </u>	1		TRENCH TERMINATED AT 7 FEET				
					Groundwater not encountered				
Figure	A-29.	1	1	1		0307	71-32-45A (TR	ENCH).GPJ	
Log o	f Trenc	h T 2	9,	Page 1	of 1				
				SAMP	LING UNSUCCESSFUL	AMPLE (UNDI	STURBED)		
SAMPLE SYMBOLS				Image: State					

Import Source TRENCH T 30 Discrete				_					
Image: Note: a bit of the second s	DEPTH		УЭС	ATER	SOIL	TRENCH T 30	ATION NCE /FT.)	ЧSITΥ Ξ.)	JRE П (%)
Image: Second	IN FEET	SAMPLE NO.	LHOL(NDN	CLASS (USCS)	ELEV. (MSL.) 698' DATE COMPLETED 04-30-2019	IETR/ SISTA OWS	Y DEN (P.C.I	OISTI
0 MATERIAL DESCRIPTION 0 SM COLF COURSE FILL (Ogen) Loose, damp, known, Sity, fine to medium SAND 2 CL TOPSOL Stiff, moist to very moist, very dark brown, Sity CLAY 4 ML MISSION VALLEY FORMATION - Weathered (Tany) Very stiff, moist, while and olive green, fine, Sandy SULTSULTSUDNE; heavy selection carbonate replacement 6 ML MISSION VALLEY FORMATION (Tany) Hard, damp, olive green, fine, Sandy SULTSULTSULTSUDNE; heavy selection carbonate replacement 8 ML MISSION VALLEY FORMATION (Tany) Hard, damp, olive green, fine, Sandy SULTSULTSULTSUDNE; heavy selection carbonate replacement 8 TRENCH TERMINATED AT 8 FEET Groundwater not caroountered 9 TRENCH TERMINATED AT 8 FEET Groundwater not caroountered 9 COULSEAN TIDENCH OF THE CARD AT 100 (Tany) Hard, damp, olive green, fine, Sandy SULTSULTSULTSULTSULTSULTSULTSULTSULTSULT				GROI		EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PEN (BL	DR	≥o
0 SM GOLF COURSE FILL (Open Lowes, damp, brown, Silty, fine to medium SAND 2 CL TOPSOIL. 4 MI. MISSION VALLEY FORMATION - Weathered (Trw) bravy cakium carbonate replacement 6 MI. MISSION VALLEY FORMATION - Weathered (Trw) bravy cakium carbonate replacement 8 MI. MISSION VALLEY FORMATION (Trw) Hard, damp, olive green, fine, Sandy SILT/SILTSTONF; bravy cakium carbonate replacement 8 MI. MISSION VALLEY FORMATION To Mark to accountered 7 MI. MISSION VALLEY FORMATION (Trw) Hard, damp, olive green, fine, Sandy SILT/SILTSTONF; 8 TRENCH TERMINATED AT \$ FEET Groundwater not encountered Output 8 TRENCH TERMINATED AT \$ FEET Groundwater not encountered Output Figure A-30, Cog of Trench T 30, Page 1 of 1 Output SAMPLE (MORTURED) Output SAMPLE (MORTURED) SAMPLE SYMBOLS - SMUND UNPUCCESSTUL - STANDARD PENETRATION TEST - DRVE SAMPLE (MORTURED)						MATERIAL DESCRIPTION			
2 CL TOPSOIL Stiff, moist to very moist, very dark brown, Sily CLAY 4 ML MISSION VALLEY FORMATION - Weathered (Time) 6 ML MISSION VALLEY FORMATION - Weathered (Time) 8 ML MISSION VALLEY FORMATION (Time) 8 TREENCH TERMINATED AT 8 FIELT Coundwater not encountered 7 Groundwater not encountered Staff, moist, while and dive green, fine, Sandy SILTSTONE; 8 TREENCH TERMINATED AT 8 FIELT Coundwater not encountered 7 Groundwater not encountered Staff, moist, while and dive green, fine, Sandy SILTSTONE; 9 TREENCH TERMINATED AT 8 FIELT Coundwater not encountered 9 Coundwater not encountered Staff, moist, while and divergence, fine, Sandy SILTSTONE; 9 Coundwater not encountered Staff, moist, while and divergence, fine, Sandy SILTSTONE; 9 Coundwater not encountered Staff, moist, while and divergence, fine, Sandy SILTSTONE; 9 Coundwater not encountered Coundwater not encountered 9 Coundwater not encountered Coundwater not encountered 9 Coundwater not encountered Coundwater not encountered 9 Coundwater not encountered	- 0 -				SM	GOLF COURSE FILL (Qgcf)			
2					CL	TOPSOIL			
Image: Subset of the second	- 2 -					Stiff, moist to very moist, very dark brown, Silty CLAY	-		
4 Image: Construction of the second consecond construction of the second constructi							-		
6 Wery still, most, white and only green, the, sandy SULTSULTSUANE; 8 ML MISSION VALLEY FORMATION (Tmv) Hard, damp, dive green, fine, Sandy SULTSUDNE with calcium carbonate 8 TRENCH TERMINATED AT & FEET Groundwater not encountered Image: Comparison of the sandy size of	- 4 -			-	ML	MISSION VALLEY FORMATION - Weathered (Tmv)			
6						Very stiff, moist, white and olive green, fine, Sandy SIL1/SIL1STONE; heavy calcium carbonate replacement	-		
8 Image: Construction of the symptotic s	- 6 - 				ML	MISSION VALLEY FORMATION (Tmv) Hard, damp, olive green, fine, Sandy SILTSTONE with calcium carbonate	_		
Groundwater not encountered Gr	- 8 -					TRENCH TERMINATED AT 8 FEET			
Figure A-30, Log of Trench T 30, Page 1 of 1 SAMPLE SYMBOLS SAMPLE SYMOLS SAMPLE SYMOLS SAMPLE						Groundwater not encountered			
Figure A-30, Log of Trench T 30, Page 1 of 1 Ostriaz4sa (TRENCH) GPJ SAMPLE SYMBOLS Image: Sample Symbols Sample Symbols Image: Sample Symbols									
Figure A-30, Log of Trench T 30, Page 1 of 1 Obstructure of the sample Obstructure of the sample SAMPLE SYMBOLS Obstructure of the sample Obstructure of the sample Obstructure of the sample									
Figure A-30, Log of Trench T 30, Page 1 of 1 SAMPLE SYMBOLS Image: Symbol Symb									
Figure A-30, Log of Trench T 30, Page 1 of 1 Outline Sample SAMPLE SYMBOLS Image: Sample Display Equipment									
Figure A-30, D371-32-45A (TRENCH).GPJ Figure A-30, D371-32-45A (TRENCH).GPJ SAMPLE SYMBOLS STANDARD PENETRATION TEST SAMPLE SYMBOLS STANDARD PENETRATION TEST Martin Standard PENETRATION TEST DRIVE SAMPLE (UNDISTURBED)									
Figure A-30, Log of Trench T 30, Page 1 of 1 Ostri 22.45A (TRENCH).GPJ SAMPLE SYMBOLS SAMPLING UNSUCCESSFUL DISTURBED OB BAG SAMPLE Image: Change and the provided and t									
Figure A-30, Log of Trench T 30, Page 1 of 1									
Figure A-30, Log of Trench T 30, Page 1 of 1 O3071-32-45A (TRENCH),GPJ SAMPLE SYMBOLS SAMPLING UNSUCCESSFUL SAMPLE SYMBOLS SAMPLING UNSUCCESSFUL									
Figure A-30, Log of Trench T 30, Page 1 of 1 SAMPLE SYMBOLS Image: Sample Symbols Image: Sample Symbols									
Figure A-30, Log of Trench T 30, Page 1 of 1 Image: Comparison of the standard penetration test is compared by									
Figure A-30, Log of Trench T 30, Page 1 of 1 Image: Sampling unsuccessful issues of the init is sampling unsuccessful issues of the init i									
Figure A-30, Log of Trench T 30, Page 1 of 1 03071-32-45A (TRENCH).GPJ SAMPLE SYMBOLS SAMPLING UNSUCCESSFUL DISTURBED OR BAG SAMPLE STANDARD PENETRATION TEST Matter table or SEEPAGE									
Figure A-30, Log of Trench T 30, Page 1 of 1 03071-32-45A (TRENCH).GPJ SAMPLE SYMBOLS SAMPLING UNSUCCESSFUL DISTURBED OR BAG SAMPLE STANDARD PENETRATION TEST DRIVE SAMPLE (UNDISTURBED) VALUE TABLE OR SEEPACE DRIVE SAMPLE (UNDISTURBED)									
Figure A-30, Log of Trench T 30, Page 1 of 1 03071-32-45A (TRENCH).GPJ SAMPLE SYMBOLS SAMPLING UNSUCCESSFUL DISTURBED OR BAG SAMPLE STANDARD PENETRATION TEST DRIVE SAMPLE (UNDISTURBED) WATER TABLE OR SEEPACE ORIVE SAMPLE (UNDISTURBED)									
Figure A-30, Log of Trench T 30, Page 1 of 1 03071-32-45A (TRENCH).GPJ SAMPLE SYMBOLS Image: Sample construction constructine construction constructine construction const									
Figure A-30, Log of Trench T 30, Page 1 of 1 03071-32-45A (TRENCH).GPJ SAMPLE SYMBOLS Image: mail in the same is a same if a constraint of the same is a same if a constraint of the same is a same if a constraint of the same is a constraint of the same is a constraint of the same is a same is a constraint of the same is a same is									
LOG OT IFERICITI 3U, Page 1 OT 1 SAMPLE SYMBOLS Image: Sample or bag sample Image: Sample or bag sample or bag sample Image: Sample or bag sample or bag sample Image: Sample or bag sample or bag sample or bag sample Image: Sample or bag sample	Figure	e A-30, € Treese	ь т о	•	Decre		0307	71-32-45A (TF	₹ENCH).GPJ
SAMPLE SYMBOLS		TIRENC	n I 3	υ,	rage 1				
	SAMPLE SYMBOLS								

		1		I				
			К		TRENCH T 31	Zula	≻	(
DEPTH] G√	ATE	SOIL			SIT.	IRE %) T
IN FFFT	SAMPLE NO.	НОГС	MDN	CLASS	ELEV. (MSL.) 697.5' DATE COMPLETED 04-30-2019	ETRA SISTA OWS/	P.C.F	DISTL DISTL
			GROL	(0303)	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	RES (BL	DR)	CON
						 		
- 0 -				CT.	MATERIAL DESCRIPTION	<u> </u>		
				CL	Stiff, damp, very dark brown, Sandy CLAY	_		
- 2 -				ML	MISSION VALLEY FORMATION - Weathered (Tmv)			
			-		Very stiff, damp, white and olive green, fine, Sandy SILT/SILTSTONE; heavy calcium carbonate replacement	-		
				ML	MISSION VALLEY FORMATION (Tmv)			
			-	IVIL	Hard, damp, olive green, fine, Sandy SILTSTONE with calcium carbonate	-		
- 6 -					TRENCH TERMINATED AT 6 FEET Groundwater not encountered			
Figure	A-31 ,					0307	71-32-45A (TF	RENCH).GPJ
Log o	f Trenc	h T 3	1,	Page 1	of 1			
				SAMP	LING UNSUCCESSFUL	AMPLE (UNDI	STURBED)	
SAMPLE SYMBOLS			🖾 DISTL	IRBED OR BAG SAMPLE T WATER	WATER TABLE OR SEEPAGE			

	1	1				· ·		· · · · · · · · · · · · · · · · · · ·
DEPTH IN FEET	SAMPLE NO.	ПТНОГОСУ	ROUNDWATER	SOIL CLASS (USCS)	TRENCH T 32 ELEV. (MSL.) 797' DATE COMPLETED 04-30-2019 EQUIDMENT Bubber Tim Bestition DV/ T. DEIOT	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
			Ū			ш.	_	
_ 0 _					MATERIAL DESCRIPTION			
				CL/CH	TOPSOIL Stiff, moist, brown to very dark brown, Silty CLAY; plastic	_		
- 2 -				SM	MISSION VALLEY FORMATION (Tmv) Dense to very dense, damp, light gray, Silty, fine to medium SANDSTONE	_		
- 4 -					TRENCH TERMINATED AT 4 FEET Groundwater not encountered			
Figure Log o	e A-32, f Trenc	h T 3	2,	Page 1	of 1	0307	'1-32-45A (TR	ENCH).GPJ
SAMF	SAMPLE SYMBOLS Image: Sampling unsuccessful Image		STURBED) EPAGE					

		1	-							
DEPTH	SAMPLE	OGY	NATER	SOIL	TRENCH T 33	ATION ANCE S/FT.)	NSITY .F.)	URE VT (%)		
IN FEET	NO.	1HOL	UND	CLASS (USCS)	ELEV. (MSL.) 799' DATE COMPLETED 04-30-2019	LOW:	P.C.	IOIST		
			GRO		EQUIPMENT Rubber Tire Backhoe BY: T. REIST	(BE (BE	DR	≥0 O		
			┢		MATERIAL DESCRIPTION					
- 0 -				SM	GOLF COURSE FILL (Qgcf)					
					Loose, dry, brown, Silty, fine to medium SAND; minor caving; low cohesion	-				
- 2 -						-				
	T22 1					-				
- 4 -	155-1					_				
- 6 -				CM		-				
				5171	Dense, damp, light gray, Silty, fine to medium SANDSTONE	-				
- 8 -			╞		TRENCH TERMINATED AT 8 FEET					
					Groundwater not encountered					
Eigure	Δ 22					020-	71 22 /54 /75			
Log of	f Trenc	h T 3	3,	Page 1	of 1	0307	1-52-45A (1F	LINGH).GPJ		
			-		LING UNSUCCESSFUL	AMPLE (UNDI	STURBED)			
SAMF	SAMPLE SYMBOLS			Image: Second state in the s			R TABLE OR SEEPAGE			

		1				1		, , , , , , , , , , , , , , , , , , ,
DEPTH		βGY	ATER	SOU	TRENCH T 34	TION NCE FT.)	SITY (;	IRE Г (%)
IN FEET	SAMPLE NO.	тного	UNDW	CLASS (USCS)	ELEV. (MSL.) 792' DATE COMPLETED 04-30-2019	JETRA SISTAI -OWS/	Y DEN (P.C.F	IOISTU NTEN
			GRO		EQUIPMENT Rubber Tire Backhoe BY: T. REIST	BI (BI	DR	Cov
			┢		MATERIAL DESCRIPTION			
- 0 -				SM	GOLF COURSE FILL (Qgcf)			
					Loose, dry, brown, Silty, fine to medium SAND; low cohesion	-		
- 2 -						-		
						_		
- 4 -						_		
- 6 -				SM	MISSION VALLEY FORMATION (Tmv) Dense damp light gray Silty fine to medium SANDSTONE			
					Dense, damp, ngin gray, siny, nine to incertain SAINDSTONE	-		
- 8 -					TRENCH TERMINATED AT 8 FEET			
					Groundwater not encountered			
Figure	e A-34, f Trenc	h T 3	4,	Page 1	of 1	0307	71-32-45A (TF	RENCH).GPJ
			-			AMPLE (UNDI	STURBED)	
SAMPLE SYMBOLS			JRBED OR BAG SAMPLE	ATER TABLE OR SEEPAGE				

		-						
DEPTH IN	SAMPLE	IOLOGY	IDWATER	SOIL CLASS	TRENCH T 35 ELEV. (MSL.) 781' DATE COMPLETED 04-30-2019	TRATION STANCE WS/FT.)	DENSITY P.C.F.)	ISTURE TENT (%)
FEET	NO.	Ē	ROUN	(USCS)	FOUIPMENT Rubber Tire Backhoe BY: T. REIST	PENE RESI (BLO	DRY (F	CON
- 0 -	T25 1 B		<u> </u>	CM	MATERIAL DESCRIPTION			
	135-1			51M	Loose to medium dense, damp, brown, Silty, fine to medium SAND	_		
- 2 - - 4 -			•	ML	MISSION VALLEY FORMATION - Weathered (Tmv) Very stiff, damp, white and green, Sandy SILT/SILTSTONE; heavy calcium carbonate replacement	_		
				МІ	MISSION VALLEV EODMATION (True)	-		
- 6 -			•	IVIL	Hard, damp, mottled olive green and maroon, fine, Sandy/Clayey SILTSTONE	_		
Figure	A-35.				TRENCH TERMINATED AT 8 FEET Groundwater not encountered	0307	/1-32-45A (TF	RENCH).GPJ
Logo	f Trenc	h T 3	5,	Page 1	of 1			
SAMPLE SYMBOLS								
SAIVIPLE STIVIDULS			🔯 DISTURBED OR BAG SAMPLE 🛛 🛛 CHUNK SAMPLE 🔍 WATER		R TABLE OR SEEPAGE			

		1						
DEPTH		уду	ATER	SOIL	TRENCH T 36	ATION NCE /FT.)	√SITY Ξ.)	JRE IT (%)
IN FEET	SAMPLE NO.	HOL	MDN	CLASS (USCS)	ELEV. (MSL.) 769.5' DATE COMPLETED 04-30-2019	ETRA SISTA	Y DEN (P.C.F	OISTI
			GROL	(0000)	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PEN (BL	DR	CO
					MATERIAL DESCRIPTION			
- 0 -				SM				
				SIVI	MISSION VALLEY FORMATION (Tmv)	-		
- 2 -					Dense, damp, light gray, Silty, fine to medium SANDSTONE	-		
L _						_		
4								
- 4 -					TRENCH TERMINATED AT 4 FEET			
					Groundwater not encountered			
Figure	∋ A-36,				•	0307	71-32-45A (TF	RENCH).GPJ
Log o	f Trenc	h T 3	6,	Page 1	of 1			
0.4145				SAMF	PLING UNSUCCESSFUL STANDARD PENETRATION TEST DRIVE S.	AMPLE (UNDI	STURBED)	
SAMPLE SYMBOLS			JRBED OR BAG SAMPLE	T WATER TABLE OR SEEPAGE				

DEPTH IN	SAMPLE	OLOGY	IDWATER	SOIL CLASS		TRATION STANCE WS/FT.)	DENSITY .C.F.)	STURE FENT (%)		
FEET	NO.	Ē	ROUN	(USCS)	EQUIPMENT Rubber Tire Backhoe BY: T REIST	PENE RESI (BLO	DRY (F	CON		
- 0 -	 			SM	MATERIAL DESCRIPTION					
L _			<u> </u>		Loose, damp, brown, Silty, fine to medium SAND					
0				SM&SC	Loose to medium dense, damp, gray and dark brown, Silty & Clayey, fine to medium SAND					
- 2 -					inculum SAND	-				
						-				
- 4 -				CL/CH	Stiff moist, very dark brown. Silty CLAY: plastic	+				
				02.011		_				
6 -		KXX								
	T37-1									
						-				
- 8 -	. 8					-				
						_				
- 10 -			1_			L				
10				SC/SM	Loose to medium dense, damp, dark gray, Clayey/Silty, fine SAND with organic odor					
					6	-				
- 12 -						-				
			0 0 0	SM	MISSION VALLEY FORMATION (Tmv) Dense, damp, light brown, Silty, fine to medium SANDSTONE with calcium carbonate	-				
- 14 -					TRENCH TERMINATED AT 14 FEET					
					Groundwater not encountered					
Figure	Figure A-37, 03071-32-45A (TRENCH).GPJ									
Log o	f Trenc	h T 3	7,	Page 1	of 1					
SAME	SAMPLE SYMBOLS									

		1						
DEPTH		ŊGΥ	ATER	SOIL	TRENCH T 38	TION NCE FT.)	(:	JRE T (%)
IN FEET	SAMPLE NO.	НОГС	MDM	CLASS	ELEV. (MSL.) 764' DATE COMPLETED 04-30-2019	ETRA SISTA OWS/	P.C.F	DISTL NTEN
1			GROU	(0505)	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PENI RES (BL(DRY)	CONC
					MATERIAL DESCRIPTION			
- 0 -			,	SM	MISSION VALLEY FORMATION (Tmv)			
					Dense, damp, light gray, Silty, fine to medium SANDSTONE with calcium carbonate veins	-		
- 2 -			, ,			-		
			, ,			_		
			, ,					
- 4 -					TRENCH TERMINATED AT 4 FEET			
					Groundwater not encountered			
Figure	A-38,	ьтο	0	Dogo 4		0307	71-32-45A (TF	ENCH).GPJ
		113	ο,	rage 1				
SAMPLE SYMBOLS SAMPLING UNSUCCESSFUL STANDARD PENETRATION TEST DRIVE SAMPLE (UNDISTURBED)								
		🕅 DISTL	JRBED OR BAG SAMPLE 🔰 WATER	TABLE OR SE	EPAGE			

		1	1					, , , , , , , , , , , , , , , , , , ,		
			н		TRENCH T 39	Zщ.	≿	(%		
DEPTH	SAMPLE	00	WAT	SOIL		ATIC ANC S/FT	ENSIT	rure NT (9		
FEET	NO.	THOI	NN	CLASS (USCS)	ELEV. (MSL.) 757.5' DATE COMPLETED 04-30-2019	NETR SIST LOW	Υ DE (P.C	10IS ⁻		
			GRO		EQUIPMENT Rubber Tire Backhoe BY: T. REIST	RE RE	DF	≥ 0 0		
			┢		MATERIAL DESCRIPTION					
- 0 -				SC	GOLF COURSE FILL (Qgcf)					
				SM&CL	Loose to medium dense, moist, light brown, gray and white, mixture of Clayey to Silty, fine to medium SAND and Sandy CLAY	-				
- 2 -						_				
- 4 -						-				
						-				
- 6 -			1			-				
- 8 -						-				
						-				
- 10 -					Persones prodominantly gray below 10 feet	-				
					-becomes predominantly gray below 10 reet	_				
- 12 -					-Becomes predominantly blue green below 12 feet	_				
						-				
- 14 -						-				
						-				
- 16 -										
10										
		······			TRENCH TERMINATED AT 17 FEET	_				
					Groundwater not encountered					
Figure	Log of Trench T 39. Page 1 of 1									
90			-,							
SAMPLE SYMBOLS Image: mail and mail an										



(1		1		I I		
DEPTH		OGY	VATER	SOIL	TRENCH T 40	ATION ANCE (/FT.)	VSITY F.)	URE JT (%)
IN FEET	NO.	ТНОГ	UNDV	CLASS (USCS)	ELEV. (MSL.) 754.5' DATE COMPLETED 04-30-2019	JETR/ SIST/ -OWS	Y DEN (P.C.	OIST
			GRO		EQUIPMENT Rubber Tire Backhoe BY: T. REIST	RE (BI	DR	≥o
					MATERIAL DESCRIPTION			
- 0 -			<u> </u>	_ <u>SM</u>	GOLF COURSE FILL (Qgcf)			
				SC&SM	Loose, damp, brown, Silty, fine to medium SAND	-		
- 2 -						-		
						-		
- 4 -						-		
L _				SC	TOPSOIL			
- 6 -				SM	Loose to medium dense, damp, dark brown, Clayey, fine to medium SAND / MISSION VALLEY FORMATION (Tmv)			
0					Dense, damp, light gray, Silty, fine to medium SANDSTONE			
					TRENCH TERMINATED AT 7 FEET			
					Groundwater not encountered			
Figure	A-40		1	I		0307	71-32-45A (TF	RENCH).GPJ
Log o	f Trenc	h T 4	0,	Page 1	of 1			,
				SAMP	LING UNSUCCESSFUL	AMPLE (UNDI	STURBED)	
SAMP	SAMPLE SYMBOLS			M DISTURBED OR BAG SAMPLE M CHUNK SAMPLE ✓ WATER TABLE OR SEEPAGE				

DEPTH		УGY	ATER	SOIL	TRENCH T 41	ATION NCE /FT.)	VSITY =.)	JRE IT (%)
IN FEET	NO.	НОГ	NDV	CLASS (USCS)	ELEV. (MSL.) 739' DATE COMPLETED 04-30-2019	IETR/ SIST/ OWS	Y DEN (P.C.I	OISTI
			GROI	()	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	(BL	DR	CΩ
					MATERIAL DESCRIPTION			
- 0 -				SM&SC	GOLF COURSE FILL (Qgcf)			
					Loose, dry, white and light brown, Silty and Clayey SAND	-		
- 2 -						-		
						-		
- 4 -					Stiff which block and rate many Silty and Sandy CLAV, plastic			
L _				CL/CH	Sum, moist, black and pale green, Sinty and Sandy CLAY; plastic	_		
6 -								
0		HH						
						-		
- 8 -			1			-		
		Ĥ				-		
- 10 -						-		
						-		
- 12 -		H H				_		
L _						_		
_ 11 _								
14								
						-		
- 16 -					TRENCH TERMINATED AT 16 FEET			
					Groundwater not encountered			
Figure	e A-41,					0307	'1-32-45A (TF	ENCH).GPJ
Log o	f Trenc	h T 4	1,	Page 1	of 1			
SAMF	PLE SYMB	OLS		SAMP	LING UNSUCCESSFUL STANDARD PENETRATION TEST DRIVE SA	AMPLE (UNDI	STURBED)	
				🕅 DISTL	IRBED OR BAG SAMPLE N CHUNK SAMPLE V WATER 1	ABLE OR SE	EPAGE	

			T					1
			К		TRENCH T 42	Z	≻	(ç
DEPTH	CAMPLE	06Y	VATE	SOIL		ATIO /FT.	NSIT F.)	URE JT (%
IN FEET	NO.	НОГ	NDV	CLASS (USCS)	ELEV. (MSL.) 743.5' DATE COMPLETED 04-30-2019	IETR/ SIST/ OWS	Y DEN (P.C.	OIST
			GROI	(/	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	(BL	DR	C⊠
			┢					
- 0 -		- Alter	-	SM	GOLF COURSE FILL (Ogef)			
L –				SM	Loose, damp, dark brown, Silty, fine to medium SAND			
					Loose to medium dense, damp, gray, Silty, fine to medium SAND with some			
- 2 -	T42-1				enay	_		
						-		
- 4 -				М	Clean contact	_		
				MIL	MISSION VALLEY FORMATION (Tmv)			
			•		Hard, damp, gray, fine, Sandy SILTSTONE			
- 6 -			-			-		
					TRENCH TERMINATED AT 7 FEET			
					Groundwater not encountered			
E larrow							4 00 451 7-	
	≠ A-42, f Trenc	h T 4	2.	Page 1	of 1	0307	1-3∠-45A (ſF	ENCH).GPJ
			_,					
SAMF	SAMPLE SYMBOLS							
1						ADLL UN SE	LIAGE	

		X	TER		TRENCH T 43	CE CE	λ	КЕ (%)	
DEPTH IN FEET	SAMPLE NO.	HOLOG	NDWA	SOIL CLASS (USCS)	ELEV. (MSL.) 719' DATE COMPLETED 04-30-2019	ETRAT SISTAN	Y DENS (P.C.F.)	OISTUR	
			GROL	(0000)	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PEN RE((BL	DR	CO	
			Π		MATERIAL DESCRIPTION				
- 0 -				SC	TOPSOIL				
					CRANITIC ROCK (Kgr)	-			
- 2 -		+ + - + ·			Moderately weathered, brown, moderately weak to moderately strong	_			
		+ +			GRANITIC ROCK	_			
		+ +							
- 4 -					PRACTICAL REFUSAL AT 4 FEET				
					Groundwater not encountered				
Log of Trench T 43, Page 1 of 1									
			-				STURBED		
SAMP	SAMPLE SYMBOLS				. SAMPLE (UNDISTURBED) R TABLE OR SEEPAGE				



(1	-					
		2	TER		TRENCH T 44	NORU	Υ	E (%)
DEPTH IN	SAMPLE NO.	POLOG	NDWA'	SOIL CLASS	ELEV. (MSL.) 614' DATE COMPLETED 05-01-2019	ETRATI ISTAN(DWS/F	DENSI P.C.F.)	ISTUR
FEEI		Ē	GROU	(USCS)	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PENE RES (BLO	DRY (I	CON
<u> </u>								
- 0 -		A. 0.0.			MULCH			
				SM&SC	PREVIOUSLY PLACED COMPACTED FILL (Onf)			
- 2 -				Siviase	Medium dense, moist, brown and gray, Silty to Clayey, fine to medium SAND	_		
- 4 -						-		
					-Becomes predominantly gray below 5 feet	-		
- 6 -						-		
L -						-		
0								
						-		
- 10 -				$-\overline{CL}$	Very stiff, moist, gray and brown, Sandy to Silty CLAY			
			1			-		
- 12 -						-		
L _								
4.4								
- 14 -			:					
						-		
- 16 -					-Becomes brown with trace gravel below 16 feet	-		
			·		TRENCH TERMINATED AT 17 FEET			
					Groundwater not encountered			
Figure A-44, Log of Trench T 44, Page 1 of 1								
			-		LING UNSUCCESSFUL STANDARD PENETRATION TEST DRIVE S.	AMPLE (UNDI	STURBED)	
SAMPLE SYMBOLS				🖾 DISTL	IRBED OR BAG SAMPLE Two water Two wa	TABLE OR SE	EPAGE	

			Я		TRENCH T 45	Z	~	
DEPTH] G√	/ATE	SOIL		PUCE (FT.)	ISIT :)	JRE T (%
IN	SAMPLE NO.	10L0	NDN	CLASS	ELEV. (MSL.) 616.5' DATE COMPLETED 05-01-2019	STA STA	DEN P.C.F	ISTU
FEEI		Ē	SOUI	(USCS)		PENE (BLC	DRY (F	CON
			G					
0					MATERIAL DESCRIPTION			
- 0 -				SM&SC	GOLF COURSE FILL (Qgcf)			
					Loose to medium dense, damp, light brown and gray, Silty to Clayey, fine to medium SAND	-		
- 2 -								
						-		
- 4 -						-		
- 6 -					-Becomes medium dense, damp to moist, gray and brown with mixtures of	-		
					Silty to Clayey SAND and Silty to Sandy CLAY below 6 feet	L		
- 8 -						-		
						-		
- 10 -								
10								
						-		
- 12 -						L		
					-3-foot long boulder at 12 feet			
					-Becomes blue gray and very dark brown with organic odor below 13 feet	-		
- 14 -						-		
- 16 -						-		
					TRENCH TERMINATED AT 17 FEET			
					Groundwater not encountered			
Figure A-45. 03071-32-45A (TRENCH).GPJ								
Log o	f Trencl	h T 4	5,	Page 1	of 1			
			-					
SAMPLE SYMBOLS							EPAGE	



			ER		TRENCH T 46	Zω~	≥	(%
DEPTH		6	VAT	SOIL		NC NC	NSIT (.)	URE IT (%
IN	NO.	- P	NDV	CLASS	ELEV. (MSL.) 691' DATE COMPLETED 05-01-2019	ETR/ IST/	DE C.C.	IST ITEN
FEEI		Ē	ROU	(USCS)		PENE RES (BLC	DRY (I	CONC
			Ū			ш. 		
					MATERIAL DESCRIPTION			
- 0 -				SM	GOLF COURSE FILL (Qgcf)			
				SC&CL	Loose to medium dense, damp, brown, Silty to Clayey, fine to medium SAND and Silty to Sandy CLAY: with some random 6 to 12 inch granitic clasts	-		
2					and Sity to Sandy CLAT, with some random o to 12-men granitic clasis			
						Γ		
						-		
_ 4 _								
	T46-1				-Becomes medium dense and damp to moist below 4 feet			
						-		
- 6 -	l B					_		
						-		
- 8 -		문민			-Becomes array below & feet	-		
					-Decomes gray below o rec			
- 10 -		+ '+ '	-		Moderately weathered, brown, moderately strong GRANITIC ROCK	-		
		+ +						
					Groundwater not encountered			
Figure A-46, 03071-32-45A (TRENCH).GPJ								
Log o	t Trenc	h T 4	6,	Page 1	of 1			
SAME				SAMP	LING UNSUCCESSFUL STANDARD PENETRATION TEST DRIVE S	AMPLE (UNDI	STURBED)	
SAMPLE SYMBOLS				🕅 DISTL	IRBED OR BAG SAMPLE 🛛 CHUNK SAMPLE II. WATER	TABLE OR SE	EPAGE	



			딾		TRENCH T 47	Zш	≺	()	
DEPTH		JG√	ATE	SOIL		PTCI PTCI	USIT (:	T (%	
IN	SAMPLE	Į OLO	Ŋ ₽ 2	CLASS	ELEV. (MSL.) 696' DATE COMPLETED 05-01-2019	STA STA WVS	DEN C.F	IST(
FEET	110.	Ē	ROUN	(USCS)		PENE RESI (BLC	DRY (F	CON	
			G			-			
					MATERIAL DESCRIPTION				
- 0 -				SM	TOPSOIL				
	T47 1 🛛	+ + - + ·			Loose, damp, brown, Silty, fine to medium SAND	_			
2	14/-1	+ +			GRANITIC ROCK (Kgr) Moderately to slightly weathered gray moderately strong to strong				
- 2 -					GRANITIC ROCK				
					REFUSAL AT 2 FEET				
					Groundwater not encountered				
Figure	Figure A-47, 03071-32-45A (TRENCH).GPJ								
Log o	f Trencl	h T 4	7, I	Page 1	of 1				
_									
SAMP	LE SYMB	OLS							
1					TOLD ON DAG GAIVIFLE II. GOUNN GAIVIFLE V MATERI	VDLE OK 9E	LEAGE		

								ſ	
			К		TRENCH T 48	zwo	≻	(9	
DEPTH		∑	ATE	SOIL		L IO	ISIT (:	JRE 7 (%	
IN	SAMPLE	I OLO	NDV	CLASS	ELEV. (MSL.) 689' DATE COMPLETED 05-01-2019	STA STA WS	DEN P.C.F	ISTU	
FEET	110.	Ē	ROUN	(USCS)	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PENE RESI (BLC	DRY (F	CON	
			0						
					MATERIAL DESCRIPTION				
0		한다		SM	GOLF COURSE FILL (Qgcf)				
				$-\overline{CL}$	Stiff. moist. brown. Silty CLAY: with some gray sand				
- 2 -									
		+ '	-		Moderately to slightly weathered, dark gray, strong GRANITIC ROCK				
					REFUSAL AT 3 FEET				
					Groundwater not encountered				
Figure	A-4 8,					0307	1-32-45A (TF	ENCH).GPJ	
Log o	f Trenc	h T 4	8,	Page 1	of 1				
				SAMP			STURBEDI		
SAMF	SAMPLE SYMBOLS		Image: Standard Penetration Test Image: DRIVE SA Image: Standard Penetration Test Ima				TABLE OR SEEPAGE		

		2	TER		TRENCH T 49	U⊟(:	ΣLI	MOISTURE CONTENT (%)		
DEPTH IN	SAMPLE NO.	POLOP	NDWA	SOIL CLASS	ELEV. (MSL.) 698' DATE COMPLETED 05-01-2019	ETRATI ISTAN	DENS P.C.F.)	ISTUR TENT		
FEEI			GROUI	(USCS)	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PENE RESI (BLC	DRY (F	MO		
			Ĕ							
- 0 -			_	CN/8CC						
				SM&SC	GOLF COURSE FILL (Qgct) Loose to medium dense, damp to moist, dark brown and gray, Silty to Clayey, fine to medium SAND with abundant roots in upper foot	_				
			-							
		$\begin{vmatrix} + & + \\ + & + \end{vmatrix}$			GRANITIC ROCK (Kgr) Moderately weathered, brown to dark brown, moderately strong to strong GRANITIC ROCK	-				
- 4 -					REFUSAL AT 4 FEET Groundwater not encountered					
Figure	A-49 ,					0307	71-32-45A (TF	RENCH).GPJ		
Log o	f Trenc	h T 4	9,	Page 1	of 1					
		<u></u>		SAMF	LING UNSUCCESSFUL STANDARD PENETRATION TEST DRIVE S	AMPLE (UNDI	STURBED)			
SAMP	SAMPLE SYMBOLS				JRBED OR BAG SAMPLE III CHUNK SAMPLE IIII WATER	R TABLE OR SEEPAGE				

		1	-					,
DEPTH		GY	ATER	SOIL	TRENCH T 50	TION VCE FT.)	SITY (RE Г (%)
IN FEET	SAMPLE NO.	OTOH-	MDN	CLASS (USCS)	ELEV. (MSL.) 697.5' DATE COMPLETED 05-01-2019	ETRA SISTAI OWS//	Y DEN (P.C.F	OISTU
			GRO	(0000)	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PEN (BL	DR	CW
					MATERIAL DESCRIPTION			
- 0 -				SM	GOLF COURSE FILL (Qgcf)			
					Loose, dry, brown, Silty, fine to medium SAND; low cohesion in upper 4 feet	-		
- 2 -						-		
L -						_		
_ 1 _								
-					-Becomes mixed with clayey sand below 4 feet			
		0 0	_	CM	MISSION VALLEY FORMATION (Face)	_		
- 6 -		000		SIM	Dense, damp, light gray, Gravelly, fine to coarse SAND with 30%-40% gravel	-		
		+ +			and cobble size rock fragments up to 4-inches	-		
- 8 -		+ +			Slightly to moderately weathered, pale green, moderately weak GRANITIC			
					TRENCH TERMINATED AT 8 FEET			
					Groundwater not encountered			
Figure	Δ_50					0307	1-32-45A (TR	ENCH).GP.I
Log o	f Trenc	h T 5	0,	Page 1	of 1			
SAMF	SAMPLE SYMBOLS							
				🕅 DISTL	IRBED OR BAG SAMPLE V WATER	TABLE OR SE	EPAGE	



DEPTH		ЭGY	ATER	SOIL	TRENCH T 51	TION NCE (FT.)	ISITY .)	JRE T (%)
IN FEET	SAMPLE NO.	HOLO	NDN	CLASS (USCS)	ELEV. (MSL.) 706.5' DATE COMPLETED 05-01-2019	IETRA SISTA OWS	Y DEN (P.C.F	OISTU NTEN
			GROI		EQUIPMENT Rubber Tire Backhoe BY: T. REIST	BEN (BL	DR	COM
			┢		MATERIAL DESCRIPTION			
- 0 -				SM	GOLF COURSE FILL (Qgcf)			
					Loose, dry, brown, Silty, fine to medium SAND; low cohesion	-		
- 2 -						-		
				- <u>-</u>	Loose to medium dense, damp, light gray and white, Silty, fine to medium			
- 4 -					SAND with random very dark brown clay chunks	-		
						-		
- 6 -						_		
- 8 -					-Gravel and cobble size rock fragments up to 5-inches present below 8 feet			
						-		
- 10 -				CL	MISSION VALLEY FORMATION (Tmv)			
					fissured in areas	-		
- 12 -		+ +	1		GRANITIC ROCK (Kgr)			
		+ + + + +			Completely to highly weathered, brown and white, moderately weak GRANITIC ROCK; weathering decreases with depth	-		
- 14 -					TRENCH TERMINATED AT 14 FEET Groundwater not encountered			
<u> </u>								
Figure	e A-51, f Trenc	h T 5	1,	Page 1	of 1	0307	71-32-45A (TF	RENCH).GPJ
SAME				SAMP	LING UNSUCCESSFUL	AMPLE (UNDI	STURBED)	
SAMPLE SYMBOLS				🕅 DISTL	JRBED OR BAG SAMPLE 🛛 CHUNK SAMPLE I WATER	TABLE OR SE	EPAGE	



	1	1	1	1		,	1		
		≻	ER		TRENCH T 52	<u>К</u> Ш.	≿	(%) =	
DEPTH IN	SAMPLE	DOG)	DWAT	SOIL		RATIC TANC VS/FT	ENSI C.F.)	sturi	
FEET	NO.		INNO	(USCS)	ELEV. (MSL.) 790.5 DATE COMPLETED 05-01-2019	ENET RESIS BLOV	RY D (Р.		
			GR		EQUIPMENT Rubber Tire Backhoe BY: T. REIST	ЧЧ С ЧЧ С		0	
					MATERIAL DESCRIPTION				
0				SC&CL	PREVIOUSLY PLACED COMPACTED FILL (Qpf) Medium dense, moist, gray-brown, mixture of Clayey, fine to medium SAND				
					and Sandy CLAY	-			
- 2 -						-			
	T52-1					-			
- 4 -						-			
						-			
- 6 -						-			
						_			
_ 8 _		4,4,4		SM&SC	Medium dense, moist, gray, Clayey to Silty SAND				
0									
						-			
- 10 -						-			
						-			
- 12 -			-		TRENCH TERMINATED AT 12 FEET				
					Groundwater not encountered				
Figure	Figure A-52, 03071-32-45A (TRENCH).GPJ								
	T I renc	n I 5	2,	Page 1	OT 1				
SAMF	PLE SYMB	OLS		SAMP	PLING UNSUCCESSFUL	AMPLE (UNDI	STURBED)		
1				🕅 DISTL	JRBED OR BAG SAMPLE 🛛 🔪 WATER	I ABLE OR SE	EPAGE		


	1	1					1	
DEPTH IN	SAMPLE	огосу	DWATER	SOIL CLASS		IRATION STANCE WS/FT.)	DENSITY .C.F.)	STURE 'ENT (%)
FEET	NO.	H H	NNO	(USCS)	ELEV. (MSL.) 790 DATE COMPLETED 05-01-2019	ENE1 RESIS	RY D (P.	MONT
			GR		EQUIPMENT Rubber Tire Backhoe BY: T. REIST			0
0					MATERIAL DESCRIPTION			
				SC	PREVIOUSLY PLACED COMPACTED FILL (Qpf) Medium dense, moist, brown-gray, Clayey, fine to medium SAND			
				ML	MISSION VALLEY FORMATION (Tmv)			
- 2 -					Hard, damp, gray, fine, Sandy SILTSTONE			
					Groundwater not encountered			
Figure	Δ_53				L	0303	1-32-45A /TE	ENCH) GP I
Log of	f Trenc	h T 5	3, I	Page 1	of 1	0307	1-32-49A (1H	LINGH).GPJ
			-		PLING UNSUCCESSFUL		STURBED)	ĺ
SAMP	SAMPLE SYMBOLS				JRBED OR BAG SAMPLE	TER TABLE OR SEEPAGE		

		1						
			ER		TRENCH T 54	Zu~	≻	(%
DEPTH	SAMPLE	0GY	VATI	SOIL		ATIO ANCI S/FT.	NSIT F.)	URE VT (%
IN FEET	NO.	HOL	NDN	CLASS (USCS)	ELEV. (MSL.) 800' DATE COMPLETED 05-01-2019	ETR. SIST/	Y DE (P.C.	OIST
			GROL	(0000)	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PEN (BL	DR	Ŭ O Ŭ
					MATERIAL DESCRIPTION			
- 0 -		-00- -00			MULCH			
				CL	PREVIOUSLY PLACED COMPACTED FILL (Qpf)	-		
- 2 -					Medium dense, moist, gray and brown, Siny and Sandy CLA i	_		
			-	ML	MISSION VALLEY FORMATION (Tmv)			
					Hard, damp, gray-brown, fine, Sandy SILTSTONE			
					TRENCH TERMINATED AT 3 FEET			
					Groundwater not encountered			
L								
Log o	, א-ס4, f Trenc	h T 5	4,	Page 1	of 1	0307	r i-3∠-45A (ſF	ENCH).GPJ
			-					
SAMPLE SYMBOLS			JRBED OR BAG SAMPLE	E SAMPLE (UNDISTURBED) ER TABLE OR SEEPAGE				

		≻	ШШ		TRENCH T 55	<u>с</u> К	≿			
DEPTH	SAMPI F	00	NAT	SOIL		ATIC ANC S/FT	NSI ⁻	URE MT (5		
IN FEET	NO.	HOL		CLASS (USCS)	ELEV. (MSL.) 790.5' DATE COMPLETED 05-01-2019	ETR SIST, OWS	Y DE (P.C.	0IST NTE		
			3ROL	(0000)	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PEN RE((BL	DR	COL		
			Ц							
- 0 -		ene kor		01						
				SM SM	GOLF COURSE FILL (Qgcf) Loose, dry, brown, Silty, fine to medium SAND					
					MISSION VALLEY FORMATION (Tmv)	_				
- 2 -					Dense, damp, gray, Silty, fine to medium SANDSTONE	_				
					TRENCH TERMINATED AT 3 FEET Groundwater not encountered					
Figure	Figure A-55, 03071-32-45A (TRENCH).GPJ									
Log of	Trencl	n T 5	5,	Page 1	of 1					
SAMPLE SYMPOLS					AMPLE (UNDI	STURBED)				
SAMP	SAMPLE SYMBOLS			🕅 DISTU	IRBED OR BAG SAMPLE I WATER T	I WATER TABLE OR SEEPAGE				

		1	T					
DEPTH		OGY	VATER	SOIL	TRENCH T 56	ATION ANCE (/FT.)	VSITY F.)	URE IT (%)
IN FEET	NO.	HOL	NDN	CLASS (USCS)	ELEV. (MSL.) 667' DATE COMPLETED 05-01-2019	IETR/ SIST/	Y DEN (P.C.I	OISTI
		5	GROI	()	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PEN (BL	DR	ZOZ
					MATERIAL DESCRIPTION			
- 0 -	T56-1			SM/SC	TOPSOIL Medium dance damp brown Silty/Clayay fine to medium SAND			
					Medium dense, damp, brown, Snty/Clayey, fine to medium SAND	-		
- 2 -	. 8					-		
		+ +			GRANITIC ROCK (Kgr) Highly weathered, pale green, moderately weak GRANITIC ROCK	_		
- 4 -					Thighly weathered, part green, moderately weak OKANTTE ROCK	_		
		+ +						
					TRENCH TERMINATED AT 5 FEET			
					Groundwater not encountered			
Figure	Figure Δ-56							
Log o	f Trenc	h T 5	6,	Page 1	of 1			,
			-				STURBED)	
SAMPLE SYMBOLS				JRBED OR BAG SAMPLE In CHUNK SAMPLE IN CHUNK SAMPLE	TABLE OR SEEPAGE			

	1	1	-					
DEDTU		27	VTER		TRENCH T 57	TON TCE	ытү)	त्रह (%)
IN FEET	SAMPLE NO.	THOLO(NDWP	SOIL CLASS (USCS)	ELEV. (MSL.) 670' DATE COMPLETED 05-01-2019	IETRAT SISTAN OWS/F	Y DENS (P.C.F.)	OISTUF
			GROI	()	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PEN (BL	DR	S O ⊠
<u> </u>			┢		MATERIAL DESCRIPTION			
- 0 -			:	SM/SC	GOLF COURSE FILL (Qgcf)			
					Loose to medium dense, damp, brown, Silty to Clayey, fine to medium SAND	-		
- 2 -						_		
					2 fact haulden at 2.5 fact	_		
- 4 -					-3-100t bollder at 5.3 feet -Becomes gray and brown between 3.5 and 5 feet	_		
- 6 -						-		
						-		
- 8 -						-		
						_		
- 10 -		- + '			Moderately weathered, dark gray and white, moderately strong GRANITIC			
					ROCK TRENCH TERMINATED AT 10 FEET			
					Groundwater not encountered			
Figure	e A-57,					0307	71-32-45A (TF	RENCH).GPJ
Log o	f Trenc	h T 5	7,	Page 1	of 1			
SAMF	SAMPLE SYMBOLS							
				🕅 DISTL	JRBED OR BAG SAMPLE V WATER	TABLE OR SE	EPAGE	



						1	1	
DEPTH		ZG≺	ATER	SOIL	TRENCH T 58	TION NCE FT.)	SITY (RE Г (%)
IN FEET	SAMPLE NO.	гного	UNDW/	CLASS (USCS)	ELEV. (MSL.) 671' DATE COMPLETED 05-01-2019	IETRA' SISTAI -OWS//	Y DEN (P.C.F	OISTU
			GROI	()	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PEN (BL	DR	Co⊻
					MATERIAL DESCRIPTION			
- 0 -			:	SM/SC	GOLF COURSE FILL (Qgcf)			
			\vdash	CI	Loose to medium dense, damp, brown, Silty to Clayey, fine to medium SAND			
- 2 -			1		Stiff, moist, dark brown, Silty/Sandy CLAY	_		
					GRANITIC ROCK (Kgr) Highly weathered, dark green and white, moderately weak GRANITIC ROCK	_		
- 4 -						-		
					TRENCH TERMINATED AT 5 FEET Groundwater not encountered			
Figure	A-58,		0			0307	71-32-45A (TR	ENCH).GPJ
Log o	t Trenc	n T 5	8,	Page 1	l of 1			
SAMPLE SYMBOLS		STURBED)						
SAMPLE SYMBOLS		🕅 DISTL	JRBED OR BAG SAMPLE 🛛 CHUNK SAMPLE 🕎 WATER 1	TABLE OR SEEPAGE				

			ER		TRENCH T 59	Zш~	≥	9
DEPTH		06)	VAT	SOIL		ATIC NC.	NSIT (.1	URE JT (%
	NO.	보	NDV	CLASS	ELEV. (MSL.) 639' DATE COMPLETED 05-01-2019	ETR/	P.C.	UTEN UTEN
1 661		Ē	ROU	(USCS)		BL(DRY)	CON
			Ū			ш. 		
					MATERIAL DESCRIPTION			
- 0 -				SM	PREVIOUSLY PLACED COMPACTED FILL (Qpf)			
					Medium dense, damp to moist, brown, Silty, fine to coarse SAND	-		
- 2 -						_		
					-Several boulders (over 4-feet in length) observed within a compacted soil			
					matrix	-		
					REFUSAL ON BOULDERS AT 3.5 FEET			
					Groundwater not encountered			
Figure								
Loa	f Trencl	h T 5	9.	Page 1	l of 1	0001	. 02 707 (11)	
			-,					
SAMP	LE SYMB	OLS		SAMF	PLING UNSUCCESSFUL	AMPLE (UNDI	STURBED)	
I				🖾 DISTL	JRBED OR BAG SAMPLE 📃 WATER 📜 WATER 📜	TABLE OR SE	EPAGE	

		1						
			2		TRENCH T 60	7	~	
DEPTH		<u></u> ∑	ATE	8011			(TIS	RE 7 (%
IN	SAMPLE		M	CLASS		RA STAI	OEN .C.F	STU ENT
FEET	NO.	L E	NNC	(USCS)	ELEV. (MSL.) 440 DATE COMPLETED 00-01-2019		RY [(P.	IOM
			GR		EQUIPMENT Rubber Tire Backhoe BY: T. REIST	I II N	D	C
			\vdash		MATERIAL DESCRIPTION			
- 0 -		집단학	-	SM	PREVIOUSLY PLACED COMPACTED FILL (Opf)			
					Medium dense, damp to moist, dark brown and brown, Silty, fine to coarse			
					SAND			
- 2 -						-		
						_		
- 4 -	T60-1					-		
						-		
6								
- 0 -						Γ		
						-		
- 8 -					-Refusal on boulder at 8 feet: possible granitic rock contact			
Ũ					REFUSAL AT 8 FEET			
					Groundwater not encountered			
Figure	A-60 ,					0307	71-32-45A (TF	ENCH).GPJ
Log o	f Trencl	h T 6	0,	Page 1	of 1			
		.		SAMP	PLING UNSUCCESSFUL	AMPLE (UNDI	STURBED)	
SAMP	SAMPLE SYMBOLS		OLS Image: Solute Lines on social solution Image: Solute Lines on social solution Image: Solute Lines on social solution Image: Solute Lines on social solution Image: Solute Lines on social solution Image: Solute Lines on social solution Image: Solute Lines on social solution Image: Solute Lines on social solution Image: Solute Lines on social solution Image: Solute Lines on social solution Image: Solute Lines on social solution Image: Solute Lines on social solution Image: Solute Lines on social solution Image: Solute Lines on social solution Image: Solute Lines on social solution Image: Solute Lines on social solution Image: Solute Lines on social solution Image: Solute Lines on social solution					

(1					· · · · · · · · · · · · · · · · · · ·		
DEPTH		βGY	ATER	SOIL	TRENCH T 61	TION NCE FT.)	SITY (:	IRE T (%)
IN FEET	SAMPLE NO.	LHOLC	MDND	CLASS (USCS)	ELEV. (MSL.) 658.5' DATE COMPLETED 05-01-2019	IETRA SISTAI -OWS/	Y DEN (P.C.F	OISTU NTEN ⁻
			GRO	. ,	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	RE (BI	DR	∑ O ∑
					MATERIAL DESCRIPTION			
- 0 -			:	SP	GOLF COURSE FILL (Qgcf)			
					Loose, damp, gray, fine to medium SAND	-		
- 2 -		7777	; ;	$-\frac{1}{SC}$	¬3 to 4-inch thick, pea gravel lense at base /			
					Medium dense, moist, brown, Clayey, fine to medium SAND	-		
- 4 -	T61-1	+ +			GRANITIC ROCK (Kgr)			
					Highly to moderately weathered, light brown, moderately weak to moderately strong GRANITIC ROCK	_		
- 6 -	ř.				REFUSAL AT 6 FEET Groundwater not encountered			
Eigur								
Log o	f Trenc	h T 6	1,	Page 1	of 1	0307	- 1-02-+0A (TP	
SAMPLE SYMBOLS								
	SAMPLE SYMBOLS			🕅 DISTL	IRBED OR BAG SAMPLE 🛛 WATER	FABLE OR SE	EPAGE	



DEPTH IN	SAMPLE	огоду	JDWATER	SOIL CLASS	TRENCH T 62	TRATION STANCE WS/FT.)	DENSITY .C.F.)	ISTURE FENT (%)
FEET	NO.		GROUN	(USCS)	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PENE RESI (BLO	DRY (F	MO
- 0 -			-	SP	GOLF COURSE FILL (Ogef)			
			•		Loose, damp, gray, fine to medium SAND	-		
- 2 -		-7-,	; 	- <u>-</u>	-3 to 4-inch thick, pea gravel lense at base			
				CL	Stiff, moist, dark brown, Sandy CLAY	-		
- 4 -		<u></u>			GRANITIC ROCK (Kgr) Highly to moderately weathered, brow, moderately weak to moderately strong GRANITIC ROCK	_		
- 6 -		+ + + +				-		
		+ +				-		
- 8 -		+ +						
					PRACTICAL REFUSAL AT 8 FEET Groundwater not encountered			
Figure	• A-62	1	1	I	1	0307	'1-32-45A (TF	ENCH).GPJ
Log o	f Trenc	h T 6	2,	Page 1	of 1			
				SAMF	PLING UNSUCCESSFUL	AMPLE (UNDI	STURBED)	
SAMPLE SYMBOLS				JRBED OR BAG SAMPLE I CHUNK SAMPLE I WATER	ABLE OR SEEPAGE			

			H		TRENCH T 63	Zщγ	≿	
DEPTH		0 0	VAT	SOIL		ATIC %FT	NSI ⁻	URE ()
IN FEET	NO.	보	ND ND	CLASS	ELEV. (MSL.) 655' DATE COMPLETED 05-01-2019	ETR.	P.C.	NIST
		5	ROL	(0303)	FOUIPMENT Rubber Tire Backhoe BY: T. REIST	RES (BL	DR)	CON
			0					
- 0 -					MATERIAL DESCRIPTION			
Ŭ				SM/SC	GOLF COURSE FILL (Qgcf) Medium dense, damp, brown, Silty to Clayey, fine to medium SAND			
					wedulin dense, damp, brown, bity to erayey, fine to meetidin brandb	-		
- 2 -						-		
- 4 -		+ +			GRANITIC ROCK (Kgr)			
		+ + + + + + + + + + + + + + + + + + +	1		Highly to moderately weathered, dark brown, moderately weak to moderately	-		
6		+ +			Strong OKANITIC ROCK			
0					TRENCH TERMINATED AT 6 FEET			
					Groundwater not encountered			
Figure A-63. 03071-32-45A (TRENCH).GPJ								
Log o	f Trenc	h T 6	3,	Page 1	of 1			
				SAMP			STURBED)	
SAMPLE SYMBOLS				IRBED OR BAG SAMPLE IN CHUNK SAMPLE IN WATER	TABLE OR SE	EPAGE		

							1	1
			<u>د</u>		TRENCH T 64	Z	~	
DEPTH		∑	ATE	SOIL			SIT.	RЕ Г (%
IN	SAMPLE	OLC	ND	CLASS		STAI WS/	C.F	STU
FEET	NO.	E E	SUN	(USCS)		ENE.	RY I (Р	
			US R		EQUIPMENT Rubber Tire Backhoe BY: T. REIST			0
					MATERIAL DESCRIPTION			
- 0 -				SM/SC	GOLF COURSE FILL (Qgcf)			
			:		Medium dense, damp, brown, Silty to Clayey, fine to medium SAND	_		
- 2 -						-		
			_		CDANITIC DOCK (Var)			
4		' + '	-		Highly to moderately weathered, brown to brown, moderately weak to			
- 4 -		+ +			moderately strong GRANITIC ROCK	_		
		[+ +	1			-		
6		+ +	-		Defeed on first handles of Chart			
0					REFUSAL AT 6 FEFT			
					Groundwater not encountered			
I og of Trench T 64 Page 1 of 1								
_~y v			•,	- ~yv				
SAMPLE SYMBOLS								
	SAMPLE SYMBOLS			🕅 DISTL	IRBED OR BAG SAMPLE 📃 WATER :	TABLE OR SE	EPAGE	

(1	_					
DEPTH		OGY	VATER	SOIL	TRENCH T 65	ATION ANCE S/FT.)	ИSITY F.)	URE \T (%)
IN FEET	NO.	HOL	NDN	CLASS (USCS)	ELEV. (MSL.) 650' DATE COMPLETED 05-01-2019	IETR/ SIST/ OWS	Y DEI (P.C.	OIST
			GROI		EQUIPMENT Rubber Tire Backhoe BY: T. REIST	(BL BL	DR	≥O
					MATERIAL DESCRIPTION			
- 0 -			:	SP	GOLF COURSE FILL (Qgcf)			
				CL -	Stiff, moist, reddish brown and brown, Silty and Sandy CLAY			
- 2 -		HH				-		
						-		
- 4 -					GRANITIC ROCK (Kgr) Highly weathered, brown, moderately weak GRANITIC ROCK	_		
		+ +				-		
- 6 -					TRENCH TERMINATED AT 6 FEET Groundwater not encountered			
Eigure						0005	71 20 /54 /75	
Log o	f Trenc	h T 6	5,	Page 1	of 1	0307	1-32-43A (1h	LINGH).GPJ
SAMF	SAMPLE SYMBOLS							
	SAMPLE SYMBOLS			🕅 DISTL	IRBED OR BAG SAMPLE 🛛 WATER :	TABLE OR SE	EPAGE	

			T						
			۲.		TRENCH T 66	zulo	~	()	
DEPTH		G√	ATE	SOIL			SIT (JRE T (%	
IN	SAMPLE	OLO	M	CLASS		STA WS/	DEN C.F	STL IEN	
FEET	NO.		NO	(USCS)			RY (P	NO ^T NO:	
			GR		EQUIPMENT Rubber Tire Backhoe BY: T. REIST	IL IL I		0	
			\vdash		MATERIAL DESCRIPTION				
- 0 -		/;;/;/;/;/;/;/;/;/;/;/;/;/;/;/;/;/;/;/	2	SM&SC	GOLF COURSE FILL (Qgcf)				
					Loose to medium dense, damp, very dark brown and brown, Clayey to Silty,	_			
			~		fine to medium SAND				
- 2 -		+ +			GRANITIC ROCK (Kgr)				
			1		Highly weathered, light brown to brown, moderately weak GRANITIC ROCK	-			
1		+ +							
- 4 -					TRENCH TERMINATED AT 4 FEET				
					Groundwater not encountered				
Figure	A-66 ,					0307	71-32-45A (TF	ENCH).GPJ	
Log o	f Trencl	h T 6	6,	Page 1	of 1				
		01.0		SAMP	LING UNSUCCESSFUL STANDARD PENETRATION TEST DRIVE SA	AMPLE (UNDI	STURBED)		
SAMPLE SYMBOLS		🕅 DISTL	IRBED OR BAG SAMPLE	R TABLE OR SEEPAGE					

		1									
			к		TRENCH T 67	Z	~	<u> </u>			
DEPTH		<u></u>	ATE	8011			SIT)	RE 7 (%			
IN	SAMPLE		Ň	CLASS		RA TAN NS/I	C.F.	STU ENT			
FEET	NO.	I I	N	(USCS)	ELEV. (MSL.) 646.3 DATE COMPLETED 05-01-2019		₹Ү Г (Р.	NON			
			GRO		EQUIPMENT Rubber Tire Backhoe BY: T. REIST	H H H H	ä	20			
			┝								
- 0 -		F. J. K. S.									
-				SM&SC	GOLF COURSE FILL (Qgcf)						
					to coarse SAND	-					
- 2 -		말을				_					
	T67-1					-					
- 4 -						_					
	₽					-					
- 6 -						_					
Ŭ					GRANITIC ROCK (Kgr)						
		+ +			Highly weathered, dark green and white, moderately weak ORANTIC ROCK	-					
- 8 -		+ +									
Ŭ					TRENCH TERMINATED AT 8 FEET						
					Groundwater not encountered						
Figure	A-67 ,					0307	71-32-45A (TF	RENCH).GPJ			
Log o	f Trenc	h T 6	7,	Page 1	of 1						
				SAMP							
SAMP	SAMPLE SYMBOLS				IRBED OR BAG SAMPLE VATER	TABLE OR SF	BOLS				

			к		TRENCH T 68	Z	~		
DEPTH		<u></u> b	ATE	8011			SIT)	RE (%	
IN	SAMPLE	DLO	Ň	CLASS		TRA STAN	C.F.	STU ENT	
FEET	NO.	I H	N	(USCS)	ELEV. (MSL.) 645" DATE COMPLETED 05-01-2019		₹Ү (P.	NOIS	
			GRO		EQUIPMENT Rubber Tire Backhoe BY: T. REIST	H H H H	ä	20	
			┝						
- 0 -					MATERIAL DESCRIPTION				
Ŭ				SM&SC	GOLF COURSE FILL (Qgcf)				
					Clavev, fine to medium SAND	-			
_ 2 _									
2									
						-			
_ 1 _									
4					-24-inch boulder at 4 feet				
						-			
6									
					GRANITIC ROCK (Kgr)	-			
0		+ +			mgmy weathered, light brown, moderatery weak OKANTTE ROCK				
- 0 -					TRENCH TERMINATED AT 8 FEET				
					Groundwater not encountered				
Eigener			1				4 00 454 (==		
rigure	; A-00, f Tranal	ьтε	0	Daga 4	of 1	0307	1-3∠-45A (TF	ENCH).GPJ	
		0	ο,	raye 1					
CAMP	SAMPLE SYMPOLS								
SAIVIP	SAMPLE SYMBOLS		PLE SYMBOLS				IRBED OR BAG SAMPLE 🛛 CHUNK SAMPLE 🗶 WATER	TABLE OR SE	



			Т						
			ШШ		TRENCH T 69	Zω_	≻	(%	
DEPTH		l g	ATE	SOIL		FT.	USIT E.)	T (%	
IN	SAMPLE		Į2	CLASS	ELEV (MSL) 641' DATE COMPLETED 05-01-2019	TRA STA	DEN C.F	IST(TEN	
FEET	110.		1 0	(USCS)		ENE	RY (F	ON ON	
			GR		EQUIPMENT Rubber Tire Backhoe BY: T. REIST	<u> </u>		0	
			\square		MATERIAL DESCRIPTION				
- 0 -				SM&SC	PREVIOUSLY PLACED COMPACTED FILL (Qpf)				
					Medium dense, damp to moist, dark brown, Silty to Clayey, fine to medium	_			
					SAND; random 1 to 2 foot boulders present				
- 2 -						-			
			-		-Refusal on large boulder (over 4 feet long) at 3 feet				
					REFUSAL AT 3 FEET				
					Groundwater not encountered				
Figure	A-69,					0307	71-32-45A (TF	ENCH).GPJ	
Log o	f Trencl	h T 6	9,	Page 1	of 1				
				SAME			STURBED)		
SAMF	SAMPLE SYMBOLS				JRBED OR BAG SAMPLE In CHUNK SAMPLE IN CHUNK SAMPLE	SAMPLE (UNDISTURBED)			

		-							
ПЕРТН		G√	ATER	00"	TRENCH T 70	IION ICE	ытү)	RE - (%)	
IN FEET	SAMPLE NO.	OTOH-	MDN	CLASS	ELEV. (MSL.) 643.5' DATE COMPLETED 05-01-2019	ETRA1 SISTAN OWS/F	Y DEN: (P.C.F.	OISTU	
			GROL	(0000)	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PEN RES (BL	DR	COM	
			\vdash		MATERIAL DESCRIPTION				
- 0 -		[]]		SC&SM	GOLF COURSE FILL (Qgef)				
					Loose to medium dense, damp to moist, brown to dark brown, Clayey to Silty, fine to medium SAND	-			
- 2 -									
_ 4 _	T70-1			CL	Stiff, moist, very dark brown to black, Silty to Sandy CLAY with random 1 to 2-foot boulders and moderate to heavy organics				
- 6 -									
_ 8 _									
- 10 -									
- 12 -				SM	Medium dense, moist, blue green, Silty, fine to medium SAND				
- 14 -					-Becomes brown below 13 feet				
		+ +			GRANITIC ROCK (Kgr) Highly to moderately weathered, dark brown, weak GRANITIC ROCK				
					TRENCH TERMINATED AT 14.5 FEET Groundwater not encountered				
Figure	Figure A-70, 03071-32-45A (TRENCH).GPJ 03071-32-45A (TRENCH).GPJ								
CAME				SAMP	LING UNSUCCESSFUL STANDARD PENETRATION TEST DRIVE S	AMPLE (UNDI	STURBED)		
SAMP	SAMPLE SYMBOLS SAMPLE A LONG SAMPLE WATER TABLE OR SEEPAGE								

(1	1	T	1		1		
		و۲ ا	VTER		TRENCH T 71	TON TCE	ытү)	RE (%)
IN FEET	SAMPLE NO.	иного		SOIL CLASS (USCS)	ELEV. (MSL.) 660' DATE COMPLETED 05-02-2019	IETRAT SISTAN OWS/F	Y DENS (P.C.F.	OISTUF NTENT
			GRO		EQUIPMENT Rubber Tire Backhoe BY: T. REIST	REN (BL	DR	≥o
			┢		MATERIAL DESCRIPTION			
- 0 -				SM	GOLF COURSE FILL (Qgcf)			
					Loose, damp, brown, Silty, fine to medium SAND	-		
- 2 -						_		
				SC	TOPSOIL			
- 4 -					SAND	_		
					GRANITIC ROCK (Kgr) Highly weathered, reddish brown, moderately weak GRANITIC ROCK	_		
- 6 -					TRENCH TERMINATED AT 6 FEET Groundwater not encountered			
			1					
Log o	e A-/1, f Trenc	h T 7	1,	Page 1	of 1	0307	1-32-45A (TF	KENCH).GPJ
		01.0		SAMP	LING UNSUCCESSFUL STANDARD PENETRATION TEST DRIVE SA	AMPLE (UNDI	STURBED)	
SAMPLE SYMBOLS		🕅 DISTL	IRBED OR BAG SAMPLE	TABLE OR SE	EPAGE			

		1	-					
DEPTH IN FEET	SAMPLE NO.	ГІТНОГОСУ	ROUNDWATER	SOIL CLASS (USCS)	TRENCH T 72 ELEV. (MSL.) 676' DATE COMPLETED 05-02-2019 EQUIPMENT Pubber Tire Backboo BY: T PEIST	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
			G					
					MATERIAL DESCRIPTION			
- 0 -			1	SC	TOPSOIL			
					Loose to medium dense, damp, dark brown, Clayey, fine to medium SAND	_		
- 2 -						_		
					GRANITIC ROCK (Kgr)	-		
4		+ +			Highly weathered, light brown, weak to moderately weak GRANITIC ROCK			
- 4 -						_		
		' + ' ·				-		
_ 6 _		+ +						
0		+ +						
		<u>}</u> ,+,∙				-		
- 8 -						_		
Ŭ		+ +						
			1			-		
- 10 -		+ ' ·				_		
					Groundwater not encountered			
Figure	Δ_72		1			0307	1-32-45A (TR	ENCH) GP.1
Log of Trench T 72, Page 1 of 1								
SAME		015		SAMP	LING UNSUCCESSFUL STANDARD PENETRATION TEST DRIVE SA	AMPLE (UNDI	STURBED)	
	SAMPLE SYMBOLS							



DEPTH IN FEET	SAMPLE NO.	ГІТНОГОĞY	GROUNDWATER	SOIL CLASS (USCS)	TRENCH T 73 ELEV. (MSL.) 680' DATE COMPLETED 05-02-2019 EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
					MATERIAL DESCRIPTION			
- 0 - 				SM	TOPSOIL Loose to medium dense, damp, brown, Silty, fine to medium SAND	_		
- 2 -	T73-1			CL	Stiff, moist, reddish brown, Silty to Sandy CLAY			
- 4 -	T73-2	+ + + + + +			GRANITIC ROCK (Kgr) Highly weathered, reddish brown, moderately weak GRANITIC ROCK	_		
Figure	A-73,		2	Page 1	PRACTICAL REFUSAL AT 5 FEET Groundwater not encountered	0307	'1-32-45A (TF	RENCH).GPJ
			<u>,</u>					
SAMPLE SYMBOLS			ING UNGUCCESSFUL IN STAINDARD PENETRATION TEST IN DRIVE S.		EPAGE			

			~					
ПЕРТЧ		β	ATER	0.01		NOI (.	×TIS (RE . (%)
IN FEET	SAMPLE NO.	НОГО	/MDN	CLASS	ELEV. (MSL.) 672' DATE COMPLETED 05-02-2019	ETRAT SISTAN OWS/F	P.C.F.	DISTUR
			GROL	(0303)	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PEN RES (BL	DR)	CONC
			\vdash					
- 0 -		집간가		SM	GOLF COURSE FILL (Ogef)			
			•		Loose to medium dense, dry to damp, brown, dark brown and gray, Silty, fine to medium SAND	_		
- 2 -						-		
						-		
- 4 -						-		
				SC	TOPSOIL Loose to medium dense, moist, dark brown, Clayey, fine to medium SAND	_		
- 6 -		+ +			GRANITIC ROCK (Kgr)			
		- +	-		Highly weathered, reddish brown, weak GRANITIC ROCK			
					Groundwater not encountered			
	e A-74, f Trencl	h T 7	4	Page 1	of 1	0307	'1-32-45A (TR	ENCH).GPJ
			-,					
SAMPLE SYMBOLS					ILING UNSUCCESSFUL I STANDARD PENETRATION TEST I DRIVE SAMPLE CHUNK SAMPLE V WATER 1		STURBED) EPAGE	

6			_						
		75	TER		TRENCH T 75	L.) T.)	Ϋ́	RE (%)	
IN FEET	SAMPLE NO.	THOLOG	NDWA	SOIL CLASS (USCS)	ELEV. (MSL.) 676.5' DATE COMPLETED 05-02-2019	IETRAT SISTAN OWS/F	Y DENS (P.C.F.)	OISTUF	
			GROI	(0000)	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PEN (BL	DR	COM	
					MATERIAL DESCRIPTION				
- 0 -				SM	GOLF COURSE FILL (Qgcf)				
					Loose to medium dense, dry to damp, brown, dark brown and gray, Silty, fine to medium SAND	-			
- 2 -						_			
- 4 -						_			
					Becomes clayier below 5 feet	-			
- 6 -						-			
- 8 -				CL	Stiff, moist, brown and dark brown, Silty to Sandy CLAY				
						_			
- 10 -						-			
		<u> X X X</u>		SM	TOPSOIL				
- 12 -				- <u>-</u>	Loose to medium dense, damp, reddish brown, Silty, fine SAND				
					GRANITIC ROCK (Kgr)	_			
- 14 -		+++			Highly weathered, reddish brown, weak to moderately weak GRANITIC				
					TRENCH TERMINATED AT 14 FEET Groundwater not encountered				
Figure Log o	Figure A-75, 03071-32-45A (TRENCH).GPJ Log of Trench T 75, Page 1 of 1 03071-32-45A (TRENCH).GPJ								
				SAMP	LING UNSUCCESSFUL STANDARD PENETRATION TEST DRIVE SA	AMPLE (UNDI	STURBED)		
SAMPLE SYMBOLS Image: Same Line of Note Could be and the									

(marging 1)			_					
DEPTH		GΥ	ATER	2011	TRENCH T 76	rion VCE	SITY)	RE - (%)
IN FEET	SAMPLE NO.	НОГО	MDN		ELEV. (MSL.) 611' DATE COMPLETED 05-02-2019	ETRA ⁻ SISTAN OWS/I	P.C.F.	DISTU
			GROL	(0303)	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PEN RES (BL	DR)	COM
			\square		MATERIAL DESCRIPTION			
- 0 -				SP	GOLF COURSE FILL (Qgcf)			
						-		
- 2 -			·	SM&SC	3 to 4-inch thick, pea gravel layer present at base			
- 4 -	-					-		
- 6 -			-	$-\overline{CL}$	Stiff, moist to wet, dark gray and black. Silty to Sandy CLAY: organic odor			
	T76-1			01		-		
- 8 -						-		
						-		
- 10 -						-		
						-		
- 12 -						-		
						-		
- 14 -			<u> </u>	SM	Medium dense, damp to moist, brown, Silty, fine to medium SAND with			
					random granific boulders up to 16-inches	-		
- 16 -						-		
					-Becomes dry below 17 feet	-		
					TRENCH TERMINATED AT 17.5 FEET Groundwater not encountered			
Figure Log o	e A-76, f Trenc	h T 7	6 ,	Page 1	of 1	0307	71-32-45A (TF	(ENCH).GPJ
SAMF	SAMPLE SYMBOLS							
1				🖾 DISTU	I ABLE OR SE	EPAGE		

			-					
DEPTH		ЭGY	ATER	SOIL	TRENCH T 77	TION NCE (FT.)	ISITY (.=	JRE T (%)
IN FEET	SAMPLE NO.	HOLG	MON	CLASS (USCS)	ELEV. (MSL.) 611' DATE COMPLETED 05-02-2019	ETRA SISTA	Y DEN (P.C.F	OISTU
		5	GROI	()	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	(BL	DR	≥o
			┢		MATERIAL DESCRIPTION			
- 0 -				SM	GOLF COURSE FILL (Qgcf)			
					Loose to medium dense, damp, Silty, fine to medium SAND	-		
- 2 -						-		
						-		
- 4 -						L		
				CL	Stiff, moist to wet, very dark gray, black and dark brown, Silty to Sandy CLAY; organic odor			
- 6 -		H H						
						-		
- 8 -						-		
						-		
- 10 -		11				_		
10								
- 12 -				SM	Loose to medium dense, damp, reddish brown, Silty, fine to medium SAND			
					GRANITIC ROCK (Kgr)			
- 14 -		[+ + +			Highly weathered, reddish brown to brown, weak GRANITIC ROCK	-		
		· '·	\vdash		TRENCH TERMINATED AT 15 FEET			
					Groundwater not encountered			
				<u> </u>		0000	71 30 /54 /75	
Log o	f Trenc	h T 7	7,	Page 1	i of 1	0307	1-02-40A (TR	LINGH).GPJ
				SAMP	PLING UNSUCCESSFUL	AMPLE (UNDI	STURBED)	
SAMPLE SYMBOLS				🕅 DISTL	JRBED OR BAG SAMPLE	TABLE OR SE	EPAGE	

		≻	ER		TRENCH T 78	N N N N	≽	ы(%
DEPTH	SAMPLE	LOG	WAT	SOIL		RATIC FANC S/FT	ENSI'	
FEET	NO.	H H	IND	(USCS)	ELEV. (MSL.) 514.5' DATE COMPLETED 05-02-2019	NETF ESIS ⁻ SLOW	К DI (Р.С	NOIS
			GRO		EQUIPMENT Rubber Tire Backhoe BY: T. REIST	AR E	D	200
			┢		MATERIAL DESCRIPTION			
- 0 -				SM&SC	GOLF COURSE FILL (Qgcf)			
					Clayey, fine to medium SAND	_		
- 2 -					-Irrigation pipe at 2 feet	_		
	T78-1					-		
- 4 -						_		
				$-\overline{CL}$	Stiff, moist to wet, dark gray and black, Silty to Sandy CLAY; trace roots			
- 6 -		H			with organic odor	-		
						-		
- 8 -						_		
						_		
- 10 -						_		
		H H						
- 12 -					-Piece of construction wood at 12 feet	_		
						_		
- 14 -		E E				_		
						_		
- 16 -			<u> </u>		Loose, dry, brown. Silty, fine to medium SAND with roots			
						_		
- 18 -						_		
					-Becomes readisn brown below 18 feet	_		
		민마한	-		TRENCH TERMINATED AT 19.5 FEET			
					Groundwater not encountered			
Figure	<u> </u>		<u> </u>		1	0307	71-32-45A (TF	RENCH).GPJ
Log o	f Trenc	h T 7	8,	Page 1	of 1			
SAMPLE SYMBOLS								

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

... CHUNK SAMPLE

... DISTURBED OR BAG SAMPLE



... WATER TABLE OR SEEPAGE

			_						
		ß	ATER	00"	TRENCH T 79	ION (. -T.))	RE (%)	
IN FEET	SAMPLE NO.	ОТОН.	/MDN/	CLASS	ELEV. (MSL.) 596' DATE COMPLETED 05-02-2019	ETRAT SISTAN OWS/F	/ DENS (P.C.F.	DISTU	
			GROL	(0000)	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PEN (BL	DR	COL	
			\square		MATERIAL DESCRIPTION				
- 0 -				SM	GOLF COURSE FILL (Qgcf)				
					Loose to medium dense, damp, reddish brown, Sitly, fine to medium SAND	-			
- 2 -						E		L	
		XX		CL	Stiff, moist to wet, gray and dark gray, Silty CLAY; organic odor	-			
_ 4 _									
						-			
- 6 -						-			
L –						L			
		XX							
0		XX			-Becomes mixed with dark brown to clayey sand below 8 feet				
						-			
- 10 -						-			
L –									
10									
- 12 -				SM	Loose, dry, brown, Silty, fine SAND				
					-Becomes reddish brown below 13 feet	-			
- 14 -						-			
L _									
10									
- 16 -									
					-Becomes brown below 17 feet; possible topsoil contact	-			
- 18 -						-			
L -		+ +			GRANITIC ROCK (Kgr)				
					Highly weathered, dark brown, weak GRANITIC ROCK				
					Groundwater not encountered				
Figure	e A-79,					0307	71-32-45A (TF	RENCH).GPJ	
Log of Trench T 79, Page 1 of 1									
SAME				SAMP	LING UNSUCCESSFUL STANDARD PENETRATION TEST DRIVE S.	AMPLE (UNDI:	STURBED)		
SAMPLE SYMBOLS			🕅 DISTL	JRBED OR BAG SAMPLE 🛛 CHUNK SAMPLE I WATER	TABLE OR SE	ABLE OR SEEPAGE			

		102 1	0/ (
DEPTH IN FFFT	SAMPLE NO.	НОГОСУ	JNDWATER	SOIL CLASS	TRENCH T 80 ELEV. (MSL.) 586' DATE COMPLETED 05-02-2019	ETRATION SISTANCE OWS/FT.)	' DENSITY P.C.F.)	DISTURE NTENT (%)		
			GROL	(0303)	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PEN RES (BL	DR)	CONC		
			┢							
- 0 -		- Notice		SM	GOLE COURSE FILL (Ogef)					
				5101	Loose to medium dense, damp, brown, Silty, fine to medium SAND	_				
- 2 -			· 	$-\overline{CL}$	Stiff moist to wet, dark gray and dark brown. Silty CLAY					
		XX		CL		-				
- 4 -						-				
						-				
- 6 -						-				
						-				
- 8 -						-				
						-				
- 10 -				SM	COLLUVIUM (Qc) Madium danse damp to maist brown and dark brown Silty, fine to course					
					SAND	-				
- 12 -						-				
					GRANITIC ROCK (Kgr) Highly weathered dark brown to brown weak GRANITIC ROCK					
- 14 -		+ + - +			inging weathered, dark brown to brown, weak ord in the Rock	-				
					TRENCH TERMINATED AT 15 FEET Groundwater not encountered					
Figure	⇒ A- 80.	1		L		0307	71-32-45A (TF	RENCH).GPJ		
Log o	f Trenc	h T 8	0,	Page 1	of 1					
SAMF	SAMPLE SYMBOLS SAMPLING UNSUCCESSFUL STANDARD PENETRATION TEST DRIVE SAMPLE (UNDISTURBED)									
1				🕅 DISTURBED OR BAG SAMPLE 🛛 🔊 CHUNK SAMPLE 🕎 WATER TABLE OR SEEPAGE						



		102 1	07.1						
DEPTH IN	SAMPLE	LOGY	WATER	SOIL	TRENCH T 81	RATION TANCE (S/FT.)	ENSITY C.F.)	TURE ENT (%)	
FEET	NO.	I HO	DUNE	(USCS)	ELEV. (MSL.) 583' DATE COMPLETED 05-02-2019	NETF ESIS	Ч DI (Р.С	MOIS	
			GR(EQUIPMENT Rubber Tire Backhoe BY: T. REIST	I I I I I I I I I I I I I I I I I I I	Ō	- ö	
			Π		MATERIAL DESCRIPTION				
- 0 -				SM	GOLF COURSE FILL (Qgcf)				
					Loose to medium dense, dry to damp, brown, snty, file to medium SATAD	-			
- 2 -									
				CL	Stiff, moist to wet, dark gray and black, Silty to Sandy CLAY; organic odor	-			
- 4 -						-			
		HH							
- 6 -		HH							
					-Becomes mixed with dark brown sand below 7 feet	-			
- 8 -			1		Loose, dry, brown, Silty, fine SAND with abundant roots and vegetation from				
					8 to 10 feet	-			
- 10 -						-			
10					-Becomes reddish brown and fine to medium grained below 11 feet				
- 12 -									
				SM	COLLUVIUM (Qc)				
- 14 -					Medium dense, damp, brown, Silty, fine to coarse SAND	-			
						-			
- 16 -						-			
		+ +	\square		GRANITIC ROCK (Kgr) Highly weathered, brown, weak GRANITIC ROCK				
					TRENCH TERMINATED AT 17.5 FEET				
					Groundwater not encountered				
Figure	A-81 ,					0307	71-32-45A (TF	RENCH).GPJ	
Log o	t Trenc	h T 8	1,	Page 1	of 1				
SAMF	LE SYMB	OLS		SAMP	LING UNSUCCESSFUL STANDARD PENETRATION TEST DRIVE S	AMPLE (UNDI	STURBED)		
	SAIVIFLE STIVIDOLS			🕅 DISTURBED OR BAG SAMPLE 🛛 🛛 CHUNK SAMPLE 🕎 WATER TABLE OR SEEPAGE					

			1					
		G	ATER	0.011	TRENCH T 82	TION TION	ытү)	RE . (%)
IN FEET	SAMPLE NO.	ГНОГО		CLASS (USCS)	ELEV. (MSL.) 569' DATE COMPLETED 05-02-2019	IETRA1 SISTAN OWS/F	Y DENS (P.C.F.	OISTUI
			GROI		EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PEN (BL	DR	Co⊻
			\square		MATERIAL DESCRIPTION			
- 0 -				SM&SC	GOLF COURSE FILL (Qgcf)			
					with some random boulders up to 16-inches present	-		
- 2 -						-		
						_		
- 4 -						_		
				SM	COLLUVIUM (Qc)			
					Medium dense, damp, brown, Silty, fine to coarse SAND			
- 6 -						-		
						-		
- 8 -						-		
		+ +			GRANITIC ROCK (Kgr) Highly to moderately worthward, light brown, moderately work to moderately	_		
- 10 -		+ +			strong GRANITIC ROCK			
					TRENCH TERMINATED AT 10 FEET Groundwater not encountered			
Figure	A-82 ,	<u>.</u>	1	1		0307	71-32-45A (TF	ENCH).GPJ
Log o	f Trenc	h T 8	2,	Page 1	of 1			
SAMF	SAMPLE SYMBOLS							
				🕅 DISTL	IRBED OR BAG SAMPLE V WATER	TABLE OR SE	FPAGE	

	1	1	_								
		ß	ATER	0.011	TRENCH T 83	LION LION	ытү)	RE . (%)			
IN FEET	SAMPLE NO.	иного		CLASS (USCS)	ELEV. (MSL.) 575.5' DATE COMPLETED 05-02-2019	JETRA SISTAN OWS/F	Y DENS (P.C.F.	OISTUI			
			GRO		EQUIPMENT Rubber Tire Backhoe BY: T. REIST	REN (BL	DR	COM			
					MATERIAL DESCRIPTION						
- 0 -				SM	GOLF COURSE FILL (Qgcf)						
					Loose to medium dense, damp, brown to dark brown, Silty, fine to medium SAND with some clay	-					
- 2 -						-					
	T83-1										
- 4 -						-					
						-					
- 6 -						-					
- 8 -				SM	TOPSOIL Loose to medium dense, damp, brown, Silty, fine to coarse SAND	-					
		+ +			GRANITIC ROCK (Kgr)	-					
- 10 -		+ +			rignly weathered, light brown, weak GKANTIC ROCK						
					TRENCH TERMINATED AT 10 FEET Groundwater not encountered						
L											
Figure	Figure A-83, 03071-32-45A (TRENCH).GPJ Log of Trench T 83. Page 1 of 1										
			,								
SAMF	SAMPLE SYMBOLS						MPLE (UNDISTURBED) ABLE OR SEEPAGE				

			<i></i>					
DEDTU		GΥ	TER		TRENCH T 84	T.))	ЯЕ (%)
IN FEET	SAMPLE NO.	НОГО		CLASS	ELEV. (MSL.) 572.5 DATE COMPLETED 05-02-2019	ETRAT SISTAN OWS/F	/ DENS (P.C.F.	DISTUI
			GROL	(0000)	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PEN (BL	DR	COM
			\vdash		MATERIAL DESCRIPTION			
- 0 -				SM&SC	GOLF COURSE FILL (Qgcf)			
					Loose to medium dense, damp, Silty to Clayey, fine to medium SAND	-		
- 2 -						-		
				CL	Stiff, moist to wet, gray and brown, Silty to Sandy CLAY			
4								
						-		
- 6 -		HH H				-		
		KXX	<u> </u>	- <u></u> -	Loose to medium dense, damp, reddish brown, Silty, fine to medium SAND			
- 8 -	T04 1 8	8			,,,,,,,,,,,,,,,,,	-		
	184-1							
10								
- 10 -								
				SM	COLLUVIUM (Qc)			
- 12 -					Medium dense, damp, brown, Silty, fine to coarse SAND	-		
						-		
- 14 -						-		
10		+ +			GRANITIC ROCK (Kgr) Highly weathered, dark brown to brown, weak GRANITIC ROCK			
- 16 -					TRENCH TERMINATED AT 16 FEET			
					Groundwater not encountered			
Eigure						0207	71-32 /54 /75	
Log o	f Trenc	h T 8	4,	Page 1	of 1	0307	11) AUF-20-	LINOI IJ. OF J
							STURBED)	
SAMPLE SYMBOLS Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sampling unsuccessful Image: Sam								



			_					
DEPTH		GΥ	ATER	2011	TRENCH T 85	TION (.) -T.)	SITY (RE - (%)
IN FEET	SAMPLE NO.	OTOH-	WDN	CLASS	ELEV. (MSL.) 598' DATE COMPLETED 05-02-2019	ETRA1 SISTAN OWS/F	Y DEN: (P.C.F.	OISTU
			GROL	(0000)	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	RE: (BL	DR	COM
			\square		MATERIAL DESCRIPTION			
- 0 -				SM&SC	GOLF COURSE FILL (Qgcf)			
					Loose to medium dense, damp, brown to dark brown, Silty to Clayey, fine to medium SAND	-		
- 2 -						-		
						-		
- 4 -						-		
						-		
- 6 -						-		
		XX		CL	Stiff, moist to wet, dark gray, Silty to Sandy CLAY; organic odor			
- 8 -						-		
						-		
- 10 -						-		
		H				-		
- 12 -						-		
						-		
- 14 -						-		
				SM	Loose, dry, brown, Silty, fine SAND with abundant roots and vegetation			[
- 16 -						-		
					TRENCH TERMINATED AT 17 FEET Groundwater not encountered			
Figure Log o	e A-85, f Trenc	h T 8	5,	Page 1	of 1	0307	71-32-45A (TF	€NCH).GPJ
CANAL				SAMP	LING UNSUCCESSFUL STANDARD PENETRATION TEST DRIVE S.	AMPLE (UNDI	STURBED)	
SAMPLE SYMBOLS			🕅 DISTU	IRBED OR BAG SAMPLE 🛛 CHUNK SAMPLE II. WATER	TABLE OR SEEPAGE			



(1			1				,)
			Я		TRENCH T 86	zu	~	(9
DEPTH		QGY	VATE	SOIL		ATIO ANCE %/FT.)	NSIT F.)	URE JT (%
IN FEET	NO.	HOL	NDN	CLASS (USCS)	ELEV. (MSL.) 759.5' DATE COMPLETED 05-06-2019	ETR/ SIST/ OWS	P.C.	DIST
			GROL	(0000)	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	RES (BL	DR	COL
			Ľ					
- 0 -				CM				
L _				SM	GOLF COURSE FILL (Qgct) Loose to medium dense, damp to dry, brown, Silty, fine to medium SAND			
- 2 -						-		
						-		
- 4 -						_		
· ·								
					-Becomes light brown and brown with some clay below 5 feet	-		
- 6 -						-		
						_		
0								
- 0 -				SM	MISSION VALLEY FORMATION (Tmv)			
					Dense, damp, light brown, Sitty, line to medium SANDSTONE	-		
- 10 -						-		
L _								
					TRENCH TERMINATED AT 11 FEET Groundwater not encountered			
Ļ								
Figure	A-86, f Tropol	h T 오	6	Dago 1	of 1	0307	71-32-45A (TF	RENCH).GPJ
		110	υ,					
SAMF	PLE SYMB	OLS		SAMP	LING UNSUCCESSFUL STANDARD PENETRATION TEST DRIVE S.	AMPLE (UNDI	STURBED)	
1				KX DISTI	JRBED OR BAG SAMPLE WATER	TABLE OR SE	FPAGE	



		1	_			1		
DEPTH IN FEET	SAMPLE NO.	ТТНОГОСУ	OUNDWATER	SOIL CLASS (USCS)	TRENCH T 87 ELEV. (MSL.) _750' DATE COMPLETED _05-06-2019	ENETRATION ESISTANCE BLOWS/FT.)	RY DENSITY (P.C.F.)	MOISTURE ONTENT (%)
			GR(EQUIPMENT Rubber Tire Backhoe BY: T. REIST	I HA	D	U
			Π		MATERIAL DESCRIPTION			
- 0 - - 2 -				SM	GOLF COURSE FILL (Qgcf) Loose, damp, brown, Silty, fine SAND -Becomes gray with some clay below 1 foot	-		
- 4 -				CL	MISSION VALLEY FORMATION - Weathered (Tmv) Very stiff, moist, white and olive green, Silty CLAY/CLAYSTONE; heavy calcium carbonate replacement	_		
- 6 -	T87-1			CL	MISSION VALLEY FORMATION (Tmv) Hard, moist, olive green, Silty CLAYSTONE with calcium carbonate	_		
- 8 -					TRENCH TERMINATED AT 8 FEET Groundwater not encountered			
Figure	e A-87, f Trenc	h T 8	7,	Page 1	of 1	0307	71-32-45A (TF	(ENCH).GPJ
SAMPLE SYMBOLS				SAMP	LING UNSUCCESSFUL STANDARD PENETRATION TEST DRIVE S JRBED OR BAG SAMPLE WATER	AMPLE (UNDI	STURBED) EPAGE	



DEPTH IN	SAMPLE	ОГОСЛ	IDWATER	SOIL CLASS	TRENCH T 88	TRATION STANCE WS/FT.)	DENSITY .C.F.)	STURE TENT (%)		
FEET	NU.	LIT	ROUN	(USCS)		PENE RESI((BLO)	DRY I (P	MOI		
			Q							
- 0 -				CM						
				SIVI	Loose to medium dense, damp, brown, Silty, fine to medium SAND	_				
- 2 -	188-1									
] [
- 4 -						-				
				CL	MISSION VALLEY FORMATION (Tmv)					
- 6 -					Hard, moist, olive green, Silty CLAYSIONE with some calcium carbonate	-				
						-				
- 8 -						-				
					TRENCH TERMINATED AT 9 FEFT					
					Groundwater not encountered					
Figure	• A- 88,	I	I			0307	71-32-45A (TF	ENCH).GPJ		
Log of Trench T 88, Page 1 of 1										
SAME	PLE SYMB	01.5		SAMP	LING UNSUCCESSFUL STANDARD PENETRATION TEST DRIVE S	AMPLE (UNDI	STURBED)			
	0.00	220								
(-								
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DEPTH	SAMPI F	OGY	WATER	SOIL	TRENCH T 89	ATION ANCE S/FT.)	NSITY .F.)	TURE NT (%)		
IN FEET	NO.	THOL	UND	CLASS (USCS)	ELEV. (MSL.) 737.5' DATE COMPLETED 05-06-2019	NETR SIST LOW:	Y DE (P.C	10IS1		
			GRO		EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PEN (BI	DR	Co		
0					MATERIAL DESCRIPTION					
- 0 -				SM	GOLF COURSE FILL (Qgcf)					
				CL	MISSION VALLEY FORMATION (Tmv)					
- 2 -					Hard, moist, olive green to gray, Silty CLAYSTONE; weak and waxy	-				
	T89-1		í— —	ML	Hard, moist, olive green, fine, Sandy/Clayey SILTSTONE					
- 4 -						-				
			Į⊻		-Slight seepage at 5 feet	-				
- 6 -					-Difficult trenching below 6 feet	-				
			-			-				
- 8 -										
					TRENCH TERMINATED AT 8 FEET Seepage encountered at 5 feet					
Eigen							4 00 454 (==			
Log o	, א-סש, f Trenc	h T 8	9,	Page 1	of 1	0307	1-32-45A (1F	ENCH).GPJ		
SAMF	PLE SYMB	SOLS			DR BAG SAMPLE Implementation Dr. BAG SAMPLE Implementation					

DEDTU		75	TER		TRENCH T 90	ION (.)	×Ti	RE (%)
DEPTH IN FEET	SAMPLE NO.	НОГО	NDWA	SOIL CLASS	ELEV. (MSL.) 733' DATE COMPLETED 05-06-2019	ETRAT SISTAN OWS/F	(DENS (P.C.F.)	DISTUF NTENT
			GROL	(0303)	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PEN RES (BL	DR)	CON
			\vdash		MATERIAL DESCRIPTION			
- 0 -				SM	GOLF COURSE FILL (Qgcf)			
					Loose to medium dense, damp, brown, Silty, fine to medium SAND	-		
- 2 -						_		
					-Becomes gray below 2.5 feet			
				ML	MISSION VALLEY FORMATION (Tmv)			
- 4 -					Hard, moist, olive green, Clayey/fine, Sandy SILTSTONE with some calcium carbonate	-		
		PHH.				-		
- 6 -						_		
Ŭ								
						-		
- 8 -		rifiliki T			TRENCH TERMINATED AT 8 FEET			
					Groundwater not encountered			
<u> </u>								
Figure	e A-90, f Trenc	h T 9	0,	Page 1	of 1	0307	'1-32-45A (TR	ENCH).GPJ
SAMPLE SYMBOLS			IRBED OR BAG SAMPLE	WATER TABLE OR SEEPAGE				

	1	1	1	1		1 1		
			۲.		TRENCH T 91	Zula	~	(
DEPTH] \J	ATE	SOIL		FT.)	USIT (.	JRE T (%
IN FFFT	SAMPLE NO.	НОГО	NDN	CLASS	ELEV. (MSL.) 722' DATE COMPLETED 05-06-2019	ETR/ SISTA OWS	P.C.F	DIST(
			BROL	(0303)	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	RES (BL-	DR)	CON
<u> </u>			Ľ					
- 0 -	L				MATERIAL DESCRIPTION			
				SM&SC	GOLF COURSE FILL (Qgcf) Loose to medium dense damp gray and brown Silty to Clayey fine to			
					medium SAND with trace gravel and cobble size rock fragments up to	-		
- 2 -					10-inches present in upper 1-foot	-		
						[
- 4 -						-		
L _								
- 6 -						-		
						-		
			÷					
0								
						-		
- 10 -						-		
					-Becomes orange brown and gray below 10 feet			
- 12 -					-16-inch boulder at 12 feet	-		
L _		집물						
- 14 -		물란				-		
						- I		
10								
- 10 -		RX		CL	PREVIOUSLY PLACED COMPACTED FILL (Qpf)			
		KX	1		Medium dense, very moist, very dark brown and green, Slity CLAY	-		
- 18 -		FXXX	1			L		
					TRENCH TERMINATED AT 18 FEET Groundwater not encountered			
Figure	A-91 ,					0307	71-32-45A (TF	RENCH).GPJ
Log o	f Trenc	h T 9	1,	Page 1	of 1			
		01.0		SAMP	LING UNSUCCESSFUL STANDARD PENETRATION TEST DRIVE S.	AMPLE (UNDI	STURBED)	
SAMF	CAMPLE SYMBOLS SAMPLE OF BAG SAMPLE S							

	1	1						
DEPTH IN FEET	SAMPLE NO.	гтногоду	OUNDWATER	SOIL CLASS (USCS)	TRENCH T 92 ELEV. (MSL.) 726' DATE COMPLETED 05-06-2019	ENETRATION RESISTANCE BLOWS/FT.)	RY DENSITY (P.C.F.)	MOISTURE ONTENT (%)
			GR		EQUIPMENT Rubber Tire Backhoe BY: T. REIST	I I R ~		0
					MATERIAL DESCRIPTION			
- 0 - - 2 -				SM&SC	GOLF COURSE FILL (Qgcf) Loose to medium dense, dry to damp, dark brown and gray, Silty to Clayey, fine to medium SAND	_		
 - 4 - 	T92-1		· · · · · · · · · · · · · · · · · · ·	SM/SC	MISSION VALLEY FORMATION (Tmv) Dense to very dense, damp, gray, Silty/Clayey, fine to medium SANDSTONE; cemented	_		
- 6 - - 8 -	. ≥		•		-Slow difficult trenching	-		
 - 10 - 					DDACTICAL DEFUSAL AT 11 FEET	-		
					Groundwater not encountered			
Log o	e A-92, f Trenc	h T 9	2,	Page 1		0307	(1-32-45A (TR	LENCH).GPJ
SAMPLE SYMBOLS								

	1	1							
DEPTH	SAMPI F	-06Y	WATER	SOIL	TRENCH T 93	ATION ANCE S/FT.)	ENSITY .F.)	rure NT (%)	
IN FEET	NO.	THOL		CLASS (USCS)	ELEV. (MSL.) 720' DATE COMPLETED 05-06-2019	NETR	кү DE (P.C	AOIST	
			GRO		EQUIPMENT Rubber Tire Backhoe BY: T. REIST	BEI (B	DF	200	
					MATERIAL DESCRIPTION				
- 0 -				SM	GOLF COURSE FILL (Qgcf) Loose to medium dense, dry, brown, Silty, fine to medium SAND				
- 2 -					-Becomes gray below 1.5 feet				
2				SM	TOPSOIL				
					Loose, damp, dark brown, Silty, fine to medium SAND				
- 4 -						-			
				ML	MISSION VALLEY FORMATION (Tmv)				
- 6 -					Flard, damp, gray and white, line, sandy SIL151ONE with calcium carbonate	-			
						-			
- 8 -						-			
					-Becomes dark gray below 9 feet	-			
- 10 -						_			
						_			
- 12 -						_			
					-Becomes clayey siltstone below 12 feet				
14									
- 14 -					TRENCH TERMINATED AT 14 FEET Groundwater not encountered				
Figure	e A-93, f Trenc	h T 9	3, I	Page 1	of 1	0307	71-32-45A (TF	RENCH).GPJ	
SAME				SAMP	LING UNSUCCESSFUL	AMPLE (UNDI	STURBED)		
	SAMPLE SYMBOLS		🕅 DISTU	IRBED OR BAG SAMPLE T WATER	WATER TABLE OR SEEPAGE				

(1						
DEPTH	SAMPI E	OGY	NATER	SOIL	TRENCH T 94	ATION ANCE S/FT.)	NSITY .F.)	'URE NT (%)
IN FEET	NO.	THOL	ND	CLASS (USCS)	ELEV. (MSL.) 711' DATE COMPLETED 05-06-2019	NETR. SIST, LOWS	(P.C.	10IST NTE
			GRO		EQUIPMENT Rubber Tire Backhoe BY: T. REIST	REP (BIE)	DR	S O ≤
					MATERIAL DESCRIPTION			
- 0 -				SM	GOLF COURSE FILL (Qgcf)			
				SM&SC	Loose to medium dense, moist, gray, Silty to Clayey, fine to medium SAND			
- 2 -						_		
				SM	TOPSOIL			
- 4 -					Loose, damp, brown, Silty, fine to medium SAND	_		
			, ,	SM	MISSION VALLEY FORMATION - Weathered (Tmv) Medium dense, damp, white and gray, Silty, fine SAND/SANDSTONE:	_		
- 6 -					heavy calcium carbonate replacement	_		
			> >					
				SM	MISSION VALLEY FORMATION (Tmv) Dense damp gray Silty fine to medium SANDSTONE with calcium			
- 8 -			, ,		carbonate	-		
						-		
- 10 -			-		TRENCH TERMINATED AT 10 FEET			
					Groundwater not encountered			
Figure	Figure A-94, Log of Trench T 94, Page 1 of 1							
			,					
SAMPLE SYMBOLS								

	1	1	1			1		r
DEPTH		ΟGY	ATER	SOIL	TRENCH T 95	TION NCE (FT.)	ISITY (.=	JRE T (%)
IN FEET	SAMPLE NO.	HOLO	MDN	CLASS (USCS)	ELEV. (MSL.) 705' DATE COMPLETED 05-06-2019	ETRA SISTA	Y DEN (P.C.F	OISTU NTEN
			GROL	(0000)	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PEN (BL	DR	COL
<u> </u>			\vdash					
- 0 -	T95-1			SM	TOPSOIL			
					Medium dense, dry, brown, Silty, fine to medium SAND	_		
- 2 -	1 [, ,	SM	MISSION VALLEY FORMATION (Tmv) Dense damp light gray. Silty, fine to medium SANDSTONE			
			, ,			-		
- 4 -			>			-		
						-		
- 6 -					1 fact comparted lower at 6 fact	_		
L _					-1-Toot cemented layer at 6 feet	_		
- 8 -								
						-		
- 10 -	-		, , ,			-		
						-		
- 12 -						_		
L -			,		-Cemented at 13 feet			
					REFUSAL AT 13 FEET			
					Groundwater not encountered			
Figure	Figure A-95.							
Log o	f Trencl	h T 9	5,	Page 1	of 1			, 3
CANA				SAMP	LING UNSUCCESSFUL STANDARD PENETRATION TEST DRIVE S.	AMPLE (UNDI	STURBED)	
SAME	LE SINB	₩ DISTURBED OR BAG SAMPLE CHUNK SAMPLE WATER TABLE OR SEEPAGE				🕅 DISTURBED OR BAG SAMPLE 🔰 CHUNK SAMPLE 👤 WATER TABLE OR SEEPAGE		



DFPTH		GY	ATER	5011	TRENCH T 96	TION CE	SITY)	RE - (%)	
IN FEET	SAMPLE NO.	НОГО	MDN	CLASS	ELEV. (MSL.) 694' DATE COMPLETED 05-06-2019	ETRA ⁻ SISTAN OWS/I	P.C.F.	DISTU	
			GROL	(0000)	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PEN RES (BL	DR)	CON	
			\vdash		MATERIAL DESCRIPTION				
- 0 -				SM	GOLF COURSE FILL (Qgcf)				
					Loose, dry, brown, Silty, fine to medium SAND	_			
- 2 -						_			
				SM/SC	Losse to medium dense, damp to maist, brown light brown and gray. Silty to				
- 4 -				SIM/SC	Clayey, fine to medium SAND	_			
						_			
- 6 -						_			
						_			
- 8 -						_			
						-			
- 10 -						_			
						_			
- 12 -						_			
					-Becomes clayier below 12 feet	_			
				$-\frac{1}{CL}$	Stiff, moist, very dark gray. Silty to Sandy CLAY; organic odor				
- 14 -	T96-1					_			
						-			
- 16 -						-			
						_			
- 18 -						_			
				ML	MISSION VALLEY FORMATION - Weathered (Tmv) Very stiff moist white and gray fine Sandy to Clayey SII T/SII TSTONE	-			
					heavy calcium carbonate replacement				
					TRENCH TERMINATED AT 19.5 FEET Groundwater not encountered				
Figure	Figure A-96, 03071-32-45A (TRENCH).GPJ								
Log of Trench T 96, Page 1 of 1									
SAMF	PLE SYMB	OLS		SAMP	LING UNSUCCESSFUL STANDARD PENETRATION TEST DRIVE SA	AMPLE (UNDI	STURBED)		
				🕅 DISTU	IRBED OR BAG SAMPLE 🛛 WATER 1	ABLE OR SE	EPAGE		



LOCITINE PERT MANULE NO. TRENCH T 97 (LOSS) DATE COMPLETED 05:06:2019 Display by the part of the part of th		1	1						, ,
No. O <tho< th=""> <tho< th=""> <tho< th=""></tho<></tho<></tho<>	DEPTH		OGY	VATER	SOIL	TRENCH T 97	ATION ANCE S(FT.)	NSITY F.)	URE JT (%)
Image: Second	IN FEET	NO.	LHOL	NDV	CLASS (USCS)	ELEV. (MSL.) 673' DATE COMPLETED 05-06-2019	IETR/ SIST/ OWS	Y DEN (P.C.I	OISTI
0 MATERIAL DESCRIPTION Image: Construction of the image: Constructing of the image: Constructing of the image: Constructio				GRO	. ,	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	RE (BI	DR	≥O
0 SMASC GOLF COURSE FILL (Ogen) Loose, dry, brown, Silty to Clayer, fins to medium SAND 2 -Becomes gray and brown below 1.5 feet 4 SM Loose, dry, brown, Silty, fine to medium SAND 6 ML MISSION VALLEY FORMATION - Weathered (Tmv) Very Silt, damp, white and olive green, fine, Sudy SILTSILTSIONE; heavy calcium carbonate replacement 8 ML MISSION VALLEY FORMATION (Tmv) Hard, damp to most, dwg green, fine, Sudy SILTSINTSIONE; heavy calcium carbonate replacement 10 SM Desse, damp, gray, Silty, fine to medium SANDSTONE 10 TRENCH TERMINATED AT 10 FEET Groundwater not encountered 10 TRENCH TERMINATED AT 10 FEET Groundwater not encountered Figure A-97, Log of Trench T 97, Page 1 of 1						MATERIAL DESCRIPTION			
2 Becomes gray and brown below 1.5 feet 4 MI. 6 MI. 8 MI. 8 MI. 9 MI. 10 MI. 10 TRENCH TERMINATED AT 10 FEET	- 0 -				SM&SC	GOLF COURSE FILL (Qgcf)			
2							-		
4 SM TOPSOIL Loss, dump, brown, Silty, fine to medium SAND 6 ML MISSION VALLEY FORMATION - Weathered (Tmv) Very stiff, dump, white and olive green, fine, Sandy SILT/SILTSTONE; heavy calcim actionate replacement 8 ML MISSION VALLEY FORMATION (Tmv) Hard, dump to moist, olive green, fine, Sandy SILT/SILTSTONE; heavy calcim actionate replacement 10 ML MISSION VALLEY FORMATION (Tmv) Hard, dump to moist, olive green, fine, Sandy SILTSTONE with calcium carbonate 10 SM Dense, damp, gray, Silty, fine to medium SANDSTONE 10 TREINCH TERMINATED AT 10 FEET Groundwater not encountered Figure A-97, Log of Trench T 97, Page 1 of 1	- 2 -					-Becomes gray and brown below 1.5 feet	-		
4 - Loss, damp, brown, Sitty, tine to medium SAND - <td< td=""><td></td><td></td><td></td><td></td><td>SM</td><td>TOPSOIL</td><td></td><td></td><td></td></td<>					SM	TOPSOIL			
6 ML MISSION VALLEY FORMATION - Weathered (Tmv) Very stiff, damp, white and olive green, fine, Sandy SIL/ISILTSTONE; heavy calcium achonate replacement Image: Comparison of the comparison	- 4 -					Loose, damp, brown, Silty, fine to medium SAND	_		
6					ML	MISSION VALLEY FORMATION - Weathered (Tmv)			
8 ML MISSION VALLEY FORMATION (Tmv) Hard, damp to moisi, dive green, fine, Sandy SULTSTONE with calcium carbonate	- 6 -					Very stiff, damp, white and olive green, fine, Sandy SILT/SILTSTONE; heavy calcium carbonate replacement	-		
8 - Hard, damp to most, olive green, line, sandy SLTSTONE with calcium carbonate - SM Dense, damp, gray, Sitly, fine to medium SANDSTONE 10 TRENCH TERMINATED AT 10 FEET Groundwater not encountered 10 TRENCH TERMINATED AT 10 FEET Groundwater not encountered 10 Figure A-97, Cogo of Trench T97, Page 1 of 1 SAMPLE SYMBOLS SAMPLING UNSUCCESSFUL					ML	MISSION VALLEY FORMATION (Tmy)			
Image: SM Dense, damp, gray, Sitly, fine to medium SANDSTONE Image: SM Image: Imag	- 8 -					Hard, damp to moist, olive green, fine, Sandy SILTSTONE with calcium	-		
10 TRENCH TERMINATED AT 10 FEET Groundwater not encountered Image: Comparison of the comparison o					SM	Dense, damp, gray, Silty, fine to medium SANDSTONE	_		
Groundwater not encountered	- 10 -		<u></u>			TRENCH TERMINATED AT 10 FEET			
Figure A-97, Cog of Trench T 97, Page 1 of 1						Groundwater not encountered			
Figure A-97, Log of Trench T 97, Page 1 of 1 OUT1-32-45A (TRENCH).GPJ SAMPLE SYMBOLS SAMPLING UNSUCCESSFUL									
Figure A-97, Log of Trench T 97, Page 1 of 1 SAMPLE SYMBOLS									
Figure A-97, Log of Trench T 97, Page 1 of 1 O3071-3245A (TRENCH) GPJ SAMPLE SYMBOLS Image: Sampling Unsuccessful provide an advanced									
Figure A-97, Log of Trench T 97, Page 1 of 1 Output Standard Penetration test Image: Contract of the standard penetration test SAMPLE SYMBOLS Image: Sample Contract of the standard penetration test Image: Contract of the standard penetration test Image: Contract of the standard penetration test									
Figure A-97, Log of Trench T 97, Page 1 of 1 SAMPLE SYMBOLS									
Figure A-97, Log of Trench T 97, Page 1 of 1 O3071-32-45A (TRENCH).GPJ SAMPLE SYMBOLS Sample Symbols									
Figure A-97, Log of Trench T 97, Page 1 of 1 O3071-32-45A (TRENCH).GPJ SAMPLE SYMBOLS									
Figure A-97, Log of Trench T 97, Page 1 of 1 03071-32-45A (TRENCH).GPJ SAMPLE SYMBOLS SAMPLING UNSUCCESSFUL SAMPLE SYMBOLS SAMPLING UNSUCCESSFUL									
Figure A-97, Log of Trench T 97, Page 1 of 1 03071-32-45A (TRENCH).GPJ SAMPLE SYMBOLS SAMPLING UNSUCCESSFUL SAMPLE SYMBOLS SAMPLING UNSUCCESSFUL									
Figure A-97, Log of Trench T 97, Page 1 of 1 03071-32-45A (TRENCH).GPJ SAMPLE SYMBOLS SAMPLING UNSUCCESSFUL STANDARD PENETRATION TEST DRIVE SAMPLE (UNDISTURBED)									
Figure A-97, Log of Trench T 97, Page 1 of 1 03071-32-45A (TRENCH).GPJ SAMPLE SYMBOLS SAMPLING UNSUCCESSFUL STANDARD PENETRATION TEST DRIVE SAMPLE (UNDISTURBED)									
Figure A-97, Log of Trench T 97, Page 1 of 1 03071-32-45A (TRENCH).GPJ SAMPLE SYMBOLS SAMPLING UNSUCCESSFUL STANDARD PENETRATION TEST SAMPLE SYMBOLS SAMPLING UNSUCCESSFUL STANDARD PENETRATION TEST									
Figure A-97, Log of Trench T 97, Page 1 of 1									
Log of Trench T 97, Page 1 of 1	Figure	A-97 ,					0307	71-32-45A (TR	ENCH).GPJ
SAMPLE SYMBOLS	Log o	f Trenc	h T 9	7,	Page 1	of 1			
	SAMF	SAMPLE SYMBOLS							

		1	1			· · · · · ·		
			ШШ		TRENCH T 98	Zω~	≻	(%)
DEPTH	SAMPLE	06	VATI	SOIL		ATIC ANCI S/FT.	NSIT .F.)	URE NT (%
IN FEET	NO.	HOL	ND	CLASS (USCS)	ELEV. (MSL.) 659' DATE COMPLETED 05-06-2019	SIST.	Y DE (P.C	OIST NTEI
			GRO		EQUIPMENT Rubber Tire Backhoe BY: T. REIST	(BI	DR	∑ O ∑
			┢		MATERIAL DESCRIPTION			
- 0 -				SM	GOLF COURSE FILL (Qgcf)			
				SC&CL	Loose to medium dense, damp to moist, gray and brown, Silty to Clayey, fine to medium SAND and Sandy CLAY	-		
- 2 -						-		
L -						_		
					-Piece of drainage pipe at 3 feet			
4		11		CL	Stiff, very moist, very dark gray and gray-green, Silty to Sandy CLAY with organic odor			
						-		
- 6 -						-		
						-		
- 8 -						-		
						-		
- 10 -								
10			-	ML	MISSION VALLEY FORMATION (Tmv) Hard, damp, mottled olive green and maroon, fine, Sandy SILTSTONE with			
			-		calcium carbonate			
- 12 -					TRENCH TERMINATED AT 12 FEET			
					Groundwater not encountered			
Figure	Figure A-98, 03071-32-45A (TRENCH).GPJ							
Log o	f Trenc	h T 9	8,	Page 1	of 1			
SAMF	SAMPLE SYMBOLS							
					IRBED OR BAG SAMPLE V WATER	TABLE OR SE	FPAGE	



(-						
ПЕРТН		GY	ATER	0.011	TRENCH T 99	TION VCE	ХТІЗ (RE - (%)	
IN FEET	SAMPLE NO.	OTOH-	MDN	CLASS	ELEV. (MSL.) 674' DATE COMPLETED 05-06-2019	ETRA1 SISTAN OWS/F	Y DEN: (P.C.F.	OISTU	
			GROI	(0000)	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PEN RE: (BL	DR	COM	
			┢		MATERIAL DESCRIPTION				
- 0 -				ML					
				SM	MISSION VALLEY FORMATION (Tmy)	-			
- 2 -					Dense, damp, light gray, Silty, fine SANDSTONE	_			
						_			
_ 4 _						_			
			, ,						
			> >			_			
- 6 -			>			-			
						-			
- 8 -				- <u>-</u>	Hard damp mottled alive green and margon fine Sandy SII TSTONE				
			-	IVIL	Hard, damp, motied onve green and maroon, fine, sandy SIETSTONE	_			
10			-						
- 10 -			; ;	- <u>-</u>	Dense damp light gray Silty fine to medium SANDSTONE				
			> >	5101	Dense, damp, light gray, Sitty, line to fredram SANDSTONE	-			
- 12 -	Т99-1					-			
						_			
- 14 -						_			
						_			
10									
- 16 -						_			
		<u> 0'0'0'0</u>	<u>,</u>		TRENCH TERMINATED AT 17 FEET				
					Groundwater not encountered				
Log of Trench T 99, Page 1 of 1									
			-		LING UNSUCCESSFUL	AMPLE (UNDI	STURBED)		
SAMPLE SYMBOLS						ABLE OR SE	, EPAGE		



						I			
			к		TRENCH T100	Z	≻		
DEPTH		J Q √	ATE	SOIL			SIT.	IRE 1 (%	
IN	SAMPLE	OLO	NDN	CLASS	ELEV (MSL) 649.5' DATE COMPLETED 05-06-2019	TRA STA WS/	DEN C.F	STL IEN	
FEET	NO.		SOUN	(USCS)		ENE.	RY I (Р		
			9 BR		EQUIPMENT Rubber Tire Backhoe BY: T. REIST	6.6.0		0	
					MATERIAL DESCRIPTION				
- 0 -				SM	GOLF COURSE FILL (Qgcf)				
					Loose to medium dense, damp to moist, brown and gray, Silty, fine to medium	_			
					SAND				
- 2 -						-			
						-			
4									
- 4 -				ML	-12-inch, pvc storm drain pipe encountered at 3.5 feet				
					Hard, damp, mottled olive green and maroon, fine, Sandy SILTSTONE	-			
6									
0									
						-			
- 8 -						_			
					TRENCH TERMINATED AT 8 FEET				
					Groundwater not encountered				
Figure	Δ_100			1		0307	1-32-45A (TF	RENCH).GP.I	
Logo	f Trenc	h T1 0)0,	Page	1 of 1		(, 2. 0	
SAMF						WATER TABLE OR SEEPAGE			

				-						
DEPTH IN FEET	SAMPLE NO.	НОГОСУ	JNDWATER	SOIL CLASS	TRENCH T101 ELEV. (MSL.) 652.5' DATE COMPLETED 05-06-2019	ETRATION SISTANCE OWS/FT.)	/ DENSITY (P.C.F.)	DISTURE NTENT (%)		
			GROL	(0303)	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PEN RES (BL	DR)	CONC		
			┢							
- 0 -			-	SP	GOLF COURSE FILL (Ogef)					
					Loose, dry, brown, fine to medium SAND	_				
- 2 -					-3 to 4-inch, pea gravel lense at base					
				SMasc	Medium dense, moist, gray and brown, Sitly to Clayey, fine to medium SAND	_				
- 4 -						_				
						_				
						_				
- 8 -						_				
						_				
- 10 -				ML	MISSION VALLEY FORMATION (Tmv)					
					Hard, moist, mottled olive green and maroon, Clayey/ fine, Sandy	_				
_ 12 _					SILISIONE					
12										
					TRENCH TERMINATED AT 13 FEET	_				
					Groundwater not encountered					
Figure A-101. 03071-32-45A (TRENCH).GPJ										
Log o	f Trenc	h T10)1,	Page	1 of 1					
				SAMP	LING UNSUCCESSFUL STANDARD PENETRATION TEST DRIVE S/	AMPLE (UNDI	STURBED)			
SAMP	SAMPLE SYMBOLS				IRBED OR BAG SAMPLE I CHUNK SAMPLE I WATER T	TABLE OR SEEPAGE				

		-	-					
DEPTH		GY	ATER	0.011	TRENCH T102	IION ICE	SITY (RE - (%)
IN FEET	SAMPLE NO.	тного		CLASS (USCS)	ELEV. (MSL.) <u>645'</u> DATE COMPLETED <u>05-06-2019</u>	JETRA SISTAN OWS/F	Y DENS (P.C.F.	IOISTUI NTENT
			GRO		EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PEN (BL	DR	So⊼
			\square		MATERIAL DESCRIPTION			
- 0 -				SM&SC	GOLF COURSE FILL (Qgcf)			
					Loose to medium dense, damp, gray and brown, Silty to Clayey, fine to medium SAND	_		
- 2 -					-12-inch, pvc storm drain pipe encountered at 2 feet			
- 4 -						_		
						_		
- 6 -								
Ű								
						-		
- 8 -					-Becomes blue green and very dark gray with organic odor below 8 feet	_		
				SM&SC	PREVIOUSLY PLACED COMPACTED FILL (Qpf) Medium dense moist dark grav and blue green. Silty to Clavey, fine to			
- 10 -					medium SAND	-		
						_		
- 12 -						-		
						-		
- 14 -						_		
				SM	MISSION VALLEY FORMATION (Tmv) Dense damp gray Silty fine to medium SANDSTONE			
- 16 -		<u> </u>	1		TRENCH TERMINATED AT 16 FEET			
					Groundwater not encountered			
Figure	A-102					0307	71-32-45A (TF	RENCH).GPJ
Log o	f Trenc	h T10)2 ,	Page	1 of 1			
CANA				SAMP	LING UNSUCCESSFUL	AMPLE (UNDI	STURBED)	

 SAMPLE SYMBOLS
 Image: Sampling unsuccessful
 Image: Standard penetration test
 Image: Sample (undisturbed on the sample (undisturbed on



			ER		TRENCH T103	Zша	≻	(%
DEPTH	a) Q	/ATI	SOIL		FT.	LISN (:=	URE TT (%
IN	SAMPLE NO.	Į OLO	NDN	CLASS	ELEV. (MSL.) 656' DATE COMPLETED 05-06-2019	ISTA STA	CC.F	ISTI
FEEI		Ē	Sour	(USCS)		ENE (BLC	ЛRY (F	ON NOC
			ß		EQUIPMENT Rubber Tire Backhoe BY: T. REIST	<u> </u>		Ŭ
					MATERIAL DESCRIPTION			
- 0 -				SM&SC	GOLF COURSE FILL (Qgcf)			
					Loose to medium dense, damp, gray and brown, Silty to Clayey, fine to	-		
2					inedium SAND			
- 2 -								
						-		
- 4 -								
						-		
- 6 -						-		
- 8 -		XXX		CL	MISSION VALLEY FORMATION (Tmv)			
		<u> XXX</u>			Hard, moist, brown, Silty/fine, Sandy CLAYSTONE			
					TRENCH TERMINATED AT 9 FEET			
					Groundwater not encountered			
Figure A-103, 03071-32-45A (TRENCH).GPJ								
Log of Trench T103, Page 1 of 1								
		<u></u>		SAMP	PLING UNSUCCESSFUL STANDARD PENETRATION TEST DRIVE S.	AMPLE (UNDI	STURBED)	
SAMPLE SYMBOLS				🕅 DISTL	JRBED OR BAG SAMPLE	TABLE OR SE	, EPAGE	

	1	1	1	1				
DEPTH		β	ATER	SOIL	TRENCH T104	TION VCE FT.)	SITY (RE [(%)
IN FEET	SAMPLE NO.	DIOH.	MDN	CLASS	ELEV. (MSL.) 648 DATE COMPLETED 05-06-2019	ETRA SISTAI OWS/	r den (P.C.F	OISTU NTEN ⁻
			GROL	(0000)	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PEN (BL	DR	COM
			┢		MATERIAL DESCRIPTION			
- 0 -				SM	TOPSOIL			
					Loose, damp, brown, Silty, fine SAND	-		
- 2 -			•	ML	MISSION VALLEY FORMATION - Weathered (Tmv) Very stiff, moist, white and brown, fine, Sandy SILT/SILTSTONE; heavy calcium carbonate replacement			
- 4 -			:	ML	MISSION VALLEY FORMATION (Tmv)			
					Hard, damp, brown, fine, Sandy SILTSTONE	_		
- 6 -		<u> </u>			TRENCH TERMINATED AT 6 FEET Groundwater not encountered			
L							74 00 AFA (TF	
Log of	f Trenc	, h T10)4,	Page	1 of 1	0307	' 1-3∠-45A (Th	ENGH).GPJ
		01.0		SAMP	LING UNSUCCESSFUL STANDARD PENETRATION TEST DRIVE S.	AMPLE (UNDI	STURBED)	
SAMF	SAMPLE SYMBOLS							

		-	-						
DEPTH	SAMDLE	OGY	VATER	SOIL	TRENCH T105	ATION ANCE 8/FT.)	NSITY F.)	URE VT (%)	
IN FEET	NO.	THOL		CLASS (USCS)	ELEV. (MSL.) 646' DATE COMPLETED 05-06-2019	LETR, SIST/ OWS	Y DEI (P.C.	IOIST NTEN	
			GRO		EQUIPMENT Rubber Tire Backhoe BY: T. REIST	(BI (BI	DR	S 0 ∑	
			\vdash		MATERIAL DESCRIPTION				
- 0 -				SM&SC	GOLF COURSE FILL (Qgcf)				
					Loose, damp, brown and gray, Silty to Clayey, fine to medium SAND	-			
- 2 -				$-\overline{CL}$	Stiff, moist, very dark brown, Silty CLAY				
						_			
- 4 -		H H				_			
						_			
- 6 -									
Ŭ									
				SM	Medium dense, damp to moist, light brown, Silty, fine to medium SAND				
- 8 -						-			
				SM	MISSION VALLEY FORMATION (Tmv)				
- 10 -					Dense, damp, gray, Silty, fine to medium SANDSTONE with some calcium carbonate	-			
					TRENCH TERMINATED AT 11 FEET				
					Groundwater not encountered				
Figure A-105, 03071-32-45A (TRENCH).GPJ									
Log of Trench T105, Page 1 of 1									
SAMP	SAMPLE SYMBOLS								
1				🔛 DISTL	IRBED OR BAG SAMPLE 📃 WATER :	TABLE OR SE	EPAGE		



		-	-					
DEPTH		ЭGY	/ATER	SOIL	TRENCH T106	NTION NCE /FT.)	USITY :.)	JRE T (%)
IN FEET	SAMPLE NO.	HOL	NDN	CLASS (USCS)	ELEV. (MSL.) 664' DATE COMPLETED 05-06-2019	IETR/ SISTA OWS	Y DEN (P.C.I	OISTI
		5	GROI	()	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	RE: (BL	DR	×o C
			\vdash		MATERIAL DESCRIPTION			
- 0 -				SM	GOLF COURSE FILL (Qgcf)			
					Loose, dry, brown, Silty, fine SAND	-		
- 2 -						-		
					Becomes loose to medium dense, damp to moist and gray with silty to clayer	-		
- 4 -					sand below 3 feet	_		
						_		
G								
- 0 -								
						-		
- 8 -						-		
						-		
- 10 -				CL	TOPSOIL Stiff moist dark brown Sandy CLAY	_		
				МТ	MISSION VALLEY FORMATION Worth and (True)			
- 12 -				MIL	Very stiff, damp, white to light brown, fine, Sandy SILT/SILTSTONE; heavy	_		
					calcium carbonate replacement			
				ML	MISSION VALLEY FORMATION (Tmv) Hard, damp, brown, fine, Sandy SILTSTONE			
- 14 -					TRENCH TERMINATED AT 14 FEET			
					Groundwater not encountered			
Figure	A-106.		1		1	0307	71-32-45A (TF	RENCH).GPJ
Log o	f Trenc	h T10)6,	Page	1 of 1			
SAME				SAMP	LING UNSUCCESSFUL STANDARD PENETRATION TEST DRIVE S.	AMPLE (UNDI	STURBED)	
SAIVIP	SAMPLE SYMBOLS SAMPLE OR BAG SAMPLE CHUNK SAMPLE WATER TABLE OR SEEPAGE							

			к		TRENCH T107	Zuis	≻	(
DEPTH		[] G	ATE	SOIL		TIOI NCE	SIT.	IRE T (%
IN	SAMPLE	OLC	DW	CLASS		STA WS/	OEN .C.F	STU TEN
FEET	NO.		NO	(USCS)			RY I (P	
			GR		EQUIPMENT Rubber Tire Backhoe BY: T. REIST	I II I	Δ	U
			\vdash		MATERIAL DESCRIPTION			
- 0 -			:	SM	GOLF COURSE FILL (Ogef)			
L _					Loose to medium dense, damp, brown and gray, Silty, fine to medium SAND	_		
					with some clay			
- 2 -						-		
						-		
- 4 -								
						-		
- 6 -						_		
		http		ML	MISSION VALLEY FORMATION (Tmv)			
- 8 -				- <u>-</u>	Hard, damp, brown, Clayey/fine, Sandy SILTSTONE			
				SIVI	Dense, damp, gray, Silty, fine to medium SANDSTONE			
- 10 -		<u> </u> *•[*•]•* •* 			TRENCH TERMINATED AT 10 FEET			
					Groundwater not encountered			
Figure A-107, 03071-32-45A (TRENCH).GPJ								
Log of Trench T107, Page 1 of 1								
SAMF	SAMPLE SYMBOLS							



			۳		TRENCH T108	_	,	_
DEPTH		ЪG	ATEF	SOIL		NCE NCE (FT.)	ISITY (:	JRE T (%)
	SAMPLE NO.	НОГО	NDN	CLASS	ELEV. (MSL.) 656' DATE COMPLETED 05-06-2019	ETRA IISTA DWS/	P.C.F	UTEN.
1			BROU	(0505)	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PENI RES (BL(DRY)	CONC
- 0 -	ļ		_	01000				
				SM&SC	GOLF COURSE FILL (Qgct) Loose, damp, brown and gray, Silty to Clayey, fine to medium SAND			
- 2 -						-		
				CL	MISSION VALLEY FORMATION (Tmv)			
- 4 -					Hard, moist, mottled olive brown and olive green, Silty CLAYSTONE	-		
					TRENCH TERMINATED AT 5 FEET Groundwater not encountered			
					Groundwater not encountered			
Figure	A-108,					0307	71-32-45A (TR	ENCH).GPJ
Log of	f Trenc	h T10)8,	Page	1 of 1			
		01.0		SAMP	LING UNSUCCESSFUL	AMPLE (UNDI	STURBED)	
SAMP	SAMPLE SYMBOLS			SAMPLING UNSUGGESSFUL STANDARD PENETRATION TEST DRIVE SAMPLE (UNDISTURBED)				

			Γ						
		≻	Ë		TRENCH T109	N H C	≿	ш (%	
DEPTH	SAMPLE	LOG	WAT	SOIL		ATIC ANC S/FT	ENSI'	NT ('	
FEET	NO.	THO	IND	CLASS (USCS)	ELEV. (MSL.) 657.5' DATE COMPLETED 05-07-2019	NETR SIST LOW	۲ DE (P.C	10IS ⁻	
			GRO		EQUIPMENT Rubber Tire Backhoe BY: T. REIST	BE (BE	DR	≥0 O	
			╞		MATERIAL DESCRIPTION				
- 0 -				SP	GOLF COURSE FILL (Qgcf)				
					Loose, dry, brown, fine to medium SAND	-			
- 2 -				SM&SC	Loose to medium dense, damp, gray and white, Silty to Clayey, fine to				
				CL	medium SAND MISSION VALLEV FORMATION (Tmv)				
- 4 -					Hard, moist, brown, Silty CLAYSTONE with calcium carbonate	-			
						_			
6									
- 0 -	1								
				ML	Hard, damp, gray, fine, Sandy SILTSTONE				
- 8 -	T109-1					-			
			2			-			
- 10 -						_			
[TRENCH TERMINATED AT 11 FEET				
Log of Trench T109, Page 1 of 1									
CANA									
SAIVIF	SAMPLE SYMBOLS								

DEPTH		УЭС	/ATER	SOIL	TRENCH T110	NTION NCE /FT.)	JSITY 	JRE T (%)		
IN FEET	SAMPLE NO.	тного	NDN	CLASS (USCS)	ELEV. (MSL.) 665' DATE COMPLETED 05-07-2019	JETRA SISTA LOWS	Y DEN (P.C.F	IOISTU NTEN		
			GRO		EQUIPMENT Rubber Tire Backhoe BY: T. REIST	REP (BI	DR	≥O		
			\vdash		MATERIAL DESCRIPTION					
- 0 -				SM	GOLF COURSE FILL (Qgcf)					
				CL	Stiff, moist, very dark brown and gray, Silty to Sandy CLAY mixed with Silty					
- 2 -		HH		SC&SM	to Clayey SAND	-				
						-				
- 4 -						-				
						-				
- 6 -						_				
				CL	TOPSOIL Stiff, moist, very dark brown, Silty CLAY					
- 8 -						-				
		H H				-				
- 10 -				ML	MISSION VALLEY FORMATION - Weathered (Tmv)					
			-		Very stiff, damp, white and brown, fine, Sandy SILT/SILTSTONE; heavy calcium carbonate replacement	-				
- 12 -			-			-				
				ML	MISSION VALLEV FORMATION (Tmv)					
- 14 -					Hard damp, brown, fine, Sandy SILTSTONE with calcium carbonate	_				
					Groundwater not encountered					
Figure A-110, 03071-32-45A (TRENCH).GPJ Log of Trench T110. Page 1 of 1										
			,		LING UNSUCCESSFUL		STURBED)	,		

SAMPLE SYMBOLS

... DISTURBED OR BAG SAMPLE

... CHUNK SAMPLE

▼ ... WATER TABLE OR SEEPAGE



DEPTH	SAMPI E	OGY	NATER	SOIL	TRENCH T111	ATION ANCE S/FT.)	NSITY .F.)	'URE NT (%)	
IN FEET	NO.	THOL	ND	CLASS (USCS)	ELEV. (MSL.) 660' DATE COMPLETED 05-07-2019	NETR SIST.	KY DE (P.C	10IST NTEI	
			GRO		EQUIPMENT Rubber Tire Backhoe BY: T. REIST	BE BE	DR	202	
			\square		MATERIAL DESCRIPTION				
- 0 -				SM	GOLF COURSE FILL (Qgcf)				
				CL -	Stiff, moist, dark brown, Silty to Sandy CLAY				
- 2 -						-			
						-			
- 4 -						_			
- 6 -						-			
						-			
- 8 -						-			
						-			
- 10 -						_			
10			•	SM	MISSION VALLEY FORMATION (Tmv) Dense, damp, light brown to gray, Silty, fine to medium SANDSTONE with				
- 12 -			•		calcium carbonate	_			
		000P			TRENCH TERMINATED AT 13 FEET				
					Groundwater not encountered				
Figure Log o	<mark>} A-111</mark> , f Trenc∣	, h T11	11,	Page	1 of 1	0307	71-32-45A (TF	RENCH).GPJ	
CAME				SAMP	LING UNSUCCESSFUL	AMPLE (UNDI	STURBED)		
J SAIVIP	SAMPLE SYMBOLS			🕅 DISTL	IRBED OR BAG SAMPLE 🛛 CHUNK SAMPLE II. WATER	TABLE OR SE	EPAGE		

		2	TER		TRENCH 1112	U⊟(:	Σ	MOISTURE CONTENT (%)
DEPTH IN FEET	SAMPLE NO.	НОГОС	NDWA	SOIL CLASS	ELEV. (MSL.) 665' DATE COMPLETED 05-07-2019	ETRAT SISTAN OWS/F	DENS P.C.F.)	DISTUR
			GROL	(0303)	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PENI RES (BL	DRY)	CONC
			\vdash					
- 0 -				ML	MISSION VALLEY FORMATION (Tmy)			
					Hard, damp, mottled olive green and olive brown, fine, Sandy SILTSTONE with calcium carbonate	-		
- 2 -						-		
						-		
- 4 -								
					TRENCH TERMINATED AT 4 FEET Groundwater not encountered			
			1				74 00 45 · 7-	
Log of	f Trencl	h T1 1	12,	Page	1 of 1	0307	1-32-45A (TF	KENCH).GPJ
			.,					
SAMPLE SYMBOLS			Image: Sampling Unsuccessful Image: Standard Penetration Test Image: Sample (Undisturbed) Image: Sample Disturbed or bag Sample Image: Standard Penetration Test Image: Sample Construction Test					

			_						
DEPTH IN FEET	SAMPLE NO.	ногосу	JNDWATER	SOIL CLASS (USCS)	TRENCH T113 ELEV. (MSL.) 670 DATE COMPLETED 05-07-2019	ETRATION SISTANCE OWS/FT.)	Υ DENSITY (P.C.F.)	OISTURE NTENT (%)	
			GROI	()	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PEN (BL	DR	≥O	
			\square		MATERIAL DESCRIPTION				
- 0 -				_ <u>SM</u>	GOLF COURSE FILL (Qgcf)				
				SM&SC	Loose, dry, brown, Silty, fine to medium SAND/ Loose to medium dense, damp to moist, gray and dark brown, Silty to Clayey, fine to medium SAND	_			
						_			
- 4 -						_			
- 6 -						_			
- 8 -						_			
						-			
- 10 -				CL	TOPSOIL Stiff, moist, dark brown, Silty to Sandy CLAY	_			
		XX	1			-			
- 12 - 				CL	MISSION VALLEY FORMATION - Weathered (Tmv) Very stiff, damp to moist, white and brown, Silty CLAY/CLAYSTONE; heavy calcium carbonate replacement				
- 14 -						_			
- 16 -				ML	MISSION VALLEY FORMATION (Tmv) Hard, damp, brown, Clayey/ fine, Sandy SILTSTONE with calcium carbonate	_			
					TRENCH TERMINATED AT 17 FEET Groundwater not encountered				
Figure A-113, 03071-32-45A (TRENCH).GPJ Log of Trench T113, Page 1 of 1									
SAMF	LE SYMB	OLS		SAMP	LING UNSUCCESSFUL STANDARD PENETRATION TEST DRIVE SA	AMPLE (UNDI	STURBED)		

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

... CHUNK SAMPLE

... DISTURBED OR BAG SAMPLE

... WATER TABLE OR SEEPAGE

		1						
			<u>ا</u> بر		TRENCH T114	z	~	
DEPTH		∑g	ATE	SOIL			SIT.	JRE T (%
IN	SAMPLE	I OTO	NDV	CLASS	ELEV. (MSL.) 593.5' DATE COMPLETED 05-07-2019	STA	DEN P.C.F	ISTL TEN
FEET	110.	<u></u>	NO CI	(USCS)		ENE (BLO	ЛRY (F	OM MO
			Ь		EQUIPMENT Rubber Tire Backhoe BY: T. REIST			0
					MATERIAL DESCRIPTION			
- 0 -			:	SM&SC	GOLF COURSE FILL (Qgcf)			
					Loose to medium dense, dark gray, brown and dark brown, Silty to Clayey,	_		
2					to 10-inches			
2	T114-1							
						-		
- 4 -		8111			-24-inch long, concrete chunk (sidewalk panel) present at 3.5 feet	L		
- 6 -			\vdash		GRANITIC ROCK (Kgr)			
L -			1		Highly weathered, reddish brown, moderately weak GRANITIC ROCK	L		
		+ +						
- 8 -					TRENCH TERMINATED AT 8 FEET			
					Groundwater not encountered			
Figure	A-114				A	0307	71-32-45A (TF	RENCH).GPJ
Log o	t Irenc	n [11	4,	Page	1 of 1			
SAME	SAMPLE SYMPOLS							
GAIVIP	SAMPLE SYMBOLS		AMPLE SYMBOLS				EPAGE	

			T					1	
			К		TRENCH T115	ZIIIO	~	MOISTURE CONTENT (%)	
DEPTH		∑	ATE	SOIL		LIO FTIO	ISIT (:	JRE T (%	
IN	SAMPLE	IOL0	Į 2	CLASS	ELEV. (MSL.) 582' DATE COMPLETED 05-07-2019	STA STA	DEN C.F	ISTU	
FEET	110.	<u> </u>	NO CI	(USCS)		ENE (BLC	лкY (F	MON	
			U U U U		EQUIPMENT Rubber Tire Backhoe BY: T. REIST	6.6.0		0	
			\vdash		MATERIAL DESCRIPTION				
- 0 -		+ +	┢		GRANITIC ROCK (Kgr)				
	T 115 1 X	├ + ⊥ ⊥	1		Moderately weathered, brown, moderately weak to moderately strong	_			
0	1115-1	+ +			GRANITIC ROCK				
- 2 -		+ +				_			
	×	+ +				-			
- 4 -		- + + +	1			_			
		+ +	-						
		╞╧╶╧	\vdash		PRACTICAL REFUSAL AT 5 FEET				
					Groundwater not encountered				
Figure A-115, 03071-32-45A (TRENCH).GPJ									
Log of Trench T115, Page 1 of 1									
		01.0		SAMF	LING UNSUCCESSFUL STANDARD PENETRATION TEST DRIVE S/	AMPLE (UNDI	STURBED)		
SAMPLE SYMBOLS			Image: Start						

		<u>≻</u>	ER		TRENCH T116	Ζщ <u></u>	≥	(%
DEPTH		00	VAT	SOIL		ATIC ANC %FT.	NSI'	URE JT (9
IN FEET	NO.	HOL	NDV	CLASS	ELEV. (MSL.) 577.5' DATE COMPLETED 05-07-2019	ETR/ SIST/	P.C.	NIST
1			GROU	(0505)	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PENI RES (BL(DRY)	CONC
			Ľ					
- 0 -					MATERIAL DESCRIPTION			
-				SM	GOLF COURSE FILL (Qgcf) Loose to medium dense, dry to damp, brown, Silty, fine to coarse SAND with			
	T116-1				trace cobble	-		
- 2 -						-		
- 4 -						-		
L _		+ +			GRANITIC ROCK (Kgr)	_		
			1		Highly to moderately weathered, brown, moderately weak GRANITIC ROCK			
- 6 -		+ ·				-		
		++				-		
_ 8 _		+ +						
0					TRENCH TERMINATED AT 8 FEET			
					Groundwater not encountered			
Figure	Δ_116	<u> </u>	1	I		0305	71-32-45A (TR	ENCH) GP.1
Log of Trench T116, Page 1 of 1								
SAMF	SAMPLE SYMBOLS				IRBED OR BAG SAMPLE V WATER		EPAGE	

		1							
DEPTH		ЭGY	ATER	SOIL	TRENCH T117	TION NCE FT.)	(;	JRE T (%)	
IN FEET	SAMPLE NO.	HOLC	MDN	CLASS	ELEV. (MSL.) 578' DATE COMPLETED 05-07-2019	ETRA SISTA OWS/	r den (P.C.F	OISTU NTEN	
		5	GROL	(0000)	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PEN (BL	DR	COL	
			\vdash						
- 0 -		- 위안함:		SM	GOLF COURSE FILL (Ogef)				
					Loose, dry, brown, Silty, fine to coarse SAND	_			
- 2 -						_			
						_			
- 4 -		+ +			GRANITIC ROCK (Kgr)				
					Slightly weathered, gray, strong GRANITIC ROCK				
					Groundwater not encountered				
Figure	Figure A-117, 03071-32-45A (TRENCH).GPJ								
			17,	Fage					
SAMP	SAMPLE SYMBOLS		SAMP	LING UNSUCCESSFUL STANDARD PENETRATION TEST DRIVE S	AMPLE (UNDI	STURBED)			
	SAMPLE STMBULS		🔯 DISTURBED OR BAG SAMPLE 🛛 🛛 CHUNK SAMPLE 🕎 WATER TAB				EPAGE		

		1	1	1					
		75	TER		TRENCH T118	CE NON	≻TI	КЕ (%)	
DEPTH IN FEFT	SAMPLE NO.	НОГО	NDWA	SOIL CLASS	ELEV. (MSL.) 576.5' DATE COMPLETED 05-07-2019	ETRAT SISTAN OWS/F	DENS P.C.F.)	DISTUF	
			GROL	(0505)	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PENI RES (BL(DRY)	CONC	
			\vdash		MATERIAL DESCRIPTION				
- 0 -				SM	GOLF COURSE FILL (Qgcf)				
					Loose to medium dense, damp, brown, Silty, fine to coarse SAND	_			
- 2 -		$\left + + \right $			GRANITIC ROCK (Kgr)				
		+ + + +			Moderately weathered, dark gray, moderately strong GRANITIC ROCK	_			
- 4 -					REFUSAL AT 4 FEET				
					Groundwater not encountered				
L									
Figure	e A-118, f Trencl	h T1 1	8.	Page	1 of 1	0307	'1-32-45A (TF	RENCH).GPJ	
			-,						
SAMP	SAMPLE SYMBOLS			ILING UNSUCCESSFUL I STANDARD PENETRATION TEST I DRIVE S.	E SAMPLE (UNDISTURBED)				

í	1					1		
DEPTH		JGΥ	ATER	SOIL	TRENCH T119	TION NCE FT.)	SITY (:	IRE T (%)
IN FEET	SAMPLE NO.	HOLC	MDN	CLASS	ELEV. (MSL.) 584.5 DATE COMPLETED 05-07-2019	ETRA SISTA OWS/	r den (P.C.F	OISTU NTEN
			GROL	(0000)	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	RES (BL	DR	COL
			\vdash		MATERIAL DESCRIPTION			
- 0 -				SM	TOPSOIL			
					Loose to medium dense, dry, brown, Silty, fine to coarse SAND	_		
- 2 -					GRANITIC ROCK (Kgr) Moderately weathered, dark gray, moderately strong GRANITIC ROCK	-		
		+ +	-			-		
- 4 -		+ + - + '				-		
L _		+ +						
		+ +						
- 6 -					PRACTICAL REFUSAL AT 6 FEET			
					Groundwater not encountered			
L							74 00 454 (TT	
Log o	f Trenc	, h T1 1	19,	Page	1 of 1	0307	`ı-3∠-45A (1ŀ	ENCH).GPJ
		<u></u>		SAMP	LING UNSUCCESSFUL	AMPLE (UNDI	STURBED)	
SAMPLE SYMBOLS			🕅 DISTL	RBED OR BAG SAMPLE Image: Church Ch				

		-	-							
DEPTH IN	SAMPLE	JOGY	DWATER	SOIL	TRENCH T120	RATION TANCE VS/FT.)	ENSITY C.F.)	STURE ENT (%)		
FEET	NO.		SOUNE	(USCS)	ELEV. (MSL.)_602' DATE COMPLETED 05-07-2019	ENET RESIS (BLOV	Р. (P.	MOIS		
			ß		EQUIPMENT Rubber Tire Backhoe BY: T. REIST					
- 0 -					MATERIAL DESCRIPTION					
 - 2 -				SC	GOLF COURSE FILL (Qgcf) Loose to medium dense, moist, dark brown, Clayey, fine to medium SAND with 10%-20% gravel and cobble size rock fragments up to 8-inches	_				
- 4 -	T120-1			CL	Stiff, moist to wet, black, dark brown and green, Silty to Sandy CLAY with 10% gravel and cobble size rock fragments up to 6-inches; organic odor	- - -				
- 6 - - 8 -					-Becomes predominantly green below 8 feet	-				
						-				
- 12 - 	-			<u></u>		-				
- 14 - 			。 。 。 。	SM	FRIARS FORMATION (11) Dense, moist, blue green, Silty, fine to medium SANDSTONE with calcium carbonate	_				
Figure	A 120				TRENCH TERMINATED AT 15.5 FEET Groundwater not encountered	030	74 32 454 (TE			
Figure Log o	e A-120, f Trenc	, h T12	20,	Page	1 of 1	0307	71-32-45A (TF	ENCH).GPJ		
SAMF	SAMPLE SYMBOLS									

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

... CHUNK SAMPLE

... DISTURBED OR BAG SAMPLE



... WATER TABLE OR SEEPAGE

			-							
		GY	ATER	0.011	TRENCH T121	ION (. T.)))	RE (%)		
IN FEET	SAMPLE NO.	тного		CLASS (USCS)	ELEV. (MSL.) 600' DATE COMPLETED 05-07-2019	VETRAT SISTAN LOWS/F	Y DENS (P.C.F.	IOISTUI NTENT		
			GRO		EQUIPMENT Rubber Tire Backhoe BY: T. REIST	(BIR BIR	DR	CS		
			\square		MATERIAL DESCRIPTION					
- 0 -				SC	GOLF COURSE FILL (Qgcf)					
					Loose to medium dense, moist, gray-brown, Clayey, fine to medium SAND	-				
- 2 -						_				
		XX		CL	Very stiff, moist to wet, dark brown and gray-brown, Silty to Sandy CLAY					
- 4 -						-				
						-				
- 6 -			1			_				
		11/1			-Becomes dark brown and green below 7 feet					
- 8 -		HH				-				
		K K	1			-				
- 10 -										
					-Trace cobble size rock fragments up to 10-inches present below 10 feet					
			1			-				
- 12 -						-				
		<u> </u>				_				
- 14 -										
				CL	FRIARS FORMATION (Tf) Very stiff, moist, white and green, Silty CLAYSTONE with calcium					
					carbonate	-				
- 16 -			, – –	SM/SC	Dense, moist, pale green, Silty/Clayey, fine to coarse SANDSTONE					
			•			_				
					TRENCH TERMINATED AT 17.5 FEET					
					Groundwater not encountered					
Figure	A-121		I		1	0307	71-32-45A (TF	RENCH).GPJ		
Log o	f Trenc	h T12	21,	Page	1 of 1					
SAMF	SAMPLE SYMBOLS									

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

... CHUNK SAMPLE

... DISTURBED OR BAG SAMPLE



... WATER TABLE OR SEEPAGE

DEPTH		GY	ATER	801	TRENCH T122	TION VCE FT.)	SITY .)	RE _ (%)
IN FEET	SAMPLE NO.	OTOH-	MDN	CLASS	ELEV. (MSL.) 607.5' DATE COMPLETED 05-07-2019	ETRA SISTAI OWS/	Y DEN (P.C.F	OISTU
			GROI	(0000)	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PEN (BL	DR	ΞŌ C
			\vdash		MATERIAL DESCRIPTION			
- 0 -				SM	GOLF COURSE FILL (Qgcf)			
					Loose, dry, gray, Silty, fine to medium SAND	-		
- 2 -						-		
					Pandom 12 inch concretion present at 2 feet	-		
- 4 -					-Random 12-men concretion present at 5 reet	_		
				$-\overline{CL}$	Stiff, moist, black and gray, Silty to Sandy CLAY			
		H H						
- 6 -			1		-Becomes green and black with organic odor below 6 feet	-		
						-		
- 8 -			1			-		
		11				-		
- 10 -			1			_		
10			1					
- 12 -		11				-		
			1			-		
- 14 -					-Becomes pale green with trace gravel below 14 feet	-		
			1			-		
- 16 -		[1]/x	1		TDENICH TEDMINIATED AT 16 EET			
					Groundwater not encountered			
Figure	e A-122 f Trenc	, h T12	22,	Page	1 of 1	0307	'1-32-45A (TF	ENCH).GPJ
			,	SAMP	LING UNSUCCESSFUL	AMPLE (UNDI	STURBED)	
SAMPLE SYMBOLS					IRBED OR BAG SAMPLE III. CHUNK SAMPLE III. WATER	TABLE OR SE	, EPAGE	

			КШ		TRENCH T123	Zω_	~	(9)
DEPTH)GY	/ATE	SOIL		FT:	√SIT	JRE T (%
IN	SAMPLE NO.	PDL6	NDN	CLASS	ELEV. (MSL.) 607.5' DATE COMPLETED 05-07-2019	ISTA ISTA	DEN C.F	ISTU
FEEI		Ē	SOU	(USCS)		PENE (BLC	DRY (F	0 W C ON
			ß		EQUIPMENT Rubber Tire Backhoe BY: T. REIST	<u> </u>	_	Ū
					MATERIAL DESCRIPTION			
- 0 -				SM&SC	GOLF COURSE FILL (Qgcf)			
					Loose, dry, light brown to gray, Silty to Clayey, fine to medium SAND	-		
_ 2 _								
2								
	T123-1				-Becomes damp below 3 feet	-		
- 4 -						_		
						-		
- 6 -						-		
L _								
		KXX	1	CL	TOPSOIL Stiff majet yeary dark brown to block Silty CLAY			
- 8 -	T123-2			CL	FRIARS FORMATION (Tf)			
					Hard, moist, blue green, Silty CLAYSTONE	_		
10		XXXX						
- 10 -					TRENCH TERMINATED AT 10 FEET			
					Groundwater not encountered			
Figure	A-123,	, h T44	22	Dogo	1 of 1	0307	71-32-45A (TF	RENCH).GPJ
			:3,	rage				
SAME				SAMP	LING UNSUCCESSFUL STANDARD PENETRATION TEST DRIVE S	AMPLE (UNDI	STURBED)	
SAM	SAMPLE SYMBOLS							



		1	ī						
		75	TER		TRENCH T124	CEN CEN	Σ	٤E (%)	
	SAMPLE NO.	НОГОС	NDWA	SOIL CLASS	ELEV. (MSL.) 607.5' DATE COMPLETED 05-07-2019	ETRAT ISTAN DWS/F	, DENS P.C.F.)	JISTUF UTENT	
			GROU	(USCS)	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PENE RES (BL0	DRY)	CON	
					MATERIAL DESCRIPTION				
- 0 -			:	SM&SC	GOLF COURSE FILL (Qgcf)				
					Loose to medium dense, damp, dark brown and gray, Silty to Clayey, fine to medium SAND	-			
	T124-1			SM	STADIUM CONGLOMERATE (Tst)				
- 4 -					Dense, moist, orange, Silty, fine to medium SANDSTONE	_			
				GM -	Dense, moist, mottled orange and gray, Sandy CONGLOMERATE with				
		$\sum_{i=1}^{n} O_i$	7		50%-60% gravel and cobble size rock fragments up to 10-inches				
- 6 -						-			
			-			-			
- 8 -						-			
L _									
10									
- 10 -		$\mathcal{O} \mathcal{O}$							
		XX		CL	FRIARS FORMATION (Tf)				
- 12 -			1		Hard, moist, pale green, Silty CLAYSTONE				
					Groundwater not encountered				
Figure	Figure A-124. 03071-32-45A (TRENCH).GPJ								
Log o	f Trenc	h T12	24,	Page	1 of 1				
				SAMP	PLING UNSUCCESSFUL	AMPLE (UNDI	STURBED)		
SAMPLE SYMBOLS Important and other states of the states of the state of the sta						EPAGE			
			-			1			
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DEPTH		ЭGY	ATER	SOIL	TRENCH T125	ATION NCE /FT.)	ISITY 	JRE T (%)	
IN FEET	SAMPLE NO.	HOLO	MDNL	CLASS (USCS)	ELEV. (MSL.) 610' DATE COMPLETED 05-07-2019	ETRA SISTA OWS	Y DEN (P.C.F	OIST(NTEN	
		5	GROI	(,	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	(BL	DR	×O	
			\vdash		MATERIAL DESCRIPTION				
- 0 -				SM	GOLF COURSE FILL (Qgcf)				
					Loose to medium dense, damp, dark brown, Silty, fine to medium SAND	-			
- 2 -					-Becomes gray below 2 feet	_			
				GM	STADIUM CONGLOMERATE (Tst)	-			
- 4 -	T125 1 8				gravel and cobble size rock fragments up to 10-inches	-			
	1123-1					_			
6					-Becomes orange brown below 5 feet				
- 0 -	[
						-			
- 8 -					-Some boulders size rock fragments up to 16-inches present below 8 feet	-			
		$\left \begin{array}{c} 0 \\ 0 \\ 0 \\ \end{array} \right $				-			
- 10 -					-Becomes wet with minor caving below 10 feet	-			
						-			
- 12 -		γ_{β}	Ţ			_			
		6%			-Moderate seepage at 12 feet				
14									
- 14 -									
			1		TRENCH TERMINATED AT 15 FEET				
					Seepage encountered at 12 feet				
Figure	A-125.		1	I	1	0307	71-32-45A (TF	RENCH).GPJ	
Log o	Log of Trench T125, Page 1 of 1								
SAME		019		SAMP	LING UNSUCCESSFUL	AMPLE (UNDI:	STURBED)		
J JAIVIE	SAMPLE SYMBOLS SAMPLE SYMBOLS SAMPLE								



-		-	_						
DEPTH IN FEET	SAMPLE NO.	гтногосу	OUNDWATER	SOIL CLASS (USCS)	TRENCH T126 ELEV. (MSL.) 610' DATE COMPLETED 05-07-2019	ENETRATION (ESISTANCE BLOWS/FT.)	RY DENSITY (P.C.F.)	MOISTURE ONTENT (%)	
			GR		EQUIPMENT Rubber Tire Backhoe BY: T. REIST	ЦЦК ()		0	
			Γ		MATERIAL DESCRIPTION				
- 0 -				SM	GOLF COURSE FILL (Qgcf) Loose, dry, brown and gray, Silty, fine to medium SAND	_			
- 2 -				CL	ALLUVIUM (Qal) Stiff, moist, black, Silty to Sandy CLAY with 5%-10% gravel and cobble size rock fragments up to 8-inches	_			
- 4 -						-			
- 6 -				GM	Loose, wet, dark brown, Sandy/Clayey GRAVEL				
- 8 -					-Very heavy seepage and moderately caving at 7 feet	_			
- 10 - 			2			_			
- 12 -					-Likely stadium conglomerate contact at 12 feet; orange sand observed in bucket prior to trench caving TRENCH TERMINATED AT 12 FEET DUE TO CAVING Seepage encountered at 7 feet				
Figure A-126, 03071-32-45A (TRENCH).GPJ Log of Trench T126, Page 1 of 1									
SAMF	SAMPLE SYMBOLS								



1		1							
DEPTH		λg	ATER	SOIL	TRENCH T127	NTION NCE /FT.)	ISITY 	JRE T (%)	
IN FEET	SAMPLE NO.	LHOL(NDN	CLASS (USCS)	ELEV. (MSL.) 637' DATE COMPLETED 05-07-2019	IETR/ SISTA OWS	Y DEN (P.C.F	OISTI	
			GROI	. ,	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	RE RE (BI	DR	COM	
			\vdash		MATERIAL DESCRIPTION				
- 0 -				SM/SC	COLLUVIUM (Qc)				
	T127-1				Loose, dry, brown, Snty/Clayey, fine to medium SAND	-			
- 2 -					-Becomes clayier with depth	-			
						-			
- 4 -				GM	STADIUM CONGLOMERATE (Tst)				
	T127-2				Dense, damp to moist, orange brown, Sandy CONGLOMERATE with 50%-60% gravel and cobble size rock fragments up to 10-inches	-			
- 6 -						-			
						-			
- 8 -						-			
						_			
- 10 -									
					Groundwater not encountered				
Figure	<u> </u>					0307	71-32-45A (TF	ENCH).GPJ	
Logo	Log of Trench T127, Page 1 of 1								
SAMF	SAMPLE SYMBOLS								
1				KX DISTL	IRBED OR BAG SAMPLE WATER	TABLE OR SE	FPAGE		



		1	-						
DEPTH		GΥ	ATER	2011	TRENCH T128	TION (.)	SITY)	RE - (%)	
IN	SAMPLE NO.	ОТОН.	MDN	CLASS	ELEV. (MSL.) 639' DATE COMPLETED 05-07-2019	ETRA' SISTAN OWS/I	P.C.F	DISTU	
			GROL	(0000)	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PEN (BL	DR)	CON	
			┢		MATERIAL DESCRIPTION				
- 0 -		n North		SM					
				5171	Loose, dry, brown, Silty, fine to medium SAND	-			
- 2 -				CL	TOPSOIL Stiff moist dark brown Silty to Sandy CLAV	-			
					Shiri, hiosi, dark brown, Shiy to Sandy CLAT	_			
- 4 -						_			
				GM	STADIUM CONGLOMERATE (Tst) Dense, damp to moist, orange brown, Sandy CONGLOMERATE with				
- 6 -					50%-60% gravel and cobble size rock fragments up to 10-inches	-			
					TDENICH TEDMINATED AT 7.5 EEET	-			
					Groundwater not encountered				
Figure	Figure A-128, 03071-32-45A (TRENCH).GPJ								
	i i renci		-0,	raye					
SAMF	SAMPLE SYMBOLS SAMPLING UNSUCCESSFUL STANDARD PENETRATION TEST DRIVE SAMPLE (UNDISTURBED) DISTURBED OR BAG SAMPLE CHUNK SAMPLE WATER TABLE OR SEEPAGE								

		1	1					
DEPTH	SAMPI E	OGY	NATER	SOIL	TRENCH T129	ATION ANCE S/FT.)	NSITY .F.)	URE VT (%)
IN FEET	NO.	THOL	UND	CLASS (USCS)	ELEV. (MSL.) 638' DATE COMPLETED 05-07-2019	NETR SIST.	Y DE (P.C.	IOIST
			GRO		EQUIPMENT Rubber Tire Backhoe BY: T. REIST	(BIR BIR	DR	≥O
			\vdash		MATERIAL DESCRIPTION			
- 0 -				SM&SC	GOLF COURSE FILL (Qgcf)			
					Loose, dry to damp, brown, Silty to Clayey, fine to medium SAND	-		L
- 2 -				CL	Stiff, moist, dark brown, Sandy CLAY	-		
						-		
- 4 -						_		
			╞	CL	-6-inch thick, dry pocket at 4 feet			
					Stiff, moist, dark brown, Silty CLAY with some gravel and cobble size rock	-		
- 6 -		00		GM	STADIUM CONGLOMERATE (Tst)			
					Dense, damp, orange brown, Sandy CONGLOMERATE with 50%-60%	-		
- 8 -					TRENCH TERMINATED AT 8 FEET			
					Groundwater not encountered			
Log of	F Trenc	, h T12	<u>29</u> .	Page	1 of 1	0307	1-32-45A (TF	(ENCH).GPJ
			- ,					
SAMF	SAMPLE SYMBOLS Main disturbed or bag sample Main disturbed or bag sample disturbed or bag sample Main disturbed or bag sample d							

			_						
DEPTH IN	SAMPLE	ргоду	DWATER	SOIL CLASS		RATION STANCE VS/FT.)	JENSITY C.F.)	STURE ENT (%)	
FEET	NO.	LITH	NNO	(USCS)	ELEV. (MSL.) 645.5 DATE COMPLETED 05-07-2019	ENET RESIS (BLOV	RY D (P.	MOIS	
			С В В		EQUIPMENT Rubber Tire Backhoe BY: T. REIST			0	
- 0 -					MATERIAL DESCRIPTION				
				SP	GOLF COURSE FILL (Qgcf) Loose, dry, gray, fine to medium SAND	_			
- 2 -			-			_			
				CL	TOPSOIL Stiff, moist, dark brown, Silty CLAY	_			
						_			
- 6 -		[<u>1</u>]		GM	STADIUM CONGLOMERATE (Tst)				
			17 X J		Dense, damp, brown, Sandy CONGLOMERATE with 50%-60% gravel and cobble size rock fragments up to 10-inches	-			
- 8 -					TRENCH TERMINATED AT 8 FEET Groundwater not encountered				
Figure	Figure A-130, 03071-32-45A (TRENCH).GPJ								
Log o	f Trenc	h T13	30,	Page	1 of 1				
SAMF	LE SYMB	OLS		SAMP	LING UNSUCCESSFUL STANDARD PENETRATION TEST DRIVE S	AMPLE (UNDI	STURBED)		
	SAMPLE SYMBOLS			🔯 DISTURBED OR BAG SAMPLE 🔹 🚺 CHUNK SAMPLE 🛒 WATER TABLE OR SEEPAGE					

			_					
		GY	ATER		TRENCH T131	TION LCE T.)	ытү)	त्रE '(%)
IN FEET	SAMPLE NO.	HOLO	MDN	SOIL CLASS (USCS)	ELEV. (MSL.) 639.5' DATE COMPLETED 05-07-2019	ETRAT SISTAN OWS/F	Y DENS (P.C.F.	OISTUF
			GROI	(0000)	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PEN (BL	DR	COM
					MATERIAL DESCRIPTION			
- 0 -			:	SM&SC	GOLF COURSE FILL (Qgcf)			
					Loose to medium dense, damp, brown, Silty to Clayey, fine to medium SAND	-		
- 2 -						-		
					-Becomes dark brown and clayier below 2.5 feet	-		
- 4 -						-		
						-		
- 6 -				CL				
		<i>HH</i>		02	Stiff, moist, very dark gray to black, Silty to Sandy CLAY; organic odor	-		
- 8 -						-		
						_		
- 10 -						-		
				<u></u>				
- 12 -				SM	Dense, damp, light brown to light gray, Silty, fine to medium SANDSTONE	_		
			,		TRENCH TERMINATER AT 12 FEFT			
					Groundwater not encountered			
Figure A-131, 03071-32-45A (TRENCH).GPJ								
Log of	f Trenc	h T13	31,	Page	1 of 1			
SAMPLE SYMBOLS Image: Sampling unsuccessful Image								



DEPTH IN FEET	SAMPLE NO.	ГІТНОГОСУ	GROUNDWATER	SOIL CLASS (USCS)	TRENCH T132 ELEV. (MSL.) 633' DATE COMPLETED 05-08-2019 EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
					MATERIAL DESCRIPTION			
- 0 - - 2 - 				SM&SC	GOLF COURSE FILL (Qgcf) Loose to medium dense, damp, dark brown, Silty to Clayey, fine to medium SAND with 10%-15% gravel and cobble size rock fragments up to 6-inches			
- 4 -				CL	COLLUVIUM (Qc) Stiff, moist, very dark brown, Silty to Sandy CLAY	_		
- 6 -				SC -	Medium dense, damp to moist, brown, Clayey, fine to medium SAND	-		
- 8 -				SM	STADIUM CONGLOMERATE (Tst) Dense, damp, light brown, Gravelly, fine to medium SANDSTONE with 20%-30% gravel and cobble size rock fragments up to 8-inches	_		
					TRENCH TERMINATED AT 10 FEET Groundwater not encountered			
Figure A-132, Log of Trench T132, Page 1 of 1								
SAMPLE SYMBOLS								

- 0 - - 2 - - 2 - - 4 - - 4 -				SM	MATERIAL DESCRIPTION GOLF COURSE FILL (Qgcf) Loose, dry, brown to dark brown, Silty, fine to medium SAND	_		
- 2 - - 2 - - 4 - - 4 -				SM	GOLF COURSE FILL (Qgcf) Loose, dry, brown to dark brown, Silty, fine to medium SAND	_		
- 6	T133-1			GM	COLLUVIUM (Qc) Loose to medium dense, moist, brown, Silty to Clayey, fine to medium SAND -Becomes light brown and gray with 10%-15% gravel and cobble size rock fragments up to 10-inches with calcium carbonate below 10 feet STADIUM CONGLOMERATE (Tst) Dense, moist, orange brown, Sandy CONGLOMERATE with 50%-60% gravel and cobble size rock fragments up to 10-inches TRENCH TERMINATED AT 14 FEET Groundwater not encountered			
Figure A-133, 03071-32-45A (TRENCH).GPJ Log of Trench T133, Page 1 of 1 SAMPLING UNSUCCESSFUL SAMPLE SYMBOLS SAMPLING UNSUCCESSFUL								

								1
		_	ER		TRENCH T134	<u>с</u> ш.	≿	(%
DEPTH IN	SAMPLE	LOG	WAT	SOIL		RATIC TANC /S/FT	ENSI ⁻ C.F.)	TURE ENT (5
FEET	NO.	OHTI.	DUNE	(USCS)	ELEV. (MSL.) 625' DATE COMPLETED 05-08-2019	ENETF ESIS ⁻ BLOM	RY DI (P.C	MOIS
			GR(EQUIPMENT Rubber Tire Backhoe BY: T. REIST	E R B	ā	- ō
			\square		MATERIAL DESCRIPTION			
- 0 -				SM	GOLF COURSE FILL (Qgcf)			
					Loose to medium dense, moist, orown, only, mile to coarse or no	-		
- 2 -						-		
						-		
- 4 -					Pagames grav with trace cabble between 4 and 6 fast: lower aphacian	-		
					-becomes gray with trace cobole between 4 and 6 reet, lower conesion	_		
_ 6 _								
					-Becomes wet with moderate caving below 6 feet; possible alluvium contact???			
						-		
- 8 -			-		-Seepage at 8 feet; entire trench caved			
					TRENCH TERMINATED AT 8 FEET DUE TO CAVING			
					Seepage encountered at 8 feet			
Eigur						020-	71-32 /54 /75	
Log o	f Trencl	h T13	34 ,	Page	1 of 1	0307	1-02-40A (TP	LINGI IJ.GFJ
			-		PLING UNSUCCESSFUL	AMPLE (UNDI	STURBED)	
SAMF	SAMPLE SYMBOLS SAMPLE ONDISTURBED OR BAG SAMPLE STANDARD PENETRATION TEST DRIVE SAMPLE (UNDISTURBED) WATER TABLE OR SEEPAGE WATER TABLE OR SEEPAGE							

			1			1				
		و۲ ا	ATER		TRENCH T135	TON TCE	ытү)	RE (%)		
IN FEET	SAMPLE NO.	LHOLO		CLASS (USCS)	ELEV. (MSL.) 640' DATE COMPLETED 05-08-2019	IETRAT SISTAN OWS/F	Y DENS (P.C.F.	OISTUI		
			GROI	()	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PEN (BL	DR	C ⊠		
			\square		MATERIAL DESCRIPTION					
- 0 -				SM	GOLF COURSE FILL (Qgcf)					
					Loose to medium dense, dry to damp, dark brown, Silty, fine to medium SAND with 5%-10% gravel and cobble size rock fragments up to 6-inches	_				
						-				
- 4 -						-				
L -					-Becomes moist below 5 feet	-				
- 6 -				SC	TOPSOIL					
0					Loose to medium dense, moist, very dark brown, Clayey, fine to medium SAND with 5%-10% gravel and cobble size rock fragments up to 8-inches					
		ÍXX.	1-	CL -	Stiff, moist, gray, Silty CLAY with 5%-10% gravel and cobble size rock					
- 8 -		HH			fragments up to 10-inches	-				
		KKK K		GM	STADIUM CONCLOMEDATE (Tst)					
- 10 -				OW	Dense, damp, gray-brown, Sandy CONGLOMERATE with 50%-60% gravel	_				
			2		and cobble size rock fragments up to 8-inches					
					TRENCH TERMINATED AT 11 FEET					
					Groundwater not encountered					
<u> </u>										
Figure	A-135, f Tronc	, h T1?	35	Pane	1 of 1	0307	71-32-45A (TF	RENCH).GPJ		
			<i>,</i>							
SAMPLE SYMBOLS				SAMP	LING UNSUCCESSFUL I STANDARD PENETRATION TEST I DRIVE S IRBED OR BAG SAMPLE I CHUNK SAMPLE I WATER	AMPLE (UNDI TABLE OR SE	STURBED) EPAGE			

		<u>≻</u>	ĒR		TRENCH T136	<u>Кщ</u>	≿	ш (%	
DEPTH	SAMDLE	0 0	VAT	SOIL		ATIC ANC S/FT	-ISI	URE VT (°	
IN	NO.	보	ND	CLASS	ELEV. (MSL.) 632' DATE COMPLETED 05-08-2019	ETR.	P.C.	UTEN	
1 221			ROU	(0505)		BL(DRY)	COM	
			Ū			ш. 			
					MATERIAL DESCRIPTION				
- 0 -				SM	GOLF COURSE FILL (Qgcf)				
				CL	Loose, dry, brown, Silty, fine to medium SAND				
- 2 -				02	Stiff, moist, very dark brown, Sandy CLAY with 5%-10% gravel and cobble				
2					size rock fragments up to 10-inches				
						-			
- 4 -		/		CN					
				GM	STADIUM CONGLOMERATE (1st) Dense, damp, orange brown, Sandy CONGLOMERATE with 50%-60%				
		$\begin{bmatrix} 0 \end{bmatrix}$	-		gravel and cobble size rock fragments up to 10-inches	-			
- 6 -		\mathcal{O}	-		TRENCH TERMINATED AT 6 FEFT				
					Groundwater not encountered				
Figure A-136, 03071-32-45A (TRENCH).GPJ									
Log of Trench T136, Page 1 of 1									
		<u></u>		SAMP	LING UNSUCCESSFUL STANDARD PENETRATION TEST DRIVE SA	AMPLE (UNDI	STURBED)		
SAMPLE SYMBOLS				IRBED OR BAG SAMPLE	R TABLE OR SEEPAGE				

		1						
DEPTH		ЭGY	'ATER	SOIL	TRENCH T137	NCE NCE (FT.)	ISITY (. ⁻	JRE T (%)
IN FEET	SAMPLE NO.	НОГО	MDN	CLASS	ELEV. (MSL.) 650' DATE COMPLETED 05-08-2019	ETRA SISTA OWS,	ALIG (%) INA DENSILA WOISLINK UNIENCHJ.GPJ	
			GROL	(0000)	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PEN RES (BL	DR	COL
			┢		MATERIAL DESCRIPTION			
- 0 -				SM&SC	GOLF COURSE FILL (Qgcf)			
					Loose, dry to damp, brown and gray, Silty to Clayey, fine to medium SAND	-		
- 2 -						-		
						-		
- 4 -	T137-1			CL	TOPSOIL Stiff, moist, very dark brown, Sandy CLAY with 5%-10% gravel and cobble	-		
					size rock fragments up to 10-inches	-		
- 6 -						_		
L _								
- 8 -		44		GM	STADIUM CONGLOMERATE (Tst)			
Ű					Dense, damp, orange brown and gray, Sandy CONGLOMERATE with 50%-60% gravel and cobble size rock fragments up to 8-inches			
		$\hat{\mathbf{D}}$			TRENCH TERMINATED AT 9.5 FEET			
					Groundwater not encountered			
Figure	<mark>⊧ A-137</mark> ,	<u> </u> ,	1			0307	71-32-45A (TF	ENCH).GPJ
Logo	f Trenc	h T13	37 ,	Page	1 of 1			
SAMF	SAMPLE SYMBOLS							
1				🕅 DISTU	IRBED OR BAG SAMPLE 🛛 🔪 WATER	TABLE OR SE	EPAGE	

		1	-					
DEPTH		УGY	/ATER	SOIL	TRENCH T138	NTION NCE /FT.)	lSITΥ Ξ.)	JRE T (%)
IN FEET	SAMPLE NO.	HOL	MDN	CLASS (USCS)	ELEV. (MSL.) 656' DATE COMPLETED 05-08-2019	IETRA SISTA OWS	Y DEN (P.C.F	OISTI
			GROI	()	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	(BL	DR	×O
					MATERIAL DESCRIPTION			
- 0 -				SM&SC	GOLF COURSE FILL (Qgcf)			
					Loose to medium dense, dry to damp, brown and gray, Silty to Clayey, fine to medium SAND	-		
				CL		_		
- 4 -					Stiff, moist, very dark brown, Sandy CLAY with 5%-10% gravel and cobble size rock fragments up to 8-inches	_		
L _			-	SM	STADIUM CONGLOMERATE (Tst)	_		
- 6 -					Dense, damp, orange brown, Gravelly, fine to medium SANDSTONE with 20%-30% gravel and cobble size rock fragments up to 8-inches			
0	T138-1							
						_		
- 8 -	. 2					-		
					TRENCH TERMINATED AT 9 FEET			
					Groundwater not encountered			
Figure Log o	e A-138 f Trenc	, h T13	88,	Page	1 of 1	0307	71-32-45A (TF	RENCH).GPJ
CANA				SAMP	LING UNSUCCESSFUL	AMPLE (UNDI	STURBED)	
SAMPLE SYMBOLS				IRBED OR BAG SAMPLE	TABLE OR SE	EPAGE		

			1							
DEPTH		ΟGY	ATER	SOIL	TRENCH T139	TION NCE (FT.)	ISITY (. ⁼	JRE T (%)		
IN FEET	SAMPLE NO.	HOLG	MDN	CLASS (USCS)	ELEV. (MSL.) 659' DATE COMPLETED 05-08-2019	ETRA SISTA	Y DEN (P.C.F	OISTU NTEN		
			GROL	(0000)	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PEN (BL	DR	COX		
			\vdash		MATERIAL DESCRIPTION					
- 0 -				SM&SC	GOLF COURSE FILL (Qgcf)					
					Loose to medium dense, damp, brown, Silty to Clayey, fine to medium SAND with 5%-10% gravel and cobble size rock fragments up to 10-inches	_				
						_				
- 4 -						-				
						-				
- 6 -						_				
				CL	TOPSOIL Stiff, moist, dark brown, Sandy CLAY with 5%-10% gravel and cobble size					
					rock fragments up to 6-inches	_				
- 10 -				GM	STADIUM CONGLOMERATE (Tst)	_				
					50%-60% gravel and cobble size rock fragments up to 8-inches	-				
					TRENCH TERMINATED AT 11.5 FEET Groundwater not encountered					
Figure Log o	Figure A-139,03071-32-45A (TRENCH).GPJLog of Trench T139, Page 1 of 1									
SAME				SAMP	LING UNSUCCESSFUL STANDARD PENETRATION TEST DRIVE S.	AMPLE (UNDI	STURBED)			
SAIVIP	SAMPLE SYMBOLS			Image: State of the state o						

		1	-					
DEPTH		ιGY	ATER	SOU	TRENCH T140	TION NCE FT.)	SITY .)	IRE Г (%)
IN FEET	SAMPLE NO.	DTOH.	MDN	CLASS	ELEV. (MSL.) 652.5' DATE COMPLETED 05-08-2019	ETRA SISTAI OWS/	r den (P.C.F	OISTU NTEN ⁻
		5	GROL	(0000)	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	(BL	DR	COM
			┢		MATERIAL DESCRIPTION			
- 0 -				SM	GOLF COURSE FILL (Ogef)	┨────┦		
					Loose, damp, brown, Silty, fine to medium SAND	_		
- 2 -		K K	1	CL	TOPSOIL Stiff moist very dark brown Silty CLAY	-		
					Sun, noist, very dark brown, Sity CLAT			
4		11	1					
- 4								
				SM	STADIUM CONGLOMERATE (Tst)			
- 6 -					Dense, damp, light brown to brown, Gravelly, fine to medium SANDSTONE with 10%-20% gravel and cobble size rock fragments up to 8-inches	-		
			╞		TRENCH TERMINATED AT 6.5 FEET			
					Groundwater not encountered			
Figure	e A-140, f Trenc	, h T1∠	10.	Page	1 of 1	0307	71-32-45A (TF	(ENCH).GPJ
SAMPLE SYMBOLS		III SAMP	LING UNSUCCESSFUL ■ STANDARD PENETRATION TEST ■ DRIVE S IRBED OR BAG SAMPLE ■ CHUNK SAMPLE ▼ WATER	AMPLE (UNDI	S FURBED) EPAGE			

	1					,	1		
DEPTH		уду	ATER	SOIL	TRENCH T141	ATION NCE /FT.)	чSITY :.)	JRE ∏ (%)	
IN FEET	SAMPLE NO.	LHOL(NDN	CLASS (USCS)	ELEV. (MSL.) 658.5' DATE COMPLETED 05-08-2019	IETR/ SISTA OWS	Y DEN (P.C.I	OISTI	
			GROI	(/	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	(BL	DR	C⊻	
			┢		MATERIAL DESCRIPTION				
- 0 -				SM&SC	GOLF COURSE FILL (Qgcf)				
					Loose, dry, brown and gray, Silty to Clayey, fine to medium SAND	_			
- 2 -			1	CL	TOPSOIL Stiff. moist, very dark brown, Silty CLAY	-			
						_			
- 4 -						_			
		HH							
- 6 -				SC	Medium dense, moist, gray-brown, Clayey, fine to medium SAND				
						-			
- 8 -				SM	MISSION VALLEY FORMATION (Tmv) Dense, damp, light brown, Silty, fine to medium SANDSTONE	-			
					TRENCH TERMINATED AT 9 FEET				
					Groundwater not encountered				
Figure Log o	Figure A-141, 03071-32-45A (TRENCH).GPJ Log of Trench T141, Page 1 of 1 03071-32-45A (TRENCH).GPJ								
CANAL	SAMPLE SYMPOLS								
SAIVIE	SAMPLE SYMBOLS								

DEPTH	SAMPLE	-OGY	WATER	SOIL	TRENCH T142	ATION ANCE S/FT.)	ENSITY .F.)	rure NT (%)
FEET	NO.	THOI	UND	CLASS (USCS)	ELEV. (MSL.) <u>667.5'</u> DATE COMPLETED <u>05-08-2019</u>	NETR	ку DE (P.C	AOIST
			GRC		EQUIPMENT Rubber Tire Backhoe BY: T. REIST	RE RE	Ъ	≥ 0 0
					MATERIAL DESCRIPTION			
- 0 -				SM	GOLF COURSE FILL (Ogef)			
				CI		-		
- 2 -	T142-1			CL	Stiff, moist, very dark brown, Silty CLAY	-		
						-		
- 4 -						-		
	т142-2			ML	MISSION VALLEY FORMATION (Tmv) Hard damp light brown fine to medium Sandy SII TSTONE with calcium	-		
- 6 -	1142-2				carbonate	_		
0								
0					TRENCH TERMINATED AT 8 FEET Groundwater not encountered			
Figure	A-142,					0307	71-32-45A (TF	ENCH).GPJ
Log o	t Trenc	h T14	2,	Page	1 of 1			
SAMF	LE SYMB	OLS		SAMP	LING UNSUCCESSFUL	AMPLE (UNDI	STURBED)	
1			🖾 DISTL		IRBED OR BAG SAMPLE III. CHUNK SAMPLE III. WATER	I ABLE OR SE	EPAGE	



			н К		TRENCH T143	ZWO	≻	(9
DEPTH		lg	/ATE	SOIL		FT.	USIT (.	JRE 7 (%
IN FEET	SAMPLE NO.	НОГО	NDN	CLASS	ELEV. (MSL.) 663' DATE COMPLETED 05-08-2019	ETRA IISTA DWS	P.C.F	DIST(
1			GROU	(USCS)	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PENE RES (BL(DRY)	CONCON
			Ľ					
- 0 -					MATERIAL DESCRIPTION			
				CL	TOPSOIL Stiff moist very dark brown Silty CLAY			
						-		
- 2 -						-		
- 4 -				SM	MISSION VALLEY FORMATION (Tmv)			
L –					Dense, damp, light brown to gray, Silty, fine to medium SANDSTONE	_		
			-		TRENCH TERMINATED AT 5 5 FEET			
					Groundwater not encountered			
L							4 00 451 7-	
	+ A-143, f Trenc	, h T1⊿	13	Pane	1 of 1	0307	1-32-45A (TF	(ENCH).GPJ
			ν,	- 498				
SAMF	PLE SYMB	OLS		SAMF	LING UNSUCCESSFUL STANDARD PENETRATION TEST DRIVE S.	AMPLE (UNDI	STURBED)	
1				🕅 DISTL	IRBED OR BAG SAMPLE 🛛 🛛 CHUNK SAMPLE 🖉 WATER '	TABLE OR SE	EPAGE	

DEPTH IN FEET	SAMPLE NO.	гітногоду	ROUNDWATER	SOIL CLASS (USCS)	TRENCH T144 ELEV. (MSL.) 665' DATE COMPLETED 05-08-2019	ENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
			GF		EQUIPMENT Rubber Tire Backhoe BY: T. REIST	<u> </u>		Ũ
					MATERIAL DESCRIPTION			
- 0 -				SM	GOLF COURSE FILL (Qgef)			
				CL	TOPSOIL			
- 2 -					Stiff, moist, very dark brown, Silty CLAY	_		
				SM	MISSION VALLEY FORMATION (Tmv)			
- 4 -					carbonate	-		
						-		
- 6 -								
Ŭ								
						-		
- 8 -			' <u> </u>		TRENCH TERMINATED AT 8 FEET			
					Groundwater not encountered			
Figure	Figure A-144, 03071-32-45A (TRENCH).GPJ							
Log of	f Trenc	h T14	14,	Page	1 of 1			
				SAMP	LING UNSUCCESSFUL	AMPLE (UNDI	STURBED)	
SAMP	SAMPLE SYMBOLS		🕅 DISTL	IRBED OR BAG SAMPLE WATER	TABLE OR SE	EPAGE		

DEPTH IN EEET	SAMPLE NO.	НОГОСУ	INDWATER	SOIL CLASS	TRENCH T145 ELEV. (MSL.) 564.5' DATE COMPLETED 05-08-2019	ETRATION SISTANCE OWS/FT.)	' DENSITY P.C.F.)	DISTURE VTENT (%)	
			GROL	(0303)	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PEN RES (BL	DR)	CON	
					MATERIAL DESCRIPTION				
- 0 -				SM	GOLF COURSE FILL (Qgcf)				
					Loose to medium dense, damp, reddish brown, Shty, fine to medium SAIVD	_			
	T145-1			CL	TOPSOIL Stiff, moist, reddish brown, Silty to Sandy CLAY	-			
- 4 -						_			
- 6 -					GRANITIC ROCK (Kgr)	_			
					Moderately weathered, brown, weak to moderately weak GRANITIC ROCK	_			
					TRENCH TERMINATED AT 7.5 FEET Groundwater not encountered				
<u> </u>									
Log of	A-145 f Trenc	, h T14	15 ,	Page	1 of 1	0307	71-32-45A (TF	RENCH).GPJ	
SAMP	SAMPLE SYMBOLS Image: Sampling unsuccessful Image: Standard penetration test Image: Standard penetration test Image: Sample or bag sample Image: Standard penetration test Image: Standard penetration test Image: Standard penetration test								

(_					
DEPTH	SAMPLE	LOGY	WATER	SOIL	TRENCH T146	RATION FANCE S/FT.)	ENSITY C.F.)	TURE ENT (%)
FEET	NO.	H H	INN	(USCS)	ELEV. (MSL.) 563' DATE COMPLETED 05-08-2019	ESIS ⁷	Ч DI (Р.С	MOIS
			GRO		EQUIPMENT Rubber Tire Backhoe BY: T. REIST	HR H	Ď	Ξŏ
			\square		MATERIAL DESCRIPTION			
- 0 -				SM&SC	GOLF COURSE FILL (Qgcf)			
	T146-1				SAND with some gravel	-		
- 2 -						-		
	. ×					-		
- 4 -			_	CI	товсон			
				CL	Stiff, moist, reddish brown, Silty to Sandy CLAY			
- 6 -			:					
		+ +	1		GRANITIC ROCK (Kgr)			
- 8 -		+ +	1		Highly to moderately weathered, gray-brown, moderately weak GRANITIC ROCK	-		
			1			-		
- 10 -			1			_		
		+ +						
					TRENCH TERMINATED AT 11 FEET Groundwater not encountered			
Figure	Figure A-146, 03071-32-45A (TRENCH).GPJ							
Log o	f Trencl	h T1 4	ŀ6 ,	Page	1 of 1			
SAME				SAMP	LING UNSUCCESSFUL	AMPLE (UNDI:	STURBED)	
	SAMPLE SYMBOLS			🕅 DISTL	IRBED OR BAG SAMPLE 🛛 CHUNK SAMPLE II. WATER	TABLE OR SE	EPAGE	

· · · · · · · · · · · · · · · · · · ·			_						
ЛЕРТЦ		GY	ATER	801	TRENCH T147	TION CE	SITY)	RE . (%)	
IN FEET	SAMPLE NO.	НОГО	MDM		ELEV. (MSL.) 555.5' DATE COMPLETED 05-08-2019	ETRA1 SISTAN OWS/F	/ DENS (P.C.F.	DISTUI	
			GROL	(0000)	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PEN (BL	DR	COL	
			\square		MATERIAL DESCRIPTION				
- 0 -		KXX		CL	COLLUVIUM (Qcol)				
		ĤĤ			Stiff, damp to moist, brown to reddish brown, Silty/Sandy CLAY	-			
- 2 -		H H				_			
- 4 -						-			
		<u> </u>	\vdash		GRANITIC ROCK (Kgr)				
- 6 -					Highly weathered, brown, moderately weak GRANITIC ROCK	-			
						_			
0		+ +							
- 8 -						_			
					TRENCH TERMINATED AT 8 FEET				
					Groundwater not encountered				
Figure	Figure A-147, 03071-32-45A (TRENCH).GPJ								
SAMF	SAMPLE SYMBOLS								
	SAMPLE SYMBOLS			🕅 DISTL	IRBED OR BAG SAMPLE 🛛 🖳 WATER	TABLE OR SE	EPAGE		

			К		TRENCH T148	ZWA	≻	(3	
DEPTH] G	/ATE	SOIL		FT:)	USIT (:	JRE T (%	
IN FEET	SAMPLE NO.	НОГО	MDN	CLASS (USCS)	ELEV. (MSL.) 555' DATE COMPLETED 05-08-2019	IETRA SISTA OWS,	Y DEN (P.C.F	OISTU	
		5	GROI	()	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	REN (BL	DR	C ⊠	
			┢						
- 0 -		- Martin	-	SM/SC					
				Divi/DC	Loose to medium dense, damp, reddish brown, Silty/Clayey, fine to medium				
					SAND				
- 2 -		집물				-			
L _						_			
- 4 -						-			
6		+ +			Highly weathered, dark brown, moderately weak GRANITIC ROCK				
- 6 -						-			
		+++]			-			
_ 8 _		+ +							
Ŭ					TRENCH TERMINATED AT 8 FEET				
					Groundwater not encountered				
Figure A-148, 03071-32-45A (TRENCH).GPJ									
Log o	f Trencl	h T14	18,	Page	1 of 1				
				SAMF	PLING UNSUCCESSFUL	AMPLE (UNDI	STURBED)		
SAMP	SAMPLE SYMBOLS			— — — — — — — — — — — — — — — — — — —					

DEPTH IN FEET	SAMPLE NO.	ГІТНОГОЄУ	GROUNDWATER	SOIL CLASS (USCS)	TRENCH T149 ELEV. (MSL.) 550' DATE COMPLETED 05-08-2019 EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
			\vdash		MATERIAL DESCRIPTION			
- 0 - - 2 - - 4 - - 4 - - 6 - - 8 - - 7 - 8 - - 10 -	T149-1			SM/SC	EQUIPMENT Rubber Tire Backhoe BY: T. REIST MATERIAL DESCRIPTION COLLUVIUM (Qcol) Medium dense, damp, reddish brown, Silty/Clayey, fine to medium SAND -Becomes dense and damp to moist below 5 feet -Random 12-inch boulder size rock fragments present below 6 feet GRANITIC ROCK (Kgr) Highly to moderately weathered, dark brown, moderately weak GRANITIC ROCK TRENCH TERMINATED AT 10 FEET Groundwater not encountered			
Figure Log o	e A-149, f Trencl	n T14	19,	Page	1 of 1	0307 AMPLE (UNDI	71-32-45A (TR	RENCH).GPJ

		1						, , , , , , , , , , , , , , , , , , ,	
			R		TRENCH T150	Zω	≻	(9	
DEPTH	SAMPLE	OGY	VATE	SOIL		ATIO ANCI S/FT.	NSIT F.)	URE VT (%	
IN FEET	NO.	LHOL	UND/	CLASS (USCS)	ELEV. (MSL.) 549' DATE COMPLETED 05-08-2019	JETR, SIST, OWS	Y DE (P.C.	OIST	
			GRO	. ,	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	(BL BI	DR	≥o	
			\vdash		MATERIAL DESCRIPTION				
- 0 -			-	SM	COLLUVIUM (Qcol)				
					Medium dense, damp, reddish brown, Silty, fine to medium SAND with some	_			
2					ciay				
2									
						-			
- 4 -						–			
L _									
					-Becomes dense and moist below 5 feet				
- 6 -						-			
						-			
- 8 -						_			
						_			
- 10 -					-Becomes light brown and gray below 10 feet	-			
						-			
- 12 -									
12									
						-			
- 14 -						-			
					Created and apply a real fragments up to 8 inches researchedery 15 feat	-			
- 16 -					-Graver and cooole size rock magnents up to 8-menes present below 15 reet				
10									
		1.1.1.1.1.	-		-Heavy seepage at 17 feet				
					Seepage encountered at 17 feet				
Figure A-150, 03071-32-45A (TRENCH).GPJ									
Log of Trench T150, Page 1 of 1									
SAME				SAMP	LING UNSUCCESSFUL	AMPLE (UNDI	STURBED)		
SAIVIP	SAMPLE SYMBOLS								

	1	1	-			1			
		20	ATER		TRENCH T151	TION (. -T.))	RE (%)	
IN FEET	SAMPLE NO.	THOLO		SOIL CLASS (USCS)	ELEV. (MSL.) 549' DATE COMPLETED 05-08-2019	JETRAT SISTAN OWS/F	Y DENS (P.C.F.	OISTUR	
			GRO		EQUIPMENT Rubber Tire Backhoe BY: T. REIST	(BL BL	DR	Co⊻	
					MATERIAL DESCRIPTION				
- 0 - 				SM	COLLUVIUM (Qcol) Medium dense, damp, reddish brown, Silty, fine to medium SAND with some clay	_			
- 2 -						_			
- 4 -						_			
 - 6 -	T151-1				-Becomes dense and damp to moist below 5 feet	-	114.5	9.2	
						_			
- 8 -			•			-			
- 10 -						_			
– – – 12 –						-			
					-Becomes gray-brown below 13 feet	_			
- 14 - 						_			
- 16 -		+ + +			GRANITIC ROCK (Kgr) Highly weathered, light brown to brown, moderately weak GRANITIC ROCK	_			
					TRENCH TERMINATED AT 17 FEET Groundwater not encountered				
Figure A-151, 03071-32-45A (TRENCH).GPJ 03071-32-45A (TRENCH).GPJ									
SAMPLE SYMBOLS Image: mathematical symbols Image: mathematical symbols Image: mathematical symbols Image: mathematical symbols Image: mathematical symbols Image: mathematical symbols Image: mathematical symbols Image: mathematical symbols Image: mathematical symbols Image: mathematical symbols Image: mathe									



		1	-						
DEPTH		ЪGY	ATER	SOIL	TRENCH T152	NCE NCE /FT.)	ISITY)	JRE T (%)	
IN FEET	SAMPLE NO.	HOLO	MDN	CLASS	ELEV. (MSL.) 542' DATE COMPLETED 05-08-2019	ETRA SISTA OWS	/ DEN (P.C.F	DISTU	
			GROL	(0303)	EQUIPMENT Rubber Tire Backhoe BY: T. REIST	PEN RES (BL	DR)	CONC	
			┢		MATERIAL DESCRIPTION				
- 0 -				SM	COLLUVIUM (Qcol)				
					Loose to medium dense, damp, brown, Slity, fine to medium SAND	_			
		+ + - + + + - +	-		GRANITIC ROCK (Kgr) Highly to moderately weathered, brown, moderately weak GRANITIC ROCK	_			
- 4 -					PRACTICAL REFUSAL AT 4 FEET	_			
Figure	Figure A-152. 03071-32-45A (TRENCH).GPJ								
Log of	f Trencl	h T 1የ	52,	Page	1 of 1			, =: 0	
			SAMF	PLING UNSUCCESSFUL	AMPLE (UNDI	STURBED)			
SAIVIP	SAMPLE SYMBOLS			🕅 DISTU	JRBED OR BAG SAMPLE	TABLE OR SEEPAGE			

DEPTH IN FEET	SAMPLE NO.	ІТНОГОС(JUND/ ATER	SOIL) LASS (LJS) SV	BORING LB 1 ELEW @ASL.V 625.5' DATE) OMPLETED 05-13-2019	ENETRATION ESISTAN) E 3LO/ SÆT.V	R(DENSIT(P.).F.V	MOISTURE ONTENT C V
			GR(E3 UIPMENT 30" BUCKET AUGER B(QT. REIST		Ō	
0					MATERIAL DES) RIPTION			
				SP	GOLF COURSE FILL (Qgcf) Loose, dry, gray, fine to medium SAND	_		
- 2 - - 4 -				SM/SC	-3 to 4-inch thick, pea gravel lense at base/ Medium dense, moist, brown and gray-brown, Silty to Clayey, fine to medium SAND with pockets of dark brown clay; random gravel and cobble size rock fragments up to 6-inches			
 - 6 -	LB1-1		-		-Becomes very moist below 5 feet	2 	101.9	24.6
- 8 - 						_ _ 		
 - Y2 -	LB1-2 LB1-3			SM	Medium dense, moist, gray and brown, Gravelly, fine to coarse SAND with silt and clay and 5%-30% gravel and cobble size rock fragments up to 12-inches	4 - -	114.6	14.0
 - Y4 -						_		
- Y6 -	LB1-4					6 -	109.8	17.5
- Y8 -						-		
 - 22 -	LB1-5			CL	Very stiff, moist, dark gray, very dark brown and green-gray, Silty to Sandy CLAY with mixture of silty to clayey sand	2 	109.6	19.3
 - 24 -						_		
 - 26 - 	LB1-6				-Becomes very moist below 25 feet	2 	92.8	23.3
					-Becomes moist to very moist, very dark brown, fine to coarse, sandy clay	_		
Figure Log o	e A-153 f Boring	, g LB	1,	Page	1 of 2	070	1Y-72-45A (B)	ORINGVGPJ
SAMF	PLE S(MB	OLS		SAMP	LING UNSU)) ESSFUL STANDARD PENETRATION TEST DRIVE S	Ample (Jndi	STURBEDV	

NOTEQ.THE LOG OF SUBSURFA) E) ONDITIONS SHO/ N HEREON APPLIES ONL(AT THE SPE) IFI) BORING OR TREN) H LO) ATION AND AT THE DATE INDI) ATED. IT IS NOT / ARRANTED TO BE REPRESENTATIVE OF SUBSURFA) E) ONDITIONS AT OTHER LO) ATIONS AND TIMES.

...) HUN%SAMPLE

... DISTURBED OR BAG SAMPLE



▼ ... / ATER TABLE OR SEEPAGE

		<u> </u>	TER		BORING LB 1	NON Non Sun Sun Sun Sun Sun Sun Sun Sun Sun Su)T(> () 田	
DEPTH IN	SAMPLE NO.	ВОЛОН	ND/ A	SOIL) LASS	ELEW 0MSL.V 625.5' DATE) OMPLETED 05-13-2019	ETRATI SISTAN) D/ SIKT	DENSI P.) .F.V	DISTUR UTENT (
			GROL	WS) SV	E3 UIPMENT 30" BUCKET AUGER B(QT. REIST	RES	DR(MO (
					MATERIAL DES) RIPTION				
- 70 -	LB1-7	XX		CL	with random gravel and cobble size rock fragments up to 6-inches	3	121.8	13.1	
	LB1-8	XX	1			-			
- 72 -						-			
						-			
- 74 -				CL	-Random boulder size rock fragments up to 14-inches present above contact				
	LB1-9	XX			ALLUVIUM (Qal) Very stiff, moist, brown, Silty/Sandy CLAY with trace gravel	- 10	117.1	12.0	
- 76 -	LB1-10	444 	1	- _{SC} -	Medium dense, moist, brown, Clayey, fine to coarse SAND				
	. 🗠					-			
- 78 -		+ +	╡		-Gravel and cobble size rock fragments up to 8-inches present along				
			1		GRANITIC ROCK (Kgr)	-			
- 40 -	LB1-11	+ + -	1		Highly weathered, brown, moderately weak to GRANITIC ROCK	- 10/8"			
			-			-			
- 42 -		+ +				-			
		+ +				-			
- 44 -			1			-			
		- + -	1		BORING TERMINATED AT 45 FEET				
					Groundwater not encountered				
Figure	A-153 ,	,		_		070	1Y-72-45A (B)	ORINGVGPJ	
Log o	t Boring	g LB	1,	Page	2 of 2				
SAME				SAMP	LING UNSU)) ESSFUL III STANDARD PENETRATION TEST III DRIVE S	AMPLE (UNDI	STURBEDV		
SAIVIE		ULS		🕅 DISTL	IRBED OR BAG SAMPLE	TABLE OR SE	EPAGE		

SAMPLE S(MBOLS

DEPTH IN FEET	SAMPLE NO.	тногос(UND/ ATER	SOIL) LASS (JJS) SV	BORING LB 2 ELEW 0MSL.V 632.5' DATE) OMPLETED 05-14-2019	NETRATION SISTAN) E LO/ SIET.V	(, DENSIT(@.) .F.V	IOISTURE INTENT © V		
			GRO		E3 UIPMENT 30" BUCKET AUGER B(QT. REIST	RE PER	DR	₩ (
			┢		MATERIAL DES) RIPTION					
- 0 - - 2 -				SM&SC	GOLF COURSE FILL (Qgcf) Medium dense, moist, light brown to brown, Silty to Clayey, fine to coarse SAND with gravel throughout	_				
- 4 - - 4 -	LB2-1				-Becomes very moist to wet below 5 feet	_ _ _ 1	87.4	33.6		
- 6 -	LB2-2					-				
 - Y0 -	LB2-3 LB2-4			CL	Very stiff, very moist to wet, dark gray, very dark brown and brown, Silty to Sandy CLAY -20-inch boulder at 9 feet	3	114.5	17.2		
 - Y2 -	. <u>×</u>	0 0		<u>-</u> SM	Medium dense, moist, pale green, Gravelly to Silty, fine to coarse SAND with gravel and cobble size rock fragments up to 12-inches -Becomes predominantly gray-brown with little to no gravel below 12.5 feet	 - -				
- Y4 -	LB2-5	0 0 0				_ 2	110.2	17.6		
- Y6 -	LB2-6	о 0 0				-				
- Y8 - 	LB2-7			CL/CH	TOPSOIL Very stiff, moist, mottled very dark grayish brown and dark brown, Silty	-	80.2	37.5		
- 20 - 	LB2-8	+ +			CLAY; plastic GRANITIC ROCK (Kgr) Highly weathered, brown, weak GRANITIC ROCK	_ 4				
- 22 -			-							
		+ +			BORING TERMINATED AT 25 FEET					
					Groundwater not encountered					
Figure A-154, Log of Boring LB 2, Page 1 of 1										

NOTEQ.THE LOG OF SUBSURFA) E) ONDITIONS SHO/ N HEREON APPLIES ONL(AT THE SPE) IFI) BORING OR TREN) H LO) ATION AND AT THE DATE INDI) ATED. IT IS NOT / ARRANTED TO BE REPRESENTATIVE OF SUBSURFA) E) ONDITIONS AT OTHER LO) ATIONS AND TIMES.

... DISTURBED OR BAG SAMPLE

...) HUN%SAMPLE



▼ … / ATER TABLE OR SEEPAGE

DEPTH IN FEET	SAMPLE NO.	ГІТНОГОС(GROUND/ ATER	SOIL) LASS (LIS) SV	BORING LB 3 ELEW @MSL.V 657' DATE) OMPLETED 05-14-2019 E3 UIPMENT 30" BUCKET AUGER B(QT. REIST	PENETRATION RESISTAN) E (BLO/ SIFT.V	DR(DENSIT(@.) .F.V	MOISTURE) ONTENT C V	
- 0 -	ļ,				MATERIAL DES) RIPTION				
 - 2 -				SM&SC	GOLF COURSE FILL (Qgcf) Loose to medium dense, damp, brown, Silty to Clayey, fine to medium SAND	_			
- 4 -		RX	1-	CL	Very stiff, very moist, dark brown to very dark gray, Silty to Sandy CLAY	F			
- 6 - - 6 - 	LB3-1 LB3-2					– Push –	105.8	21.3	
	LB3-3	XX	1	CL/CH	TOPSOIL	-			
– Y0 –	LB3-4	Y <u>XXX</u> + +	1		CLAY; plastic	4/10"	87.3	25.7	
- Y2 - - Y2 - 	LB3-5		-		GRANITIC ROCK (Kgr) Highly weathered, dark green and white, weak GRANITIC ROCK	- - -			
					BORING TERMINATED AT 15 FEET Groundwater not encountered				
Figure	e A-155, f Boring	, a LB	3.	Page	1 of 1	070	1Y-72-45A 🕲	DRINGVGPJ	
90		5	-,				07115555		
SAMF	SAMPLE S(MBOLS Image: Sample generation of the sa								

SAMPLE S(MBOLS

· · · · ·		1							
DEPTH	SAMPI F	.0G(' ATER	SOIL	BORING LB 4	ATION AN) E S IÆ T.V	NSIT(.F.V	TURE NT C V	
IN FEET	NO.	THOL	UND/) LASS (CJS) SV	ELEW 0MSL.V 632' DATE) OMPLETED 05-14-2019	NETR SIST, LO/ S	(DE ().	10IST	
			GRO		E3 UIPMENT 30" BUCKET AUGER B(QT. REIST	19 19 19 19 19 19 19 19 19 19 19 19 19 1	DR	20	
			\vdash		MATERIAL DES) RIPTION				
- 0 -			:	SM&SC	GOLF COURSE FILL (Qgcf)				
- 2 -				CL	Medium dense, damp, brown, Silty to Clayey, fine to medium SAND Very stiff, moist, gray-brown and dark brown, Silty to Sandy CLAY				
_ 4 _									
L .					-Becomes very moist and predominantly dark gray and very dark brown below 4 feet		101.0		
- 6 -	LB4-1				-Becomes sandier below 5 feet	Push	101.8	23.9	
	LD4-2					-			
- 8 -						-			
						-			
– Y0 –	LB4-3		1			– Push	114.8	17.6	
						-			
- Y2 -									
- va -		11	1_			[
	LB4-4			SM	Medium dense, very moist, very dark gray, Silty, fine to medium SAND with some clay	Push —	116.4	14.1	
- Y6 -	LB4-5			SC	TOPSOIL				
				SC	Medium dense, very moist, very dark brown, Clayey, fine to medium SAND	-			
- Y8 -					-Becomes gray below 18 feet	_			
						- 8/10"	124.4	10.8	
- 20 -	LB4-6	(/./././ +			-Becomes mottled gray and brown below 19.5 feet GRANITIC ROCK (Kgr)	0/10	124.4	10.8	
		+++			Highly weathered, pale green, weak GRANITIC ROCK	-			
			1						
- 24 -			1						
					Groundwater not encountered				
Figure A-156, 0701Y-72-45A @ORINGVGPJ									
Log o	fBoring	g LB	4,	Page	1 of 1				
				SAMP	LING UNSU)) ESSFUL IN STANDARD PENETRATION TEST IN DRIVE S	AMPLE (UNDI	STURBEDV		

...) HUN%SAMPLE ... DISTURBED OR BAG SAMPLE ▼ … / ATER TABLE OR SEEPAGE NOTEQ.THE LOG OF SUBSURFA) E) ONDITIONS SHO/ N HEREON APPLIES ONL(AT THE SPE) IFI) BORING OR TREN) H LO) ATION AND AT THE DATE INDI) ATED. IT IS NOT / ARRANTED TO BE REPRESENTATIVE OF SUBSURFA) E) ONDITIONS AT OTHER LO) ATIONS AND TIMES.



			EH		BORING LB 5	<u>S</u> ш>.	Т(> 巴 (1)	
DEPTH	SAMPLE	LOG	A A	SOIL		RATI(SKET)	ENSI .F.V	TUR INT 0	
FEET	NO.	DHT	IND) LASS (US) SV	ELEW 0MSL.V 643.5' DATE) OMPLETED 05-15-2019	NETF ESIST	(DE (DE	AOIS	
			GRO		E3 UIPMENT 30" BUCKET AUGER B(QT. REIST	E R B	DF	20	
			┢		MATERIAL DES) RIPTION				
- 0 -				SM&SC	GOLF COURSE FILL (Qgcf)				
			<u> </u>	SM&SC	Loose to medium dense, damp, dark brown, Silty to Clayey, fine to medium				
- 2 -					Medium dense, moist, gray to grayish brown, Silty to Clayey, fine to medium SAND with dark brown sandy clay pockets and trace gravel and cobble size rock fragments up to 8-inches	_			
- 4 -						-			
	LB5-1				-Becomes very moist below 5 feet	2	96.6	25.8	
- 6 -	LB5-2				-20-inch boulder present at 6 feet	-			
						-			
- 8 -									
	LB5-3	이 가 이 가				2	113.3	15.8	
_ v2 _									
- ya -									
_ '' _									
– Y6 –	LB5-4			CL/CH	TOPSOIL Very stiff, very moist, black to very dark brown, Silty CLAY; plastic with	- 1	105.6	22.2	
L -	LB5-5				trace gravel	_			
– Y8 –			1						
L -		+ +	-		GRANITIC ROCK (Kgr) Highly weathered, brown to very dark green, weak to moderately weak	_			
- 20 -		+ +			GRANITIC ROCK	-			
		+ +				_			
- 22 -		+				-			
		+++	1			-			
- 24 -			1			-			
			1		BORING TERMINATED AT 25 FEET				
					Groundwater not encountered				
Figure A-157 .									
Log of Boring LB 5, Page 1 of 1									
SAMF	PLE S(MB	OLS		SAMP	PLING UNSU)) ESSFUL STANDARD PENETRATION TEST DRIVE S	AMPLE (LINDI	STURBEDV		

NOTEQTHE LOG OF SUBSURFA) E) ONDITIONS SHO/ N HEREON APPLIES ONL(AT THE SPE) IFI) BORING OR TREN) H LO) ATION AND AT THE DATE INDI) ATED. IT IS NOT / ARRANTED TO BE REPRESENTATIVE OF SUBSURFA) E) ONDITIONS AT OTHER LO) ATIONS AND TIMES.

...) HUN%SAMPLE

... DISTURBED OR BAG SAMPLE

▼ … / ATER TABLE OR SEEPAGE

DEPTH IN	SAMPLE)DOG(D/ ATER	SOIL) LASS	BORING LB 6	RATION STAN) E SIÆT.V	DENSIT() .F.V	STURE ENT C V
FEET	NO.	LITH6	ROUN	(US) SV	ELEVI WISL.V 653 DATE) OMPLETED 05-15-2019 E3 LIIPMENT 30" BLICKET ALIGER B(OT REIST	PENET RESIS (BLO/	DR(D P.	MOIS ONT
		<u> </u>	0			_		
- 0 -				01000				
					Loose to medium dense, damp, reddish brown, Silty to Clayey, fine to medium $_{I}$			
- 2 -			1		SAND and trace gravel and cobble size rock fragments	-		
]		very sun, moist, gray-brown, sinty to saildy CLA I	-		
- 4 -		1X				-		
	LB6-1		1			_ Push	97.9	22.5
- 6 -	LB6-2					-		-
	×			CL/CH	TOPSOIL			
- 8 -		<u>III</u>			Very stiff, very moist, dark grayish brown, Silty CLAY; plastic	-	00.4	20.1
	LB6-3		1			-	89.4	30.1
- Y0 -			1		CDANITIC DOCK (Kay)	-		
		+ + ·	{		Highly weathered, dark green and white, weak to moderately weak	-		
- Y2 -		$\left \begin{array}{c} + \\ + \end{array} \right $	-		GRANITIC ROCK	_		
						_		
					BORING TERMINATED AT 15 FEET Groundwater not encountered			
Figure	A-158	, a I P	E	Dago	1 of 1	070	1Y-72-45A (B)	ORINGVGPJ
		у со	0,	гауе				
SAMF	SAMPLE S(MBOLS Image: mail of the sample of the sampl							



	1	1	1	1						
			TER		BORING LB 7	N UN T.<	ыт(/	د < د <		
DEPTH IN	SAMPLE NO.	НОГОО	ND/ A	SOIL) LASS	ELEW CMSL.V 634' DATE) OMPLETED 05-15-2019	ETRAT STRAN	DENS P.) .F.\	DISTUR		
I LL I			GROU	(L)S) SV	E3 UIPMENT 30" BUCKET AUGER B(QT. REIST	PENE	DR(MO (
			\vdash		MATERIAL DES) RIPTION					
- 0 -			:	SM&SC	GOLF COURSE FILL (Qgcf)					
				SM	Loose to medium dense, dry to damp, brown, Silty to Clayey, fine to medium					
- 2 - 					Medium dense, damp, gray, Silty, fine to medium SAND	-				
- 4 -			+-	$-\overline{CL}$	Very stiff, very moist, very dark brown to dark gray, Silty to Sandy CLAY					
	LB7-1	XX				– Push	110.2	20.9		
- 6 -	LB7-2				-Becomes interbedded with dark green sand between 6.5 and 7.5 feet	-				
		V//	1		Persones predominantly dark grow below 7.5 feet	_		ĺ		
- 8 -					-Becomes predominantly dark gray below 7.5 feet	-				
- Y0 -	LB7-3					– Push	105.3	23.4		
	LB7-4	HH				-				
– Y2 –						-				
			1			_				
14										
- Y6 -	LB7-5			SM&SC	Medium dense, very moist, gray and white, Silty to Clayey, fine to medium SAND with dark brown siltstone and claystone chunks	2	87.7	31.3		
						-				
- Y8 -						-				
					-Becomes dark gray and white and clayier below 18.5 feet	-				
- 20 -	LB7-6					- 1	113.2	19.3		
	LB7-7			SC	ALLUVIUM (Qal) Medium dense, very moist, very dark brown, Clayey, fine to medium SAND	Push	104.0	21.6		
	LB7-8							L		
- 24 -				CL/CH	Very stiff, very moist, very dark brown, Silty CLAY; plastic	_				
			1				110 5			
- 26 -	LB/-9					Push –	112.7	19.4		
				SM/SC	Medium dense, moist, mottled gray and brown, Silty/Clayey, fine to medium SAND with trace gravel					
					-10%-20% gravel and cobble size rock fragments up to 6-inches present below					
Figure	Figure A-159, 0701Y-72-45A (BORINGVGPJ LOG of Boring LB 7, Page 1 of 2									

SAMPLE S(MBOLS Image: mail and mail a
DEPTH IN FEET	SAMPLE NO.	тногос(UND/ ATER	SOIL) LASS (LJS) SV	BORING LB 7 ELEW 0/ISL.V 634' DATE) OMPLETED 05-15-2019	VETRATION SISTAN) E LO/ SIFT.V	(, DENSIT(@.) .F.V	10ISTURE
			GRO		E3 UIPMENT 30" BUCKET AUGER B(QT. REIST	E R E	DR	₽ ((
70					MATERIAL DES) RIPTION			
- 70 -	LB7-10				29 feet	7	131.0	9.8
	Ι Γ	+ +			CRANITIC ROCK (Kgr)			
- 12 -		+ +			Highly weathered, brown, weak GRANITIC ROCK	_		
- 74 -						_		
					BORING TERMINATED AT 35 FEET Groundwater not encountered			
Figure Log o	e A-159, f Boring	j LB	7,	Page	2 of 2	070	1Y-72-45A (B)	DRINGVGPJ
SAME				SAMP	LING UNSU)) ESSFUL STANDARD PENETRATION TEST DRIVE SA	AMPLE (UNDI	STURBEDV	
SAIVIE	SAMPLE S(MBOLS							

DEPTH IN FEET	SAMPLE NO.	птногос(OUND/ ATER	SOIL) LASS (CJS) SV	BORING LB 8 ELEW 0MSL.V 669' DATE) OMPLETED 05-15-2019	ENETRATION (ESISTAN) E BLO/ SIFT.V	R(DENSIT(@.) .F.V	MOISTURE ONTENT C V
			GR		E3 UIPMENT 30" BUCKET AUGER B(QT. REIST			(
_ 0 _					MATERIAL DES) RIPTION			
			•	SM	GOLF COURSE FILL (Qgcf) Loose to medium dense, damp, reddish brown, Silty, fine to medium SAND	_		
				CL -	Very stiff, moist, light brown to grayish brown, Silty CLAY			
- 4 -						-		
	LB8-1					– Push	108.6	19.6
- 6 -	LB8-2					- 1 usii	100.0	17.0
						-		
- 8 -		ĤÌ				-		
						-		
- Y0 -	LB8-3				-Becomes gray and brown and silty to sandy clay with interbeds of silty sand	- 2	112.1	18.1
			1		below 10 feet	-		
– Y2 –						-		
		Î Î Î				-		
– Y4 –		H H	1			-		
	LB8-4					– Push	107.0	19.3
– Y6 –	LB8-5				-Gravel and cobble size rock fragments up to 4-inches present from 15.5 to 16.5 feet	-		
	×		1			-		
- Y8 -					-Becomes very dark brown, dark green and white below 18 feet	-		
		$\left + + \right $	┤─		-Clean irregular dipping contact /			
- 20 -	LB8-6				GRANITIC ROCK (Kgr) Highly weathered, dark green and dark red, weak GRANITIC ROCK	- 2		
	LB8-7	- +				-		
- 22 -	l 🛛					-		
		+ + - +				-		
- 24 -						-		
					BORING TERMINATED AT 25 FEET			
					Groundwater not encountered			
Figure	• A-160		1	I	1	070	1Y-72-45A (B)	ORINGVGPJ
Log o	f Boring	g LB	8,	Page	1 of 1			
SAMF	PLE S(MB	OLS		SAMP	PLING UNSU)) ESSFUL STANDARD PENETRATION TEST DRIVE S	AMPLE (LINDI	STURBEDV	

NOTEQ.THE LOG OF SUBSURFA) E) ONDITIONS SHO/ N HEREON APPLIES ONL(AT THE SPE) IFI) BORING OR TREN) H LO) ATION AND AT THE DATE INDI) ATED. IT IS NOT / ARRANTED TO BE REPRESENTATIVE OF SUBSURFA) E) ONDITIONS AT OTHER LO) ATIONS AND TIMES.

...) HUN%SAMPLE

... DISTURBED OR BAG SAMPLE



▼ ... / ATER TABLE OR SEEPAGE

DEPTH IN FEET	SAMPLE NO.	ПТНОГОG(SROUND/ ATER	SOIL) LASS (CJS) SV	BORING LB 9 ELEW 0MSL.V 693' DATE) OMPLETED 05-17-2019 E3 UIPMENT 30" BUCKET AUGER B(QT. REIST	PENETRATION RESISTAN) E @LO/ SIFT.V	DR(_DENSIT(@.) .F.V	MOISTURE) ONTENT C V		
L			ľ							
- 0 -			╞	CL	GOLF COURSE FILL (Ogef)					
					Stiff, damp, gray, Silty to Sandy CLAY	-				
- 2 -						-				
		H H				-				
- 4 -		K/	1			-				
	I B9-1				-Becomes very moist below 5 feet	– Push	89.0	33.6		
- 6 -						-	09.0	55.0		
			1			-				
- 8 -					-Becomes wet below 7.5 feet	-				
		KXX				-				
– Y0 –		XX				- Duch	102.6	20.1		
	LB9-3	XX	1		-Becomes very stiff, very moist, brown-gray and more competent below 10.5	– Push	105.0	20.1		
– Y2 –					feet	-				
						_				
– Y4 –			1							
				CL/CH	Very stiff, very moist, black and dark green, Silty CLAY; plastic		101 6			
– Y6 –	LB9-4		1			Push –	101.6	23.4		
L _	LB9-5		1							
– Y8 –	LB9-6			CL/CH	COLLUVIUM (Qc) Very stiff, very moist, very dark brown, Silty CLAY; plastic with trace gravel	_ Push	92.8	30.2		
	LB9-7									
- 20 -			1							
	LB9-8		1			Push	105.3	23.3		
_ 22 _										
		HX.			-Becomes dark gravish brown below 22.5 feet					
24		XX								
				CL	-ivioderately seepage along contact at 24 feet //					
	LB9-9				Very stiff to hard, moist, pale green, Silty CLAYSTONE; weak, waxy and	Push				
- 20 -	1 [fissured; moderate caving; unable to log below contact					
- 28 -										
Figure A-161, 0701Y-72-45A @ORINGVGPJ										
Log o	f Boring	g LB	9,	Page	1 of 2					
SAMF	LOG OT BORING LB 9, Page 1 of 2 SAMPLE S(MBOLS SAMPLING UNSU)) ESSFUL									

NOTEQ THE LOG OF SUBSURFA) E) ONDITIONS SHO/ N HEREON APPLIES ONL(AT THE SPE) IFI) BORING OR TREN) H LO) ATION AND AT THE DATE INDI) ATED. IT IS NOT / ARRANTED TO BE REPRESENTATIVE OF SUBSURFA) E) ONDITIONS AT OTHER LO) ATIONS AND TIMES.

...) HUN%SAMPLE

... DISTURBED OR BAG SAMPLE



▼ … / ATER TABLE OR SEEPAGE

DEPTH)G(ATER	SOIL	BORING LB 9	TION N) E FT.V	SIT(.V	IRE T C V	
IN FFFT	SAMPLE NO.	НОГС	/DNI) LASS	ELEW @MSL.V 693' DATE) OMPLETED 05-17-2019	ETRA SISTAI	DEN P. (.F	DISTU NTEN	
			GROL	60,00	E3 UIPMENT 30" BUCKET AUGER B(QT. REIST	PEN	DR(MO (
					MATERIAL DES) RIPTION				
- 70 -	LB9-10			CL		2			
- 72 -	LB9-11					_			
						-			
- 74 -						-			
	LB9-12					10			
- 76 -									
					REFUSAL AT 37 FEET Seepage encountered at 24 feet				
Figure	Figure A-161.								
Log of Boring LB 9, Page 2 of 2									
SAMF	PLE S(MB	OLS		SAMP	PLING UNSU)) ESSFUL STANDARD PENETRATION TEST DRIVE S	AMPLE (UNDI	STURBEDV		
[SAMPLE S(MOULS		🖾 DISTURBED OR BAG SAMPLE 🛛 🛛) HUN%SAMPLE 🖉 / ATER TABLE OR SEEPAGE						



DEPTH IN FEET	SAMPLE NO.	THOLOG(UND/ ATER	SOIL) LASS (LJS) SV	BORING LB 10 ELEW @MSL.V_551' DATE) OMPLETED 05-17-2019	NETRATION ESISTAN) E LO/ SI K T.V	(DENSIT(ው.) .F.V	AOISTURE DNTENT C V
			GRC		E3 UIPMENT 30" BUCKET AUGER B(QT. REIST	E E E	D	20
			F		MATERIAL DES) RIPTION			
- 0 -				SM	COLLUVIUM (Qcol) Medium dense. damp. reddish brown. Silty. fine to coarse SAND			
- 2 - - 4 - - 6 - - 8 - - 70 - - Y0 - - Y2 -	LB10-1 LB10-2 LB10-3				-Becomes dense, moist and mottled reddish brown and gray-brown with charcoal flecks below 5 feet -Gravel and cobble size rock fragments up to 12-inches present along contact GRANITIC ROCK (Kgr)	- - - - - - - - - - - - - - - - - - -	120.4	14.9
– Y4 –					nighty weathered, brown, weak OKANTTIC KOCK	_		
		+ + ·			BORING TERMINATED AT 15 FEET			
					Groundwater not encountered			
Figure	• A-162 ,	,	<u> </u>	_		070	1Y-72-45A (B)	ORINGVGPJ
Log o	f Boring	g LB	10	, Page	1 of 1			
SAMF	SAMPLE S(MBOLS Image: mail and mail a							

)(TER		BORING LB 11	ION E E	іт(,	د د ب		
DEPTH IN FEET	SAMPLE NO.	НОГОО	ND/ A	SOIL) LASS	ELEW 0MSL.V 549' DATE) OMPLETED 05-17-2019	ETRAT SISTAN O/ SIF	DENS P.) .F.\	DISTUR		
			GROL	63,37	E3 UIPMENT 30" BUCKET AUGER B(QT. REIST	PEN	DR(MO (
					MATERIAL DES) RIPTION					
_ 0 _				SM	COLLUVIUM (Qc) Medium dense, damp, reddish brown, Silty, fine to medium SAND					
- 2 -						-				
						-				
- 4 -										
- 6 -	LB11-1				-Becomes dense, moist and mottled reddish brown and gray-brown with charcoal flecks below 5 feet	2	120.0	14.1		
						-				
- 8 -						-				
- Y0 -						_				
	LB11-2					4	119.3	13.1		
- Y2 -					-Trace gravel and cobble size rock fragments up to 6-inches present at 12 feet	_				
						_				
		<u>- 14 - 1</u> + _ +			-Trace gravel and cobble size rock fragments up to 6-inches present along	_				
- Y6 -					GRANITIC ROCK (Kgr)	-				
		+++			Highly weathered, blown, weak OKANTTIC KOCK	-				
- Y8 -		+ + - + ·	<u> </u>		-Moderate to heavy seepage at 18 feet	_				
- 20 -		+ +			BORING TERMINATED AT 20 FEET					
					Groundwater encountered at 18 feet					
Figure	Δ_162					070	17-72-45ል ጮ	ORINGV@PI		
Log o	f Borinç	g LB	11	, Page	1 of 1	070				
SAMF	PLE S(MB	OLS		SAMP	PLING UNSU)) ESSFUL STANDARD PENETRATION TEST DRIVE S	AMPLE (CJNDI	STURBEDV			
	SAMPLE S(MBOLS									



			Τ					
			۲. ۲		BORING LB 12	Zω>)_	>
DEPTH) OG	ATE	SOIL		N I I I I I I I I I I I I I I I I I I I	USIT V	JRE ⊡ C
IN FEET	SAMPLE NO.	THOLO	UND/) LASS (CJS) SV	ELEW 0MSL.V 701' DATE) OMPLETED 05-17-2019	JETRA SISTA -O/S	(DEN (P.).F	IOIST(
			GRO		E3 UIPMENT 30" BUCKET AUGER B(QT. REIST	B R P	DR	×0 (
			┢		MATERIAL DES) RIPTION			
- 0 -			-	SP	GOLF COURSE FILL (Ogcf)			
			•		Loose, dry, gray, fine to medium SAND	-		
- 2 -		777	<u>+</u> -	$-\overline{CL}$	□			
					Stiff, moist to very moist, brown to dark gray, Silty CLAY	-		
- 4 -						-		
	LB12-1					– Push		
- 6 -	LB12-2					-		
	[KXX		CL	TOPSOIL	-		
- 8 -		KXX	1		Sun, very moist, black, Sitty CLA I	-		
				SM				
– Y0 –	1 1 1 2 2		•	5171	Medium dense, damp to moist, white and gray, Silty, fine to medium	- 1		
- -	LB12-3	•]• [•]• [•]• [•]• [•]•]• [•]•]• [•]•]• [•]•]•]•]•]•]•]•]•]•]•]•]•]•	• •	GM	SAND/SANDSTONE; heavy calcium carbonate replacement	1		
– Y2 –			•	SM	Dense, damp, gray, Silty, fine to medium SANDSTONE	-		
L -			•			_		
– Y4 –			•			_		
			。 。					
- V6 -	LB12-4		• •			6		
- 10 -	[•					
			•			_		
– Y8 –			•			-		
			•			-		
- 20 -	LB12-5		•			6		
		<u>`•[•</u>]•]•			BORING TERMINATED AT 21 FEET			
					Groundwater not encountered			
Figure	A-164 ,	,				070	1Y-72-45A (B)	ORINGVGPJ
Log o	f Boring	g LB	12	, Page	1 of 1			
CANF				SAMP	LING UNSU)) ESSFUL STANDARD PENETRATION TEST DRIVE S	AMPLE (CJNDI	STURBEDV	
SAMPLE S(MBOLS			🕅 DISTL	IRBED OR BAG SAMPLE	TABLE OR SE	EPAGE		



	1	1		1			1	,
			TER		BORING LB 13	Nom >	Ц	> 単の
DEPTH IN	SAMPLE	DOJC	D/ A]	SOIL) LASS		RATI STAN) SKET	DENSI .F.V	STUR ENT (
FEET	NO.	HLI	SOUN	CUS) SV	ELEW WISL.V 101 DATE) OMPLETED 05-17-2019	ENET RESIS BLO/	DR(D D.	MOI
			В В В		E3 UIPMENT 30" BUCKET AUGER B(QT. REIST			
0					MATERIAL DES) RIPTION			
				CL	GOLF COURSE FILL (Qgcf) Stiff moist to very moist dark brown. Silty CLAY with trace gravel			
- 2 -						_		
						_		
- 4 -		HH				_		
	1.012.1	K/X						
- 6 -	LB13-1					– Push		
						-		
- 8 -						-		
		1X				-		
– Y0 –	LB13-2	XX				_ Push		
		<u>HH</u>		CL	TOPSOIL Stiff very moist, black, Silty CLAY	-		
- Y2 -						-		
						-		
- Y4 -			, ,	SM	MISSION VALLEY FORMATION - Weathered (Tmv)			
	LB13-3				Medium dense, damp to moist, white and gray, Silty, fine to medium SAND/SANDSTONE; heavy calcium carbonate replacement	2		
- Y6 -			, , ,	SM	MISSION VALLEY FORMATION (Tmv)			
					Dense, damp, gray, Silty, fine to medium SANDSTONE	-		
- 20 -		•]• ,• ,• ,• ,• ,• ,• ,• ,• ,• ,• ,• ,• ,•						
	LB13-4		, ,			5		
					BORING TERMINATED AT 21 FEET Groundwater not encountered			
Figure	• A-165		1			070	1Y-72-45A (B)	ORINGVGPJ
Logo	fBorin	g LB	13	, Page	1 of 1			
				SAMP	LING UNSU)) ESSFUL STANDARD PENETRATION TEST DRIVE S	AMPLE (UNDI	STURBEDV	

SAMPLE S(MBOLS

... DISTURBED OR BAG SAMPLE

...) HUN%SAMPLE

▼ ... / ATER TABLE OR SEEPAGE



DEPTH		ĕ	ATER		BORING LB 14	rion V) E FT.V	SIT(V	RE <	
IN	SAMPLE NO.	POLO	ND/) LASS	ELEW 0MSL.V 749' DATE) OMPLETED 05-20-2019	ETRAI ISTAN D/ SH	DEN(P.) .F.	UISTU ITENT	
			GROU	(US) SV	E3 UIPMENT 30" BUCKET AUGER B(QT. REIST	PENE RES CBLO	DR(0	MO MO	
			\square		MATERIAL DES) RIPTION				
- 0 -				SM	GOLF COURSE FILL (Qgcf)				
				SM&SC	Loose to medium dense, damp, gray, Silty to Clayey, fine to medium SAND				
- 2 -				CL	MISSION VALLEY FORMATION (Tmv) Hard, damp to moist, mottled maroon and green, Silty CLAYSTONE with some calcium carbonate in upper foot	_			
	LB14-1					- 4			
- 6 -					-Becomes very hard below 6 feet	-			
- 8 -	LB14-2					_			
						-			
- Y0 -	LB14-3					8	114.3	17.2	
- Y2 -					-1-foot cemented zone at 11.5 feet	_			
					-1-foot thick, gray, fine, Sandy/Clayey SILTSTONE bed at 12.5 feet	-			
– Y4 –			,— – ,	SM -	Dense, damp, gray, Silty, fine to medium SANDSTONE				
	LB14-4		, , ,			8/10"	117.8	13.3	
- Y6 -						_			
- Y8 -	LB14-5					-			
					-1-foot cemented zone at 19 feet; auger used	-			
- 20 - 	LB14-6								
- 22 -						-			
) 	<u>-</u>	Vary dama, maint, any and brown, Gravelly, fine to madium SAND with				
- 24 - 		0.		5101	10%-20% gravel and cobble size rock fragments up to 6-inches	_			
- 26 -		0 0				_			
- 28 -				ML -	Very hard, damp, gray to light brown, fine, Sandy SILTSTONE	-			
	LB14-7					-			
Figure A-166, 0701Y-72-45A (BORINGVGPJ LOG of Boring LB 14, Page 1 of 2									
					LING UNSU)) ESSFUL STANDARD PENETRATION TEST DRIVE S	AMPLE (UNDI	STURBEDV		
SAMPLE S(MBOLS					JRBED OR BAG SAMPLE	TABLE OR SE	EPAGE		

DEPTH		0G(ATER	SOIL	BORING LB 14	NTION N) E KT.V	4SIT(≓.√	JRE T C V	
IN FEET	SAMPLE NO.	LHOL(UND/) LASS (CJS) SV	ELEW 0MSL.V 749' DATE) OMPLETED 05-20-2019	IETRA SISTA -O/S	(DEN ().F	OISTI	
			GROI	,	E3 UIPMENT 30" BUCKET AUGER B(QT. REIST	RE BE	DR	≥o	
70			\square		MATERIAL DES) RIPTION				
- 70 - 	LB14-8			ML		8/10"	113.3	18.0	
- 72 -					-Slight seepage above 1-foot cemented layer at 32 feet	_			
- 74 -					-Becomes mottled margon and green clavey siltstone below 34 feet	-			
	LB14-9				-6-inch concretion at 34.5 feet; auger used	- 8/8"			
- 76 -	1 [-			
 - 78 -						_			
					-1-foot cemented zone at 30 feet: auger used	-			
- 40 -	LB14-10				-Becomes interbedded with gray, fine grained sandstone below 40 feet	- 8			
						-			
- 42 - 									
					Seepage encountered at 32 feet				
Figur									
Log of Boring LB 14, Page 2 of 2									
SAMF	SAMPLE S(MBOLS Image: mail and mail a								



			ER		BORING LB 15	Z _U >)_	>
DEPTH IN	SAMPLE)DOG(D/ AT	SOIL) LASS		TRATIC STAN) SIET.	DENSIT .F.V	STURE ENT C
FEET	NO.	LITH(ROUN	CUS) SV		PENET RESIS	DR([P.	MOI: ONT
			ΰ					
- 0 -			_	CM	MATERIAL DES) RIPTION			
				SM&SC	GOLF COURSE FILL (Qget)			
- 2 -			•	SM	Loose to medium dense, damp, gray, Silty to Clayey, fine to medium SAND /	-		
			0 0 0		MISSION VALLEY FORMATION (Tmv) Dense, damp, gray, Silty, fine to medium SANDSTONE; random cemented zones and concretions throughout	_		
			•			_		
- 6 -			• • •		-Sample bounced on concretion at 5 feet	_		
	-		•			-		
- 8 -			•			-		
			•			-		
– Y0 –	LB15-1		•			6		
	1 [•			-		
- Y2 -			•		-Becomes grav and light brown below 12.5 feet			
– Y4 –			•					
L			•		-Auger used below 14 feet	_		
- Y6 -	1.015.2		•		-Sample bounced on concretion at 15 feet	-		
	LB13-2		•			-		
- Y8 -			•			-		
			• •			-		
- 20 -	LB15-3		• •			8		
			•			F		
- 22 -			•					
- 24 -			•					
			•					
- 26 -	LB15-4		•		-Becomes moist below 25 feet			
			•			-		
- 28 -					-5%-10% gravel size rock fragments up to 3-inches present below 27.5'	-		
		[Ţ		-Slight seepage along contact at 29.5 feet	- 		
Figure	e A-167,	<u> </u>	4		· · · · · · · · · · · · · · · ·	070	1Y-72-45A (B)	ORINGVGPJ
Log o	fBoring	g LB	15	, Page	1 of 2			
SAMF	PLE S(MR	OLS		SAMP	UING UNSU)) ESSFUL STANDARD PENETRATION TEST DRIVE S	AMPLE (CJNDI	STURBEDV	
	XANNI LE G(INDOED XANNI LE G(INDOE							



DEDTU		Ŭ	VTER		BORING LB 15	TON T.V	ыт(V	RE C V	
IN	SAMPLE NO.	ОТОН	ND/	SOIL) LASS	ELEW 0MSL.V 772.5' DATE) OMPLETED 05-20-2019	ETRAT ISTAN D/ SK	DENS P.).F.	DISTUF UTENT	
			GROU	ws) sv	E3 UIPMENT 30" BUCKET AUGER B(QT. REIST	PENE RES CBLO	DR(MO (
					MATERIAL DES) RIPTION				
- 70 - 	LB15-5			CL	Very hard, moist, green, Silty, CLAYSTONE; concretions present along contact and throughout; slow difficult drilling; auger used	8/8"			
- 72 -					Becomes mottled green and maroon below 31.5 feet	-			
						-			
- 74 -						-			
 - 76 -	LB15-6					10/10"			
						-			
- 78 -						-			
						-			
- 40 - 	LB15-7					10/10"			
- 42 -				 ML	Very hard, damp, dark gray, fine, Sandy/Clayey SILTSTONE				
					BORING TERMINATED AT 43 FEET				
					Seepage encountered 29.5 feet				
Figure A-167, 0701Y-72-45A (BORINGVGPJ LOG of Boring LB 15, Page 2 of 2									
SAME		01.5		SAMP	PLING UNSU)) ESSFUL STANDARD PENETRATION TEST DRIVE S	AMPLE (CJNDI	STURBEDV		
SAMPLE S(MBOLS							EPAGE		



		1						
			К		BORING LB 16	7		>
DEPTH		Ŭ	ATE	2011			SIT(Ш С
IN FEET	SAMPLE NO.	гного	UND/) LASS (US) SV	ELEW 0MSL.V 791.5' DATE) OMPLETED 05-20-2019	JETRA SISTAN -O/ SH	(DEN (DEN	OISTU NTENT
			GROI	,	E3 UIPMENT 30" BUCKET AUGER B(QT. REIST	BEN	DR	≥ O
					MATERIAL DES) RIPTION			
- 0 -					GOLF COURSE FILL (Qgcf)			
				SM&SC	Loose to medium dense, damp, brown, Silty, fine to medium SAND/	-		
- 2 -				SM	Loose to medium dense, damp, gray, Silty to Clayey, fine to medium SAND	-		
					MISSION VALLEY FORMATION (Tmv) Dense, damp, gray, Silty, fine to medium SANDSTONE; random concretions throughout	-		
- 4 -					unoughout	-		
F -	LB16-1					6/8"		
- 6 -						-		
<u> </u>						L/		
				ML	Very hard, moist, dark bluish green, fine, Sandy/Clayey SILTSTONE with random concretions throughout			
0								
F -						-		
– Y0 –	LB16-2					- 8	116.6	14 7
		8				_	110.0	11.7
- Y2 -	LBI6-3							
12								
	1							
– Y4 –				- SM	Very dense, damp, gray, Silty, fine SANDSTONE			
	I B16-4					- &		
– Y6 –						_ 0		
L _					-6-inch concretion at 16.5 feet			
– Y8 –						-		
					-Becomes fine to medium grained below 19 feet	-		
- 20 -	ID165					– 。	110.2	12.7
L _	LB10-3						119.5	15.7
2					-Becomes light brown below 22 feet			
	1					-		
- 24 -						-		
	ID16.6					-		
- 26 -	LBI0-0					_ 0		
_								
Г [–]						Γ		
- 28 -						-		
					-Cemented zone from 29 to 30.5 feet	-		
<u> </u>			1			I		
Figure	e A-168,	· . –		-		070	1Y-72-45A (B)	ORINGVGPJ
Log o	t Boring	g LB	16	, Page	1 of 2			
		a . c		SAMP	LING UNSU)) ESSFUL STANDARD PENETRATION TEST DRIVE S	AMPLE (UNDI	STURBEDV	
SAMF	LE S(MB	OLS		🕅 DISTL	JRBED OR BAG SAMPLE	TABLE OR SE	EPAGE	

DEPTU) (ŋ	VTER		BORING LB 16	NON E T.V	ыт(v	с <
DEP (H IN	SAMPLE NO.	HOLO(ND/ A	SOIL) LASS	ELEW 0MSL.V 791.5' DATE) OMPLETED 05-20-2019	ETRAT IISTAN D/ SIÆ	DENS P.).F.	JISTUF
FEEI			GROU	WS) SV	E3 UIPMENT 30" BUCKET AUGER B(QT. REIST	PENE RES CBLO	DR(MO (
			\vdash		MATERIAL DES) RIPTION			
- 70 -				SM				
- 72 -								
						-		
- 74 -						-		
	LB16-7					- 10/10"		
- 76 -						-		
						-		
- 78 -					BORING TERMINATED AT 38 FEET Groundwater not encountered			
Figure	Figure A-168.							
Log of Boring LB 16, Page 2 of 2								
SAME		01.5		SAMP	LING UNSU)) ESSFUL I STANDARD PENETRATION TEST I DRIVE S.	AMPLE (UNDI	STURBEDV	
		010		🕅 DISTL	JRBED OR BAG SAMPLE 🛛) HUN%SAMPLE 🔍 / ATER	TABLE OR SE	EPAGE	



DEPTH	SAMPLE	.oG(ATER	SOIL	BORING LB 17	ATION AN) E SIÆT.V	NSIT(F.V	URE VT C V
IN FEET	NO.	THOL	UND/) LASS (CJS) SV	ELEW 0MSL.V 749' DATE) OMPLETED 05-21-2019	NETR. SIST/	R(DE ().	10IST NTEN
			GRO		E3 UIPMENT 30" BUCKET AUGER B(QT. REIST	E E	DR	∩
					MATERIAL DES) RIPTION			
- 0 - - 2 -				SM&SC	GOLF COURSE FILL (Qgcf) Loose to medium dense, dry to damp, gray, Silty to Clayey, fine to medium SAND with random dark brown clay beds	_		
						_		
- 4 -						_		
- 6 -	LB17-1 LB17-2				-Poor recovery due to gravel	2		
- 8 -						- -		
 - Y0 -	LB17-3					– – Push		
- Y2 -						_		
– – – Y4 –				CL	Stiff, moist to very moist, very dark brown and brown, Silty CLAY with interbedded silty to clayey sand	-		
 - Y6 -	LB17-4 LB17-5				-Becomes predominantly dark brown below 16 feet	Push		
 - Y8 -						-		
 - 20 -	LB17-6					– Push		
- 22 -		XX.	1			-		
	LB17-7		:	SC	TOPSOIL Loose to medium dense, damp, dark brown, Clayey, fine to medium SAND	_ 1		
- 24 - - 26 -	LB17-8			SM	MISSION VALLEY FORMATION - Weathered (Tmv) Medium dense, damp, white and gray, Silty, fine SAND/SANDSTONE; heavy calcium carbonate replacement with abundant krotovina present to 26 foot	1		
						_		
- 28 -				CL	MISSION VALLEY FORMATION (Tmv) Hard, moist, mottled maroon and green, Silty CLAYSTONE	-		
Figure Log o	e A-169, f Boring	g LB	17	, Page	1 of 2	070	1Y-72-45A (B)	ORINGVGPJ

NOTEQ.THE LOG OF SUBSURFA) E) ONDITIONS SHO/ N HEREON APPLIES ONL(AT THE SPE) IFI) BORING OR TREN) H LO) ATION AND AT THE DATE INDI) ATED. IT IS NOT / ARRANTED TO BE REPRESENTATIVE OF SUBSURFA) E) ONDITIONS AT OTHER LO) ATIONS AND TIMES.

... SAMPLING UNSU)) ESSFUL

... DISTURBED OR BAG SAMPLE

SAMPLE S(MBOLS

... STANDARD PENETRATION TEST

...) HUN%SAMPLE



... DRIVE SAMPLE CINDISTURBEDV

▼ … / ATER TABLE OR SEEPAGE

DEPTH IN	SAMPLE	LOG(V ATER	SOIL	BORING LB 17	RATION TAN) E SIFT.V	ENSIT(.F.V	TURE ENT C V
FEET	NO.	-ITHO	OUND) LASS (US) SV	ELEW 0/ISL.V 749' DATE) OMPLETED 05-21-2019	ENETF ESIS1 BLO/	R(Df P.)	MOIS
			GR		E3 UIPMENT 30" BUCKET AUGER B(QT. REIST	I I I I I I I I I I I I I I I I I I I	Ω	(
- 70 -					MATERIAL DES) RIPTION			
	LB17-9	XXX		CL		4		
					BORING TERMINATED AT 31 FEET Groundwater not encountered			
Figure	Figure A-169, 0701Y-72-45A @ORINGVGPJ							
SAMF	SAMPLE S(MBOLS SAMPLING UNSU)) ESSFUL STANDARD PENETRATION TEST DRIVE SAMPLE CUNDISTURBEDV							

1	i .	1	-			1		
DEPTH) O	ATER	SOU	BORING LB 18	TION 4) E ET.V	SIT(.V	RE <
IN FEET	SAMPLE NO.	ОТОН.	/DNL) LASS	ELEW 0//SL.V 607.5' DATE) OMPLETED 05-21-2019	ETRA SISTAN O/ SH	DEN (- D	DISTU
			GROL	200) 01	E3 UIPMENT 30" BUCKET AUGER B(QT. REIST	PEN	DR(žō
			\vdash		MATERIAL DES) RIPTION			
- 0 -				SM&SC	GOLF COURSE FILL (Qgcf)			
					Loose, dry, light brown to gray, siny to Clayey, line to medium SAND			
						_		
- 4 -					-Becomes damp to moist below 3 feet	_		
	I B18-1					– Push		
- 6 -	LD10-1			CL	Stiff, moist, brownish gray and dark brown, Silty to Sandy CLAY			
						_		
- 8 -			1	CL	TOPSOIL			
				CL	Stiff, moist, dark brown, Sandy CLAY FRIARS FORMATION (T5)			
– Y0 –	LB18-2				Hard, very moist, blue-green, Silty CLAYSTONE; weathered in upper foot	2	101.2	24.1
] [
					-Becomes interbedded with silty to clay sandstone between 12.5 to 13.5 feet			
- Y4 -					-Becomes waxy below 13.5 feet	_		
	1.D10.2							
- Y6 -	LB18-3		<u> </u>	SM/SC	Very dense damp light grav Silty/Clavey fine to medium SANDSTONE			
				514150	very dense, damp, nght gray, onty/enayey, nile to includin or (1001010)	-		
- Y8 -	LB18-4					-		
						-		
- 20 -	LB18-5		T		-Slight seenage along contact at 20.5 feet		106.0	
	1 [CL	Hard, very moist, olive green, Silty CLAYSTONE; waxy from 20.5 to 23 feet	_ 5	100.0	20.9
					-Becomes very hard and mottled maroon and olive green below 22.5 feet			
- 24 -								
- ·	1.D19.6							
- 26 -	LB19-0					- 3		
						_		
- 28 -						-		
F -						-		
Figure	e A-170.	<u> </u>	1	<u> </u>		070	1Y-72-45A (B)	ORINGVGPJ
Log of Boring LB 18, Page 1 of 2								
SAME		01.5		SAMP	LING UNSU)) ESSFUL STANDARD PENETRATION TEST DRIVE S	AMPLE (JNDI	STURBEDV	
		010		🕅 DISTU	IRBED OR BAG SAMPLE 🛛) HUN%SAMPLE 🔍 / ATER *	TABLE OR SE	EPAGE	



DEPTH		Ŭ	ATER	0.011	BORING LB 18	TION U) E FT.V	ыт(V	RE C V
IN FEET	SAMPLE NO.	НОГО	/DN) LASS	ELEW 0MSL.V 607.5' DATE) OMPLETED 05-21-2019	ETRAT SISTAN O/ SIK	DENS P.).F.	DISTUR
1221			GROL	WS) SV	E3 UIPMENT 30" BUCKET AUGER B(QT. REIST	PENI	DR(MO (
			\square		MATERIAL DES) RIPTION			
- 70 - 	LB18-7			CL				
- 72 -						_		
						_		
- 74 -					-Becomes sandy claystone below 34 feet	_		
	LB18-8					_		
						_		
- 78 -						_		
						_		
- 40 -	LB18-9					-		
					Seepage encountered at 20.5 feet			
Figure	A-170,		10	Doco	2 of 2	070	1Y-72-45A (B)	ORINGVGPJ
SAMF	SAMPLE S(MBOLS Image: Sampling unsul) ESSFUL Image:							



			۳		BORING I B 19	_		
DEPTH		Ŭ	ATEF	SOIL		N) E	ISIT(T C /
IN FEET	SAMPLE NO.	THOLO	UND/) LASS (US) SV	ELEW 0MSL.V 606' DATE) OMPLETED 05-21-2019	JETRA SISTA -0/ SI	(DEN (P.).F	IOISTL
			GRO		E3 UIPMENT 30" BUCKET AUGER B(QT. REIST	RE PER BE	DR	×0 (
			\square		MATERIAL DES) RIPTION			
- 0 -				SC	ALLUVIUM (Qal)			
					Loose, medium dense, moist to very moist, brown, Clayey, fine to medium SAND	-		
- 2 -		RXX	1-	CL	Loose, very moist, dark brown, Silty to Sandy CLAY			
		H H	1			-		
- 4 -						-		
				SC	Loose, wet, light gray, Clayey SAND			
- 0 -						_		
			Ţ		-Very heavy seenage with 10% gravel and cobble size rock fragments up to	_		
- 8 -					6-inches present below 7.5 feet	_		
			,					
10								
				SM	STADIUM CONGLOMERATE (Tst) Dense, moist orange-brown, Gravelly, fine to medium SANDSTONE with			
- 14 -					20%-30% gravel and cobble size rock fragments up to 6-inches			
14			-		-Refusal on boulders at 14.5 feet			
					REFUSAL AT 14.5 FEET Seenage encountered at 7.5 feet			
					Seepage oncountered at 7.5 rect			
Figure	e A-171, f Boring	, a L B	19	. Page	1 of 1	070	1Y-72-45A (B)	ORINGVGPJ
	0///			, · · · · · · · ·			071105	
SAMF	PLE S(MB	OLS			LING UNSU)) ESSFUL ■ STANDARD PENETRATION TEST ■ DRIVE S IRBED OR BAG SAMPLE ■) HUN%SAMPLE ▼ / ATER	AMPLE (UNDI	EPAGE	

DEPTH IN FEET	SAMPLE NO.	гітногод(GROUND/ ATER	SOIL) LASS (CJS) SV	BORING LB 20 ELEW @ASL.V 628' DATE) OMPLETED 05-22-2019 E3 UIPMENT 30" BUCKET AUGER B(QT. REIST	PENETRATION RESISTAN) E @LO/ SIFT.V	DR(DENSIT(@.) .F.V	MOISTURE) ONTENT C V
			\vdash		MATERIAL DES) RIPTION			
- 0 -			:	SM/SC	GOLF COURSE FILL (Qgcf)			
	LB20-1		-	SM/SC	Loose to medium dense, damp, brown, Silty/Clayey, fine to medium SAND			
- 2 -					COLLUVIUM (Qc) Loose to medium dense, damp to moist, dark brown, Silty/Clayey, fine to	-		
			;		medium SAND with trace gravel and cobble size rock fragments up to			
- 4 -		N/			<u>4-inches</u>	-		
L -			_		Stiff, very moist, dark brown, Silty CLAY; plastic	L		
- 6 -		00000000000000000000000000000000000000	•	SM	STADIUM CONGLOMERATE (Tst) Dense, damp, light brown to orange, Gravelly, fine to medium SANDSTONE			
0			• •		with 30%-40% gravel and cobble size rock fragments up to 6-inches and trace			
	LB20-2		•		boulder cobble size rock fragments up to 14-inches			
- 8 -			•			-		
	. 8		e 8		-Becomes very moist below 9 feet	-		
– Y0 –	1 1 1 2 0 3		•		Sample disturbed due to gravel and cabble at 10 feet	- 6		
L -			•		-sample disturbed due to graver and coople at 10 feet			
- V2 -			8					
12			•		1.5 thick orange silty conditions had at 12.5 feet			
	1		•		-1.5 tillek, orange sinty sandstone bed at 12.5 reet	-		
- Y4 -			•			-		
			•		Calcium and anote magnet from 14 to 15 fast	-		
– Y6 –			。 。		-Calcium carbonate present from 14 to 15 feet			
					-Lower cohesion below 16 feet with moderate belling below			
			Ţ		Madamta soonaaa at 17.5 faati yuudhla ta aastashuisalliy laa halayy	ΓΙ		
– Y8 –		0°°°°°°	•		-Moderate seepage at 17.5 reet; unable to geotechnically log below	-		
			•			-		
- 20 -			•			-		
L _			•			L I		
22			•					
2 _			•					
			ŝ		-Slow difficult drilling due to gravel and cobble below 23 feet	-		
- 24 -			•			-		
			•			-		
- 26 -			ŝ					
			•					
					-Approx. 1-hour spent grinding on cemented zone at 27 feet			
	REFUSAL AT 27 FEET Seepage encountered at 17.5 feet							
					1 0			
								
Figure	e A-172, f Boring		20	Dere	1 of 1	0701	1Y-72-45A (B)	JRINGVGPJ
	i Boriné	JLB	20	, rage				
CANE				SAMP	LING UNSU)) ESSFUL STANDARD PENETRATION TEST DRIVE S		STURBEDV	
SAME	LE 2(MB	ULS		🕅 DISTL	JRBED OR BAG SAMPLE	TABLE OR SE	EPAGE	



DEPTH		oG(ATER	SOIL	BORING LB 21	ATION AN) E KFT.V	VSIT(F.V	URE JT C V
IN FEET	NO.	THOL	UND/) LASS (CUS) SV	ELEW 0MSL.V 624.5' DATE) OMPLETED 05-22-2019	NETR/ SIST/	(DEN (DEN).	IOIST NTEN
			GRO		E3 UIPMENT 30" BUCKET AUGER B(QT. REIST		DR	≥0
0			F		MATERIAL DES) RIPTION			
				SM	GOLF COURSE FILL (Qgcf) Loose, damp, brown, Silty, fine to coarse SAND	_		
- 2 -	1 1 2 1 1					-		
						-		
- 4 -					-Becomes dark gray below 3.5 feet	-		
				SC		– Push		
- 6 -	LB21-2			50	Loose, very moist, dark brown, Clayey, fine to medium SAND with trace	Push		
- 8 -	LB21-3				gravel			
			<u> </u>	SM		<u> </u>		
– Y0 –		0 1			Loose, wet, dark gray, Gravelly, fine to medium SAND with 30%-40% gravel and cobble size rock fragments up to 6-inches	- 5		
				SM	STADIUM CONGLOMERATE (Tst)			
- Y2 -					SANDSTONE with 30%-40% gravel and cobble size rock fragments up to			
– Y4 –					8-inches -Geotechnically logged to 13 feet	_		
	1 0 2 1 4		Ţ		Grav silty/sandstana had and graundwater present at 15 fast	- 6		
- Y6 -	LD21-4				-Oray sinty/sandstone bed and groundwater present at 15 reet	-		
						-		
– Y8 –					-Difficult drilling due to cobble content			
					Seepage encountered 8.5 feet			
					Groundwater encountered at 15 feet			
							11/ 70 454 5	
Log o	f Boring	, g LB	21	, Page	1 of 1	070	1 1- <i>1 2-</i> 45A (B)	JRIINGVGPJ
				SAMP	LING UNSU)) ESSFUL STANDARD PENETRATION TEST DRIVE S	AMPLE ©INDI	STURBEDV	
SAMP	LE 2(MB	ULS		🕅 DISTU	IRBED OR BAG SAMPLE	TABLE OR SE	EPAGE	



DEPTH)9C	ATER	SOIL	BORING LB 22	ATION (N) E KFT.V	vsi⊤(=.∨	URE IT C V	
IN FEET	SAMPLE NO.		/DNC) LASS (CJS) SV	ELEW @MSL.V 631.5' DATE) OMPLETED 05-22-2019	IETRA SISTA -0/ S	(DEN ().F	OISTU NTEN	
			GROI		E3 UIPMENT 30" BUCKET AUGER B(QT. REIST	PEN	DR	W (
0					MATERIAL DES) RIPTION				
- 0 - - 2 -				SM/SC	COLLUVIUM (Qc) Loose to medium dense, damp to moist, dark brown, Silty/Clayey, fine to medium SAND with trace gravel	_			
 - 4 -						_			
- 6 -					-Krotovina present below 5.5 feet	-			
 - 8 -				SM	STADIUM CONGLOMERATE (Tst) Dense, damp, light brown, Silty, fine to medium SANDSTONE with 10%-15% gravel and cobble size rock fragments up to 4-inches	-			
- Y0 -		<u>•</u> • • • • • •			BORING TERMINATED AT 10 FEET Groundwater not encountered				
Figure A-1/4, 0701Y-72-45A @ORINGVGPJ Log of Boring LB 22, Page 1 of 1 0701Y-72-45A @ORINGVGPJ									
SAMF	SAMPLE S(MBOLS SAMPLING UNSU)) ESSFUL SAMPLE								



APPENDIX B

LABORATORY TESTING

Laboratory tests were performed in accordance with generally accepted test methods of the American Society for Testing and Materials (ASTM) or other suggested procedures. Selected relatively undisturbed ring, bulk and chunk samples were tested for their in-place dry density and moisture content, maximum dry density and optimum moisture content, shear strength, expansion index, water-soluble sulfate content and consolidation characteristics.

The results of our laboratory tests are summarized on Tables B-I through B-IV and Figures B-1 through B-32. The results of the dry density and moisture content tests are presented on the trench and boring logs in Appendix A.

Sample No.	Hole No.	Description (Geologic Unit)	Maximum Dry Density (pcf)	Optimum Moisture Content (% dry wt.)
T2-1 & T14- 1 (Mix)		Gray-brown, fine to medium, Sandy CLAY (Qgcf)	116.6	14.6
Т3-2	9	Light grayish brown, Silty CLAY (Tmv)	106.9	18.8
T4-1		Light gray, Silty, fine to medium SAND (Tmv)	117.7	13.8
T17-1 & T17-2 (Mix)	18	Gray, fine to medium, Sandy CLAY (Qgcf)	118.8	13.8
T23-1		Dark brown, Silty CLAY (Qgcf)	114.3	15.5
T28-1	17	Dark brown, Silty CLAY (Qc)	111.7	17.5
T33-1	1	Brown, Silty, fine to medium SAND (Qgcf)	125.4	10.7
T37-1	1	Dark brown, Silty CLAY (Qgcf)	110.4	16.4
T47-1	2	Gray, Silty, fine to coarse SAND (Kgr)	119.2	14.6
T67-1	7	Dark brown, Silty, fine to coarse SAND (Qgcf)	133.8	9.4
T70-1	7	Dark brown, Silty CLAY (Qgcf)	123.2	12.0
T73-2	7	Reddish brown, Silty, fine to coarse SAND (Kgr)	120.4	13.6
T76-1	6	Dark gray, fine to medium, Sandy CLAY (Qgcf)	124.5	11.2
T78-1	6	Brown, Clayey, fine to medium SAND (Qgcf)	132.5	9.9
T83-1	6	Dark brown, Silty, fine to medium SAND (Qgcf)	132.8	9.3
T87-1	10	Olive green, Silty CLAY (Tmv)	110.2	18.1
T88-1 & T96-1 (Mix)	10	Dark brown, Clayey, fine to medium SAND (Qgcf)	123.1	11.6
T89-1	10	Olive green, Clayey SILT with fine Sand (Tmv)	117.5	14.4
T92-1	10	Gray, Clayey, fine to medium SAND (Tmv)	119.2	13.7
T109-1	11	Gray, Sandy SILT with some clay (Tmv)	114.5	14.8

TABLE B-I SUMMARY OF LABORATORY MAXIMUM DRY DENSITY AND OPTIMUM MOISTURE CONTENT TEST RESULTS

TABLE B-I (Concluded) SUMMARY OF LABORATORY MAXIMUM DRY DENSITY AND OPTIMUM MOISTURE CONTENT TEST RESULTS

Sample No.	Hole No.	Description (Geologic Unit)	Maximum Dry Density (pcf)	Optimum Moisture Content (% dry wt.)
T114-1	12	Dark brown, Clayey, fine to medium SAND (Qgcf)	130.5	8.8
T115-1	13	Reddish brown, Silty, fine to coarse SAND with some gravel (Kgr)	131.6	8.4
T116-1	13	Brown, Silty, fine to coarse SAND with some gravel (Qgcf)	135.0	7.3
T120-1 & T123-1 (Mix)	15	Grayish brown, Clayey, fine to medium SAND (Qgcf)	121.0	11.9
124-1	15	Orange, Silty, fine to medium SAND (Tst)	117.6	14.5
T127-1 & T137-1 (Mix)	15 & 16	Dark brown, fine to medium, Sandy CLAY (Qc & Topsoil)	118.0	12.5
T142-2	16	Light brown, fine to medium, Sandy SILTSTONE (Tmv)	109.8	16.3
T146-1	5	Reddish brown, Silty, fine to coarse SAND with some gravel (Qgcf)	130.8	9.9
T149-1	5	Reddish brown, Silty, fine to medium SAND with some clay (Qc)	127.9	11.0
LB1-3	2	Grayish brown, Gravelly, fine to coarse SAND (Qgcf)	119.5	14.6
LB1-8	2	Dark brown, Sandy CLAY with some gravel (Qgcf)	126.5	11.3
LB2-2	2	Brown, Clayey, fine to coarse SAND (Qgcf)	113.9	17.5
LB2-6	2	Pale green, Silty, fine to coarse SAND with gravel (Qgcf)	124.3	12.6
LB3-2	2	Dark grayish brown, Sandy CLAY	123.3	12.6
LB4-2	8	Dark gray, Clayey, fine to coarse SAND (Qgcf)	122.7	12.9
LB4-5	8	Dark brown, Silty, fine to medium SAND (Qgcf)	124.8	10.5
LB5-2	8	Gray, Clayey, fine to medium, SAND (Qgcf)	108.5	18.3
LB5-5	8	Dark brown, Silty CLAY with trace gravel (Topsoil)	119.5	15.2
LB6-2	8	Brown, Silty CLAY with some sand (Qgcf)	119.7	13.8
LB7-2	8	Brown, Silty CLAY with some sand (Qgcf)	121.1	13.2
LB7-8	8	Dark brown, fine to medium, Sandy CLAY (Qal)	117.5	15.4
LB8-2	8	Grayish brown, Silty CLAY (Qgcf)	119.6	14.1
LB8-5	8	Gray, Silty CLAY (Qgcf)	117.6	14.1
LB9-2	8	Gray, Silty CLAY (Qgcf)	114.1	15.1
LB9-5	8	Dark grayish brown, Silty CLAY (Qgcf)	119.6	13.0
LB9-7	8	Dark brown, Silty CLAY with trace gravel (Qc)	113.4	15.8
LB14-2	18	Brown, Silty CLAY (Tmv)	114.5	16.6
LB14-5	18	Gray, Silty, fine to medium SAND (Tmv)	119.3	13.0
LB14-7	18	Light gray, fine to medium, Sandy SILT (Tmv)	122.7	13.7
LB16-3	18	Bluish green, Clayey SILT (Tmv)	114.9	15.3

Sample No.	Hole No.	Geologic Unit Symbol (USCS Soil Type)	Dry Density (pcf)	Moisture Content (%)	Peak [Ultimate] Cohesion (psf)	Peak [Ultimate] Angle of Shear Resistance (degrees)
T2-1 & T14-1* (Mix)	9	Qgcf (Mix of CL & SM)	105.3	14.6	335 [330]	26 [26]
T3-2*		Tmv (CL)	97.6	16.9	755 [620]	26 [27]
T4-1*		Tmv (SM)	106.3	14.1	505 [445]	28 [29]
T17-1 & T17-2* (Mix)	18	Qgcf (Mix of CL & SM)	106.9	14.2	820 [775]	22 [23]
T23-1*		Qgcf (CL/CH)	104.2	14.3	145 [0]	36 [36]
T33-1*	1	Qgcf (SM)	114.1	9.7	490 [420]	33 [33]
T37-1*	1	Qgcf (CL/CH)	99.0	17.5	625 [455]	19 [21]
T47-1*	2	Kgr	110.4	11.8	960 [490]	36 [39]
T67-1*	7	Qgcf (SM)	119.7	9.4	620 [560]	30 [31]
T70-1*	7	Qgcf (CL)	111.3	12.4	390 [395]	30 [29]
T73-2*	7	Kgr	107.8	14.3	715 [600]	35 [35]
T76-1*	6	Qgcf (CL)	111.5	12.1	505 [505]	24 [24]
T78-1*	6	Qgcf (SC)	119.7	9.6	645 [645]	29 [29]
T83-1*	6	Qgcf (SM)	122.2	7.2	680 [680]	30 [30]
T87-1*	10	Tmv (CL)	97.9	19.7	535 [420]	29 [30]
T88-1 & T96-1* (Mix)	10	Qgcf (Mix of SM & CL)	110.2	12.4	505 [455]	29 [29]
T89-1*	10	Tmv (ML)	105.3	15.0	470 [455]	27 [27]
T92-1*	10	Tmv (SC)	107.5	14.0	650 [630]	26 [26]
T109-1*	11	Tmv (ML)	103.1	14.8	600 [595]	27 [27]
T120-1 & T123-1* (Mix)	15	Qgcf (Mix of CL, SM & SC)	109.6	11.5	840 [800]	25 [25]
T124-1*	15	Tst (SM)	106.6	14.7	540 [310]	32 [34]
T127-1 & T137-1* (Mix)	15 & 16	Qc and Topsoil (CL)	106.5	12.7	55 [70]	41 [40]
142-2*	16	Tmv (ML)	109.8	16.3	710 [620]	26 [27]
T146-1*	5	Qgcf (SM)	117.6	10.0	640 [625]	29 [29]
T149-1*	5	Qc (SM/SC)	115.5	10.3	740 [720]	29 [29]
LB1-3*	2	Qgcf (SM)	107.6	14.7	555 [475]	32 [32]
LB3-2*	2	Qgcf (CL)	110.2	14.5	390 [120]	29 [32]
LB5-2*	8	Qgcf (SC)	96.7	19.0	515 [520]	31 [31]

 TABLE B-II

 SUMMARY OF LABORATORY SHEAR TEST RESULTS

Sample No.	Hole No.	Geologic Unit Symbol (USCS Soil Type)	Dry Density (pcf)	Moisture Content (%)	Peak [Ultimate] Cohesion (psf)	Peak [Ultimate] Angle of Shear Resistance (degrees)
LB7-2*	8	Qgcf (CL)	109.1	12.9	120 [100]	38 [38]
LB14-2*	18	Tmv (CL)	101.6	18.5	740 [775]	27 [26]
LB14-3	18	Tmv (CL)	114.3	17.2	2,660 [0]	24 [44]
LB14-4	18	Tmv (SM)	117.8	13.3	2,155 [710]	25 [29]
LB14-5*	18	Tmv (SM)	107.1	13.4	645 [640]	25 [25]
LB14-7*	18	Tmv (ML)	109.9	14.4	915 [590]	23 [26]
LB14-8	18	Tmv (ML)	113.3	18.0	1,945 [905]	15 [26]
LB16-2	18	Tmv (ML)	116.6	14.7	1,275 [750]	26 [30]
LB16-3*	18	Tmv (ML)	102.2	17.3	0 [0]	43 [43]
LB16-5	18	Tmv (SM)	119.3	13.7	1,025 [395]	33 [37]
LB18-2	15	Tf(CL)	101.2	24.1	870 [865]	19 [12]
LB18-5	15	Tf(CL)	103.0	20.9	1,050[735]	21 [21]

TABLE B-II (Concluded) SUMMARY OF LABORATORY SHEAR TEST RESULTS

*Sample was remolded to 90 percent relative compaction at near optimum moisture content. **Residual Shear

Sample	Hole No.	Geologic Unit	Moisture Content (%)		Drv Densitv	Expansion
No.	or Area	(USCS Soil Type)	Before Test	After Test	(pcf)	Index
T2-1 & T14-1 (Mix)	9	Qgcf (Mix of CL & SM)	13.8	27.1	97.4	82
Т3-2		Tmv (CL)	16.0	34.6	91.9	102
T4-1		Tmv (SM)	12.6	20.4	100.5	0
T17-1 & T17-2 (Mix)	18	Qgcf (Mix of CL & SM)	12.9	24.9	100.8	89
T23-1		Qgcf (CL/CH)	14.0	35.1	96.6	130
T28-1	17	Qc (CL/CH)	16.2	37.8	96.4	145
T33-1	1	Qgcf (SM)	13.6	27.5	97.2	9
T37-1	I	Qgcf (CL/CH)	15.4	33.2	93.3	106
T52-1	Country Club Area	Qpf (SC)	13.1	24.2	100.7	42
T67-1	7	Qgcf (SM)	8.3	15.9	116.3	11
T70-1	7	Qgcf (CL)	10.1	26.4	107.2	101
T76-1	6	Qgcf (CL)	9.9	21.1	108.6	47
T78-1	6	Qgcf (SC)	8.6	16.2	116.5	30
T83-1	6	Qgcf (SM)	8.7	17.4	113.3	7
T87-1	10	Tmv (CL)	13.9	29.2	98.2	91
T88-1 & T96-1 (Mix)	10	Qgcf (Mix of SM & CL)	11.0	19.7	107.2	42
T89-1	10	Tmv (ML)	14.1	26.9	97.4	76
Т92-1	10	Tmv (SC)	11.8	23.2	104.7	54
T109-1	11	Tmv (ML)	13.3	25.6	99.1	29
T114-1	12	Qgcf (SC)	8.4	16.0	115.6	25
T116-1	13	Qgcf (SM)	8.6	15.5	115.8	6
T120-1 & T123-1 (Mix)	15	Qgcf (Mix of CL, SM & SC)	10.5	22.3	109.4	62
T124-1	15	Tst (SM)	11.2	19.3	106.5	14
T127-1 & T137-1 (Mix)	15 & 16	Qc and Topsoil (CL)	12.5	27.6	102.7	101
142-2	16	Tmv (ML)	14.9	27.1	95.1	46
T146-1	5	Qgcf (SM)	8.9	15.8	114.6	10
T149-1	5	Qc (SM/SC)	10.4	18.9	109.2	24

TABLE B-III SUMMARY OF LABORATORY EXPANSION INDEX TEST RESULTS

Sample	Hole No. or Area	Geologic Unit (USCS Soil Type)	Moisture Content (%)		Drv Density	Expansion
No.			Before Test	After Test	(pcf)	Index
LB1-3*	2	Qgcf (SM)	12.6	22.7	101.1	10
LB3-2	2	Qgcf (CL)	11.2	23.6	106.7	70
LB5-2	8	Qgcf (SC)	15.2	27.3	93.9	30
LB7-2	8	Qgcf (CL)	12.1	25.1	102.8	73
LB14-2	18	Tmv (CL)	14.2	26.8	96.9	48
LB14-5	18	Tmv (SM)	12.2	20.7	103.4	20
LB14-7	18	Tmv (ML)	11.8	22.4	103.8	64
LB16-3	18	Tmv (ML)	13.2	25.2	100.1	99

TABLE B-III (Concluded) SUMMARY OF LABORATORY EXPANSION INDEX TEST RESULTS

Sample No.	Hole No.	Water-Soluble Sulfate (%)	Classification
T3-2	9	0.055	Not Applicable (S0)
T17-1 & T17-2 (Mix)	10	0.003	Not Applicable (S0)
T23-1	18	0.151	Moderate (S1)
T28-1	17	0.173	Moderate (S1)
Т33-1	1	0.128	Moderate (S1)
Т37-1	1	0.356	Severe (S2)
T70-1	7	0.473	Severe (S2)
T73-2	7	0.012	Not Applicable (S0)
T76-1	6	0.001	Not Applicable (S0)
T88-1 & T96-1 (Mix)	10	0.002	Not Applicable (S0)
T114-1	12	0.001	Not Applicable (S0)
T116-1	13	0.018	Not Applicable (S0)
T120-1 & T123-1 (Mix)	15	0.028	Not Applicable (S0)
T146-1	5	0.291	Severe (S2)
LB1-3	2	0.001	Not Applicable (S0)
LB3-2	2	0.035	Not Applicable (S0)
LB5-2	8	0.018	Not Applicable (S0)
LB7-2	8	0.054	Not Applicable (S0)
LB14-2	18	0.064	Not Applicable (S0)
LB16-3	18	0.068	Not Applicable (S0)

 TABLE B-IV

 SUMMARY OF LABORATORY WATER-SOLUBLE SULFATE CALIFORNIA TEST NO. 417



Figure B-1



Figure B-2



Figure B-3



Figure B-4



Figure B-5



Figure B-6


Figure B-7



03071-32-45A (BORING).GPJ

Figure B-8



Figure B-9



03071-32-45A (BORING).GPJ

Figure B-10



03071-32-45A (BORING).GPJ

Figure B-11



03071-32-45A (BORING).GPJ

Figure B-12



03071-32-45A (BORING).GPJ

Figure B-13



03071-32-45A (BORING).GPJ

Figure B-14



03071-32-45A (BORING).GPJ

Figure B-15



03071-32-45A (BORING).GPJ

Figure B-16



Figure B-17



03071-32-45A (BORING).GPJ

Figure B-18



03071-32-45A (BORING).GPJ

Figure B-19



Figure B-20



Figure B-21



Figure B-22



Figure B-23



03071-32-45A (BORING).GPJ

Figure B-24



Figure B-25



03071-32-45A (BORING).GPJ

Figure B-26



03071-32-45A (BORING).GPJ

Figure B-27



03071-32-45A (BORING).GPJ

Figure B-28



03071-32-45A (BORING).GPJ

Figure B-29



Figure B-30



Figure B-31



Figure B-32



APPENDIX C

SEISMIC REFRACTION STUDY PREPARED BY SOUTHWEST GEOPHYSICS

FOR

CARMEL MOUNTAIN RANCH GOLF COURSE SAN DIEGO, CALIFORNIA

PROJECT NO. 03071-32-45A

SEISMIC REFRACTION STUDY CARMEL MOUNTAIN COUNTRY CLUB SAN DIEGO, CALIFORNIA

PREPARED FOR:

Geocon Incorporated 6960 Flanders Drive San Diego, CA 92121

PREPARED BY:

Southwest Geophysics, LLC 6280 Riverdale Street, Suite 200 San Diego, CA 92120

> June 19, 2019 Project No. 119229b



June 19, 2019 Project No. 119229b

Mr. Troy Reist Geocon Incorporated 6960 Flanders Drive San Diego, CA 92121

Subject: Seismic Refraction Study Carmel Mountain Country Club San Diego, California

Dear Mr. Reist:

In accordance with your authorization, we have performed a seismic refraction study pertaining to the Carmel Mountain Country Club project located in San Diego, California. Specifically, our survey consisted of performing six seismic P-wave refraction traverses at the project site. The purpose of our study was to develop subsurface velocity profiles of the areas surveyed, and to assess the apparent rippability of the subsurface materials. Our field services were conducted on May 23rd of 2019. This data report presents our survey methodology, equipment used, analysis, and results.

We appreciate the opportunity to be of service on this project. Should you have any questions please contact the undersigned at your convenience.

Sincerely, SOUTHWEST GEOPHYSICS, LLC

Aaron T. Puente Project Geologist/Geophysicist

ATP/PFL/pfl

Distribution: Addressee (electronic)

atrik Jehnmann

Patrick F. Lehrmann, P.G., P.Gp . Principal Geologist/Geophysicist



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Figure 2b	-	Line Location Map (SL-3 and SL-4)
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1. INTRODUCTION

In accordance with your authorization, we have performed a seismic refraction study pertaining to the Carmel Mountain Country Club project located in San Diego, California (Figure 1). Specifically, our survey consisted of performing six seismic P-wave refraction traverses at the project site. The purpose of our study was to develop subsurface velocity profiles of the areas surveyed, and to assess the apparent rippability of the subsurface materials. Our field services were conducted on May 23rd of 2019. This data report presents our survey methodology, equipment used, analysis, and results.

2. SCOPE OF SERVICES

Our scope of services included:

- Performance of six seismic P-wave refraction lines at the project site.
- Compilation and analysis of the data collected.
- Preparation of this data report presenting our results and conclusions.

3. SITE AND PROJECT DESCRIPTION

The project site is generally located just east of the intersection between Interstate 15 and Ted Williams Parkway in San Diego, California (see Figure 1). The project site is an abandoned golf course with overgrown grass, trees and brush. The study areas, which were selected by you and your office were relatively flat and contained outcrops of granitic rock. Figure 3 depicts the general site conditions in the areas of the seismic traverses.

Based on our discussions with you, it is our understanding that your office is conducting a geotechnical evaluation pertaining to the Carmel Mountain Country Club project. We also understand that the results from our survey may be used in the formulation of design and construction parameters for the project.

4. SURVEY METHODOLOGY

A seismic P-wave (compression wave) refraction study was conducted at the project site to evaluate the rippability characteristics of the subsurface materials and to develop subsurface velocity profiles of the areas surveyed. The seismic refraction method uses first-arrival times of refracted seismic waves to estimate the thicknesses and seismic velocities of subsurface layers. Seismic P-waves generated at the surface, using a hammer and plate, are refracted at boundaries separating materials of contrasting velocities. These refracted seismic waves are then detected by a series of surface vertical component 14-Hz geophones and recorded with a 24-channel Geometrics Geode seismograph. The travel times of the seismic P-waves are used in conjunction with the shot-to-geophone distances to obtain thickness and velocity information on the subsurface materials.

Six seismic lines (SL-1 through SL-6) were conducted in the study areas. The general locations and lengths of the lines were selected by your office. Shot points (signal generation locations) were conducted along the lines at the ends, midpoint, and intermediate points between the ends and the midpoint.

The seismic refraction theory requires that subsurface velocities increase with depth. A layer having a velocity lower than that of the layer above will not generally be detectable by the seismic refraction method and, therefore, could lead to errors in the depth calculations of subsequent layers. In addition, lateral variations in velocity, such as those caused by core stones, intrusions or boulders can also result in the misinterpretation of the subsurface conditions. In general, the effective depth of evaluation for a seismic refraction traverse is approximately one-third to one-fifth the length of the spread.

In general, the seismic P-wave velocity of a material can be correlated to rippability (see Table 1 below), or to some degree "hardness." Table 1 is based on published information from the Caterpillar Performance Handbook (Caterpillar, 2011) as well as our experience with similar materials, and assumes that a Caterpillar D-9 dozer ripping with a single shank is used. We emphasize that the cutoffs in this classification scheme are approximate and that rock characteristics, such as fracture spacing and orientation, play a significant role in determining rock quality or rippability. The rippability of a mass is also dependent on the excavation equipment used and the skill and experience of the equipment operator.

For trenching operations, the rippability values should be scaled downward. For example, velocities as low as 3,500 feet/second may indicate difficult ripping during trenching operations. In addition,

the presence of boulders, which can be troublesome in narrow trenching operations, should be anticipated.

Table 1 – Rippability Classification				
Seismic P-wave Velocity	Rippability			
0 to 2,000 feet/second	Easy			
2,000 to 4,000 feet/second	Moderate			
4,000 to 5,500 feet/second	Difficult, Possible Blasting			
5,500 to 7,000 feet/second	Very Difficult, Probable Blasting			
Greater than 7,000 feet/second	Blasting Generally Required			

It should be noted that the rippability cutoffs presented in Table 1 are slightly more conservative than those published in the Caterpillar Performance Handbook. Accordingly, the above classification scheme should be used with discretion, and contractors should not be relieved of making their own independent evaluation of the rippability of the on-site materials prior to submitting their bids.

5. DATA ANALYSIS

The collected data were processed using SIPwin (Rimrock Geophysics, 2003), a seismic interpretation program, and analyzed using SeisOpt Pro (Optim, 2008). SeisOpt Pro uses first arrival picks and elevation data to produce subsurface velocity models through a nonlinear optimization technique called adaptive simulated annealing. The resulting velocity model provides a tomography image of the estimated geologic conditions. Both vertical and lateral velocity information is contained in the tomography model. Changes in layer velocity are revealed as gradients rather than discrete contacts, which typically are more representative of actual conditions.

6. **RESULTS AND CONCLUSIONS**

As previously indicated, six seismic traverses were conducted as part of our study. Figures 4a through 4f present the velocity models generated from our analysis. Based on the results it appears that the study areas are underlain by low velocity materials (i.e., topsoil, colluvium, etc.) in the near surface and granitic bedrock at depth. Distinct vertical and lateral velocity variations are evident in the models. Moreover, the degree of bedrock weathering and the depth to bedrock appears to be highly variable across the study areas. In addition, remnant boulders and/or zones of relatively "hard" rock appear to be present in the subsurface in some areas.

Based on the P-wave refraction results, variability in the excavatability (including depth of rippability) of the subsurface materials should be expected across the study areas. Furthermore, blasting may be required depending on the excavation depth, location, equipment used, and desired rate of production. A contractor with excavation experience in similar conditions should be consulted for expert advice on excavation methodology, equipment and production rate.

7. LIMITATIONS

The field evaluation and geophysical analyses presented in this report have been conducted in general accordance with current practice and the standard of care exercised by consultants performing similar tasks in the project area. No warranty, express or implied, is made regarding the conclusions, recommendations, and opinions presented in this report. There is no evaluation detailed enough to reveal every subsurface condition. Variations may exist and conditions not observed or described in this report may be present. Uncertainties relative to subsurface conditions can be reduced through additional subsurface exploration. Additional subsurface surveying will be performed upon request.

This document is intended to be used only in its entirety. No portion of the document, by itself, is designed to completely represent any aspect of the project described herein. Southwest Geophysics, LLC should be contacted if the reader requires additional information or has questions regarding the content, interpretations presented, or completeness of this document. This report is intended exclusively for use by the client. Any use or reuse of the findings, conclusions, and/or recommendations of this report by parties other than the client is undertaken at said parties' sole risk.

8. SELECTED REFERENCES

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Project No.: 119229b

Date: 06/19

Figure 3















APPENDIX D

RECOMMENDED GRADING SPECIFICATIONS

FOR

CARMEL MOUNTAIN RANCH GOLF COURSE SAN DIEGO, CALIFORNIA

PROJECT NO. 03071-32-45A

RECOMMENDED GRADING SPECIFICATIONS

1. GENERAL

- 1.1 These Recommended Grading Specifications shall be used in conjunction with the Geotechnical Report for the project prepared by Geocon. The recommendations contained in the text of the Geotechnical Report are a part of the earthwork and grading specifications and shall supersede the provisions contained hereinafter in the case of conflict.
- 1.2 Prior to the commencement of grading, a geotechnical consultant (Consultant) shall be employed for the purpose of observing earthwork procedures and testing the fills for substantial conformance with the recommendations of the Geotechnical Report and these specifications. The Consultant should provide adequate testing and observation services so that they may assess whether, in their opinion, the work was performed in substantial conformance with these specifications. It shall be the responsibility of the Contractor to assist the Consultant and keep them apprised of work schedules and changes so that personnel may be scheduled accordingly.
- 1.3 It shall be the sole responsibility of the Contractor to provide adequate equipment and methods to accomplish the work in accordance with applicable grading codes or agency ordinances, these specifications and the approved grading plans. If, in the opinion of the Consultant, unsatisfactory conditions such as questionable soil materials, poor moisture condition, inadequate compaction, and/or adverse weather result in a quality of work not in conformance with these specifications, the Consultant will be empowered to reject the work and recommend to the Owner that grading be stopped until the unacceptable conditions are corrected.

2. **DEFINITIONS**

- 2.1 **Owner** shall refer to the owner of the property or the entity on whose behalf the grading work is being performed and who has contracted with the Contractor to have grading performed.
- 2.2 **Contractor** shall refer to the Contractor performing the site grading work.
- 2.3 **Civil Engineer** or **Engineer of Work** shall refer to the California licensed Civil Engineer or consulting firm responsible for preparation of the grading plans, surveying and verifying as-graded topography.
- 2.4 **Consultant** shall refer to the soil engineering and engineering geology consulting firm retained to provide geotechnical services for the project.

- 2.5 **Soil Engineer** shall refer to a California licensed Civil Engineer retained by the Owner, who is experienced in the practice of geotechnical engineering. The Soil Engineer shall be responsible for having qualified representatives on-site to observe and test the Contractor's work for conformance with these specifications.
- 2.6 **Engineering Geologist** shall refer to a California licensed Engineering Geologist retained by the Owner to provide geologic observations and recommendations during the site grading.
- 2.7 **Geotechnical Report** shall refer to a soil report (including all addenda) which may include a geologic reconnaissance or geologic investigation that was prepared specifically for the development of the project for which these Recommended Grading Specifications are intended to apply.

3. MATERIALS

- 3.1 Materials for compacted fill shall consist of any soil excavated from the cut areas or imported to the site that, in the opinion of the Consultant, is suitable for use in construction of fills. In general, fill materials can be classified as *soil* fills, *soil-rock* fills or *rock* fills, as defined below.
 - 3.1.1 Soil fills are defined as fills containing no rocks or hard lumps greater than 12 inches in maximum dimension and containing at least 40 percent by weight of material smaller than ³/₄ inch in size.
 - 3.1.2 **Soil-rock fills** are defined as fills containing no rocks or hard lumps larger than 4 feet in maximum dimension and containing a sufficient matrix of soil fill to allow for proper compaction of soil fill around the rock fragments or hard lumps as specified in Paragraph 6.2. **Oversize rock** is defined as material greater than 12 inches.
 - 3.1.3 **Rock fills** are defined as fills containing no rocks or hard lumps larger than 3 feet in maximum dimension and containing little or no fines. Fines are defined as material smaller than ³/₄ inch in maximum dimension. The quantity of fines shall be less than approximately 20 percent of the rock fill quantity.
- 3.2 Material of a perishable, spongy, or otherwise unsuitable nature as determined by the Consultant shall not be used in fills.
- 3.3 Materials used for fill, either imported or on-site, shall not contain hazardous materials as defined by the California Code of Regulations, Title 22, Division 4, Chapter 30, Articles 9

and 10; 40CFR; and any other applicable local, state or federal laws. The Consultant shall not be responsible for the identification or analysis of the potential presence of hazardous materials. However, if observations, odors or soil discoloration cause Consultant to suspect the presence of hazardous materials, the Consultant may request from the Owner the termination of grading operations within the affected area. Prior to resuming grading operations, the Owner shall provide a written report to the Consultant indicating that the suspected materials are not hazardous as defined by applicable laws and regulations.

- 3.4 The outer 15 feet of *soil-rock* fill slopes, measured horizontally, should be composed of properly compacted *soil* fill materials approved by the Consultant. *Rock* fill may extend to the slope face, provided that the slope is not steeper than 2:1 (horizontal:vertical) and a soil layer no thicker than 12 inches is track-walked onto the face for landscaping purposes. This procedure may be utilized provided it is acceptable to the governing agency, Owner and Consultant.
- 3.5 Samples of soil materials to be used for fill should be tested in the laboratory by the Consultant to determine the maximum density, optimum moisture content, and, where appropriate, shear strength, expansion, and gradation characteristics of the soil.
- 3.6 During grading, soil or groundwater conditions other than those identified in the Geotechnical Report may be encountered by the Contractor. The Consultant shall be notified immediately to evaluate the significance of the unanticipated condition.

4. CLEARING AND PREPARING AREAS TO BE FILLED

- 4.1 Areas to be excavated and filled shall be cleared and grubbed. Clearing shall consist of complete removal above the ground surface of trees, stumps, brush, vegetation, man-made structures, and similar debris. Grubbing shall consist of removal of stumps, roots, buried logs and other unsuitable material and shall be performed in areas to be graded. Roots and other projections exceeding 1½ inches in diameter shall be removed to a depth of 3 feet below the surface of the ground. Borrow areas shall be grubbed to the extent necessary to provide suitable fill materials.
- 4.2 Asphalt pavement material removed during clearing operations should be properly disposed at an approved off-site facility or in an acceptable area of the project evaluated by Geocon and the property owner. Concrete fragments that are free of reinforcing steel may be placed in fills, provided they are placed in accordance with Section 6.2 or 6.3 of this document.

- 4.3 After clearing and grubbing of organic matter and other unsuitable material, loose or porous soils shall be removed to the depth recommended in the Geotechnical Report. The depth of removal and compaction should be observed and approved by a representative of the Consultant. The exposed surface shall then be plowed or scarified to a minimum depth of 6 inches and until the surface is free from uneven features that would tend to prevent uniform compaction by the equipment to be used.
- 4.4 Where the slope ratio of the original ground is steeper than 5:1 (horizontal:vertical), or where recommended by the Consultant, the original ground should be benched in accordance with the following illustration.



TYPICAL BENCHING DETAIL



- DETAIL NOTES: (1) Key width "B" should be a minimum of 10 feet, or sufficiently wide to permit complete coverage with the compaction equipment used. The base of the key should be graded horizontal, or inclined slightly into the natural slope.
 - (2) The outside of the key should be below the topsoil or unsuitable surficial material and at least 2 feet into dense formational material. Where hard rock is exposed in the bottom of the key, the depth and configuration of the key may be modified as approved by the Consultant.
- 4.5 After areas to receive fill have been cleared and scarified, the surface should be moisture conditioned to achieve the proper moisture content, and compacted as recommended in Section 6 of these specifications.

5. COMPACTION EQUIPMENT

- 5.1 Compaction of *soil* or *soil-rock* fill shall be accomplished by sheepsfoot or segmented-steel wheeled rollers, vibratory rollers, multiple-wheel pneumatic-tired rollers, or other types of acceptable compaction equipment. Equipment shall be of such a design that it will be capable of compacting the *soil* or *soil-rock* fill to the specified relative compaction at the specified moisture content.
- 5.2 Compaction of *rock* fills shall be performed in accordance with Section 6.3.

6. PLACING, SPREADING AND COMPACTION OF FILL MATERIAL

- 6.1 *Soil* fill, as defined in Paragraph 3.1.1, shall be placed by the Contractor in accordance with the following recommendations:
 - 6.1.1 *Soil* fill shall be placed by the Contractor in layers that, when compacted, should generally not exceed 8 inches. Each layer shall be spread evenly and shall be thoroughly mixed during spreading to obtain uniformity of material and moisture in each layer. The entire fill shall be constructed as a unit in nearly level lifts. Rock materials greater than 12 inches in maximum dimension shall be placed in accordance with Section 6.2 or 6.3 of these specifications.
 - 6.1.2 In general, the *soil* fill shall be compacted at a moisture content at or above the optimum moisture content as determined by ASTM D 1557.
 - 6.1.3 When the moisture content of *soil* fill is below that specified by the Consultant, water shall be added by the Contractor until the moisture content is in the range specified.
 - 6.1.4 When the moisture content of the *soil* fill is above the range specified by the Consultant or too wet to achieve proper compaction, the *soil* fill shall be aerated by the Contractor by blading/mixing, or other satisfactory methods until the moisture content is within the range specified.
 - 6.1.5 After each layer has been placed, mixed, and spread evenly, it shall be thoroughly compacted by the Contractor to a relative compaction of at least 90 percent. Relative compaction is defined as the ratio (expressed in percent) of the in-place dry density of the compacted fill to the maximum laboratory dry density as determined in accordance with ASTM D 1557. Compaction shall be continuous over the entire area, and compaction equipment shall make sufficient passes so that the specified minimum relative compaction has been achieved throughout the entire fill.

- 6.1.6 Where practical, soils having an Expansion Index greater than 50 should be placed at least 3 feet below finish pad grade and should be compacted at a moisture content generally 2 to 4 percent greater than the optimum moisture content for the material.
- 6.1.7 Properly compacted *soil* fill shall extend to the design surface of fill slopes. To achieve proper compaction, it is recommended that fill slopes be over-built by at least 3 feet and then cut to the design grade. This procedure is considered preferable to track-walking of slopes, as described in the following paragraph.
- 6.1.8 As an alternative to over-building of slopes, slope faces may be back-rolled with a heavy-duty loaded sheepsfoot or vibratory roller at maximum 4-foot fill height intervals. Upon completion, slopes should then be track-walked with a D-8 dozer or similar equipment, such that a dozer track covers all slope surfaces at least twice.
- 6.2 *Soil-rock* fill, as defined in Paragraph 3.1.2, shall be placed by the Contractor in accordance with the following recommendations:
 - 6.2.1 Rocks larger than 12 inches but less than 4 feet in maximum dimension may be incorporated into the compacted *soil* fill, but shall be limited to the area measured 15 feet minimum horizontally from the slope face and 5 feet below finish grade or 3 feet below the deepest utility, whichever is deeper.
 - 6.2.2 Rocks or rock fragments up to 4 feet in maximum dimension may either be individually placed or placed in windrows. Under certain conditions, rocks or rock fragments up to 10 feet in maximum dimension may be placed using similar methods. The acceptability of placing rock materials greater than 4 feet in maximum dimension shall be evaluated during grading as specific cases arise and shall be approved by the Consultant prior to placement.
 - 6.2.3 For individual placement, sufficient space shall be provided between rocks to allow for passage of compaction equipment.
 - 6.2.4 For windrow placement, the rocks should be placed in trenches excavated in properly compacted *soil* fill. Trenches should be approximately 5 feet wide and 4 feet deep in maximum dimension. The voids around and beneath rocks should be filled with approved granular soil having a Sand Equivalent of 30 or greater and should be compacted by flooding. Windrows may also be placed utilizing an "open-face" method in lieu of the trench procedure, however, this method should first be approved by the Consultant.

- 6.2.5 Windrows should generally be parallel to each other and may be placed either parallel to or perpendicular to the face of the slope depending on the site geometry. The minimum horizontal spacing for windrows shall be 12 feet center-to-center with a 5-foot stagger or offset from lower courses to next overlying course. The minimum vertical spacing between windrow courses shall be 2 feet from the top of a lower windrow to the bottom of the next higher windrow.
- 6.2.6 Rock placement, fill placement and flooding of approved granular soil in the windrows should be continuously observed by the Consultant.
- 6.3 *Rock* fills, as defined in Section 3.1.3, shall be placed by the Contractor in accordance with the following recommendations:
 - 6.3.1 The base of the *rock* fill shall be placed on a sloping surface (minimum slope of 2 percent). The surface shall slope toward suitable subdrainage outlet facilities. The *rock* fills shall be provided with subdrains during construction so that a hydrostatic pressure buildup does not develop. The subdrains shall be permanently connected to controlled drainage facilities to control post-construction infiltration of water.
 - 6.3.2 *Rock* fills shall be placed in lifts not exceeding 3 feet. Placement shall be by rock trucks traversing previously placed lifts and dumping at the edge of the currently placed lift. Spreading of the *rock* fill shall be by dozer to facilitate *seating* of the rock. The *rock* fill shall be watered heavily during placement. Watering shall consist of water trucks traversing in front of the current rock lift face and spraying water continuously during rock placement. Compaction equipment with compactive energy comparable to or greater than that of a 20-ton steel vibratory roller or other compaction equipment providing suitable energy to achieve the required compaction or deflection as recommended in Paragraph 6.3.3 shall be utilized. The number of passes to be made should be determined as described in Paragraph 6.3.3. Once a *rock* fill lift has been covered with *soil* fill, no additional *rock* fill lifts will be permitted over the *soil* fill.
 - 6.3.3 Plate bearing tests, in accordance with ASTM D 1196, may be performed in both the compacted *soil* fill and in the *rock* fill to aid in determining the required minimum number of passes of the compaction equipment. If performed, a minimum of three plate bearing tests should be performed in the properly compacted *soil* fill (minimum relative compaction of 90 percent). Plate bearing tests shall then be performed on areas of *rock* fill having two passes, four passes and six passes of the compaction equipment, respectively. The number of passes required for the *rock* fill shall be determined by comparing the results of the plate bearing tests for the *soil* fill and the *rock* fill and by evaluating the deflection

variation with number of passes. The required number of passes of the compaction equipment will be performed as necessary until the plate bearing deflections are equal to or less than that determined for the properly compacted *soil* fill. In no case will the required number of passes be less than two.

- 6.3.4 A representative of the Consultant should be present during *rock* fill operations to observe that the minimum number of "passes" have been obtained, that water is being properly applied and that specified procedures are being followed. The actual number of plate bearing tests will be determined by the Consultant during grading.
- 6.3.5 Test pits shall be excavated by the Contractor so that the Consultant can state that, in their opinion, sufficient water is present and that voids between large rocks are properly filled with smaller rock material. In-place density testing will not be required in the *rock* fills.
- 6.3.6 To reduce the potential for "piping" of fines into the *rock* fill from overlying *soil* fill material, a 2-foot layer of graded filter material shall be placed above the uppermost lift of *rock* fill. The need to place graded filter material below the *rock* should be determined by the Consultant prior to commencing grading. The gradation of the graded filter material will be determined at the time the *rock* fill is being excavated. Materials typical of the *rock* fill should be submitted to the Consultant in a timely manner, to allow design of the graded filter prior to the commencement of *rock* fill placement.
- 6.3.7 *Rock* fill placement should be continuously observed during placement by the Consultant.

7. SUBDRAINS

7.1 The geologic units on the site may have permeability characteristics and/or fracture systems that could be susceptible under certain conditions to seepage. The use of canyon subdrains may be necessary to mitigate the potential for adverse impacts associated with seepage conditions. Canyon subdrains with lengths in excess of 500 feet or extensions of existing offsite subdrains should use 8-inch-diameter pipes. Canyon subdrains less than 500 feet in length should use 6-inch-diameter pipes.





NO SCALE

7.2 Slope drains within stability fill keyways should use 4-inch-diameter (or lager) pipes.



NOTES:

1.....EXCAVATE BACKCUT AT 1:1 INCLINATION (UNLESS OTHERWISE NOTED).

2.....BASE OF STABILITY FILL TO BE 3 FEET INTO FORMATIONAL MATERIAL, SLOPING A MINIMUM 5% INTO SLOPE.

3.....STABILITY FILL TO BE COMPOSED OF PROPERLY COMPACTED GRANULAR SOIL.

4.....CHIMNEY DRAINS TO BE APPROVED PREFABRICATED CHIMNEY DRAIN PANELS (MIRADRAIN G200N OR EQUIVALENT) SPACED APPROXIMATELY 20 FEET CENTER TO CENTER AND 4 FEET WIDE. CLOSER SPACING MAY BE REQUIRED IF SEEPAGE IS ENCOUNTERED.

5....FILTER MATERIAL TO BE 3/4-INCH, OPEN-GRADED CRUSHED ROCK ENCLOSED IN APPROVED FILTER FABRIC (MIRAFI 140NC).

8....COLLECTOR PIPE TO BE 4-INCH MINIMUM DIAMETER, PERFORATED, THICK-WALLED PVC SCHEDULE 40 OR EQUIVALENT, AND SLOPED TO DRAIN AT 1 PERCENT MINIMUM TO APPROVED OUTLET.

NO SCALE

- 7.3 The actual subdrain locations will be evaluated in the field during the remedial grading operations. Additional drains may be necessary depending on the conditions observed and the requirements of the local regulatory agencies. Appropriate subdrain outlets should be evaluated prior to finalizing 40-scale grading plans.
- 7.4 *Rock* fill or *soil-rock* fill areas may require subdrains along their down-slope perimeters to mitigate the potential for buildup of water from construction or landscape irrigation. The subdrains should be at least 6-inch-diameter pipes encapsulated in gravel and filter fabric. *Rock* fill drains should be constructed using the same requirements as canyon subdrains.

7.5 Prior to outletting, the final 20-foot segment of a subdrain that will not be extended during future development should consist of non-perforated drainpipe. At the non-perforated/ perforated interface, a seepage cutoff wall should be constructed on the downslope side of the pipe.

TYPICAL CUT OFF WALL DETAIL

FRONT VIEW



SIDE VIEW



7.6 Subdrains that discharge into a natural drainage course or open space area should be provided with a permanent headwall structure.

FRONT VIEW



7.7 The final grading plans should show the location of the proposed subdrains. After completion of remedial excavations and subdrain installation, the project civil engineer should survey the drain locations and prepare an "as-built" map showing the drain locations. The final outlet and connection locations should be determined during grading operations. Subdrains that will be extended on adjacent projects after grading can be placed on formational material and a vertical riser should be placed at the end of the subdrain. The grading contractor should consider videoing the subdrains shortly after burial to check proper installation and functionality. The contractor is responsible for the performance of the drains.

8. OBSERVATION AND TESTING

- 8.1 The Consultant shall be the Owner's representative to observe and perform tests during clearing, grubbing, filling, and compaction operations. In general, no more than 2 feet in vertical elevation of *soil* or *soil-rock* fill should be placed without at least one field density test being performed within that interval. In addition, a minimum of one field density test should be performed for every 2,000 cubic yards of *soil* or *soil-rock* fill placed and compacted.
- 8.2 The Consultant should perform a sufficient distribution of field density tests of the compacted *soil* or *soil-rock* fill to provide a basis for expressing an opinion whether the fill material is compacted as specified. Density tests shall be performed in the compacted materials below any disturbed surface. When these tests indicate that the density of any layer of fill or portion thereof is below that specified, the particular layer or areas represented by the test shall be reworked until the specified density has been achieved.
- 8.3 During placement of *rock* fill, the Consultant should observe that the minimum number of passes have been obtained per the criteria discussed in Section 6.3.3. The Consultant should request the excavation of observation pits and may perform plate bearing tests on the placed *rock* fills. The observation pits will be excavated to provide a basis for expressing an opinion as to whether the *rock* fill is properly seated and sufficient moisture has been applied to the material. When observations indicate that a layer of *rock* fill or any portion thereof is below that specified, the affected layer or area shall be reworked until the *rock* fill has been adequately seated and sufficient moisture applied.
- 8.4 A settlement monitoring program designed by the Consultant may be conducted in areas of *rock* fill placement. The specific design of the monitoring program shall be as recommended in the Conclusions and Recommendations section of the project Geotechnical Report or in the final report of testing and observation services performed during grading.
- 8.5 We should observe the placement of subdrains, to check that the drainage devices have been placed and constructed in substantial conformance with project specifications.
- 8.6 Testing procedures shall conform to the following Standards as appropriate:

8.6.1 Soil and Soil-Rock Fills:

8.6.1.1 Field Density Test, ASTM D 1556, Density of Soil In-Place By the Sand-Cone Method.

- 8.6.1.2 Field Density Test, Nuclear Method, ASTM D 6938, *Density of Soil and Soil-Aggregate In-Place by Nuclear Methods (Shallow Depth).*
- 8.6.1.3 Laboratory Compaction Test, ASTM D 1557, Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10-Pound Hammer and 18-Inch Drop.
- 8.6.1.4. Expansion Index Test, ASTM D 4829, Expansion Index Test.

9. PROTECTION OF WORK

- 9.1 During construction, the Contractor shall properly grade all excavated surfaces to provide positive drainage and prevent ponding of water. Drainage of surface water shall be controlled to avoid damage to adjoining properties or to finished work on the site. The Contractor shall take remedial measures to prevent erosion of freshly graded areas until such time as permanent drainage and erosion control features have been installed. Areas subjected to erosion or sedimentation shall be properly prepared in accordance with the Specifications prior to placing additional fill or structures.
- 9.2 After completion of grading as observed and tested by the Consultant, no further excavation or filling shall be conducted except in conjunction with the services of the Consultant.

10. CERTIFICATIONS AND FINAL REPORTS

- 10.1 Upon completion of the work, Contractor shall furnish Owner a certification by the Civil Engineer stating that the lots and/or building pads are graded to within 0.1 foot vertically of elevations shown on the grading plan and that all tops and toes of slopes are within 0.5 foot horizontally of the positions shown on the grading plans. After installation of a section of subdrain, the project Civil Engineer should survey its location and prepare an *as-built* plan of the subdrain location. The project Civil Engineer should verify the proper outlet for the subdrains and the Contractor should ensure that the drain system is free of obstructions.
- 10.2 The Owner is responsible for furnishing a final as-graded soil and geologic report satisfactory to the appropriate governing or accepting agencies. The as-graded report should be prepared and signed by a California licensed Civil Engineer experienced in geotechnical engineering and by a California Certified Engineering Geologist, indicating that the geotechnical aspects of the grading were performed in substantial conformance with the Specifications or approved changes to the Specifications.

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