

DOCKETED	
Docket Number:	21-SPPE-01
Project Title:	CA3 (Vantage) Backup Generating Facility
TN #:	237381
Document Title:	VDC CA3BGF SPPE Application Part III
Description:	N/A
Filer:	Scott Galati
Organization:	DayZenLLC
Submitter Role:	Applicant Representative
Submission Date:	4/5/2021 3:57:34 PM
Docketed Date:	4/5/2021

APPENDIX A-2

AQIA

Prepared for
California Energy Commission

Prepared by
Ramboll US Consulting, Inc.
San Francisco, California

Project Number
1690020771

Date
March 2021

AIR QUALITY AND GREENHOUSE GAS TECHNICAL REPORT – VANTAGE CA3 DATA CENTER

VANTAGE DATA CENTERS SANTA CLARA, CALIFORNIA

CONTENTS

EXECUTIVE SUMMARY	ES-1
1. INTRODUCTION	1
1.1 Project Description	1
1.2 Objective and Methodology	1
1.3 Thresholds Evaluated	1
1.4 Report Organization	3
2. EMISSION ESTIMATES	4
2.1 Calculation Methodologies for Construction Emissions	4
2.1.1 Emissions from Off-road Equipment	4
2.1.2 Emissions from On-road Vehicles	4
2.1.3 Emissions from Fugitive Dust	5
2.1.4 Emissions from Architectural Coating and Asphalt Paving	5
2.1.5 Summarized Construction Emissions	5
2.2 Calculation Methodologies for Operational Emissions	5
2.2.1 Stationary Sources	5
2.2.2 Land Use Sources	6
2.2.3 Summary of Project Operational GHG Emissions	7
3. ESTIMATED AIR CONCENTRATIONS	8
3.1 Chemical Selection	8
3.2 Sources of Emissions	8
3.3 Air Dispersion Modeling	8
4. RISK CHARACTERIZATION METHODS	11
4.1 Project Sources Evaluated	11
4.2 Exposure Assessment	11
4.3 Modeling Adjustment Factors	12
4.4 Toxicity Assessment	13
4.5 Age Sensitivity Factors	13
4.6 Risk Characterization	13
4.6.1 Estimation of Cancer Risks	13
4.6.2 Estimation of Chronic and Acute Noncancer Hazard Quotients/Indices	14
5. PROJECT HEALTH RISK ASSESSMENT	16
5.1 Construction HRA	16
5.2 Operational HRA	16
6. REFERENCES	17

TABLES

Table ES-1:	Summary of Project Construction Emissions
Table ES-2:	Summary of Project Operational Emissions at Full Build-Out
Table ES-3:	Summary of Construction Health Impacts at the Maximally Exposed Individual Receptor
Table ES-4:	Summary of Operational Health Impacts at the Maximally Exposed Individual Receptor
Table 1:	Project Characteristics
Table 2:	Land Use Characteristics
Table 3:	Construction Schedule
Table 4:	Construction Equipment List
Table 5:	Construction Trips
Table 6:	Project Construction Emissions
Table 7:	Emergency Generator Information
Table 8:	Daily Emissions, Emergency Generators
Table 9:	Annual Emissions, Emergency Generators
Table 10:	Operational Energy Use Emissions
Table 11:	Project Operational Trip Rates
Table 12:	Project Water Use Rates
Table 13:	Operational Mass Emissions of Criteria Air Pollutants
Table 14:	Operational Mass Emissions of Greenhouse Gas Emissions
Table 15:	Modeling Parameters
Table 16:	Modeled Emissions Rate for Health Risk Assessment
Table 17:	Exposure Parameters
Table 18:	Speciation Values
Table 19:	Toxicity Values
Table 20:	Construction Health Risk Impacts
Table 21:	Operational Health Risk Impacts

FIGURES

Figure 1:	Project Boundary
Figure 2:	Receptor Grid

APPENDICES

Appendix A:	CalEEMod® Construction and Operational Emissions Outputs
Appendix B:	Peterson Power Systems: ecoCUBE Design Criteria Emissions Specification Sheet

ACRONYMS AND ABBREVIATIONS

AERMOD	American Meteorological Society/Environmental Protection Agency regulatory air dispersion model
AQ	Air Quality
ARB	California Air Resources Board
aREL	Acute Reference Exposure Level
ASF	Age Sensitivity Factor
BAAQMD	Bay Area Air Quality Management District
CA3BGF	CA3 Backup Generating Facility
CA3DC	CA3 Data Center
CalEEMod®	California Emissions Estimator Model
Cal/EPA	California Environmental Protection Agency
CAP	Criteria Air Pollutant
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CH ₄	Methane
CO	Carbon Monoxide
CO ₂	Carbon Dioxide
CO ₂ e	Carbon Dioxide equivalent
CPF	Cancer Potency Factor
cREL	Chronic Reference Exposure Level
DPF	Diesel Particulate Filter
DPM	Diesel Particulate Matter
GHG	Greenhouse Gas
HHDT	Heavy Heavy Duty Trucks
HI	Hazard Index
HQ	Hazard Quotient
HRA	Health Risk Assessment
MAF	Modelling Adjustment Factor
MEDR	Maximally Exposed Daycare Receptor
MEIR	Maximally Exposed Individual Resident
MEISR	Maximally Exposed Individual Sensitive Receptor
MEIW	Maximally Exposed Individual Worker

MERR	Maximally Exposed Recreational Receptor
MESR	Maximally Exposed School Receptor
N ₂ O	Nitrogen Dioxide
NO _x	Nitrous Oxide
OEHA	Office of Environmental Health Hazard Assessment
PM _{2.5}	Fine Particulate Matter Less than 2.5 Micrometers in Aerodynamic Diameter
PM ₁₀	Respirable Particulate Matter Less than 10 Micrometers in Aerodynamic Diameter
ROG	Reactive Organic Gas
SCR	Selective-Catalytic Reduction Unit
SPPE	Small Power Plant Exemption
SVP	Silicon Valley Power
TAC	Toxic Air Contaminant
TOG	Total Organic Gas
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
VOC	Volatile Organic Compounds

Units

g	Gram	ppm	parts per million
lb/day	Pounds per day	s	Second
m	Meter	tpy	Ton per Year
MT	Metric Ton	yr	Year
MW	Megawatts		
MWh	Megawatts Hour		
µg/m ³	Micrograms per cubic meter		

EXECUTIVE SUMMARY

Vantage Data Centers (Vantage)'s Project CA3 at 2590 Walsh Ave is a proposed new data center and backup generating facility in Santa Clara, California. The CA3 facility would be located on a 6.69-acre plot bound to the Northwest by an existing microelectronics testing facility, to the Northeast by a software research and development facility, to the South by an existing railroad line operated by CalTrain, to the East by Walsh Avenue, and to the West by an existing Silicon Valley Power (SVP) substation. The Vantage Santa Clara Data Center Campus CA1 is located across the street on Walsh Avenue. The closest residential uses are to the South across the existing railroad right-of-way.

The proposed buildout plan for CA3 includes forty-four (44) 2.75-megawatts (MW) emergency diesel generators with a generation capacity of up to 95 MW to provide uninterruptible power supply for its tenants' servers. 40 out of the 44 generators provide back-up power for the data center and 4 of the generators are house generators that provide electricity during emergencies to support portions of the admin building and features necessary for emergency response. The data center demand load typically varies between 60 to 80 percent. Therefore, a fully leased 95 MW data center would only be expected to reach a demand load of around 77 MW.

Construction of CA3 facility which includes the data center (CA3DC) and the back-up generating facility (CA3BGF) would take place in two phases from 2022 to 2024. The first phase of construction (Phase 1) is expected to begin in January 2022 and will take approximately 14 months to complete. Phase 1 construction includes demolition of the existing structure and infrastructure that cannot be reused, grading of the entire site, installation of utility services including interim power, construction of an on-site substation, and construction of one-half of the building. The second phase of construction (Phase 2) is expected to begin in 2024 and will take approximately 11 months. This phase includes construction of remainder of the building. The site is currently occupied by an approximately 115,000 square foot single-story office and warehouse building and associated paved surface parking and loading dock that will be demolished in Phase 1. While there is [has been] activity on the site, in order to be conservative, for environmental baseline purposes, the site is vacant and unpaved. Development of the site would include the construction of an approximately 445,000 square feet of data center building and back-up generating facility, 25,000 square feet of substation, 40,230 square feet of landscaping area and 37 parking spaces (66,215 sq ft. of parking and drive aisle). Approximately 65,000 square feet of the data center building would be dedicated for administrative and office uses.

This report evaluates the air quality (AQ) and greenhouse gas (GHG) impacts, together with risks and hazards associated with the CA3 construction and operational activities. In addition, at the request of Vantage, Ramboll US Consulting, Inc. (Ramboll) has conducted a California Environmental Quality Act (CEQA) analysis of criteria air pollutants (CAPs) and precursor emissions associated with the proposed construction and operation of CA3. Ramboll also estimated GHG emissions from construction and operation of CA3 and performed a health risk assessment (HRA) of CA3 operations. The local air agency, the Bay Area Air Quality Management District (BAAQMD) has published CEQA Guidelines for use in determining significance, which will apply here for AQ and GHG (BAAQMD 2017).

The relevant thresholds for CA3 are:

- Construction CAP and precursor emissions
- Operational CAP and precursor emissions
- Local carbon monoxide (CO) concentrations¹
- Operational GHG emissions
- Excess lifetime cancer risk, chronic hazard index (HI), acute HI, and fine particulate matter (PM_{2.5}) concentrations from construction of Project. and CA3BGF operation on off-site receptors; and
- Cumulative excess lifetime cancer risk, chronic HI, and PM_{2.5} concentration from CA3BGF operation and surrounding sources on off-site receptors.²

Construction and operational CAP and GHG emissions were calculated using the California Emissions Estimator Model (CalEEMod[®]) version 2016.3.2, using project-specific information where available. Emissions from backup generator operations were estimated using manufacturer's data for stationary sources (emergency generators).

Health impacts from diesel particulate matter and speciated on-road total organic gas (TOG) emissions were calculated consistent with guidance in BAAQMD's 2017 CEQA guidelines (BAAQMD 2017) and the 2015 California Environmental Protection Agency (Cal/EPA) Office of Environmental Health Hazard Assessment (OEHHA) Hot Spots Guidance (2015). Consistent with BAAQMD and OEHHA Hot Spots guidance, health impacts were based on emissions of toxic air contaminants (TACs). Concentrations of TACs were estimated using AERMOD, a Gaussian air dispersion model recommended by United States Environmental Protection Agency (USEPA), California Air Resources Board (ARB), and BAAQMD for use in preparing environmental documentation for stationary sources. Health impacts were calculated using the TAC concentrations and TAC toxicities and exposure assumptions consistent with the 2015 OEHHA Hot Spots guidance.

Table ES-1 shows the Project construction related emissions by Phase and the BAAQMD CEQA thresholds. Project construction GHG emissions for Phase 1 is expected to be 686 metric tonnes per year (MT/yr) and 335 MT/year for Phase 2.

Table ES-1: Summary of Project Construction Emissions				
	ROG	NOx	PM₁₀	PM_{2.5}
Construction Daily Emissions (lb/day)				
Phase 1	9.6	8.0	1.8	0.6
Phase 2	11.1	6.0	0.9	0.3
BAAQMD CEQA Thresholds	54	54	82	54

¹ CO concentrations will be analysed in a separate report.

² Cumulative health risk impacts will be analysed in a separate report.

Table ES-2 shows the Project operational emissions at full buildout (in 2025), including emissions from generator testing and facility operation, and the BAAQMD CEQA thresholds. Project operational GHG emissions are 5,044 metric tonnes per year (MT/yr).

Table ES-2: Summary of Project Operational Emissions at Full Build-Out				
	ROG^A	NOx^{B,C}	PM₁₀^A	PM_{2.5}^A
Operational Daily Emissions (lb/day)				
Generators	2.4	193	0.75	0.75
Site Operations	11.8	0.9	1.6	0.4
Stationary source offsets		-193		
Total ³	14.2	0.9	2.3	1.2
BAAQMD CEQA Thresholds	54	54	82	54
Operational Annual Emissions (tpy)				
Generators	0.44	35.3	0.14	0.14
Site Operations	2.2	0.2	0.3	0.1
Stationary Source Offsets		-35.3		
Total ³	2.6	0.2	0.4	0.2
BAAQMD CEQA Thresholds	10	10	15	10
A – ROG, and PM emission factors are based on Tier 4 equivalent (Tier 2 + DPF) emissions standards B – NOx emissions factors are conservatively based on Tier 2 emissions standards C – Emission rates from manufacturers information provided by Vantage.				

³ Numbers may not add up exactly due to rounding.

Table ES-3 shows the health risk impacts due to Project Construction at the Maximally Exposed Individual Receptor, the receptor type and the BAAQMD CEQA thresholds.

Table ES-3: Summary of Construction Health Impacts at the Maximally Exposed Individual Receptor				
	Excess Lifetime Cancer Risk in one million	Noncancer Chronic HI (unitless)	Noncancer Acute HI (unitless)	PM_{2.5} Concentration (µg/m³)
Maximum Impact	1.5	0.0050	--	0.27
Receptor Type	Residential	Worker	--	Worker
<i>BAAQMD CEQA Thresholds</i>	<i>10</i>	<i>1</i>	<i>1</i>	<i>0.3</i>

Table ES-4 shows the total health impacts due to Project operations at full build-out at the Maximally Exposed Individual Receptor, the receptor type and the BAAQMD CEQA thresholds.

Table ES-4: Summary of Operational Health Impacts at the Maximally Exposed Individual Receptor				
	Excess Lifetime Cancer Risk in one million	Noncancer Chronic HI (unitless)	Noncancer Acute HI (unitless)	PM_{2.5} Concentration (µg/m³)
Maximum Impact	9.48	0.0089	0.61	0.032
Receptor Type	Residential	Worker	Residential	Worker
<i>BAAQMD CEQA Thresholds</i>	<i>10</i>	<i>1</i>	<i>1</i>	<i>0.3</i>

1. INTRODUCTION

At the request of Vantage, Ramboll US Consulting, Inc. (Ramboll) has prepared this technical report documenting air quality (AQ) and greenhouse gas (GHG) analyses for the construction and operational activities of the CA3 data center project, which includes the proposed CA3 Data Center (CA3DC) and the proposed CA3 Backup Generating Facility (CA3BGF), located at 2590 Walsh Avenue in Santa Clara, California. The analyses follow the Bay Area Air Quality Management District (BAAQMD) California Environmental Quality Act (CEQA) Guidelines released in 2017 (BAAQMD 2017).

1.1 Project Description

The proposed CA3DC and CA3BGF would be located at 2590 Walsh Avenue, Santa Clara bounded to the Northwest by an existing microelectronics testing facility, to the Northeast by a software research and development facility, to the South by an existing railroad line operated by CalTrain, to the East by Walsh Avenue, and to the West by an existing Silicon Valley Power (SVP) substation. The Vantage Santa Clara Data Center Campus CA1 is located across the street on Walsh Avenue. The closest residential uses are to the south across the existing railroad right-of-way to the South. The property is an approximately 6.69-acre lot. The proposed location and boundary are shown in **Figure 1**. The CA3DC and CA3BGF would be developed over two construction phases from 2022 to 2024. At full build-out, the CA3 Project would include forty-four (44) 2.75-megawatts (MW) capacity Tier-2 emergency generators with diesel particulate filters (DPF) and a selective-catalytic reduction unit (SCR) (equivalent to Tier 4 standards) with a total backup capacity of up to 95 MW, housed in a generation yard adjacent to the North side of a four-story data center building. Driveways, surface parking spaces, and outdoor storage areas around the building are planned to be concrete-paved.

1.2 Objective and Methodology

The BAAQMD 2017 CEQA Guidelines contain recommended thresholds for operational criteria air pollutant (CAP) and precursor emissions, GHG emissions, and risks and hazards associated with toxic air contaminant (TAC) emissions from an individual project (BAAQMD 2017). This report evaluates the AQ and GHG impacts associated with the construction and operation of the CA3DC and CA3BGF. This report also evaluates the health risks and hazards associated with construction of the CA3BGF and CA3DC, and operations of the CA3BGF on off-site receptors.

1.3 Thresholds Evaluated

The AQ analysis of this report evaluates the daily and annual regional emissions of criteria pollutants and precursors from construction and operation of the backup generators and evaluates these emissions against BAAQMD's May 2017 significance thresholds for emissions (BAAQMD 2017). These thresholds are as follows:

Construction CAP Emissions:

- Average daily emissions of Reactive Organic Gases (ROG) greater than 54 pounds per day (lb/day);
- Average daily emissions of Nitrogen Oxides (NOx) greater than 54 lb/day;
- Average daily exhaust emissions of particulate matter less than 10 micrometers in diameter (PM₁₀) greater than 82 lb/day; and

- Average daily exhaust emissions of fine particulate matter less than 2.5 micrometers in diameter (PM_{2.5}) greater than 54 lb/day.

Operational CAP Emissions:

- Average daily emissions of ROG greater than 54 lb/day, or maximum annual emissions of 10 tons per year (tpy);
- Average daily emissions of NO_x greater than 54 lb/day, or maximum annual emissions of 10 tpy;
- Average daily emissions of PM₁₀ greater than 82 lb/day, or maximum annual emissions of 15 tpy; and
- Average daily emissions of PM_{2.5} greater than 54 lb/day, or maximum annual emissions of 10 tpy.

Local carbon monoxide (CO) concentrations⁴:

- 8-hour average concentration of 9.0 parts per million (ppm)
- 1-hour average concentration of 20.0 ppm

The GHG analysis of this report evaluates the GHG emissions from operation of the CA3DC and CA3BGF and evaluates these emissions against BAAQMD's May 2017 significance thresholds for emissions. These thresholds are as follows:

- Stationary source direct GHG emissions of 10,000 metric tonnes per year (MT/yr)

The health risk assessment (HRA) in this report evaluates the estimated cancer risk, noncancer chronic hazard index (HI), acute HI, and PM_{2.5} concentration associated with the CA3DC and CA3BGF construction, and CA3BGF's operational emissions of Toxic Air Contaminants (TACs). The Toxic Air Contaminants considered are those included in BAAQMD Rule 2-5, New Source Review of Toxic Air Contaminants. The HRA evaluates potential sensitive receptor locations including:

- "Residential dwellings, including apartments, houses, condominiums;
- Schools, colleges, and universities;
- Daycares;
- Hospitals; and
- Senior-care facilities." (BAAQMD 2012a)

Ramboll conducted a sensitive receptor search within the 1,000-meter zone of influence and determined that the closest residential uses are to the South across the existing railroad right-of-way. However, for completeness, Ramboll also included a park directly South of the Project site as a potential sensitive receptor. The nearest school or daycare to the facility was found to be a school approximately 650 feet south of the Project boundary. All schools and daycare facilities within 1,000 meters were also analyzed in the health risk assessment.

To meet the above stated objectives, this HRA was conducted consistent with the following guidance:

⁴ CO concentrations will be analysed in a separate report.

- Air Toxics Hot Spots Program Risk Assessment Guidelines (Office of Environmental Health Hazard Assessment [OEHHA] 2015);
- May 2017 BAAQMD CEQA Guidelines (BAAQMD 2017); and
- BAAQMD Recommended Methods for Screening and Modeling Local Risks and Hazards (BAAQMD 2012a).

Ramboll compared the results of emissions and health risk analyses to the BAAQMD 2017 CEQA significance thresholds. Construction health impacts from construction of the entire facility were compared against the single source impact thresholds. Operational health impacts of the backup generators were also compared against the BAAQMD 2017 CEQA single source thresholds. The thresholds for Single Source Impacts are:

- An excess lifetime cancer risk level of more than 10 in one million;
- A noncancer chronic HI greater than 1.0;
- A noncancer acute HI greater than 1.0; and
- An incremental increase in the annual average PM_{2.5} concentration of greater than 0.3 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$).

The BAAQMD has also identified significance thresholds for cumulative impacts, and the thresholds of significance are⁵:

- An excess lifetime cancer risk level of more than 100 in one million;
- A noncancer chronic HI greater than 10.0; and
- An annual average PM_{2.5} concentration of greater than 0.8 $\mu\text{g}/\text{m}^3$.

1.4 Report Organization

This technical report is divided into eight sections as follows:

Section 1.0 – Introduction: describes the purpose and scope of this technical report, the objectives and methodology used in this technical report, and the report organization.

Section 2.0 – Emission Estimates: describes the methods used to estimate the emissions of CAPs, GHGs, and TACs from the CA3DC and CA3BGF;

Section 3.0 – Estimated Air Concentrations: discusses the air dispersion modeling, the selection of the dispersion models, the data used in the dispersion models (e.g., terrain, meteorology, source characterization), and the identification of residential and sensitive locations evaluated in this technical report.

Section 4.0 – Risk Characterization Methods: provides an overview of the methodology for conducting the HRA.

Section 5.0 – Project Health Risk Assessment: presents estimated emissions of CAPs and GHGs, excess lifetime cancer risks, chronic noncancer HIs, acute noncancer HIs, and PM_{2.5} concentrations for the construction of the Project and operations of the CA3BGF.

Section 6.0 – References: includes a listing of all references cited in this report.

⁵ Cumulative health risk impacts will be analysed in a separate report.

2. EMISSION ESTIMATES

Ramboll estimated CAP, GHG, and TAC emissions from construction of the CA3DC and CA3BGF from 2022 to 2024, as well as emissions from the operation of the CA3DC and CA3BGF. The CAPs of interest include ROG, NO_x, PM_{2.5} and PM₁₀ (the BAAQMD thresholds for construction specify exhaust PM only). The GHGs of interest include carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O), which are commonly combined by global warming potential-weighted average into carbon dioxide equivalents (CO₂e). One of the TACs of interest is diesel particulate matter (DPM), emissions of which are assumed to be equal to exhaust PM₁₀ from on- and off-road construction equipment, and exhaust PM₁₀ from backup diesel engines during operation. Other TACs are speciated from total organic gas (TOG) from on-road emissions from gasoline vehicles. These emissions estimates were used to compare emissions to BAAQMD thresholds and as inputs to the construction and operational HRAs. The methodologies used by Ramboll are summarized below.

Table 1 presents the Project characteristics and **Table 2** presents the land use assumptions used in the emissions estimation.

2.1 Calculation Methodologies for Construction Emissions

Emissions from construction activities were estimated using the California Emissions Estimator Model (CalEEMod®). CalEEMod® was developed by Ramboll (then known as ENVIRON) in collaboration with the California Air Pollution Control Officers Association for use in developing emission inventories suitable for CEQA analysis. Sources of construction CAP and TAC emissions are exhaust from off-road equipment, on-road vehicles, fugitive dust and ROG emissions from architectural coating and paving activities.

2.1.1 Emissions from Off-road Equipment

CAP and TAC emissions from off-road equipment were based on the equipment inventory, equipment specifications, their daily usage and construction phasing schedule based on CalEEMod® defaults. All off-road equipment for construction is assumed to be Tier 4 Final engines. CalEEMod® defaults are based on the Project land use area for each land use type and Phase. **Table 3** presents the construction schedule for Phase 1 and Phase 2 of construction, and **Table 4** presents the construction equipment list for both construction phases.

2.1.2 Emissions from On-road Vehicles

CalEEMod® estimates CAP and TAC emissions from on-road haul trucks and worker and vendor trips based on vehicle type, emission factor, distance travelled, and number of trips. The number of truck and construction worker and vendor trips are from the CalEEMod® default trip rates. Construction trip generation rate for the Project is shown in **Table 5**. Emission factors used are the CalEEMod® defaults. All hauling trucks were assumed by CalEEMod® to be Heavy Heavy Duty Trucks (HHDT), vendor trucks were assumed to be 50% HHDT and 50% Medium Heavy Duty Truck, and worker vehicles were assumed to be a 50%/25%/25% mix of Light Duty Automobiles, Light Duty Truck class 1 and Light Duty Truck class 2, consistent with CalEEMod® defaults. CalEEMod® contains fuel-type information by fleet mix for each year. The default trip lengths in CalEEMod® were used. That is, for haul trucks, a 20-mile one-way trip length was used. For worker trips a 10.8-mile trip length was used. For vendor trips a 7.3-mile trip length was used.

2.1.3 Emissions from Fugitive Dust

Fugitive dust emissions are typically generated during construction phases, and fugitive dust contributes to both PM₁₀ and PM_{2.5} emissions. Fugitive dust is generated by various activities during construction such as demolition, site preparation and grading. On-road fugitive dust is also associated with vehicles traveling on paved and unpaved roads. Fugitive dust emissions associated with material movement and on-road sources are estimated based on CalEEMod[®] defaults. BAAQMD has identified eight best management practices to control fugitive dust emissions from construction activities. The Proposed Project would be subject to the requirements of the BAAQMD best management practices including exposed water area twice a day, which is the basis for determining emissions from fugitive dust.

2.1.4 Emissions from Architectural Coating and Asphalt Paving

ROG off-gassing emissions from paving are calculated based on the paved parking area of the Project site using CalEEMod[®]'s Volatile Organic Compounds (VOC) per square foot emission factor.

ROG off-gassing emissions from architectural coating are calculated based on the square footage of the new buildings, an assumed VOC content of the paint, and an application rate of 100%, consistent with CalEEMod[®]. The VOC content of the indoor and outdoor paints are assumed to be consistent with the limits set in BAAQMD Regulation 8, Rule 3 (BAAQMD 2009).

2.1.5 Summarized Construction Emissions

CAP emissions from CA3DC and CA3BGF construction phases were added and then normalized over the number of days in the construction period for each Phase. CAP emissions and GHG emissions from on- and off-road construction sources are presented in **Table 6**. The average daily construction CAP emissions by phase are compared against the average daily BAAQMD construction CAP thresholds in **Table 6**.

CalEEMod[®] outputs for CA3DC and CA3BGF construction emissions per construction phase are included in **Appendix A** of this technical report.

2.2 Calculation Methodologies for Operational Emissions

Emissions from CA3DC and CA3BGF operation were estimated using CalEEMod[®] for land-use and building emissions (except energy) and manufacturer's data for stationary sources (emergency generators). Emissions from building energy usage were estimated separately outside of CalEEMod[®].

2.2.1 Stationary Sources

The proposed CA3BGF includes 44 diesel back-up emergency generators, the locations of which are shown in **Figure 1**. **Table 7** presents the uncontrolled and controlled emission factors used to calculate average daily emissions and annual criteria pollutant emissions based on an annual limit of 35 hours of operation per year per generator for testing and maintenance of all 44 gens. The controlled emission factors are based on the presence of a Diesel Particulate Filter (DPF) and SCR devices. **Table 8** and **Table 9** present the daily and annual emissions, respectively, based on 35 hours of operations for testing and maintenance purposes. Ramboll used emissions factors provided by Peterson Power Systems for the ecoCUBE engine configuration based on inlet and outlet emission performance. The engine specification sheet used for the analysis is provided in **Appendix B**. Engine emissions are based on non-emergency operations (primarily the schedule of testing that is required for

the generators) and the planned number of hours of non-emergency operations (in accordance with BAAQMD Regulation 2, Rule 5). Annual non-emergency operation is limited to 50 hours, as are stated in the Airborne Toxic Control Measure for Stationary Toxic Compression Ignition Engines (Section 93115, Title 17, CCR). As discussed above, operational emissions are calculated assuming all 44 back-up generators operate for 35 hours each per year. Vantage estimates normal maintenance and testing would be on the order of 35 hours per year per engine. Emission rates were averaged over the period of a year since the emergency generators could potentially be tested at any time of day or day of year. **Tables 8 and Table 9** also present the daily and annual CAP emissions from non-emergency operation of the backup engines compared against the BAAQMD significance threshold, along with the annual GHG emissions compared against the stationary source thresholds. The NO_x emissions are conservatively based on the Tier II emissions standards (uncontrolled emission factors), on the assumption that the SCR will not operate during testing and maintenance purposes. This is a conservative assumption as the start-up times for SCR is about 15 minutes and the SCR is likely to operate after 15 minutes of initial operation. Vantage will acquire offsets for NO_x in order to mitigate emissions to below significance thresholds.

GHG emissions from the diesel engines were calculated following the same methodology as described above for CAPs. GHG emission factors were obtained from AP-42 documentation for Large Stationary Diesel Engines. Ramboll used the USEPA Mandatory Reporting Rule emission factors for CH₄ and N₂O emissions (USEPA 2013a), which were added to develop a CO₂e emission factor using the same global warming potentials as in described in USEPA's 40-CFR Part 98 Vol. 78 rules and regulations (USEPA 2013b).

2.2.2 Land Use Sources

Ramboll used CalEEMod[®] to estimate CAP and GHG emissions due to mobile sources, area sources such as landscaping maintenance equipment, water treatment and distribution, and wastewater usage. GHG emissions due to electricity usage at the site were calculated outside of CalEEMod[®] based on the expected site's maximum annual energy consumption estimated based on the highest potential energy consumption all the time. The energy consumption for building operations exclusive of the operations of the data center are included in this electricity usage.

The site is not expected to have any natural gas consumption. GHG emissions from energy use is reported in **Table 10**. Annual GHG emissions associated with electricity usage are the product of the maximum estimated annual electricity usage and the utility-specific carbon intensity factor, which depends on the utility's portfolio of power generation sources. The proposed CA3DC is served by SVP. The energy use emissions for first phase of operations for the CA3DC were conservatively based on the annual average CO₂ intensity per Megawatts Hour (MWh) for 2023 and 2024. Energy use emissions for full buildout in 2025 were based on the CO₂ intensity per MWh for 2025 obtained from "SVP Email to City of Santa Clara on Carbon Intensity Factor" from the Sequoia Data Center Project as provided in the California Energy Commission (CEC) proceedings (CEC 2019). For the GHG emissions from all other sources except energy⁶, Ramboll used a carbon intensity value of 222 pounds CO₂ per MWh for Phase 1 operations in 2023. For the second year of operation, 2025, Ramboll used a carbon intensity value of 277 pounds CO₂ per MWh. To be conservative, since it is not clear

⁶ GHG emissions from other sources include emissions from water, solid waste, and landscaping which contribute to less than 1% of total GHG emissions.

whether the SVP carbon intensity already includes CH₄ and N₂O, the CalEEMod[®] default CH₄ and N₂O intensity factors of 0.029 and 0.006 pounds of CO₂e per MWh, respectively, were used for all years considered.

Energy use from the data center activities for Phase 1 was estimated to be 473,040 MWh/year. After full build-out, energy use from the data center activities was estimated to be 832,200 MWh/year. Total energy usage estimates for CA3DC operations are presented in **Table 10**.

Ramboll relied on a project operational trip generation consistent with the transportation operational analysis memo prepared for the small power plant exemption (SPPE) application (Kimley Horn 2021). The transportation analysis estimates an overall net reduction in trips with full buildout. The analysis states that the net project trip rate is negative (-658 trips per day) based on an estimate of 1,125 trips per day from the existing land use and 467 trips per day from Project operations. However, the air quality analysis conservatively assumes that the existing trip rate is zero, and hence analyzes impacts based on 467 trips per day for the Project. The operational trip rates used in CalEEMod[®] are shown in **Table 11**.

In addition, annual GHG emissions associated with water usage were based on an estimated annual water usage of 911,000 gallons per year as provided by Vantage for site operations. Ramboll conservatively assumed CalEEMod[®] defaults outdoor water usage for the landscaping area, in addition to the proposed site consumption. Water usage rates for the Project are provided in **Table 12**.

Total CA3DC and CA3BGF operational CAP emissions are the sum of land-use and emergency generator emissions, as shown in **Table 13**. The average daily CAP emissions and annual CAP emissions are compared against the BAAQMD thresholds of significance for operational emissions.

CalEEMod[®] outputs for CA3DC and CA3BGF operational emissions are included in **Appendix A** of this technical report.

2.2.3 Summary of Project Operational GHG Emissions

GHG emissions for CA3DC and CA3BGF operation are presented in **Table 14**. CalEEMod[®] outputs for CA3DC and CA3BGF operational emissions are included in **Appendix A** of this technical report. GHG emissions from the emergency generators are subject to the BAAQMD CEQA threshold for stationary sources.

Electricity usage makes up nearly 99% of the operational CA3DC GHG emissions. GHG emissions associated with electricity usage from the data center will continue to decline after 2025 due to increasing requirements for renewable power in California. As described above, electricity to the CA3DC would be provided by SVP, a utility that is on track to meet the 2030 Renewable Power Standards and its associated GHG emissions reductions.

3. ESTIMATED AIR CONCENTRATIONS

CA3DC and CA3BGF operational activities will generate emissions that will be transported outside of the physical boundaries of the Project site, potentially impacting nearby sensitive receptors such as those in residential areas. Methodologies to estimate concentrations resulting from CA3DC and CA3BGF operational activities are provided below. Ramboll performed a refined HRA for non-emergency operation of the emergency generators.

3.1 Chemical Selection

The cancer risk, chronic, and acute hazards in the refined HRA for the CA3BGF stationary source operations were based on TAC emissions from the CA3BGF. Modeled sources of TACs include the diesel-powered emergency generators. Accordingly, the chemicals to be evaluated in the HRA were DPM in diesel exhaust and speciated TOG. DPM emissions are assumed to be equal to exhaust PM₁₀ from backup diesel engines during operation.

Diesel exhaust, a complex mixture that includes hundreds of individual constituents, is identified by the State of California as a known carcinogen (California Environmental Protection Agency [Cal/EPA] 1998). Under California regulatory guidelines, DPM is used as a surrogate measure of exposure for the mixture of chemicals that make up diesel exhaust as a whole. Cal/EPA and other proponents of using the surrogate approach to quantifying cancer risks associated with the diesel mixture indicate that this method is preferable to use of a component-based approach. A component-based approach involves estimating risks for each of the individual components of a mixture. Critics of the component-based approach believe it will underestimate the risks associated with diesel as a whole mixture because the identity of all chemicals in the mixture may not be known and/or exposure and health effects information for all chemicals identified within the mixture may not be available. Furthermore, Cal/EPA has concluded that “potential cancer risk from inhalation exposure to whole diesel exhaust will outweigh the multi-pathway cancer risk from the speciated components” (OEHHA 2003). The DPM analyses for cancer and chronic hazards will be based on the surrogate approach, as recommended by Cal/EPA. In the absence of an acute toxicity value for diesel exhaust, speciated TOG will be used as a conservative estimate.

3.2 Sources of Emissions

The relevant emissions sources of TACs for the HRA are off-road equipment and on-road trucks during construction, and emergency generators during operation. Emissions estimates for operational mobile sources are not included in the operational HRA since the total number of vehicle trips are estimated to be less than 500 trips per day which BAAQMD considers as a minor, low-impact source which does not pose a significant health risk (BAAQMD. 2012a).

3.3 Air Dispersion Modeling

AERMOD Version 19191 was used to evaluate ambient air concentrations of DPM, PM_{2.5} and TOG at off-site receptors from CA3BGF non-emergency use of the backup generators and during Project construction. For each receptor location, the model generates air concentrations that result from emissions from multiple sources. If unit emissions (i.e., 1 gram per second [g/s]) are modeled, the resultant value for each receptor location is called the air dispersion factor.

Air dispersion models such as AERMOD require a variety of inputs such as source parameters, meteorological conditions, topographical information, and receptor parameters.

Modeling parameters are shown in **Table 15**. The CA3 Project boundary is shown in **Figure 1**.

Meteorological data: Air dispersion modeling requires the use of meteorological data that ideally are spatially and temporally representative of conditions in the immediate vicinity of the site under consideration. Ramboll used surface meteorological data from the San Jose Airport for years 2015 through 2019, with upper air data collected at the Oakland Airport for the same time period. Data were processed using AERMINUTE (15272) and AERMET (19191). The meteorological data was processed using the ADJ_U* option that reduces overprediction of modeled concentrations that occur in stable conditions with low wind speeds due to underprediction of the surface friction velocity (u^*). Underprediction of u^* results in an underestimation of the mechanical mixing height and thus overprediction of ambient concentrations. The ADJ_U* option is now considered a regulatory default option with the recent update to Appendix W.

Terrain considerations: Elevation and land use data were imported from the National Elevation Dataset maintained by the United States Geological Survey (USGS 2013). An important consideration in an air dispersion modeling analysis is the selection of whether or not to model an urban area. Here the model assumes an urban land use as has been done for similar projects in the area. Ramboll used 1,664,496, the 2010 population of San Jose, as the urban population in AERMOD (US Census Bureau 2014).

Source parameters: Source locations and parameters are necessary to model the dispersion of air emissions. Operational source locations are shown in **Figure 1**. At full buildout, there are 44 generators placed on concrete slabs with enclosures that are approximately 19 feet high. **Figure 1** shows locations for all 44 generators and source parameters are detailed in **Table 15**. The operational sources (i.e., emergency generators) were represented by point sources with identical exit temperatures, exit velocities and exit diameters, based on manufacturer provided information. The modelled stack height for all generators on site is 10.09 meters.

Construction sources are represented as a single area source throughout the project site. The area sources for Phase 1 spreads throughout the entire site, while the area source for Phase 2 is placed over the Eastern side of the building.

Emission rates: Emissions were modeled using the unit rate emissions method for all pollutants such that each source has a unit emission rate (i.e., 1 g/s) and the model estimates dispersion factors with units of $(\mu\text{g}/\text{m}^3)/(\text{g}/\text{s})$. Actual emissions were multiplied by the dispersion factors to obtain concentrations.

For CA3BGF operation, generators were modeled as if they could operate at any hour of the day. Construction activities are restricted to take place between 7 AM – 6 PM due to the City of Santa Clara's noise ordinance (City of Santa Clara, 2020). The modeled emissions rate are shown in **Table 16**.

For annual average ambient air concentrations, the estimated annual average dispersion factors were multiplied by the annual average emission rates. For maximum hourly ambient air concentrations, the estimated maximum hourly dispersion factors were multiplied by the maximum hourly emission rates.

Receptors: Nearby sensitive receptor populations were identified within a 1,000-meter (m) buffer of the CA3 Project site, which is larger than Project's 1,000-foot zone of influence. As

discussed above, sensitive receptors include residents to the South of the Project site and a Park also directly south of the site. In addition, a search for nearby schools and daycare facilities was conducted and sensitive receptors were modelled at these locations. All regions consisting of industrial land uses to the north of the Project site were modelled as worker receptors. A receptor grid was created to cover all potential sensitive receptors within 1,000-m of the Project site. A grid of receptors with 20-m spacing was used. Modeled off-site receptors are shown in **Figure 2**. Receptors were modeled at 1.8 meters of height, consistent with BAAQMD guidance for breathing height. As discussed previously, average annual and maximum hourly dispersion factors were estimated for each receptor location.

Concentrations: As discussed above, emissions were modeled using the unit rate emission factor method, such that the model estimates dispersion factors based on an emission rate of 1 g/s and the dispersion factors have units of $[\mu\text{g}/\text{m}^3]/[\text{g}/\text{s}]$. Estimated emissions were multiplied by the dispersion factors to obtain concentrations.

Modeling Adjustment Factor: OEHHA (2015) recommends applying an adjustment factor to the annual average concentration modeled assuming continuous emissions (i.e., 24 hours per day, seven days per week), when the actual emissions are less than 24 hours per day and exposures are concurrent with the emitting activities. Operational emissions were modeled with the assumption that they can occur at any hour of the day. Modelling Adjustment Factor (MAFs) are shown in **Table 17**.

4. RISK CHARACTERIZATION METHODS

The following sections discuss in detail the various components required to conduct the HRA of Project construction and CA3BGF operations.

4.1 Project Sources Evaluated

As discussed in Section 1.3, excess lifetime cancer risk, chronic and acute HIs, and PM_{2.5} concentrations were evaluated for off-site sensitive receptor, school receptor, daycare receptor, recreational receptor and worker receptor exposures, to emissions from the Project construction and CA3BGF operation. The TACs of concern are those in BAAQMD Rule 2-5, so no health impacts from CAPs are considered in this analysis, consistent with BAAQMD CEQA Guidance.

4.2 Exposure Assessment

Potentially Exposed Populations: This assessment evaluated off-site receptors potentially exposed to CA3DC construction and CA3BGF emissions from operational activities. These exposed populations include residential receptors, recreational receptors at a nearby park field, school receptors, daycare receptors and worker receptors. Both long-term health impacts (cancer risk, chronic HI, and PM_{2.5} concentration) and acute hazards were evaluated for the at all receptor locations.

Exposure Assumptions: The exposure parameters used to estimate excess lifetime cancer risks due to project construction and operational activities were obtained using risk assessment guidelines from OEHHA (2015) and guidelines from the BAAQMD that indicate how the BAAQMD would integrate the 2015 OEHHA Guidelines (BAAQMD 2020), unless otherwise noted, and are presented in **Table 17**. Based on the TACs considered, the only relevant exposure pathway is inhalation, so this HRA considers inhalation exposure only.

For offsite residential receptors, Ramboll selected conservative exposure parameters assuming that exposure would begin during the third trimester of a residential child's life. Ramboll used 95th percentile breathing rates up to age 2, and 80th percentile breathing rates above age 2, consistent with BAAQMD guidance (2020). For construction, off-site residents were assumed to be present at one location for the entire duration of the construction period. For operation, off-site residents were assumed to be present at one location for a 30-year period, beginning with exposure in the third trimester.

For offsite school and childcare receptors, Ramboll selected exposure parameters using the conservative assumption that a child would be located at the daycare facility starting at age of 6 weeks until age 6, and for the school receptor, a child would be at the school starting at age 6 until 18 years. For construction and operations, the child was assumed to be present at the location for 8 hours a day, for 5 days a week. Operational exposures used the 95th percentile 8-hour moderate intensity breathing rate from the OEHHA guidelines.

For offsite recreational receptors, exposure parameters were selected with the conservative assumption that a child would be present at the park starting at age 0 for 2 hours a day and would be present for 30 years, 180 days per year. Operational exposures used the 95th percentile 8-hour moderate intensity breathing rates from the OEHHA guidelines.

For offsite receptors, including fenceline and adjacent sidewalk receptors, Ramboll adopted the Commission Staff-requested methodology of assigning a worker exposure parameters to those locations for assessment of health impacts. Ramboll is not in agreement with this

methodology and believes every receptor should be assigned exposure parameters based on existing conditions and land uses or what could feasibly occur at each receptor over the duration of the project. It is not reasonable that a worker will be present for 25-30 years on the fenceline of the Site or the adjacent sidewalk. However, consistent with the Staff's request, Ramboll has provided results of an analysis that assumes every receptor that is not classified as a resident, school, daycare or recreational receptor is assumed to have worker exposure parameters. This includes all receptors on the fenceline and all other public spaces adjacent to the project site. Operational exposure for a worker used the 95th percentile 8-hour breathing rate from the OEHHA guidelines (2015). A 25-year exposure duration for workers is assumed based on the OEHHA recommended exposure duration period and an exposure frequency of 250 days in a year is used in the analysis.

Calculation of Intake: The dose estimated for each exposure pathway is a function of the concentration of a chemical and the intake of that chemical. The intake factor for inhalation, IF_{inh} , can be calculated as follows:

$$IF_{inh} = \frac{DBR * FAH * EF * ED * CF}{AT}$$

Where:

IF_{inh}	=	Intake Factor for Inhalation (m ³ /kg-day)
DBR	=	Daily Breathing Rate (L/kg-day)
FAH	=	Fraction of Time at Home (unitless)
EF	=	Exposure Frequency (days/year)
ED	=	Exposure Duration (years)
AT	=	Averaging Time (days)
CF	=	Conversion Factor, 0.001 (m ³ /L)

The chemical intake or dose is estimated by multiplying the inhalation intake factor, IF_{inh} , by the chemical concentration in air, C_i . When coupled with the chemical concentration, this calculation is mathematically equivalent to the dose algorithm given in the OEHHA Hot Spots guidance (2015).

4.3 Modeling Adjustment Factors

Cal/EPA recommends applying an adjustment factor to the annual average concentration determined through dispersion modeling by assuming continuous emissions (*i.e.*, 24 hours per day, 7 days per week), when the actual emissions occur less than 24 hours per day and exposures are concurrent with emissions-generating activities occurring at the Project. The modeling adjustment factors are discussed below.

Residents are assumed to be exposed to site emissions 24 hours per day, seven days per week. This assumption is consistent with the modeled annual average air concentration (24 hours per day, 7 days per week). Thus, the annual average concentration need not be adjusted for residential receptors.

The emissions associated with reliability-related activities are conservatively assumed to occur during the working hours and on the work days only while the offsite workers are present and children are expected to be at school or daycare. Thus, a MAF of 4.2 was applied to the annual average concentration used in the evaluation of the offsite worker, school and daycare receptors to account for an emissions schedule equivalent to a worker's schedule of 8 hours per day, 260 days per year $([24 \text{ hours}/8 \text{ hours}] \times [365 \text{ days}/260 \text{ days}])$. These concentrations represent the theoretical maximum average concentrations over the operating period to which the offsite worker, school child or daycare child might be exposed.

The exposure point concentrations for the offsite worker, school child, daycare child, and infant care child receptors will be calculated using the following equation:

$$C_i = C_{i,\text{annual}} \times \text{MAF}$$

4.4 Toxicity Assessment

The toxicity assessment characterizes the relationship between the magnitude of exposure and the nature and magnitude of adverse health effects that may result from such exposure. For purposes of calculating exposure criteria to be used in risk assessments, adverse health effects are classified into two broad categories – cancer and non-cancer endpoints. Toxicity values used to estimate the likelihood of adverse effects occurring in humans at different exposure levels are identified as part of the toxicity assessment component of a risk assessment.

Excess lifetime cancer risk and chronic HI calculations for CA3BGF operation utilized the toxicity values for DPM from diesel generators. Acute HI calculations utilized the toxicity values for TACs from speciated diesel TOG for diesel generators. The speciation profiles used are presented in **Table 18**. The toxicities of each chemical are shown in **Table 19**. The TACs of concern have inhalation health effects only.

4.5 Age Sensitivity Factors

The estimated excess lifetime cancer risks for a resident child was adjusted using the age sensitivity factors (ASFs) recommended by OEHHA (2015). This approach accounts for an "anticipated special sensitivity to carcinogens" of infants and children. Cancer risk estimates are weighted by a factor of 10 for exposures that occur from the third trimester of pregnancy to two years of age and by a factor of three for exposures that occur from two years through 15 years of age. No weighting factor (i.e., an ASF of one, which is equivalent to no adjustment) is applied to ages 16 to 30 years. **Table 16** shows the ASFs used.

4.6 Risk Characterization

4.6.1 Estimation of Cancer Risks

Excess lifetime cancer risks are estimated as the upper-bound incremental probability that an individual will develop cancer over a lifetime as a direct result of exposure to potential carcinogens. The estimated risk is expressed as a unitless probability. The cancer risk attributed to a chemical is calculated by multiplying the chemical intake or dose at the human exchange boundaries (e.g., lungs) by the chemical-specific cancer potency factor (CPF).

The equation used to calculate the potential excess lifetime cancer risk for the inhalation pathway is as follows:

$$\text{Risk}_{\text{inh}} = C_i \times CF \times I_{\text{inh}} \times \text{CPF} \times \text{ASF}$$

Where:

$Risk_{inh}$	=	Cancer risk; the incremental probability of an individual developing cancer as a result of inhalation exposure to a particular potential carcinogen (unitless)
C_i	=	Annual average air concentration for chemical during activities _i ($\mu\text{g}/\text{m}^3$)
CF	=	Conversion factor ($\text{mg}/\mu\text{g}$)
IF_{inh}	=	Intake factor for inhalation ($\text{m}^3/\text{kg}\cdot\text{day}$)
CPF_i	=	Cancer potency factor for chemical _i ($\text{mg chemical}/\text{kg body weight}\cdot\text{day}$) ⁻¹
ASF	=	Age sensitivity factor (unitless)

4.6.2 Estimation of Chronic and Acute Noncancer Hazard Quotients/Indices

Chronic HQ

The potential for exposure to result in adverse chronic noncancer effects is evaluated by comparing the estimated annual average air concentration (which is equivalent to the average daily air concentration) to the noncancer chronic reference exposure level (cREL) for each chemical. When calculated for a single chemical, the comparison yields a ratio termed a hazard quotient (HQ). To evaluate the potential for adverse chronic noncancer health effects from simultaneous exposure to multiple chemicals, the chronic HQs for all chemicals are summed, yielding a chronic HI.

$$HQ_i = C_i / cREL$$

Where:

HQ_i	=	Chronic hazard quotient for chemical i
HI	=	Hazard index
C_i	=	Annual average concentration of chemical i ($\mu\text{g}/\text{m}^3$)
$cREL_i$	=	Chronic noncancer reference exposure level for chemical i ($\mu\text{g}/\text{m}^3$)

Acute HI

The potential for exposure to result in adverse acute effects is evaluated by comparing the estimated one-hour maximum air concentration of chemical to the acute reference exposure level (aREL) for each chemical evaluated in this analysis. When calculated for a single chemical, the comparison yields an HQ. To evaluate the potential for adverse acute health effects from simultaneous exposure to multiple chemicals, the acute HQs for all chemicals are summed, yielding an acute HI.

$$HQ_i = C_i / aREL$$

Where:

HQ_i = Acute hazard quotient for chemical i
HI = Hazard index
C_i = One-hour maximum concentration of chemical i (µg/m³)
aREL_i = Acute reference exposure level for chemical i (µg/m³)

5. PROJECT HEALTH RISK ASSESSMENT

In this section, the CA3BGF HRA results are presented for each of the BAAQMD CEQA thresholds.

As discussed in Section 1.3, the single source significance thresholds for health risks and hazards from construction of Project and operation of CA3BGF are:

- An excess lifetime cancer risk level of more than 10 in one million;
- A chronic noncancer HI greater than 1.0;
- A noncancer acute HI greater than 1.0; and
- An incremental increase in the annual average PM_{2.5} of greater than 0.3 µg/m³.

5.1 Construction HRA

Table 20 shows the excess lifetime cancer risk, chronic noncancer HI, acute noncancer HI and annual PM_{2.5} concentration at the maximally exposed individual resident (MEIR), maximally exposed individual worker (MEIW), maximally exposed school receptor (MESR), maximally exposed daycare receptor (MEDR) and the maximally exposed recreational receptor (MERR) during construction of the Project. Project construction is expected to occur over two phases, with Phase 1 construction lasting for about 14 months, and Phase 2 construction lasting for 11 months. Construction health risk impacts are based on the assumption that all construction offroad equipment meets Tier 4 final engine standards and that all exposed areas in the site will undergo watering twice a day. The risks and health impacts reported here are for the entire duration of construction period. As shown in **Table 20**, the maximum cancer risk impact, chronic HI, acute HI and PM_{2.5} concentrations at all receptors are below the thresholds of significance.

5.2 Operational HRA

Table 21 shows the excess lifetime cancer risk, chronic noncancer HI, acute noncancer HI and annual PM_{2.5} concentration at the MEIR, MEIW, MESR, MEDR and the MERR during backup generator operation. The health impacts presented in this table are based on an annual maximum operating limit of 35 hours for testing and maintenance operations. As shown in **Table 21**, the maximum cancer risk impact, chronic HI, acute HI and PM_{2.5} concentrations at all receptors are below the thresholds of significance.

6. REFERENCES

- BAAQMD. 2009. Regulation 8 Organic Compounds Rule 3 Architectural Coatings. July. Available online at: <http://www.baaqmd.gov/rules-and-compliance/current-rules>
- BAAQMD. 2017. California Environmental Quality Act Air Quality Guidelines. May. Available at: https://www.baaqmd.gov/~media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?
- BAAQMD. 2012a. Recommended Methods for Screening and Modeling Local Risks and Hazards. May. Available at: <http://www.baaqmd.gov/~media/Files/Planning%20and%20Research/CEQA/Risk%20Modeling%20Approach%20May%202012.ashx?la=en>
- BAAQMD. 2020. Health Risk Assessment Modeling Protocol. December. Available at: https://www.baaqmd.gov/~media/files/ab617-community-health/facility-risk-reduction/documents/baaqmd_hra_modeling_protocol_august_2020-pdf.pdf?la=en
- California Environmental Protection Agency (Cal/EPA), Office of Environmental Health Hazard Assessment (OEHHA). 1998. Findings of the Scientific Review Panel on The Report on Diesel Exhaust, as adopted at the Panel's April 22, 1998, meeting.
- California Energy Commission (CEC). 2019. Sequoia Data Center, 19-SPPE-03, Docket #TN 233088. Available at: <https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=19-SPPE-03>
- City of Santa Clara. 2020. Chapter 9.10. Regulation of Noise and Vibration. Available at: <https://www.codepublishing.com/CA/SantaClara/html/SantaClara09/SantaClara0910.html>
- Kimley Horn and Associates, Inc. 2021. 2590 Walsh Avenue Transportation Operational Analysis. March 2021.
- Office of Environmental Health Hazard Assessment (OEHHA). 2003. The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments. Office of Environmental Health Hazard Assessment. August. Available at: <https://oehha.ca.gov/media/downloads/crnrr/hrafinalnoapp.pdf>
- OEHHA. 2015. Air Toxics Hot Spots Program Risk Assessment Guidelines. Guidance Manual for Preparation of Health Risk Assessments. February. Available at: <https://oehha.ca.gov/media/downloads/crnrr/2015guidancemanual.pdf>
- US Census Bureau. 2014. QuickFacts Santa Clara City, California. Available at: <http://www.census.gov/quickfacts/table/PST045215/0669084>
- United States Environmental Protection Agency (USEPA). 2013a. General Stationary Fuel Combustion Sources. 40 Code of Federal Regulations, Part 98, Subpart C, Table C-2. Office of Air Quality Planning and Standards.
- USEPA. 2013b. 78 FR 71904 Part VI. Revisions to Greenhouse Gas Reporting Rule and Final Confidentiality Determinations for New or Substantially Revised Data Elements. Available at: <https://www.govinfo.gov/content/pkg/FR-2013-11-29/pdf/2013-27996.pdf>
- United States Geological Survey (USGS). 2013c. National Elevation Dataset. Available at: <http://viewer.nationalmap.gov/viewer/>

TABLES

Table 1
Project Characteristics
Vantage CA3 Project
Santa Clara, California

Characteristic	Phase 1	Phase 2
Location Scope	County	
County	Santa Clara	
Climate Zone	4	
Operational Year	2023	2025
Utility	SVP	
CO ₂ Intensity Factor (lbs CO ₂ /MWh) ¹	222	277
CH ₄ Intensity Factor (lbs CH ₄ /MWh) ²	0.029	
N ₂ O Intensity Factor (lbs N ₂ O/MWh) ²	0.00617	

Notes:

¹. CO₂ Intensity Factor for 2023 and 2025 operational years were provided by SVP and used in the last few CEC proceedings. The projected carbon intensity factors were obtained from "SVP Email to City of Santa Clara on Carbon Intensity Factor" from the Sequoia Data Center Project.

². CH₄ and N₂O Intensity Factors are the CalEEMod® default values for Pacific Gas & Electric Co.

Abbreviations:

CalEEMod - California Emissions Estimator Model	
CO ₂ - carbon dioxide	N ₂ O - nitrogen dioxide
CH ₄ - methane	SVP - Silicon Valley Power

References:

CEC. 2019. Sequoia Data Center, 19-SPPE-03, Docket #TN 233088.
Available at:
<https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=19-SPPE-03>

Table 2
Land Use Characteristics
Vantage CA3 Project
Santa Clara, California

Phase	Land Use Activity	CalEEMod Land Use Type ¹	Land Use Subtype ¹	Unit Amount ²	Size Metric	Lot Acreage ³
Phase 1	Data Halls and Mechanical Galleries	Industrial	General Light Industry	147.8	1000sqft	1.22
	Electricity and MMR to Support Data Modules	Industrial	General Light Industry	25.0	1000sqft	0.21
	Generator Area	Industrial	General Light Industry	17.8	1000sqft	0.15
	Office and Lobby	Commercial	General Office Building	16.5	1000sqft	0.14
	Tenant Storage	Commercial	General Office Building	16.0	1000sqft	0.13
	Parking	Parking	Parking Lot	66.2	1000sqft	1.52
	Landscaping	Recreational	City Park	0.92	Acre	0.92
Phase 2	Substation	Industrial	General Light Industry	25.0	1000sqft	0.57
	Data Halls and Mechanical Galleries	Industrial	General Light Industry	147.8	1000sqft	1.22
	Electricity and MMR to Support Data Modules	Industrial	General Light Industry	25.0	1000sqft	0.21
	Generator Area	Industrial	General Light Industry	17.8	1000sqft	0.15
	Office and Lobby	Commercial	General Office Building	16.5	1000sqft	0.14
	Tenant Storage	Commercial	General Office Building	16.0	1000sqft	0.13

Notes:

- ¹. CalEEMod land use types were assumed based on data provide by Vantage data centers.
- ². Land use square footage for land use types were provided by Vantage based on site drawings.
- ³. Lot acreage for each land use type was estimated by scaling the total lot acreage provided by Vantage based on site drawings, by the square footage of development for each land use type.

Abbreviations:

CalEEMod - California Emissions Estimator Model sqft - square feet

References:

CAPCOA. 2017. CALifornia Emissions Estimator MODEL. Available at: <http://www.caleemod.com>

Table 3
Construction Schedule
Vantage CA3 Project
Santa Clara, California

Phase ¹	Subphase	Start	End	Days ²
Phase 1	Demolition	1/1/2022	1/28/2022	20
	Site Preparation	1/29/2022	2/4/2022	5
	Grading	2/5/2022	2/16/2022	8
	Building Construction	2/17/2022	1/4/2023	230
	Paving	1/5/2023	1/30/2023	18
	Architectural Coating	1/31/2023	2/23/2023	18
Phase 2	Building Construction	1/1/2024	10/4/2024	200
	Paving	10/5/2024	10/18/2024	10
	Architectural Coating	10/19/2024	11/1/2024	10

Notes:

- ¹. The construction schedule was estimated assuming that construction of Phase 1 begins January 1, 2022 and construction of Phase 2 begins January 1, 2024, with estimated operational years 2023 and 2025 respectively.
- ². The number of days of construction for each phase were determined using CalEEMod[®] default assumptions.

Abbreviations:

CalEEMod - California Emissions Estimator Model

References:

CAPCOA. 2017. CALifornia Emissions Estimator MODEL. Available at: <http://www.caleemod.com>

Table 4
Construction Equipment List
Vantage CA3 Project
Santa Clara, California

Phase ¹	Construction Subphase	Equipment	Construction Equipment Tier ²	Number	Daily Usage (hours/day)	Horsepower	Load Factor
Phase 1	Demolition	Concrete/Industrial Saws	Tier 4 Final	1	8	81	0.73
		Excavators	Tier 4 Final	3	8	158	0.38
		Rubber Tired Dozers	Tier 4 Final	2	8	247	0.4
	Site Preparation	Tractors/Loaders/Backhoes	Tier 4 Final	4	8	97	0.37
		Rubber Tired Dozers	Tier 4 Final	3	8	247	0.4
		Excavators	Tier 4 Final	1	8	158	0.38
	Grading	Rubber Tired Dozers	Tier 4 Final	1	8	247	0.4
		Tractors/Loaders/Backhoes	Tier 4 Final	3	8	97	0.37
		Graders	Tier 4 Final	1	8	187	0.41
		Cranes	Tier 4 Final	1	7	231	0.29
	Building Construction	Forklifts	Tier 4 Final	3	8	89	0.2
		Tractors/Loaders/Backhoes	Tier 4 Final	3	7	97	0.37
		Generator Sets	Tier 4 Final	1	8	84	0.74
		Welders	Tier 4 Final	1	8	46	0.45
		Cement and Mortar Mixers	Tier 4 Final	2	6	9	0.56
	Paving	Pavers	Tier 4 Final	1	8	130	0.42
		Rollers	Tier 4 Final	2	6	80	0.38
		Tractors/Loaders/Backhoes	Tier 4 Final	1	8	97	0.37
		Paving Equipment	Tier 4 Final	2	6	132	0.36
		Architectural Coating	Air Compressors	1	6	78	0.48
Phase 2	Building Construction	Cranes	Tier 4 Final	1	6	231	0.29
		Forklifts	Tier 4 Final	1	6	89	0.2
		Tractors/Loaders/Backhoes	Tier 4 Final	1	6	97	0.37
		Generator Sets	Tier 4 Final	1	8	84	0.74
		Welders	Tier 4 Final	3	8	46	0.45
	Paving	Cement and Mortar Mixers	Tier 4 Final	1	6	9	0.56
		Pavers	Tier 4 Final	1	6	130	0.42
		Rollers	Tier 4 Final	1	7	80	0.38
		Tractors/Loaders/Backhoes	Tier 4 Final	1	8	97	0.37
		Paving Equipment	Tier 4 Final	1	8	132	0.36
		Architectural Coating	Air Compressors	1	6	78	0.48

Notes:

- ¹. The construction equipment assumptions, number of construction equipment and equipment horsepower are based on CalEEMod® Appendix D, based on the acreage for each phase.
- ². All off-road equipment for construction is assumed to be Tier 4 Final engines. All the construction equipment is conservatively assumed to operate 100% of the subphase.

Abbreviations:

CalEEMod - California Emissions Estimator Model

References:

CAPCOA. 2017. CALifornia Emissions Estimator MODEL. Available at: <http://www.caleemod.com>

Table 5
Construction Trips
Vantage CA3 Project
Santa Clara, California

Phase	Subphase	Offroad Equipment Count	One Way Trips ¹		
			Worker Trips (trips/day)	Vendor Trips (trips/day)	Hauling Trips (trips/phase)
Phase 1	Demolition	6	15	0	523
	Site Preparation	7	18	0	1250
	Grading	6	15	0	0
	Building Construction	9	146	58	0
	Paving	8	20	0	0
	Architectural Coating	1	29	0	0
Phase 2	Architectural Coating	1	18	0	0
	Building Construction	7	90	37	0
	Paving	5	13	0	0

Notes:

¹. Trip rates for worker, vendor and haul trips are based on CalEEMod® Appendix D.

Abbreviations:

CalEEMod - California Emissions Estimator Model

References:

CAPCOA. 2017. CALifornia Emissions Estimator MODEL. Available at: <http://www.caleemod.com>

Table 6
Project Construction Emissions
Vantage CA3 Project
Santa Clara, California

Construction and Emissions by Year and Phase

Phase	Subphase	Emissions Year	Source	Total Construction Emissions ¹				GHG Emissions ²
				ROG	NO _x	PM ₁₀	PM _{2.5}	CO ₂ e
				lb/yr				MT/yr
Phase 1	Demolition	2022	On-Site Exhaust	9.2	40	1.2	1.2	34
			Off-Site Mobile Exhaust	4.7	129	0.40	0.38	20
			Fugitive Dust ³	--	--	62	11	--
	Site Preparation	2022	On-Site Exhaust	2.3	10	0.32	0.32	8.4
			Off-Site Mobile Exhaust	10	307	0.90	0.86	47
			Fugitive Dust	--	--	63	28	--
	Grading	2022	On-Site Exhaust	2.9	13	0.38	0.38	11
			Off-Site Mobile Exhaust	0.34	0.22	0	0	0.38
			Fugitive Dust	--	--	25	12	--
	Building Construction	2022	On-Site Exhaust	74	507	9.3	9.3	265
			Off-Site Mobile Exhaust	135	1,342	4.2	4.0	274
			Fugitive Dust	--	--	349	95	--
		2023	On-Site Exhaust	1.0	6.7	0.12	0.12	3.5
			Off-Site Mobile Exhaust	1.6	14	0.040	0.040	3.5
			Fugitive Dust	--	--	4.6	1.3	--
	Paving	2023	On-Site Exhaust	3.9	17	0.52	0.52	15
			Off-Site Mobile Exhaust	1.0	0.62	0.020	0.020	1.1
			Fugitive Dust	--	--	2.9	0.76	--
			Paving Emissions	4.0	--	--	--	--
	Architectural Coating	2023	On-Site Exhaust	0.54	2.3	0.080	0.080	2.3
			Off-Site Mobile Exhaust	1.4	0.90	0.020	0.020	1.6
			Fugitive Dust	--	--	4.1	1.1	--
			Architectural Coating	2,614	--	--	--	--
Phase 2	Building Construction	2024	On-Site Exhaust	59	742	6.1	6.1	182
			Off-Site Mobile Exhaust	62	566	1.5	1.4	144
			Fugitive Dust	--	--	191	52	--
	Paving	2024	On-Site Exhaust	1.6	6.9	0.22	0.22	5.9
			Off-Site Mobile Exhaust	0.32	0.20	0	0	0.38
			Fugitive Dust	--	--	1.0	0.28	--
			Paving Emissions	--	--	--	--	--
	Architectural Coating	2024	On-Site Exhaust	0.30	1.3	0.040	0.040	1.3
			Off-Site Mobile Exhaust	0.46	0.28	0	0	0.53
			Fugitive Dust	--	--	1.4	0.38	--
			Architectural Coating	2,326	--	--	--	--

Table 6
Project Construction Emissions
Vantage CA3 Project
Santa Clara, California

Summary of Construction Emissions

Phase	Average Daily CAP Emissions ⁴				Total GHG Emissions
	ROG	NO _x	PM ₁₀	PM _{2.5}	
	lb/day				MT CO ₂ e/yr
Phase 1	9.6	8.0	1.8	0.6	686
Phase 2	11.1	6.0	0.9	0.3	335
BAAQMD CEQA Threshold ⁵	54	54	82	54	--

Notes:

- ¹. Construction emissions were estimated using CalEEMod® 2016.3.2.
- ². Greenhouse gas emissions are estimated assuming global warming potentials consistent with ARB MRR guidance.
- ³. Fugitive dust from demolition are based on CalEEMod® 2016.3.2 default emissions which include emissions from site removal of debris and onsite truck traffic on paved/unpaved roads. Consistent with BAAQMD guidelines, sources of fugitive dust emissions include construction related activities such as soil disturbance, grading, and material hauling emissions.
- ⁴. Daily emissions are conservatively averaged over the actual number of day during which construction takes place for each phase.
- ⁵. Thresholds are from BAAQMD California Environmental Quality Act (CEQA) Guidelines. Fugitive emissions sources are excluded from comparison to this threshold. The BAAQMD does not have an adopted Threshold of Significance for construction-related GHG emissions.

Abbreviations:

BAAQMD - Bay Area Air Quality Management District
 CalEEMod® - California Emissions Estimator Model
 CAP - Criteria Air Pollutants
 CEQA - California Environmental Quality Act
 GHG - Greenhouse Gases

MRR - Mandatory GHG Reporting Regulation
 ROG - reactive organic gases
 NO_x - nitrogen oxides
 PM₁₀ - particulate matter less than 10 microns
 PM_{2.5} - particulate matter less than 2.5 microns

Reference:

CAPCOA. 2017. CALifornia Emissions Estimator MOdel. Available at: <http://www.caleemod.com>
 California Environmental Quality Act (CEQA) Guidelines. 2017. Bay Area Air Quality Management District (BAAQMD). May. Available online at: http://www.baaqmd.gov/~media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en
 ARB. 2018. Mandatory Greenhouse Gas Reporting Regulation (MRR). Available online at: <https://ww2.arb.ca.gov/mrr-regulation>

Table 7
Emergency Generator Information
Vantage CA3 Project
Santa Clara, California

Generator Information

Make	Caterpillar
Model	3516E
USEPA Tier Equivalent	4
Generator Output at 100% Load (kilowatt)	2,750
Engine Output at 100% Load (horsepower)	4,043
Make and Model of DPF and SCR	Safety Power ecoCUBE

Pollutant	Uncontrolled Emission Factors¹ (g/bhp-hr)	Controlled Emission Factors² (g/bhp-hr)
NOx	5.12	0.5
ROG	0.11	0.06
CO	0.64	0.64
PM	0.07	0.020
PM _{2.5} ³	0.07	0.020
CO ₂ ⁴	526.2	526.2
CH ₄ ⁵	0.021	0.021
N ₂ O ⁵	0.0042	0.0042
CO ₂ e ⁶	523	528

Notes:

- ¹ Emissions factors from Peterson Power Systems ecoCUBE design criteria inlet emission performance.
- ² Emissions factors from Peterson Power Systems ecoCUBE design criteria outlet emission performance.
- ³ Emission factors for PM₁₀ and PM_{2.5} are conservatively assumed to be equal to the PM emission factor.
- ⁴ Emissions factor from AP-42, Vol. I, Section 3.4, Table 3.4-1 for Gaseous Emission Factors for Large Stationary Diesel and All Stationary Dual Fuel Engines.
- ⁵ Emissions factors from 40 CFR 98, Subpart C, Table C-2. Petroleum emissions listed as 3 g CH₄/MMBtu and 0.6 g N₂O/MMBtu. Assumed conversion factor of 7000 Btu/hp-hr per AP-42 Vol I, Table 3.3-1.
- ⁶ Global warming potential values of 1 for CO₂, 25 for CH₄, and 298 for N₂O from US EPA's Federal Register (FR) final rule published on November 29, 2013 [78 FR 71904] and effective on January 1, 2014, were used to convert emissions to metric tones of carbon dioxide equivalents.

Abbreviations:

CH ₄ - methane	g - gram	PM - Particulate Matter
CO - carbon monoxide	hp - horsepower	ROG - reactive organic gases
CO ₂ - carbon dioxide	hr - hour	SCR - selective catalytic reduction
CO ₂ e - carbon dioxide equivalents	N ₂ O - nitrous oxide	USEPA - United States
DPF - Diesel Particulate Filter		Environmental Protection Agency

References:

40 CFR Appendix Table C-2 to Subpart C of Part 98. Available online at:
https://www.law.cornell.edu/cfr/text/40/appendix-Table_C-2_to_subpart_C_of_part_98
 USEPA. 78 FR 71904 Part VI. Revisions to Greenhouse Gas Reporting Rule and Final Confidentiality Determinations for New or Substantially Revised Data Elements. Available at:
<https://www.govinfo.gov/content/pkg/FR-2013-11-29/pdf/2013-27996.pdf>
 USEPA. AP-42 Vol 1, 3.4: Large Stationary Diesel And All Stationary Diesel-Fuel engines. Available at:
<https://www3.epa.gov/ttnchie1/ap42/ch03/final/c03s04.pdf>

Table 8
Daily Emissions, Emergency Generators
Vantage CA3 Project
Santa Clara, California

Engine Model	Engine Horsepower	Emissions by Pollutant				
		Quantity of Engines	Operational Hours per Engine per Year ¹	Pollutant	Average Daily Emissions (lb/day)	CEQA Threshold (lb/day)
3516E	4,043	44	35	NOx ²	193	54
				ROG ³	2.4	54
				CO	24	-
				PM ₁₀ ⁴	0.75	82
				PM _{2.5} ⁴	0.75	54

Notes:

- ¹. Daily emissions are based on an annual limit of 35 hours per generator for testing & maintenance operations of all 44 generators.
- ². NOx emissions are conservatively based on uncontrolled emission factors. Offsets will be purchased to mitigate emissions of the threshold.
- ³. Emission factors for ROG are based on a minimum abatement efficiency of 40% due to the proposed DPF.
- ⁴. Emission factors for PM₁₀ and PM_{2.5} are conservatively assumed to be equal to the PM emission factor. PM emissions for the emergency generators area based on a minimum control efficiency of 70% of PM based on the proposed DPF.

Abbreviations:

CO - carbon monoxide
lb - pounds
NOx - oxides of nitrogen

PM - Particulate Matter
ROG - reactive organic gases
CEQA - California Environmental Quality Act

References:

BAAQMD. 2017. CEQA Air Quality Guidelines. Available at: [https://www.baaqmd.gov/~media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en](https://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en)

Table 9
Annual Emissions, Emergency Generators
Vantage CA3 Project
Santa Clara, California

Engine Model	Engine Horsepower	Emissions by Pollutant				
		Quantity of Engines	Operational Hours per Engine per Year ¹	Pollutant	Average Annual Emissions (ton/year)	CEQA Threshold (ton/year)
3516E	4,043	44	35	NOx ²	35	10
				ROG ³	0.4	10
				CO	4	-
				PM ₁₀ ³	0.14	15
				PM _{2.5} ⁴	0.14	10
				GHG ⁵	3,287	10,000

Notes:

- ¹. Annual emissions are based on an annual limit of 35 hours per generator for testing & maintenance operations of all 44 generators.
- ². NOx emissions are conservatively based on uncontrolled emission factors. Offsets will be purchased to mitigate emissions of the threshold.
- ³. Emission factors for ROG are based on a minimum abatement efficiency of 40% due to the proposed DPF.
- ⁴. Emission factors for PM₁₀ and PM_{2.5} are conservatively assumed to be equal to the PM emission factor. PM emissions for the emergency generators area based on a minimum control efficiency of 70% of PM based on the proposed DPF.
- ⁵. Annual greenhouse gas emissions are calculated in units of MT CO₂e/year. GHG emission factors for the generators are presented in Table 7.

Abbreviations:

CO - carbon monoxide	PM - Particulate Matter
GHG - greenhouse gases	ROG - reactive organic gases
MT - metric tonnes	ton - short tons
NOx - oxides of nitrogen	

References:

BAAQMD. 2017. CEQA Air Quality Guidelines. Available at: https://www.baaqmd.gov/~media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en

Table 10
Operational Energy Use Emissions
Vantage CA3 Project
Santa Clara, California

Phase	Rating (MW)	Maximum Annual Energy Use (MWh/yr) ¹	CO ₂ Intensity Factor ² (lbs/MWh)	CH ₄ Intensity Factor ³ (lbs/MWh)	N ₂ O Intensity Factor ³ (lbs/MWh)	CO ₂ e Intensity Factor ⁴ (lbs/MWh)	Annual CO ₂ e Emitted ⁵ (MT/yr)
Phase 1	54	473,040	250	0.029	0.00617	253	54,192
Phase 2	95	832,200	277			280	105,530

Notes:

- ¹ Expected maximum annual energy consumption was provided by Vantage. The maximum annual energy consumption is conservatively estimated based on worst case energy consumption all the time (i.e. the hottest hour in the last 20 years and full use of all available IT allocation for every hour of the year).
- ² CO₂ Intensity Factor for Phase 1 of 250 lb/MWh was calculated as the average CO₂ intensity reported by Silicon Valley Power (SVP) over the two years of operation for Phase 1 (2023, 2024). The CO₂ intensity factor for Phase 2 of 277 lb/MWh was reported by SVP for operational year 2025.
- ³ CH₄ and N₂O Intensity Factor from CalEEMod® default for Pacific Gas and Electric.
- ⁴ Global warming potential (GWP) values of 1 for CO₂, 25 for CH₄, and 298 for N₂O from US EPA's Federal Register (FR) final rule published on November 29, 2013 [78 FR 71904] and effective on January 1, 2014, were used to convert emissions to metric tonnes of carbon dioxide equivalents.
- ⁵ Annual emissions are the product of the energy usage and the intensity factor.

Abbreviations:

CalEEMod - California Emissions Estimator Model	GWP - global warming potential	MT - metric tonnes
CH ₄ - methane	lbs - pounds	N ₂ O - nitrogen dioxide
CO ₂ - carbon dioxide	MW - megawatt	SVP - Silicon Valley Power
CO ₂ e - carbon dioxide equivalent	MWh - megawatt-hours	yr - year
FR - Federal Register		

References:

CEC. 2019. Sequoia Data Center, 19-SPPE-03, Docket #TN 233088. Available at: <https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=19-SPPE-03>

CAPCOA. 2017. CALifornia Emissions Estimator MODeL. Available at: <http://www.caleemod.com>

USEPA. 78 FR 71904 Part VI. Revisions to Greenhouse Gas Reporting Rule and Final Confidentiality Determinations for New or Substantially Revised Data Elements. Available at: <https://www.govinfo.gov/content/pkg/FR-2013-11-29/pdf/2013-27996.pdf>

Table 11
Project Operational Trip Rates
Vantage CA3 Project
Santa Clara, California

Land Use	Land Use Square Footage ¹ (1000. sq ft)	CalEEMod Trip Rates ²			CalEEMod Trip Totals ²			Percent of Trips		
		Weekday	Saturday	Sunday	Weekday	Saturday	Sunday	Weekday	Saturday	Sunday
		(rate/size/day)			(trips/day)					
General Light Industry	406	6.97	1.32	0.68	2829.82	535.92	276.08	62%	12%	6%
General Office Building	65	11.03	2.46	1.05	716.95	159.9	68.25	16%	3%	1%
City Park ³	40.23	1.89	22.75	16.74	0	0	0	0	0	0
Parking Lot ³	66.22	0	0	0	0	0	0	0	0	0

Land Use	Total Project Trips ⁴ (trips per day)	Adjusted Average Daily Trips ⁵			Adjusted Average Daily Trip Rate ⁵		
		Weekday	Saturday	Sunday	Weekday	Saturday	Sunday
		(trips per day)			(rate/size/day)		
General Light Industry	467	288	55	28	0.71	0.13	0.07
General Office Building		73	16	7	1.12	0.25	0.11
City Park		0	0	0	0	0	0
Parking Lot		0	0	0	0	0	0
Total		361	71	35	0	0	0

Notes:

- ¹ Land use square footage for full buildout scenario is obtained from Table 2.
- ² Default CalEEMod trip rates for land use types are from CalEEMod® 2016.3.2 Appendix D. Total trips are obtained by multiplying trip rates by the land use square footage.
- ³ Trip rates for city park and parking lot are set to zero since these land use types will not generate any project trip.
- ⁴ Project related trip rates are obtained from 2590 Walsh Avenue Transportation Operational Analysis prepared by Kimley Horn. The analysis states that the net project trip rate is negative (-658 trips per day) based on an estimate of 1,125 trips per day from the existing land use and 467 trips per day from Project operations. However, the air quality analysis conservatively assumes that the existing trip rate is zero, and hence analyzes impacts based on 467 trips per day for the Project.
- ⁵ The adjusted average daily trips is calculated by multiplying the percent of trips by the total project trips.
- ⁶ Adjusted average daily trip rates are calculated by dividing the adjusted average daily trips by the land use square footage.

Abbreviations:

CalEEMod - California Emissions Estimator Model

sqft - square feet

Table 12
Project Water Use Rates
Vantage CA3 Project
Santa Clara, California

Phase	Land Use Activity	CalEEMod Land Use Type	Land Use Subtype	Indoor Water Usage ¹ (gal/yr)	Outdoor Water Usage ² (gal/yr)
Phase 1	Data Halls and Mechanical Galleries	Industrial	General Light Industry	285,775	0
	Electricity and MMR to Support Data Modules	Industrial	General Light Industry	48,355	0
	Generator Area	Industrial	General Light Industry	34,332	0
	Office and Lobby	Commercial	General Office Building	31,914	0
	Tenant Storage	Commercial	General Office Building	30,947	0
	Parking	Parking	Parking Lot	0	0
	Landscaping ²	Recreational	City Park	0	1,096,163
	Substation	Industrial	General Light Industry	48,355	0
Phase 2	Data Halls and Mechanical Galleries	Industrial	General Light Industry	285,775	0
	Electricity and MMR to Support Data Modules	Industrial	General Light Industry	48,355	0
	Generator Area	Industrial	General Light Industry	34,332	0
	Office and Lobby	Commercial	General Office Building	31,914	0
	Tenant Storage	Commercial	General Office Building	30,947	0

Notes:

- ¹ Water use rates were calculated by taking the annual water usage provided by Vantage (911,000 gallons/year) and distributing across the phases and land uses proportionally to its land use square footage.
- ² Outdoor water usage for landscaping area is estimated using CalEEMod® defaults for the City park land use type. No outdoor water use is estimated for all other land use types.

Abbreviations:

CalEEMod - California Emissions Estimator Model

gal - gallons

yr - year

Table 13
Operational Mass Emissions of Criteria Air Pollutants
Vantage CA3 Project
Santa Clara, California

Emissions Source		CAP Emissions ¹ [ton/year]				CAP Emissions ¹ [lb/day]			
		ROG	NO _x	PM ₁₀ Total	PM _{2.5} Total	ROG	NO _x	PM ₁₀ Total	PM _{2.5} Total
Phase 1	Architectural Coating	0.13	0	0	0	0.72	-	-	-
	Consumer Products	0.97	0	0	0	5.33	-	-	-
	Landscaping	2.70E-04	3.00E-05	1.0E-05	1.0E-05	0.00	1.6E-04	5.5E-05	5.5E-05
	Building Energy Use ³	0.00	0.00	0.00	0.00	0.00	0	0	0
	Mobile Emissions	0.04	0.09	0.15	0.04	0.22	0.5	0.827	0.225
Phase 2	Architectural Coating	0.25	0	0	0	1.4	-	-	-
	Consumer Products	1.8	0	0	0	10	-	-	-
	Landscaping	4.5E-04	4.0E-05	2.0E-05	2.0E-05	2.5E-03	2.2E-04	1.1E-04	1.1E-04
	Building Energy Use ³	0	0	0	0	0	0	0	0
	Mobile Emissions	0.07	0.16	0.29	0.08	0.36	0.9	1.6	0.4
Emergency Generators ²		0.44	35.14	0.14	0.14	2.4	193	0.75	0.75
Stationary Source Offsets ⁴		--	-35.14	--	--	--	-193	--	--
Total Phase 1 Operational Emissions		1.4	0.1	0.2	0.1	7.5	0.5	1.2	0.6
Full Buildout Operational Emissions		2.6	0.2	0.4	0.2	14.2	0.9	2.3	1.2
BAAQMD Significance Threshold ⁵		10	10	15	10	54	54	82	54

Notes:

- Operational emissions estimated using CalEEMod version 2016.3.2 for all sources except building energy use and emergency generator usage.
- Emissions from testing and maintenance of emergency generator emissions are estimated in Table 8 and Table 9.
- The site does not have any natural gas consumption in buildings.
- Operational mass emissions of NO_x are conservatively based on Tier II emission factor. Vantage will purchase offsets to reduce the total NO_x emissions to zero.
- The Significance Thresholds were obtained from BAAQMD California Environmental Quality Act (CEQA) 2017 Guidelines.

Abbreviations:

BAAQMD - Bay Area Air Quality Management District	NO _x - nitrogen oxides
CalEEMod - California Emissions Estimator Model	ROG - reactive organic gases
CAP - Criteria Air Pollutant	PM ₁₀ - particulate matter less than 10 microns
lb - pounds	PM _{2.5} - particulate matter less than 2.5 microns

References:

CalEEMod® 2016.3.2. Available Online at: <http://www.caleemod.com>
BAAQMD. 2017. CEQA Air Quality Guidelines. Available at: https://www.baaqmd.gov/~media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en

Table 14
Operational Mass Emissions of Greenhouse Gas Emissions
Vantage CA3 Project
Santa Clara, California

Emissions Source		GHG Emissions ¹ MT CO ₂ e/yr
Phase 1	Landscaping	0.006
	Data Center Energy Use ²	54,192
	Water Use	1.3
	Waste Disposed	150
	Mobile Emissions	137
Phase 2	Landscaping	0.0102
	Data Center Energy Use ²	105,530
	Water Use	2
	Waste Disposed	284
	Mobile Emissions	248
Total GHG Emissions During Full Buildout(Excluding Emergency Generators)		106,063

Emissions Source	GHG Emissions ⁴ MT CO ₂ e/yr
Emergency Generators	3,287
BAAQMD Stationary Source Threshold³	10,000

Table 14
Operational Mass Emissions of Greenhouse Gas Emissions
Vantage CA3 Project
Santa Clara, California

Notes:

- ¹. Operational emissions estimated using CalEEMod version 2016.3.2 for all sources except building energy use and emergency generator usage.
- ². Data Center Energy Use is calculated based on energy use projections for the maximum usage year, and Silicon Valley Power Carbon Intensity estimates for Phase 1 operational year (average 2023 and 2024 intensities) and Phase 2 operational year 2025. For Phase 1, this maximum energy usage is 55% of total capacity (54 MW), since the project will only be partially completed in Phase 1. Phase 2 energy usage is based on the worst-case maximum estimate of 95 MW.
- ³. The Significance Thresholds were obtained from BAAQMD California Environmental Quality Act (CEQA) 2017 Guidelines.
- ⁴. Calculated based on emission factors from AP-42 Chapter 3.4 Table 3.4-1 (Large Stationary Diesel And All Stationary Dual-fuel Engines) and scaled by engine horsepower, proposed annual operating hours, and number of proposed generators.

Abbreviations:

BAAQMD - Bay Area Air Quality Management District
CalEEMod - California Emissions Estimator Model
CEQA - California Environmental Quality Act
CO₂e - carbon dioxide equivalent
GHG - greenhouse gas
MT - metric ton
yr - year

References:

CalEEMod® 2016.3.2. Available Online at: <http://www.caleemod.com>
BAAQMD. 2017. CEQA Air Quality Guidelines. Available at:
https://www.baaqmd.gov/~media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en
USEPA. AP-42 Chapter 3.4. Large Stationary Diesel and All Stationary Dual-fuel Engines.
Available at: <https://www3.epa.gov/ttnchie1/ap42/ch03/final/c03s04.pdf>

Table 15
Modeling Parameters
Vantage CA3 Project
Santa Clara, California

Construction Model

Source	Source Type ¹	Number of Sources ¹	Source Dimension (m)	Release Height ³ (m)	Initial Vertical Dimension ⁴ (m)	Initial Lateral Dimension (m)
Construction Equipment and Trucks On-Site	Area	2	Project Area	5	1.16	--

Emergency Generator Model

Source	Source Type	Number of Sources ¹	Release Height (m)	Exit Temperature (K)	Exit Velocity (m/s)	Exit Diameter (m)
Back-Up Generators	Point	44	10.09	751.54	42.219	0.56

Notes

¹. Fourty-four identical 4,043 bhp generators will be installed at the Project site.

Abbreviations:

K - Kelvin
m - meter
s - second

Table 16
Modeled Emissions Rate for Health Risk Assessment
Vantage CA3 Project
Santa Clara, California

Scenario	Source	Year	Emission Rate (g/s)			
			Yearly			Hourly
			DPM ¹	PM _{2.5} ²	TOG	TOG
Construction	Phase 1	2022	2.17E-04	2.34E-03	--	--
		2023	1.06E-05	5.64E-05	--	--
	Phase 2	2024	9.98E-05	8.68E-04	--	--
Operations ³	Diesel Generators	All	8.97E-05	8.97E-05	2.93E-04	7.33E-02

Notes

- ^{1.} The DPM emission rate during construction includes exhaust from all off-road construction equipment, and exhaust emissions from vendor and hauling trucks which are assumed to be diesel vehicles. All exhaust PM₁₀ is assumed to be DPM. DPM emissions from operations are from diesel generators. DPM emissions from operational traffic are not included since the average number of vehicle trips per day is very small.
- ^{2.} Construction related PM_{2.5} emissions are from off-road equipment and on-road vehicle exhaust, and from fugitive dust. PM_{2.5} emissions from operations are from diesel generators alone. PM_{2.5} emissions from operational traffic are not included since the emissions are relatively minor.
- ^{3.} Emission rates for generators are given as the emission rate from a single generator.

Abbreviations

DPM - diesel particulate matter	s - seconds
g - grams	TOG - toxic organic gases
PM - particulate matter	

Table 17
Exposure Parameters
Vantage CA3 Project
Santa Clara, California

Period	Receptor Type	Year	Receptor Age Group	Exposure Parameters								
				Daily Breathing Rate (DBR) ¹ (Resident: L/kg-day, Recreational L/kg-hr)	Exposure Duration (ED) ² (years)	Fraction of Time in Location (FAH) ³ (unitless)	Exposure Frequency (EF) ⁴ (days/year)	Averaging Time (AT) (days)	Modeling Adjustment Factor (MAF) (unitless)	Age Sensitivity Factor	Intake Factor, Inhalation (IF _{inh}) (m ³ /kg-day)	Cumulative Intake Factor, Inhalation (IF _{inh}) (m ³ /kg-day)
Construction	Residential	2022	3rd Trimester	361	0.25	1.0	350	25,550	1.0	10	0.012	0.12
			Age 0-<2 Years	1,090	0.75	1.0	350	25,550	1.0	10	0.11	
		2023	Age 0-<2 Years	1,090	1.0	1.0	350	25,550	1.0	10	0.15	0.15
			2024	Age 0-<2 Years	1,090	0.25	1.0	350	25,550	1.0	10	0.037
	Age 2-<9	631		0.75	1.0	350	25,550	1.0	3.0	0.019		
	Recreational	2022	Age 0-<2 Years	300	1.0	N/A	180	25,550	1.0	10	0.021	0.021
		2023	Age 0-<2 Years	300	1.0	N/A	180	25,550	1.0	10	0.021	0.021
		2024	Age 2-<9	160	1.0	N/A	180	25,550	1.0	3.0	0.0034	0.0034
	School	2022	Age 2-<9	640	1.0	N/A	180	25,550	4.2	3.0	0.057	0.057
		2023	Age 2-<9	640	1.0	N/A	180	25,550	4.2	3.0	0.057	0.057
		2024	Age 2-<9	640	1.0	N/A	180	25,550	4.2	3.0	0.057	0.057
	Daycare	2022	Age 6 Wks - 2 Years	1,200	1.0	N/A	250	25,550	4.2	10	0.49	0.49
			Age 6 Wks - 2 Years	1,200	0.88	N/A	250	25,550	4.2	10	0.44	0.45
		2023	Age 2 - 9 Years	640	0.12	N/A	250	25,550	4.2	3.0	0.0091	
			2024	Age 2 - 9 Years	640	1.0	N/A	250	25,550	4.2	3.0	0.079
	Worker	2022	Age 16-30 Years	240	1.0	N/A	250	25,550	4.2	1.0	0.0099	0.0099
2023		Age 16-30 Years	240	1.0	N/A	250	25,550	4.2	1.0	0.0099	0.0099	
2024		Age 16-30 Years	240	1.0	N/A	250	25,550	4.2	1.0	0.0099	0.0099	
Operation	Residential	All	3rd Trimester	361	0.25	1.0	350	25,550	1.0	10	0.012	0.68
			Age 0-<2 Years	1,090	2.0	1.0	350	25,550	1.0	10	0.30	
			Age 2-<16 Years	572	14	1.0	350	25,550	1.0	3.0	0.33	
			Age 16-30 Years	261	14	0.73	350	25,550	1.0	1.0	0.037	
	Recreational		Age 0-<2 Years	300	2.0	N/A	180	25,550	1.0	10	0.042	0.087
			Age 2-<16 Years	130	14	N/A	180	25,550	1.0	3.0	0.038	
			Age 16-30 Years	60	14	N/A	180	25,550	1.0	1.0	0.0059	
	School		Age 2-<16 Years	520	10	N/A	180	25,550	4.2	3.0	0.46	0.48
			Age 16-30 Years	240	2.0	N/A	180	25,550	4.2	1.0	0.014	
	Daycare		Age 6 Wks - 2 Years	1,200	1.9	N/A	250	25,550	4.2	10	0.93	1.2
			Age 2 - 9 Years	640	4.0	N/A	250	25,550	4.2	3.0	0.32	
	Worker		Age 16-70 Years	230	25	N/A	250	25,550	4.2	1.0	0.24	0.24

Table 17
Exposure Parameters
Vantage CA3 Project
Santa Clara, California

Notes:

- ¹ Daily breathing rates reflect default breathing rates from OEHHA 2015 as follows:
Resident: 95th percentile 24-hour breathing rate for 3rd trimester and age 0-<2 years; 80th percentile for 2-<9, 2-<16 years, and 16-30 years.
Recreational: 95th percentile 8-hour moderate intensity for all ages, scaled by 2/8 per the assumption of two hours per day of activity.
School and Daycare: 95th percentile 8-hour moderate intensity for all ages
Worker: 95th percentile 8-hour rate for all age bins
- ² The total exposure duration for residents reflects the default residential exposure duration from Cal/EPA 2015, 30.25 years including third trimester exposure. Recreational receptors are assumed to consist of residents visiting nearby parks, and so exposure is conservatively also set to 30 years, with third trimester exposure excluded. Daycare children are assumed to remain in daycare from 6 weeks until age 6. School children are assumed to be in school from age 6 until age 18. In the case where a school and daycare is located, children are assumed to attend from 6 weeks until age 18. The worker exposure duration is set to 25 years per Cal/EPA guidance.
- ³ Fraction of time in location (FAH) was conservatively assumed to be 1 for all age groups under age 16 for residential exposure. FAH is not applicable to the other receptor types.
- ⁴ Exposure frequency for residents reflects default exposure frequency from Cal/EPA 2015. For recreational receptors, it was assumed that individuals of all ages would visit recreational areas 180 days a year for two hours. The exposure frequency for schoolchildren is set to the length of the school year. Daycare exposure frequency is set to 250 days, and exposure frequency for co-located daycares/schools is conservatively set to the same. Worker exposure frequency is set to 250 days.

Calculation:

$$I_{F_{inh}} = DBR * ED * FAH * EF * CF / AT$$
$$CF = 0.001 \text{ (m}^3\text{/L)}$$

Abbreviations:

Cal/EPA - California Environmental Protection Agency
L - liter
kg - kilogram
m³ - cubic meter

Reference:

Cal/EPA. 2015. Air Toxics Hot Spots Program. Risk Assessment Guidelines. Guidance Manual for Preparation of Health Risk Assessments. Office of Environmental Health Hazard Assessment (OEHHA). February. Available online at: http://oehha.ca.gov/air/hot_spots/hotspots2015.html.

Table 18
Speciation Values
Vantage CA3 Project
Santa Clara, California

Source	Emission Type	Fraction	Chemical ¹
Diesel Offroad Equipment (Generators)	Exhaust PM	1.0	Diesel PM
	Exhaust TOG	0.0019	1,3-Butadiene
		0.074	Acetaldehyde
		0.020	Benzene
		0.0031	Ethylbenzene
		0.15	Formaldehyde
		0.0016	n-Hexane
		3.0E-04	Methanol
		0.015	Methyl Ethyl Ketone
		9.0E-04	Naphthalene
		0.026	Propylene
		6.0E-04	Styrene
		0.015	Toluene
		0.0061	m-Xylene
		0.0034	o-Xylene
		0.0010	p-Xylene

Notes:

- ¹. Compounds presented in this table are only those air toxic contaminants with toxicity values from Cal/EPA (2015) evaluated in the health risk assessment. Speciation profiles presented in this table are from the following sources:

Diesel offroad exhaust, TOG: ARB 818 / EPA 3161

Abbreviations:

ARB - Air Resources Board
BAAQMD - Bay Area Air Quality Management District
Cal/EPA - California Environmental Protection Agency
PM - particulate matter
TOG - total organic gas
USEPA - United States Environmental Protection Agency

References:

ARB. Speciation Profiles Used in ARB Modeling. Available online at: <http://www.arb.ca.gov/ei/speciate/speciate.htm#specprof>
BAAQMD. 2011. Recommended Methods for Screening and Modeling Local Risks and Hazards. May.
Cal/EPA. 2015. OEHH/ARB Consolidated Table of Approved Risk Assessment Health Values. May 13.
USEPA. SPECIATE 4.3. Available online at: <http://cfpub.epa.gov/si/speciate/>

Table 19
Toxicity Values
Vantage CA3 Project
Santa Clara, California

Chemical¹	Cancer Potency Factor (mg/kg-day)⁻¹	Chronic REL (µg/m³)	Acute REL (µg/m³)
Diesel PM	1.1	5.0	--
1,3-Butadiene	0.600	2	660
Acetaldehyde	0.01	140.0	470
Benzene	0.10	3.0	27
Ethylbenzene	0.0087	2000.00	--
Formaldehyde	0.021	9	55
n-Hexane	--	7,000	--
Methanol	--	4000.0	28000
Methyl Ethyl Ketone	--	--	13000
Naphthalene	0.12	9.000	--
Propylene	--	3,000	--
Styrene	--	900	21,000
Toluene	--	420.0	5,000
m-Xylene	--	700.000	22000.00
o-Xylene	--	0,700	22,000
p-Xylene	--	700	22,000

Notes:

- ¹. Chemicals presented in this table reflect air toxic contaminants in the proposed fuel types that are expected from off-road equipment, on-road truck trips, automobile traffic, and propane generators.

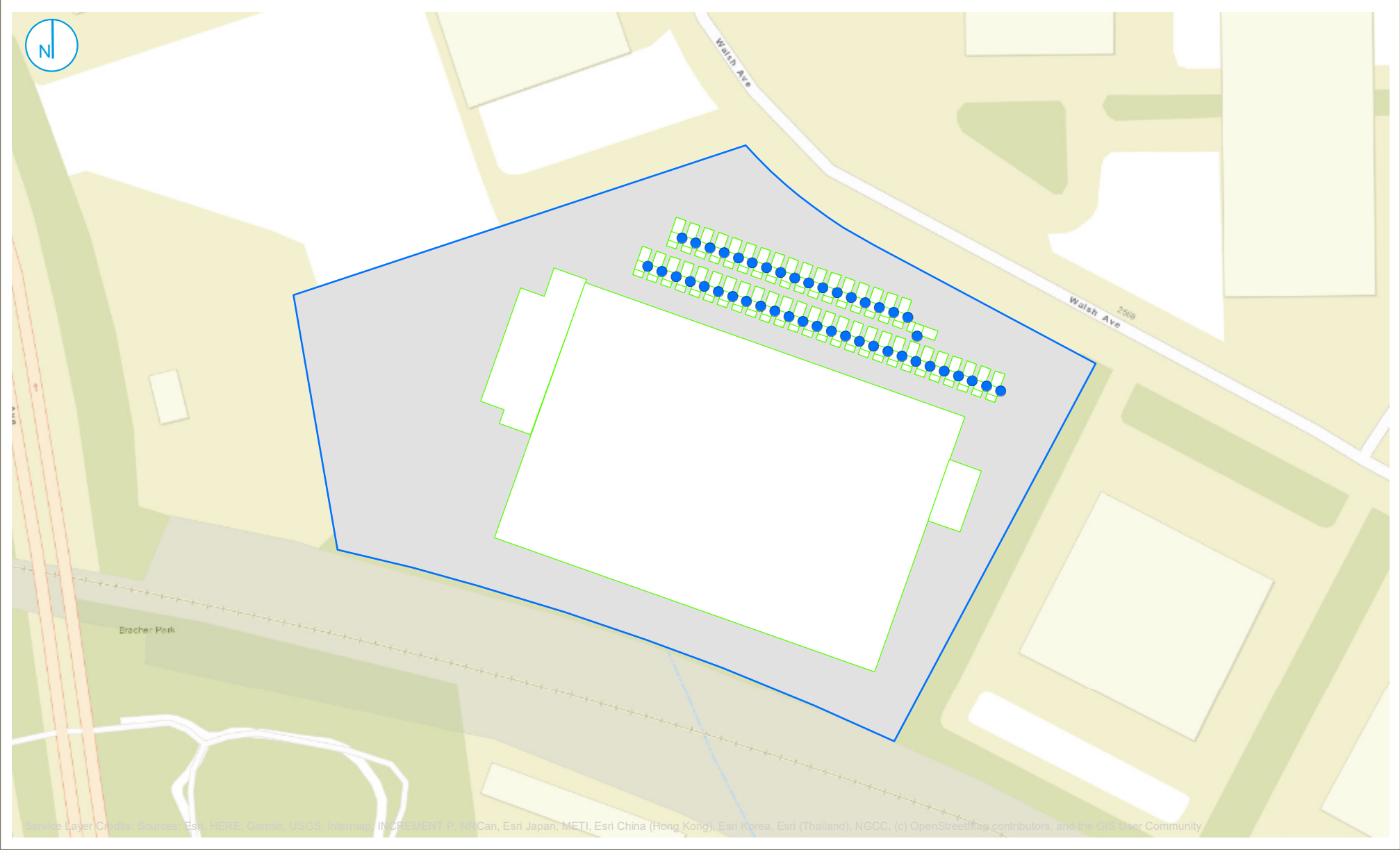
Abbreviations:

-- not available or not applicable
 µg/m³ - micrograms per cubic meter
 ARB - Air Resources Board
 Cal/EPA - California Environmental Protection Agency
 (mg/kg-day)⁻¹ - per milligram per kilogram-day
 OEHHA - Office of Environmental Health Hazard Assessment
 PM - particulate matter
 REL - reference exposure level

Reference:

Cal/EPA. 2015. OEHHA/ARB Consolidated Table of Approved Risk Assessment Health Values. May 13.

FIGURES



- Facility Boundary
- Buildings & Structures
- Emergency Generator Stacks

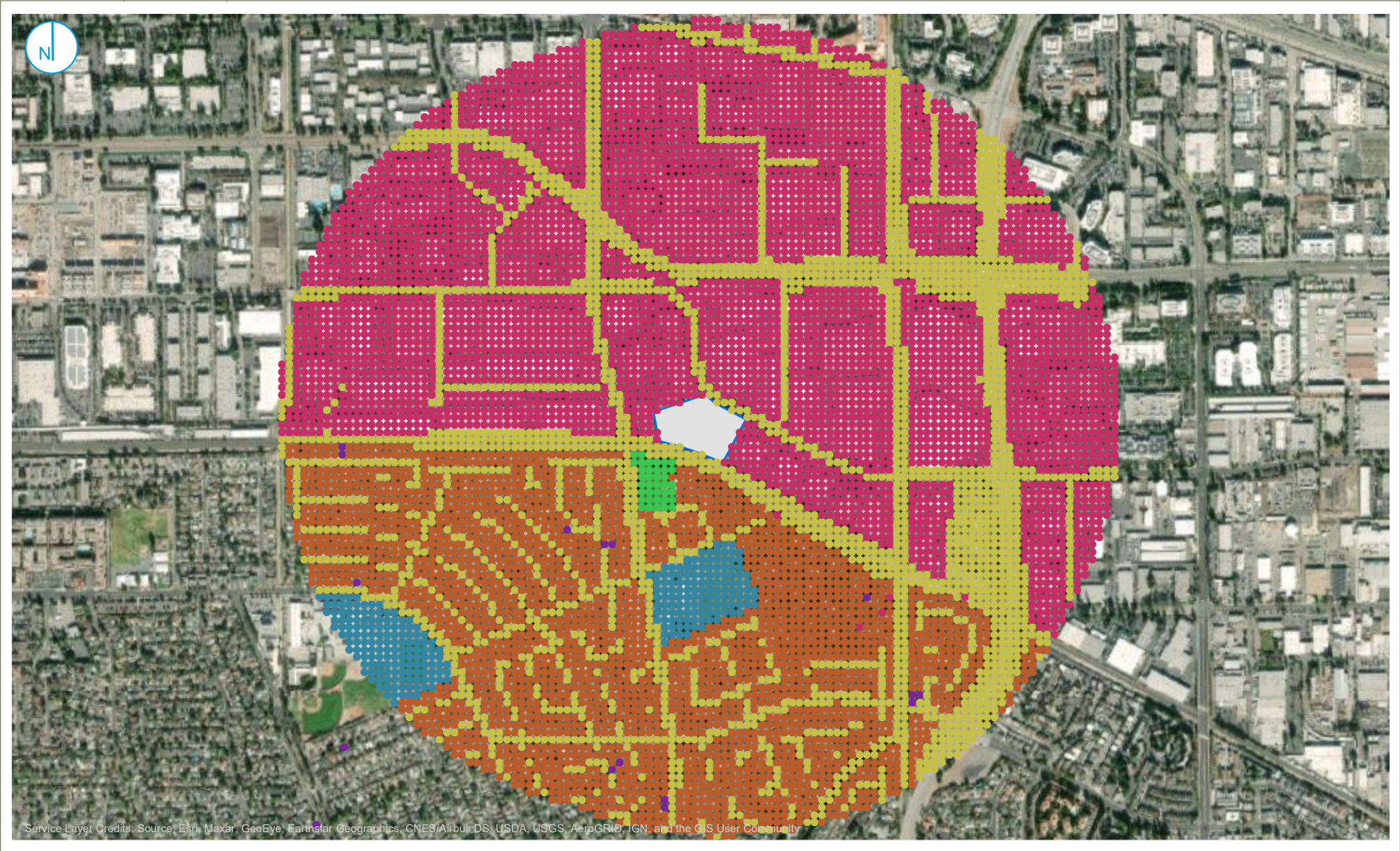
PROJECT LOCATION AND FACILITY LAYOUT
VANTAGE CA3 CAMPUS

Vantage CA3
2590 Walsh Avenue
Santa Clara, California

FIGURE 01

RAMBOLL US CORPORATION
A RAMBOLL COMPANY





Receptors

- Daycare
- Recreational
- Residential
- School
- Street
- Worker

0 0.5 1 Kilometers

RECEPTOR GRID
VANTAGE CA3 CAMPUS

Vantage CA3
2590 Walsh Avenue
Santa Clara, California

FIGURE 02

RAMBOLL US CORPORATION
A RAMBOLL COMPANY



APPENDIX A CALEEMOD® CONSTRUCTION AND OPERATIONAL EMISSIONS OUTPUTS

Vantage CA3 Data Center (Phase 1) - Santa Clara County, Annual

Vantage CA3 Data Center (Phase 1)

Santa Clara County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	16.50	1000sqft	0.14	16,500.00	0
General Office Building	16.00	1000sqft	0.13	16,000.00	0
General Light Industry	147.75	1000sqft	1.22	147,750.00	0
General Light Industry	25.00	1000sqft	0.57	25,000.00	0
General Light Industry	17.75	1000sqft	0.15	17,750.00	0
General Light Industry	25.00	1000sqft	0.21	25,000.00	0
Parking Lot	66.22	1000sqft	1.52	66,215.00	0
City Park	0.92	Acre	0.92	40,233.76	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	58
Climate Zone	4			Operational Year	2023
Utility Company	User Defined				
CO2 Intensity (lb/MW hr)	222	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Vantage CA3 Data Center (Phase 1) - Santa Clara County, Annual

Project Characteristics - Carbon intensity factor from Silicon Valley Power (utility provider) for 2023 is used in the analysis.

Land Use - Lot acreage represents the amount of lot that is developed in the first phase only.

Construction Phase - CalEEMod default schedule for construction

Demolition -

Grading - 10,000 cu yd of soil exported

Energy Use -

Construction Off-road Equipment Mitigation - All construction equipment mitigated to Tier 4 final engines

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	11.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final

Vantage CA3 Data Center (Phase 1) - Santa Clara County, Annual

tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblGrading	MaterialExported	0.00	10,000.00
tblLandUse	LandUseSquareFeet	66,220.00	66,215.00
tblLandUse	LandUseSquareFeet	40,075.20	40,233.76
tblLandUse	LotAcreage	0.37	0.13
tblLandUse	LotAcreage	0.38	0.14
tblLandUse	LotAcreage	3.39	1.22
tblLandUse	LotAcreage	0.41	0.15
tblLandUse	LotAcreage	0.57	0.21
tblProjectCharacteristics	CH4IntensityFactor	0	0.029
tblProjectCharacteristics	CO2IntensityFactor	0	222
tblProjectCharacteristics	N2OIntensityFactor	0	0.006

2.0 Emissions Summary

Vantage CA3 Data Center (Phase 1) - Santa Clara County, Annual

2.1 Overall Construction**Unmitigated Construction**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.3107	3.0851	2.7477	7.2700e-003	0.3203	0.1148	0.4351	0.0991	0.1077	0.2068	0.0000	656.9813	656.9813	0.0909	0.0000	659.2548
2023	1.3233	0.1200	0.1652	3.0000e-004	5.8100e-003	5.6500e-003	0.0115	1.5600e-003	5.2800e-003	6.8400e-003	0.0000	26.7014	26.7014	5.7600e-003	0.0000	26.8453
Maximum	1.3233	3.0851	2.7477	7.2700e-003	0.3203	0.1148	0.4351	0.0991	0.1077	0.2068	0.0000	656.9813	656.9813	0.0909	0.0000	659.2548

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.1194	1.1744	2.9119	7.2700e-003	0.2496	8.3500e-003	0.2580	0.0733	8.2000e-003	0.0815	0.0000	656.9809	656.9809	0.0909	0.0000	659.2544
2023	1.3137	0.0206	0.1793	3.0000e-004	5.8100e-003	4.0000e-004	6.2100e-003	1.5600e-003	4.0000e-004	1.9500e-003	0.0000	26.7014	26.7014	5.7600e-003	0.0000	26.8453
Maximum	1.3137	1.1744	2.9119	7.2700e-003	0.2496	8.3500e-003	0.2580	0.0733	8.2000e-003	0.0815	0.0000	656.9809	656.9809	0.0909	0.0000	659.2544

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	12.30	62.72	-6.12	0.00	21.67	92.74	40.84	25.65	92.39	60.95	0.00	0.00	0.00	0.00	0.00	0.00

Vantage CA3 Data Center (Phase 1) - Santa Clara County, Annual

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-1-2022	3-31-2022	1.0654	0.4059
2	4-1-2022	6-30-2022	0.7722	0.2925
3	7-1-2022	9-30-2022	0.7807	0.2957
4	10-1-2022	12-31-2022	0.7853	0.3003
5	1-1-2023	3-31-2023	1.3820	1.2721
		Highest	1.3820	1.2721

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.1042	3.0000e-005	2.9000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	5.6300e-003	5.6300e-003	1.0000e-005	0.0000	6.0000e-003
Energy	0.0335	0.3048	0.2560	1.8300e-003		0.0232	0.0232		0.0232	0.0232	0.0000	571.6882	571.6882	0.0377	0.0126	576.3757
Mobile	0.3229	1.2562	4.1072	0.0153	1.4787	0.0117	1.4904	0.3958	0.0109	0.4067	0.0000	1,399.726 2	1,399.726 2	0.0432	0.0000	1,400.805 7
Waste						0.0000	0.0000		0.0000	0.0000	60.3959	0.0000	60.3959	3.5693	0.0000	149.6283
Water						0.0000	0.0000		0.0000	0.0000	17.6427	31.9349	49.5777	1.8163	0.0437	107.9916
Total	1.4606	1.5610	4.3660	0.0171	1.4787	0.0349	1.5136	0.3958	0.0341	0.4299	78.0386	2,003.355 0	2,081.393 6	5.4664	0.0562	2,234.807 3

Vantage CA3 Data Center (Phase 1) - Santa Clara County, Annual

2.2 Overall Operational**Mitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.1042	3.0000e-005	2.9000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	5.6300e-003	5.6300e-003	1.0000e-005	0.0000	6.0000e-003
Energy	0.0335	0.3048	0.2560	1.8300e-003		0.0232	0.0232		0.0232	0.0232	0.0000	571.6882	571.6882	0.0377	0.0126	576.3757
Mobile	0.3229	1.2562	4.1072	0.0153	1.4787	0.0117	1.4904	0.3958	0.0109	0.4067	0.0000	1,399.7262	1,399.7262	0.0432	0.0000	1,400.8057
Waste						0.0000	0.0000		0.0000	0.0000	60.3959	0.0000	60.3959	3.5693	0.0000	149.6283
Water						0.0000	0.0000		0.0000	0.0000	17.6427	31.9349	49.5777	1.8163	0.0437	107.9916
Total	1.4606	1.5610	4.3660	0.0171	1.4787	0.0349	1.5136	0.3958	0.0341	0.4299	78.0386	2,003.3550	2,081.3936	5.4664	0.0562	2,234.8073

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail**Construction Phase**

Vantage CA3 Data Center (Phase 1) - Santa Clara County, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2022	1/28/2022	5	20	
2	Site Preparation	Site Preparation	1/29/2022	2/4/2022	5	5	
3	Grading	Grading	2/5/2022	2/16/2022	5	8	
4	Building Construction	Building Construction	2/17/2022	1/4/2023	5	230	
5	Paving	Paving	1/5/2023	1/30/2023	5	18	
6	Architectural Coating	Architectural Coating	1/31/2023	2/23/2023	5	18	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 4

Acres of Paving: 1.52

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 372,000; Non-Residential Outdoor: 124,000; Striped Parking Area: 3,973
(Architectural Coating – sqft)

OffRoad Equipment

Vantage CA3 Data Center (Phase 1) - Santa Clara County, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	2	6.00	132	0.36
Paving	Rollers	2	6.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Vantage CA3 Data Center (Phase 1) - Santa Clara County, Annual

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	523.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	1,250.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	146.00	58.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	29.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Demolition - 2022**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0566	0.0000	0.0566	8.5700e-003	0.0000	8.5700e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0264	0.2572	0.2059	3.9000e-004		0.0124	0.0124		0.0116	0.0116	0.0000	33.9902	33.9902	9.5500e-003	0.0000	34.2289
Total	0.0264	0.2572	0.2059	3.9000e-004	0.0566	0.0124	0.0690	8.5700e-003	0.0116	0.0201	0.0000	33.9902	33.9902	9.5500e-003	0.0000	34.2289

Vantage CA3 Data Center (Phase 1) - Santa Clara County, Annual

3.2 Demolition - 2022**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.9300e-003	0.0642	0.0150	2.0000e-004	4.4300e-003	1.9000e-004	4.6200e-003	1.2200e-003	1.8000e-004	1.4000e-003	0.0000	19.4263	19.4263	8.7000e-004	0.0000	19.4482
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.3000e-004	2.9000e-004	3.1500e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.2000e-003	3.2000e-004	1.0000e-005	3.2000e-004	0.0000	0.9490	0.9490	2.0000e-005	0.0000	0.9495
Total	2.3600e-003	0.0645	0.0181	2.1000e-004	5.6200e-003	2.0000e-004	5.8200e-003	1.5400e-003	1.9000e-004	1.7200e-003	0.0000	20.3754	20.3754	8.9000e-004	0.0000	20.3977

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0255	0.0000	0.0255	3.8600e-003	0.0000	3.8600e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.6200e-003	0.0200	0.2328	3.9000e-004		6.2000e-004	6.2000e-004		6.2000e-004	6.2000e-004	0.0000	33.9902	33.9902	9.5500e-003	0.0000	34.2289
Total	4.6200e-003	0.0200	0.2328	3.9000e-004	0.0255	6.2000e-004	0.0261	3.8600e-003	6.2000e-004	4.4800e-003	0.0000	33.9902	33.9902	9.5500e-003	0.0000	34.2289

Vantage CA3 Data Center (Phase 1) - Santa Clara County, Annual

3.2 Demolition - 2022**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.9300e-003	0.0642	0.0150	2.0000e-004	4.4300e-003	1.9000e-004	4.6200e-003	1.2200e-003	1.8000e-004	1.4000e-003	0.0000	19.4263	19.4263	8.7000e-004	0.0000	19.4482
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.3000e-004	2.9000e-004	3.1500e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.2000e-003	3.2000e-004	1.0000e-005	3.2000e-004	0.0000	0.9490	0.9490	2.0000e-005	0.0000	0.9495
Total	2.3600e-003	0.0645	0.0181	2.1000e-004	5.6200e-003	2.0000e-004	5.8200e-003	1.5400e-003	1.9000e-004	1.7200e-003	0.0000	20.3754	20.3754	8.9000e-004	0.0000	20.3977

3.3 Site Preparation - 2022**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0457	0.0000	0.0457	0.0249	0.0000	0.0249	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.9300e-003	0.0827	0.0492	1.0000e-004		4.0300e-003	4.0300e-003		3.7100e-003	3.7100e-003	0.0000	8.3599	8.3599	2.7000e-003	0.0000	8.4274
Total	7.9300e-003	0.0827	0.0492	1.0000e-004	0.0457	4.0300e-003	0.0498	0.0249	3.7100e-003	0.0286	0.0000	8.3599	8.3599	2.7000e-003	0.0000	8.4274

Vantage CA3 Data Center (Phase 1) - Santa Clara County, Annual

3.3 Site Preparation - 2022**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.6200e-003	0.1535	0.0358	4.8000e-004	0.0106	4.5000e-004	0.0110	2.9100e-003	4.3000e-004	3.3400e-003	0.0000	46.4301	46.4301	2.0900e-003	0.0000	46.4822
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3000e-004	9.0000e-005	9.5000e-004	0.0000	3.6000e-004	0.0000	3.6000e-004	9.0000e-005	0.0000	1.0000e-004	0.0000	0.2847	0.2847	1.0000e-005	0.0000	0.2849
Total	4.7500e-003	0.1536	0.0368	4.8000e-004	0.0110	4.5000e-004	0.0114	3.0000e-003	4.3000e-004	3.4400e-003	0.0000	46.7148	46.7148	2.1000e-003	0.0000	46.7671

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0206	0.0000	0.0206	0.0112	0.0000	0.0112	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.1600e-003	5.0400e-003	0.0522	1.0000e-004		1.6000e-004	1.6000e-004		1.6000e-004	1.6000e-004	0.0000	8.3598	8.3598	2.7000e-003	0.0000	8.4274
Total	1.1600e-003	5.0400e-003	0.0522	1.0000e-004	0.0206	1.6000e-004	0.0207	0.0112	1.6000e-004	0.0114	0.0000	8.3598	8.3598	2.7000e-003	0.0000	8.4274

Vantage CA3 Data Center (Phase 1) - Santa Clara County, Annual

3.3 Site Preparation - 2022**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.6200e-003	0.1535	0.0358	4.8000e-004	0.0106	4.5000e-004	0.0110	2.9100e-003	4.3000e-004	3.3400e-003	0.0000	46.4301	46.4301	2.0900e-003	0.0000	46.4822
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3000e-004	9.0000e-005	9.5000e-004	0.0000	3.6000e-004	0.0000	3.6000e-004	9.0000e-005	0.0000	1.0000e-004	0.0000	0.2847	0.2847	1.0000e-005	0.0000	0.2849
Total	4.7500e-003	0.1536	0.0368	4.8000e-004	0.0110	4.5000e-004	0.0114	3.0000e-003	4.3000e-004	3.4400e-003	0.0000	46.7148	46.7148	2.1000e-003	0.0000	46.7671

3.4 Grading - 2022**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0262	0.0000	0.0262	0.0135	0.0000	0.0135	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.7900e-003	0.0834	0.0611	1.2000e-004		3.7600e-003	3.7600e-003		3.4600e-003	3.4600e-003	0.0000	10.4219	10.4219	3.3700e-003	0.0000	10.5062
Total	7.7900e-003	0.0834	0.0611	1.2000e-004	0.0262	3.7600e-003	0.0300	0.0135	3.4600e-003	0.0169	0.0000	10.4219	10.4219	3.3700e-003	0.0000	10.5062

Vantage CA3 Data Center (Phase 1) - Santa Clara County, Annual

3.4 Grading - 2022**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7000e-004	1.1000e-004	1.2600e-003	0.0000	4.8000e-004	0.0000	4.8000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.3796	0.3796	1.0000e-005	0.0000	0.3798
Total	1.7000e-004	1.1000e-004	1.2600e-003	0.0000	4.8000e-004	0.0000	4.8000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.3796	0.3796	1.0000e-005	0.0000	0.3798

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0118	0.0000	0.0118	6.0600e-003	0.0000	6.0600e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.4500e-003	6.2900e-003	0.0710	1.2000e-004		1.9000e-004	1.9000e-004		1.9000e-004	1.9000e-004	0.0000	10.4219	10.4219	3.3700e-003	0.0000	10.5062
Total	1.4500e-003	6.2900e-003	0.0710	1.2000e-004	0.0118	1.9000e-004	0.0120	6.0600e-003	1.9000e-004	6.2500e-003	0.0000	10.4219	10.4219	3.3700e-003	0.0000	10.5062

Vantage CA3 Data Center (Phase 1) - Santa Clara County, Annual

3.4 Grading - 2022**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7000e-004	1.1000e-004	1.2600e-003	0.0000	4.8000e-004	0.0000	4.8000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.3796	0.3796	1.0000e-005	0.0000	0.3798
Total	1.7000e-004	1.1000e-004	1.2600e-003	0.0000	4.8000e-004	0.0000	4.8000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.3796	0.3796	1.0000e-005	0.0000	0.3798

3.5 Building Construction - 2022**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1937	1.7724	1.8573	3.0600e-003		0.0918	0.0918		0.0864	0.0864	0.0000	263.0082	263.0082	0.0630	0.0000	264.5834
Total	0.1937	1.7724	1.8573	3.0600e-003		0.0918	0.0918		0.0864	0.0864	0.0000	263.0082	263.0082	0.0630	0.0000	264.5834

Vantage CA3 Data Center (Phase 1) - Santa Clara County, Annual

3.5 Building Construction - 2022**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0200	0.6395	0.1696	1.7600e-003	0.0433	1.3000e-003	0.0446	0.0125	1.2500e-003	0.0138	0.0000	168.8877	168.8877	7.1000e-003	0.0000	169.0651
Worker	0.0476	0.0317	0.3484	1.1600e-003	0.1314	8.1000e-004	0.1322	0.0350	7.4000e-004	0.0357	0.0000	104.8437	104.8437	2.2200e-003	0.0000	104.8992
Total	0.0677	0.6712	0.5180	2.9200e-003	0.1747	2.1100e-003	0.1769	0.0475	1.9900e-003	0.0495	0.0000	273.7314	273.7314	9.3200e-003	0.0000	273.9642

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0372	0.2536	1.9817	3.0600e-003		4.6300e-003	4.6300e-003		4.6300e-003	4.6300e-003	0.0000	263.0078	263.0078	0.0630	0.0000	264.5831
Total	0.0372	0.2536	1.9817	3.0600e-003		4.6300e-003	4.6300e-003		4.6300e-003	4.6300e-003	0.0000	263.0078	263.0078	0.0630	0.0000	264.5831

Vantage CA3 Data Center (Phase 1) - Santa Clara County, Annual

3.5 Building Construction - 2022**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0200	0.6395	0.1696	1.7600e-003	0.0433	1.3000e-003	0.0446	0.0125	1.2500e-003	0.0138	0.0000	168.8877	168.8877	7.1000e-003	0.0000	169.0651
Worker	0.0476	0.0317	0.3484	1.1600e-003	0.1314	8.1000e-004	0.1322	0.0350	7.4000e-004	0.0357	0.0000	104.8437	104.8437	2.2200e-003	0.0000	104.8992
Total	0.0677	0.6712	0.5180	2.9200e-003	0.1747	2.1100e-003	0.1769	0.0475	1.9900e-003	0.0495	0.0000	273.7314	273.7314	9.3200e-003	0.0000	273.9642

3.5 Building Construction - 2023**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.3600e-003	0.0216	0.0244	4.0000e-005		1.0500e-003	1.0500e-003		9.9000e-004	9.9000e-004	0.0000	3.4771	3.4771	8.3000e-004	0.0000	3.4978
Total	2.3600e-003	0.0216	0.0244	4.0000e-005		1.0500e-003	1.0500e-003		9.9000e-004	9.9000e-004	0.0000	3.4771	3.4771	8.3000e-004	0.0000	3.4978

Vantage CA3 Data Center (Phase 1) - Santa Clara County, Annual

3.5 Building Construction - 2023**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.0000e-004	6.4000e-003	2.0100e-003	2.0000e-005	5.7000e-004	1.0000e-005	5.8000e-004	1.7000e-004	1.0000e-005	1.7000e-004	0.0000	2.1685	2.1685	8.0000e-005	0.0000	2.1705
Worker	5.9000e-004	3.8000e-004	4.2400e-003	1.0000e-005	1.7400e-003	1.0000e-005	1.7500e-003	4.6000e-004	1.0000e-005	4.7000e-004	0.0000	1.3330	1.3330	3.0000e-005	0.0000	1.3336
Total	7.9000e-004	6.7800e-003	6.2500e-003	3.0000e-005	2.3100e-003	2.0000e-005	2.3300e-003	6.3000e-004	2.0000e-005	6.4000e-004	0.0000	3.5015	3.5015	1.1000e-004	0.0000	3.5042

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.9000e-004	3.3500e-003	0.0262	4.0000e-005		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005	0.0000	3.4771	3.4771	8.3000e-004	0.0000	3.4978
Total	4.9000e-004	3.3500e-003	0.0262	4.0000e-005		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005	0.0000	3.4771	3.4771	8.3000e-004	0.0000	3.4978

Vantage CA3 Data Center (Phase 1) - Santa Clara County, Annual

3.5 Building Construction - 2023**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.0000e-004	6.4000e-003	2.0100e-003	2.0000e-005	5.7000e-004	1.0000e-005	5.8000e-004	1.7000e-004	1.0000e-005	1.7000e-004	0.0000	2.1685	2.1685	8.0000e-005	0.0000	2.1705
Worker	5.9000e-004	3.8000e-004	4.2400e-003	1.0000e-005	1.7400e-003	1.0000e-005	1.7500e-003	4.6000e-004	1.0000e-005	4.7000e-004	0.0000	1.3330	1.3330	3.0000e-005	0.0000	1.3336
Total	7.9000e-004	6.7800e-003	6.2500e-003	3.0000e-005	2.3100e-003	2.0000e-005	2.3300e-003	6.3000e-004	2.0000e-005	6.4000e-004	0.0000	3.5015	3.5015	1.1000e-004	0.0000	3.5042

3.6 Paving - 2023**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	8.2600e-003	0.0791	0.1097	1.7000e-004		3.9200e-003	3.9200e-003		3.6200e-003	3.6200e-003	0.0000	14.7407	14.7407	4.6300e-003	0.0000	14.8565
Paving	1.9900e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0103	0.0791	0.1097	1.7000e-004		3.9200e-003	3.9200e-003		3.6200e-003	3.6200e-003	0.0000	14.7407	14.7407	4.6300e-003	0.0000	14.8565

Vantage CA3 Data Center (Phase 1) - Santa Clara County, Annual

3.6 Paving - 2023**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.8000e-004	3.1000e-004	3.4800e-003	1.0000e-005	1.4300e-003	1.0000e-005	1.4400e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.0956	1.0956	2.0000e-005	0.0000	1.0961
Total	4.8000e-004	3.1000e-004	3.4800e-003	1.0000e-005	1.4300e-003	1.0000e-005	1.4400e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.0956	1.0956	2.0000e-005	0.0000	1.0961

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.9700e-003	8.5600e-003	0.1218	1.7000e-004		2.6000e-004	2.6000e-004		2.6000e-004	2.6000e-004	0.0000	14.7407	14.7407	4.6300e-003	0.0000	14.8565
Paving	1.9900e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	3.9600e-003	8.5600e-003	0.1218	1.7000e-004		2.6000e-004	2.6000e-004		2.6000e-004	2.6000e-004	0.0000	14.7407	14.7407	4.6300e-003	0.0000	14.8565

Vantage CA3 Data Center (Phase 1) - Santa Clara County, Annual

3.6 Paving - 2023**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.8000e-004	3.1000e-004	3.4800e-003	1.0000e-005	1.4300e-003	1.0000e-005	1.4400e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.0956	1.0956	2.0000e-005	0.0000	1.0961
Total	4.8000e-004	3.1000e-004	3.4800e-003	1.0000e-005	1.4300e-003	1.0000e-005	1.4400e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.0956	1.0956	2.0000e-005	0.0000	1.0961

3.7 Architectural Coating - 2023**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.3070					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.7200e-003	0.0117	0.0163	3.0000e-005		6.4000e-004	6.4000e-004		6.4000e-004	6.4000e-004	0.0000	2.2979	2.2979	1.4000e-004	0.0000	2.3014
Total	1.3087	0.0117	0.0163	3.0000e-005		6.4000e-004	6.4000e-004		6.4000e-004	6.4000e-004	0.0000	2.2979	2.2979	1.4000e-004	0.0000	2.3014

Vantage CA3 Data Center (Phase 1) - Santa Clara County, Annual

3.7 Architectural Coating - 2023**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.0000e-004	4.5000e-004	5.0500e-003	2.0000e-005	2.0700e-003	1.0000e-005	2.0800e-003	5.5000e-004	1.0000e-005	5.6000e-004	0.0000	1.5886	1.5886	3.0000e-005	0.0000	1.5894
Total	7.0000e-004	4.5000e-004	5.0500e-003	2.0000e-005	2.0700e-003	1.0000e-005	2.0800e-003	5.5000e-004	1.0000e-005	5.6000e-004	0.0000	1.5886	1.5886	3.0000e-005	0.0000	1.5894

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.3070					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.7000e-004	1.1600e-003	0.0165	3.0000e-005		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	2.2979	2.2979	1.4000e-004	0.0000	2.3014
Total	1.3073	1.1600e-003	0.0165	3.0000e-005		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	2.2979	2.2979	1.4000e-004	0.0000	2.3014

Vantage CA3 Data Center (Phase 1) - Santa Clara County, Annual

3.7 Architectural Coating - 2023**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.0000e-004	4.5000e-004	5.0500e-003	2.0000e-005	2.0700e-003	1.0000e-005	2.0800e-003	5.5000e-004	1.0000e-005	5.6000e-004	0.0000	1.5886	1.5886	3.0000e-005	0.0000	1.5894
Total	7.0000e-004	4.5000e-004	5.0500e-003	2.0000e-005	2.0700e-003	1.0000e-005	2.0800e-003	5.5000e-004	1.0000e-005	5.6000e-004	0.0000	1.5886	1.5886	3.0000e-005	0.0000	1.5894

4.0 Operational Detail - Mobile**4.1 Mitigation Measures Mobile**

Vantage CA3 Data Center (Phase 1) - Santa Clara County, Annual

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.3229	1.2562	4.1072	0.0153	1.4787	0.0117	1.4904	0.3958	0.0109	0.4067	0.0000	1,399.726 2	1,399.726 2	0.0432	0.0000	1,400.805 7
Unmitigated	0.3229	1.2562	4.1072	0.0153	1.4787	0.0117	1.4904	0.3958	0.0109	0.4067	0.0000	1,399.726 2	1,399.726 2	0.0432	0.0000	1,400.805 7

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	1.74	20.93	15.40	13,732	13,732
General Light Industry	1,029.82	195.03	100.47	2,270,791	2,270,791
General Light Industry	174.25	33.00	17.00	384,229	384,229
General Light Industry	123.72	23.43	12.07	272,802	272,802
General Light Industry	174.25	33.00	17.00	384,229	384,229
General Office Building	182.00	40.59	17.33	330,431	330,431
General Office Building	176.48	39.36	16.80	320,418	320,418
Parking Lot	0.00	0.00	0.00		
Total	1,862.25	385.34	196.07	3,976,631	3,976,631

4.3 Trip Type Information

Vantage CA3 Data Center (Phase 1) - Santa Clara County, Annual

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	9.50	7.30	7.30	33.00	48.00	19.00	66	28	6
General Light Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3
General Light Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3
General Light Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3
General Light Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3
General Office Building	9.50	7.30	7.30	33.00	48.00	19.00	77	19	4
General Office Building	9.50	7.30	7.30	33.00	48.00	19.00	77	19	4
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.612822	0.036208	0.182365	0.105071	0.013933	0.005011	0.012748	0.021514	0.002168	0.001529	0.005280	0.000629	0.000720
General Light Industry	0.612822	0.036208	0.182365	0.105071	0.013933	0.005011	0.012748	0.021514	0.002168	0.001529	0.005280	0.000629	0.000720
General Office Building	0.612822	0.036208	0.182365	0.105071	0.013933	0.005011	0.012748	0.021514	0.002168	0.001529	0.005280	0.000629	0.000720
Parking Lot	0.612822	0.036208	0.182365	0.105071	0.013933	0.005011	0.012748	0.021514	0.002168	0.001529	0.005280	0.000629	0.000720

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Vantage CA3 Data Center (Phase 1) - Santa Clara County, Annual

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	239.9300	239.9300	0.0313	6.4800e-003	242.6459
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	239.9300	239.9300	0.0313	6.4800e-003	242.6459
NaturalGas Mitigated	0.0335	0.3048	0.2560	1.8300e-003		0.0232	0.0232		0.0232	0.0232	0.0000	331.7583	331.7583	6.3600e-003	6.0800e-003	333.7297
NaturalGas Unmitigated	0.0335	0.3048	0.2560	1.8300e-003		0.0232	0.0232		0.0232	0.0232	0.0000	331.7583	331.7583	6.3600e-003	6.0800e-003	333.7297

Vantage CA3 Data Center (Phase 1) - Santa Clara County, Annual

5.2 Energy by Land Use - NaturalGas**Unmitigated**

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
General Light Industry	3.89765e+006	0.0210	0.1911	0.1605	1.1500e-003		0.0145	0.0145		0.0145	0.0145	0.0000	207.9932	207.9932	3.9900e-003	3.8100e-003	209.2292
General Light Industry	468245	2.5200e-003	0.0230	0.0193	1.4000e-004		1.7400e-003	1.7400e-003		1.7400e-003	1.7400e-003	0.0000	24.9873	24.9873	4.8000e-004	4.6000e-004	25.1358
General Light Industry	659500	7.1100e-003	0.0647	0.0543	3.9000e-004		4.9100e-003	4.9100e-003		4.9100e-003	4.9100e-003	0.0000	70.3869	70.3869	1.3500e-003	1.2900e-003	70.8051
General Office Building	261920	1.4100e-003	0.0128	0.0108	8.0000e-005		9.8000e-004	9.8000e-004		9.8000e-004	9.8000e-004	0.0000	13.9771	13.9771	2.7000e-004	2.6000e-004	14.0601
General Office Building	270105	1.4600e-003	0.0132	0.0111	8.0000e-005		1.0100e-003	1.0100e-003		1.0100e-003	1.0100e-003	0.0000	14.4138	14.4138	2.8000e-004	2.6000e-004	14.4995
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0335	0.3048	0.2560	1.8400e-003		0.0232	0.0232		0.0232	0.0232	0.0000	331.7583	331.7583	6.3700e-003	6.0800e-003	333.7297

Vantage CA3 Data Center (Phase 1) - Santa Clara County, Annual

5.2 Energy by Land Use - NaturalGas**Mitigated**

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
General Light Industry	3.89765e+006	0.0210	0.1911	0.1605	1.1500e-003		0.0145	0.0145		0.0145	0.0145	0.0000	207.9932	207.9932	3.9900e-003	3.8100e-003	209.2292
General Light Industry	468245	2.5200e-003	0.0230	0.0193	1.4000e-004		1.7400e-003	1.7400e-003		1.7400e-003	1.7400e-003	0.0000	24.9873	24.9873	4.8000e-004	4.6000e-004	25.1358
General Light Industry	659500	7.1100e-003	0.0647	0.0543	3.9000e-004		4.9100e-003	4.9100e-003		4.9100e-003	4.9100e-003	0.0000	70.3869	70.3869	1.3500e-003	1.2900e-003	70.8051
General Office Building	261920	1.4100e-003	0.0128	0.0108	8.0000e-005		9.8000e-004	9.8000e-004		9.8000e-004	9.8000e-004	0.0000	13.9771	13.9771	2.7000e-004	2.6000e-004	14.0601
General Office Building	270105	1.4600e-003	0.0132	0.0111	8.0000e-005		1.0100e-003	1.0100e-003		1.0100e-003	1.0100e-003	0.0000	14.4138	14.4138	2.8000e-004	2.6000e-004	14.4995
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0335	0.3048	0.2560	1.8400e-003		0.0232	0.0232		0.0232	0.0232	0.0000	331.7583	331.7583	6.3700e-003	6.0800e-003	333.7297

Vantage CA3 Data Center (Phase 1) - Santa Clara County, Annual

5.3 Energy by Land Use - Electricity**Unmitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
General Light Industry	1.22042e+006	122.8928	0.0161	3.3200e-003	124.2839
General Light Industry	146615	14.7638	1.9300e-003	4.0000e-004	14.9309
General Light Industry	206500	41.5881	5.4300e-003	1.1200e-003	42.0588
General Office Building	285280	28.7270	3.7500e-003	7.8000e-004	29.0522
General Office Building	294195	29.6247	3.8700e-003	8.0000e-004	29.9601
Parking Lot	23175.3	2.3337	3.0000e-004	6.0000e-005	2.3601
Total		239.9300	0.0313	6.4800e-003	242.6459

Vantage CA3 Data Center (Phase 1) - Santa Clara County, Annual

5.3 Energy by Land Use - Electricity**Mitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
General Light Industry	1.22042e+006	122.8928	0.0161	3.3200e-003	124.2839
General Light Industry	146615	14.7638	1.9300e-003	4.0000e-004	14.9309
General Light Industry	206500	41.5881	5.4300e-003	1.1200e-003	42.0588
General Office Building	285280	28.7270	3.7500e-003	7.8000e-004	29.0522
General Office Building	294195	29.6247	3.8700e-003	8.0000e-004	29.9601
Parking Lot	23175.3	2.3337	3.0000e-004	6.0000e-005	2.3601
Total		239.9300	0.0313	6.4800e-003	242.6459

6.0 Area Detail**6.1 Mitigation Measures Area**

Vantage CA3 Data Center (Phase 1) - Santa Clara County, Annual

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.1042	3.0000e-005	2.9000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	5.6300e-003	5.6300e-003	1.0000e-005	0.0000	6.0000e-003
Unmitigated	1.1042	3.0000e-005	2.9000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	5.6300e-003	5.6300e-003	1.0000e-005	0.0000	6.0000e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1307					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.9732					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.7000e-004	3.0000e-005	2.9000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	5.6300e-003	5.6300e-003	1.0000e-005	0.0000	6.0000e-003
Total	1.1042	3.0000e-005	2.9000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	5.6300e-003	5.6300e-003	1.0000e-005	0.0000	6.0000e-003

Vantage CA3 Data Center (Phase 1) - Santa Clara County, Annual

6.2 Area by SubCategory**Mitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1307					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.9732					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.7000e-004	3.0000e-005	2.9000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	5.6300e-003	5.6300e-003	1.0000e-005	0.0000	6.0000e-003
Total	1.1042	3.0000e-005	2.9000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	5.6300e-003	5.6300e-003	1.0000e-005	0.0000	6.0000e-003

7.0 Water Detail**7.1 Mitigation Measures Water**

Vantage CA3 Data Center (Phase 1) - Santa Clara County, Annual

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	49.5777	1.8163	0.0437	107.9916
Unmitigated	49.5777	1.8163	0.0437	107.9916

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 1.09616	0.3863	5.0000e-005	1.0000e-005	0.3907
General Light Industry	49.8344 / 0	42.9636	1.6274	0.0391	95.2935
General Office Building	5.77635 / 3.54034	6.2277	0.1888	4.5600e-003	12.3074
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		49.5777	1.8163	0.0437	107.9916

Vantage CA3 Data Center (Phase 1) - Santa Clara County, Annual

7.2 Water by Land Use**Mitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 1.09616	0.3863	5.0000e-005	1.0000e-005	0.3907
General Light Industry	49.8344 / 0	42.9636	1.6274	0.0391	95.2935
General Office Building	5.77635 / 3.54034	6.2277	0.1888	4.5600e-003	12.3074
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		49.5777	1.8163	0.0437	107.9916

8.0 Waste Detail

8.1 Mitigation Measures Waste

Vantage CA3 Data Center (Phase 1) - Santa Clara County, Annual

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	60.3959	3.5693	0.0000	149.6283
Unmitigated	60.3959	3.5693	0.0000	149.6283

8.2 Waste by Land UseUnmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.08	0.0162	9.6000e-004	0.0000	0.0402
General Light Industry	267.22	54.2433	3.2057	0.0000	134.3853
General Office Building	30.23	6.1364	0.3627	0.0000	15.2027
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		60.3959	3.5693	0.0000	149.6283

Vantage CA3 Data Center (Phase 1) - Santa Clara County, Annual

8.2 Waste by Land Use**Mitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.08	0.0162	9.6000e-004	0.0000	0.0402
General Light Industry	267.22	54.2433	3.2057	0.0000	134.3853
General Office Building	30.23	6.1364	0.3627	0.0000	15.2027
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		60.3959	3.5693	0.0000	149.6283

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
----------------	--------	-----------	-----------	-------------	-------------	-----------

10.0 Stationary Equipment**Fire Pumps and Emergency Generators**

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
----------------	--------	-----------	------------	-------------	-------------	-----------

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
----------------	--------	----------------	-----------------	---------------	-----------

User Defined Equipment

Vantage CA3 Data Center (Phase 1) - Santa Clara County, Annual

Equipment Type	Number
----------------	--------

11.0 Vegetation

Vantage CA3 Data Center (Phase 2) - Santa Clara County, Annual

Vantage CA3 Data Center (Phase 2)

Santa Clara County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	16.50	1000sqft	0.14	16,500.00	0
General Office Building	16.00	1000sqft	0.13	16,000.00	0
General Light Industry	147.75	1000sqft	1.22	147,750.00	0
General Light Industry	25.00	1000sqft	0.21	25,000.00	0
General Light Industry	17.75	1000sqft	0.15	17,750.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	58
Climate Zone	4			Operational Year	2025
Utility Company	User Defined				
CO2 Intensity (lb/MW hr)	277	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 intensity factor was adjusted from Silicon Valley Power (utility provider) for 2025.

Land Use - Lot acreage represents the amount of lot that is developed in the second phase only.

Construction Phase -

Energy Use -

Construction Off-road Equipment Mitigation - All construction equipment mitigated to Tier 4 final engines

Vantage CA3 Data Center (Phase 2) - Santa Clara County, Annual

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblLandUse	LotAcreage	0.37	0.13
tblLandUse	LotAcreage	0.38	0.14
tblLandUse	LotAcreage	3.39	1.22
tblLandUse	LotAcreage	0.41	0.15
tblLandUse	LotAcreage	0.57	0.21
tblProjectCharacteristics	CH4IntensityFactor	0	0.029

Vantage CA3 Data Center (Phase 2) - Santa Clara County, Annual

tblProjectCharacteristics	CO2IntensityFactor	0	277
tblProjectCharacteristics	N2OIntensityFactor	0	0.006

2.0 Emissions Summary

Vantage CA3 Data Center (Phase 2) - Santa Clara County, Annual

2.1 Overall Construction

Unmitigated Construction

Year	tons/yr											MT/yr		
	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CO2e
2024	1.3402	1.4250	1.5518	3.8300e-003	0.0970	0.0475	0.1445	0.0264	0.0458	0.0721	0.0000	333.9175	333.9175	334.8300
Maximum	1.3402	1.4250	1.5518	3.8300e-003	0.0970	0.0475	0.1445	0.0264	0.0458	0.0721	0.0000	333.9175	333.9175	334.8300

Mitigated Construction

Year	tons/yr											MT/yr		
	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CO2e
2024	1.2245	0.6585	1.6177	3.8300e-003	0.0970	3.9000e-003	0.1009	0.0264	3.8500e-003	0.0302	0.0000	333.9173	333.9173	334.8298
Maximum	1.2245	0.6585	1.6177	3.8300e-003	0.0970	3.9000e-003	0.1009	0.0264	3.8500e-003	0.0302	0.0000	333.9173	333.9173	334.8298

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	8.64	53.79	-4.25	0.00	0.00	91.79	30.19	0.00	91.59	58.13	0.00	0.00	0.00	0.00	0.00	0.00

Vantage CA3 Data Center (Phase 2) - Santa Clara County, Annual

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-1-2024	3-31-2024	0.5089	0.2334
2	4-1-2024	6-30-2024	0.5069	0.2313
3	7-1-2024	9-30-2024	0.5124	0.2338
		Highest	0.5124	0.2338

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.9874	2.0000e-005	2.0400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.9800e-003	3.9800e-003	1.0000e-005	0.0000	4.2400e-003
Energy	0.0300	0.2724	0.2288	1.6300e-003		0.0207	0.0207		0.0207	0.0207	0.0000	567.0793	567.0793	0.0340	0.0113	571.2958
Mobile	0.2585	1.0435	3.2512	0.0129	1.3306	9.9800e-003	1.3405	0.3561	9.2900e-003	0.3654	0.0000	1,179.5443	1,179.5443	0.0350	0.0000	1,180.4180
Waste						0.0000	0.0000		0.0000	0.0000	54.0869	0.0000	54.0869	3.1965	0.0000	133.9981
Water						0.0000	0.0000		0.0000	0.0000	15.8086	35.4342	51.2428	1.6274	0.0391	103.5817
Total	1.2759	1.3159	3.4820	0.0145	1.3306	0.0307	1.3613	0.3561	0.0300	0.3861	69.8955	1,782.0619	1,851.9574	4.8928	0.0504	1,989.2979

Vantage CA3 Data Center (Phase 2) - Santa Clara County, Annual

2.2 Overall Operational**Mitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.9874	2.0000e-005	2.0400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.9800e-003	3.9800e-003	1.0000e-005	0.0000	4.2400e-003
Energy	0.0300	0.2724	0.2288	1.6300e-003		0.0207	0.0207		0.0207	0.0207	0.0000	567.0793	567.0793	0.0340	0.0113	571.2958
Mobile	0.2585	1.0435	3.2512	0.0129	1.3306	9.9800e-003	1.3405	0.3561	9.2900e-003	0.3654	0.0000	1,179.5443	1,179.5443	0.0350	0.0000	1,180.4180
Waste						0.0000	0.0000		0.0000	0.0000	54.0869	0.0000	54.0869	3.1965	0.0000	133.9981
Water						0.0000	0.0000		0.0000	0.0000	15.8086	35.4342	51.2428	1.6274	0.0391	103.5817
Total	1.2759	1.3159	3.4820	0.0145	1.3306	0.0307	1.3613	0.3561	0.0300	0.3861	69.8955	1,782.0619	1,851.9574	4.8928	0.0504	1,989.2979

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail**Construction Phase**

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Building Construction	Building Construction	1/1/2024	10/4/2024	5	200	
2	Paving	Paving	10/5/2024	10/18/2024	5	10	
3	Architectural Coating	Architectural Coating	10/19/2024	11/1/2024	5	10	

Vantage CA3 Data Center (Phase 2) - Santa Clara County, Annual

Acres of Grading (Site Preparation Phase): 0**Acres of Grading (Grading Phase): 0****Acres of Paving: 0****Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 334,500; Non-Residential Outdoor: 111,500; Striped Parking Area: 0 (Architectural Coating – sqft)****OffRoad Equipment**

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Building Construction	Cranes	1	6.00	231	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Building Construction	Welders	3	8.00	46	0.45
Paving	Cement and Mortar Mixers	1	6.00	9	0.56
Paving	Pavers	1	6.00	130	0.42
Paving	Paving Equipment	1	8.00	132	0.36
Paving	Rollers	1	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Building Construction	7	90.00	37.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	13.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

Vantage CA3 Data Center (Phase 2) - Santa Clara County, Annual

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Building Construction - 2024**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1420	1.1064	1.2517	2.2100e-003		0.0451	0.0451		0.0435	0.0435	0.0000	181.6113	181.6113	0.0302	0.0000	182.3674
Total	0.1420	1.1064	1.2517	2.2100e-003		0.0451	0.0451		0.0435	0.0435	0.0000	181.6113	181.6113	0.0302	0.0000	182.3674

Vantage CA3 Data Center (Phase 2) - Santa Clara County, Annual

3.2 Building Construction - 2024**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.2100e-003	0.2689	0.0827	9.5000e-004	0.0244	3.1000e-004	0.0247	7.0400e-003	3.0000e-004	7.3400e-003	0.0000	91.6085	91.6085	3.3300e-003	0.0000	91.6916
Worker	0.0228	0.0140	0.1614	5.8000e-004	0.0714	4.2000e-004	0.0718	0.0190	3.9000e-004	0.0194	0.0000	52.6278	52.6278	9.7000e-004	0.0000	52.6521
Total	0.0310	0.2829	0.2441	1.5300e-003	0.0957	7.3000e-004	0.0965	0.0260	6.9000e-004	0.0267	0.0000	144.2362	144.2362	4.3000e-003	0.0000	144.3437

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0293	0.3712	1.3124	2.2100e-003		3.0300e-003	3.0300e-003		3.0300e-003	3.0300e-003	0.0000	181.6110	181.6110	0.0302	0.0000	182.3672
Total	0.0293	0.3712	1.3124	2.2100e-003		3.0300e-003	3.0300e-003		3.0300e-003	3.0300e-003	0.0000	181.6110	181.6110	0.0302	0.0000	182.3672

Vantage CA3 Data Center (Phase 2) - Santa Clara County, Annual

3.2 Building Construction - 2024**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.2100e-003	0.2689	0.0827	9.5000e-004	0.0244	3.1000e-004	0.0247	7.0400e-003	3.0000e-004	7.3400e-003	0.0000	91.6085	91.6085	3.3300e-003	0.0000	91.6916
Worker	0.0228	0.0140	0.1614	5.8000e-004	0.0714	4.2000e-004	0.0718	0.0190	3.9000e-004	0.0194	0.0000	52.6278	52.6278	9.7000e-004	0.0000	52.6521
Total	0.0310	0.2829	0.2441	1.5300e-003	0.0957	7.3000e-004	0.0965	0.0260	6.9000e-004	0.0267	0.0000	144.2362	144.2362	4.3000e-003	0.0000	144.3437

3.3 Paving - 2024**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.0900e-003	0.0293	0.0441	7.0000e-005		1.4100e-003	1.4100e-003		1.3000e-003	1.3000e-003	0.0000	5.8870	5.8870	1.8700e-003	0.0000	5.9337
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	3.0900e-003	0.0293	0.0441	7.0000e-005		1.4100e-003	1.4100e-003		1.3000e-003	1.3000e-003	0.0000	5.8870	5.8870	1.8700e-003	0.0000	5.9337

Vantage CA3 Data Center (Phase 2) - Santa Clara County, Annual

3.3 Paving - 2024**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.6000e-004	1.0000e-004	1.1700e-003	0.0000	5.2000e-004	0.0000	5.2000e-004	1.4000e-004	0.0000	1.4000e-004	0.0000	0.3801	0.3801	1.0000e-005	0.0000	0.3803
Total	1.6000e-004	1.0000e-004	1.1700e-003	0.0000	5.2000e-004	0.0000	5.2000e-004	1.4000e-004	0.0000	1.4000e-004	0.0000	0.3801	0.3801	1.0000e-005	0.0000	0.3803

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	8.0000e-004	3.4600e-003	0.0493	7.0000e-005		1.1000e-004	1.1000e-004		1.1000e-004	1.1000e-004	0.0000	5.8870	5.8870	1.8700e-003	0.0000	5.9337
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	8.0000e-004	3.4600e-003	0.0493	7.0000e-005		1.1000e-004	1.1000e-004		1.1000e-004	1.1000e-004	0.0000	5.8870	5.8870	1.8700e-003	0.0000	5.9337

Vantage CA3 Data Center (Phase 2) - Santa Clara County, Annual

3.3 Paving - 2024**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.6000e-004	1.0000e-004	1.1700e-003	0.0000	5.2000e-004	0.0000	5.2000e-004	1.4000e-004	0.0000	1.4000e-004	0.0000	0.3801	0.3801	1.0000e-005	0.0000	0.3803
Total	1.6000e-004	1.0000e-004	1.1700e-003	0.0000	5.2000e-004	0.0000	5.2000e-004	1.4000e-004	0.0000	1.4000e-004	0.0000	0.3801	0.3801	1.0000e-005	0.0000	0.3803

3.4 Architectural Coating - 2024**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.1628					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.0000e-004	6.0900e-003	9.0500e-003	1.0000e-005		3.0000e-004	3.0000e-004		3.0000e-004	3.0000e-004	0.0000	1.2766	1.2766	7.0000e-005	0.0000	1.2784
Total	1.1637	6.0900e-003	9.0500e-003	1.0000e-005		3.0000e-004	3.0000e-004		3.0000e-004	3.0000e-004	0.0000	1.2766	1.2766	7.0000e-005	0.0000	1.2784

Vantage CA3 Data Center (Phase 2) - Santa Clara County, Annual

3.4 Architectural Coating - 2024**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.3000e-004	1.4000e-004	1.6100e-003	1.0000e-005	7.1000e-004	0.0000	7.2000e-004	1.9000e-004	0.0000	1.9000e-004	0.0000	0.5263	0.5263	1.0000e-005	0.0000	0.5265
Total	2.3000e-004	1.4000e-004	1.6100e-003	1.0000e-005	7.1000e-004	0.0000	7.2000e-004	1.9000e-004	0.0000	1.9000e-004	0.0000	0.5263	0.5263	1.0000e-005	0.0000	0.5265

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.1628					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.5000e-004	6.4000e-004	9.1600e-003	1.0000e-005		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	1.2766	1.2766	7.0000e-005	0.0000	1.2784
Total	1.1630	6.4000e-004	9.1600e-003	1.0000e-005		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	1.2766	1.2766	7.0000e-005	0.0000	1.2784

Vantage CA3 Data Center (Phase 2) - Santa Clara County, Annual

3.4 Architectural Coating - 2024**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.3000e-004	1.4000e-004	1.6100e-003	1.0000e-005	7.1000e-004	0.0000	7.2000e-004	1.9000e-004	0.0000	1.9000e-004	0.0000	0.5263	0.5263	1.0000e-005	0.0000	0.5265
Total	2.3000e-004	1.4000e-004	1.6100e-003	1.0000e-005	7.1000e-004	0.0000	7.2000e-004	1.9000e-004	0.0000	1.9000e-004	0.0000	0.5263	0.5263	1.0000e-005	0.0000	0.5265

4.0 Operational Detail - Mobile**4.1 Mitigation Measures Mobile**

Vantage CA3 Data Center (Phase 2) - Santa Clara County, Annual

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.2585	1.0435	3.2512	0.0129	1.3306	9.9800e-003	1.3405	0.3561	9.2900e-003	0.3654	0.0000	1,179.5443	1,179.5443	0.0350	0.0000	1,180.4180
Unmitigated	0.2585	1.0435	3.2512	0.0129	1.3306	9.9800e-003	1.3405	0.3561	9.2900e-003	0.3654	0.0000	1,179.5443	1,179.5443	0.0350	0.0000	1,180.4180

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	1,029.82	195.03	100.47	2,270,791	2,270,791
General Light Industry	174.25	33.00	17.00	384,229	384,229
General Light Industry	123.72	23.43	12.07	272,802	272,802
General Office Building	182.00	40.59	17.33	330,431	330,431
General Office Building	176.48	39.36	16.80	320,418	320,418
Total	1,686.26	331.41	163.67	3,578,671	3,578,671

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3
General Light Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3
General Light Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3
General Office Building	9.50	7.30	7.30	33.00	48.00	19.00	77	19	4
General Office Building	9.50	7.30	7.30	33.00	48.00	19.00	77	19	4

Vantage CA3 Data Center (Phase 2) - Santa Clara County, Annual

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.616749	0.035330	0.181430	0.103378	0.013121	0.005016	0.012828	0.021913	0.002183	0.001508	0.005219	0.000634	0.000691
General Office Building	0.616749	0.035330	0.181430	0.103378	0.013121	0.005016	0.012828	0.021913	0.002183	0.001508	0.005219	0.000634	0.000691

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	270.5145	270.5145	0.0283	5.8600e-003	272.9687
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	270.5145	270.5145	0.0283	5.8600e-003	272.9687
NaturalGas Mitigated	0.0300	0.2724	0.2288	1.6300e-003		0.0207	0.0207		0.0207	0.0207	0.0000	296.5648	296.5648	5.6800e-003	5.4400e-003	298.3272
NaturalGas Unmitigated	0.0300	0.2724	0.2288	1.6300e-003		0.0207	0.0207		0.0207	0.0207	0.0000	296.5648	296.5648	5.6800e-003	5.4400e-003	298.3272

Vantage CA3 Data Center (Phase 2) - Santa Clara County, Annual

5.2 Energy by Land Use - NaturalGas**Unmitigated**

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	3.89765e+006	0.0210	0.1911	0.1605	1.1500e-003		0.0145	0.0145		0.0145	0.0145	0.0000	207.9932	207.9932	3.9900e-003	3.8100e-003	209.2292
General Light Industry	468245	2.5200e-003	0.0230	0.0193	1.4000e-004		1.7400e-003	1.7400e-003		1.7400e-003	1.7400e-003	0.0000	24.9873	24.9873	4.8000e-004	4.6000e-004	25.1358
General Light Industry	659500	3.5600e-003	0.0323	0.0272	1.9000e-004		2.4600e-003	2.4600e-003		2.4600e-003	2.4600e-003	0.0000	35.1934	35.1934	6.7000e-004	6.5000e-004	35.4026
General Office Building	261920	1.4100e-003	0.0128	0.0108	8.0000e-005		9.8000e-004	9.8000e-004		9.8000e-004	9.8000e-004	0.0000	13.9771	13.9771	2.7000e-004	2.6000e-004	14.0601
General Office Building	270105	1.4600e-003	0.0132	0.0111	8.0000e-005		1.0100e-003	1.0100e-003		1.0100e-003	1.0100e-003	0.0000	14.4138	14.4138	2.8000e-004	2.6000e-004	14.4995
Total		0.0300	0.2724	0.2288	1.6400e-003		0.0207	0.0207		0.0207	0.0207	0.0000	296.5648	296.5648	5.6900e-003	5.4400e-003	298.3272

Vantage CA3 Data Center (Phase 2) - Santa Clara County, Annual

5.2 Energy by Land Use - NaturalGas**Mitigated**

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	3.89765e+006	0.0210	0.1911	0.1605	1.1500e-003		0.0145	0.0145		0.0145	0.0145	0.0000	207.9932	207.9932	3.9900e-003	3.8100e-003	209.2292
General Light Industry	468245	2.5200e-003	0.0230	0.0193	1.4000e-004		1.7400e-003	1.7400e-003		1.7400e-003	1.7400e-003	0.0000	24.9873	24.9873	4.8000e-004	4.6000e-004	25.1358
General Light Industry	659500	3.5600e-003	0.0323	0.0272	1.9000e-004		2.4600e-003	2.4600e-003		2.4600e-003	2.4600e-003	0.0000	35.1934	35.1934	6.7000e-004	6.5000e-004	35.4026
General Office Building	261920	1.4100e-003	0.0128	0.0108	8.0000e-005		9.8000e-004	9.8000e-004		9.8000e-004	9.8000e-004	0.0000	13.9771	13.9771	2.7000e-004	2.6000e-004	14.0601
General Office Building	270105	1.4600e-003	0.0132	0.0111	8.0000e-005		1.0100e-003	1.0100e-003		1.0100e-003	1.0100e-003	0.0000	14.4138	14.4138	2.8000e-004	2.6000e-004	14.4995
Total		0.0300	0.2724	0.2288	1.6400e-003		0.0207	0.0207		0.0207	0.0207	0.0000	296.5648	296.5648	5.6900e-003	5.4400e-003	298.3272

Vantage CA3 Data Center (Phase 2) - Santa Clara County, Annual

5.3 Energy by Land Use - Electricity**Unmitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	1.22042e+006	153.3392	0.0161	3.3200e-003	154.7303
General Light Industry	146615	18.4215	1.9300e-003	4.0000e-004	18.5886
General Light Industry	206500	25.9457	2.7200e-003	5.6000e-004	26.1811
General Office Building	285280	35.8440	3.7500e-003	7.8000e-004	36.1692
General Office Building	294195	36.9642	3.8700e-003	8.0000e-004	37.2995
Total		270.5145	0.0283	5.8600e-003	272.9687

Vantage CA3 Data Center (Phase 2) - Santa Clara County, Annual

5.3 Energy by Land Use - Electricity**Mitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	1.22042e+006	153.3392	0.0161	3.3200e-003	154.7303
General Light Industry	146615	18.4215	1.9300e-003	4.0000e-004	18.5886
General Light Industry	206500	25.9457	2.7200e-003	5.6000e-004	26.1811
General Office Building	285280	35.8440	3.7500e-003	7.8000e-004	36.1692
General Office Building	294195	36.9642	3.8700e-003	8.0000e-004	37.2995
Total		270.5145	0.0283	5.8600e-003	272.9687

6.0 Area Detail**6.1 Mitigation Measures Area**

Vantage CA3 Data Center (Phase 2) - Santa Clara County, Annual

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.9874	2.0000e-005	2.0400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.9800e-003	3.9800e-003	1.0000e-005	0.0000	4.2400e-003
Unmitigated	0.9874	2.0000e-005	2.0400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.9800e-003	3.9800e-003	1.0000e-005	0.0000	4.2400e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1163					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.8709					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.9000e-004	2.0000e-005	2.0400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.9800e-003	3.9800e-003	1.0000e-005	0.0000	4.2400e-003
Total	0.9874	2.0000e-005	2.0400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.9800e-003	3.9800e-003	1.0000e-005	0.0000	4.2400e-003

Vantage CA3 Data Center (Phase 2) - Santa Clara County, Annual

6.2 Area by SubCategory**Mitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1163					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.8709					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.9000e-004	2.0000e-005	2.0400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.9800e-003	3.9800e-003	1.0000e-005	0.0000	4.2400e-003
Total	0.9874	2.0000e-005	2.0400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.9800e-003	3.9800e-003	1.0000e-005	0.0000	4.2400e-003

7.0 Water Detail**7.1 Mitigation Measures Water**

Vantage CA3 Data Center (Phase 2) - Santa Clara County, Annual

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	51.2428	1.6274	0.0391	103.5817
Unmitigated	51.2428	1.6274	0.0391	103.5817

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	44.0531 / 0	43.9262	1.4386	0.0345	90.1853
General Office Building	5.77635 / 3.54034	7.3166	0.1888	4.5600e-003	13.3963
Total		51.2428	1.6274	0.0391	103.5816

Vantage CA3 Data Center (Phase 2) - Santa Clara County, Annual

7.2 Water by Land Use**Mitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	44.0531 / 0	43.9262	1.4386	0.0345	90.1853
General Office Building	5.77635 / 3.54034	7.3166	0.1888	4.5600e-003	13.3963
Total		51.2428	1.6274	0.0391	103.5816

8.0 Waste Detail**8.1 Mitigation Measures Waste****Category/Year**

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	54.0869	3.1965	0.0000	133.9981
Unmitigated	54.0869	3.1965	0.0000	133.9981

Vantage CA3 Data Center (Phase 2) - Santa Clara County, Annual

8.2 Waste by Land Use**Unmitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	236.22	47.9505	2.8338	0.0000	118.7954
General Office Building	30.23	6.1364	0.3627	0.0000	15.2027
Total		54.0870	3.1964	0.0000	133.9981

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	236.22	47.9505	2.8338	0.0000	118.7954
General Office Building	30.23	6.1364	0.3627	0.0000	15.2027
Total		54.0870	3.1964	0.0000	133.9981

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
----------------	--------	-----------	-----------	-------------	-------------	-----------

Vantage CA3 Data Center (Phase 2) - Santa Clara County, Annual

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
----------------	--------	-----------	------------	-------------	-------------	-----------

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
----------------	--------	----------------	-----------------	---------------	-----------

User Defined Equipment

Equipment Type	Number
----------------	--------

11.0 Vegetation

Vantage CA3 Data Center (Phase 1 Operational) - Santa Clara County, Annual

Vantage CA3 Data Center (Phase 1 Operational)

Santa Clara County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	16.50	1000sqft	0.14	16,500.00	0
General Office Building	16.00	1000sqft	0.13	16,000.00	0
General Light Industry	147.75	1000sqft	1.22	147,750.00	0
General Light Industry	25.00	1000sqft	0.21	25,000.00	0
General Light Industry	17.75	1000sqft	0.15	17,750.00	0
General Light Industry	25.00	1000sqft	0.57	25,000.00	0
Parking Lot	66.22	1000sqft	1.52	66,215.00	0
City Park	0.92	Acre	0.92	40,233.76	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	58
Climate Zone	4			Operational Year	2023
Utility Company	User Defined				
CO2 Intensity (lb/MW hr)	222	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Vantage CA3 Data Center (Phase 1 Operational) - Santa Clara County, Annual

Project Characteristics - CO2 intensity factor from Silicon Valley Power (utility provider) for 2023 was used in the analysis.

Land Use - Lot acreage represents the amount of lot that is developed in the first phase only.

Construction Phase - Construction is analyzed separately

Off-road Equipment - Construction is analyzed separately

Off-road Equipment - Construction is analyzed separately

Off-road Equipment - Construction is analyzed separately

Off-road Equipment - Construction is analyzed separately

Off-road Equipment - Construction is analyzed separately

Off-road Equipment - Construction is analyzed separately

Trips and VMT - Construction is analyzed separately

Demolition - Construction is analyzed separately

Grading -

Vehicle Trips - Project trip rates are estimated in Table 11 of AQ appendix

Energy Use - Energy use rates are estimated outside of CalEEMod.

Water And Wastewater - Water usage data was provided by Vantage

Vehicle Emission Factors - EMFAC 2017 emission factors

Vehicle Emission Factors -

Vehicle Emission Factors -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	18.00	0.00
tblConstructionPhase	NumDays	230.00	0.00
tblConstructionPhase	NumDays	20.00	0.00
tblConstructionPhase	NumDays	8.00	0.00
tblConstructionPhase	NumDays	18.00	0.00
tblConstructionPhase	NumDays	5.00	0.00
tblEnergyUse	LightingElect	3.08	0.00

Vantage CA3 Data Center (Phase 1 Operational) - Santa Clara County, Annual

tblEnergyUse	LightingElect	3.88	0.00
tblEnergyUse	LightingElect	0.35	0.00
tblEnergyUse	NT24E	3.70	0.00
tblEnergyUse	NT24E	7.84	0.00
tblEnergyUse	NT24NG	6.67	0.00
tblEnergyUse	NT24NG	0.06	0.00
tblEnergyUse	T24E	1.48	0.00
tblEnergyUse	T24E	6.11	0.00
tblEnergyUse	T24NG	19.71	0.00
tblEnergyUse	T24NG	16.31	0.00
tblFleetMix	HHD	0.02	0.02
tblFleetMix	HHD	0.02	0.02
tblFleetMix	HHD	0.02	0.02
tblFleetMix	HHD	0.02	0.02
tblFleetMix	LDA	0.61	0.59
tblFleetMix	LDA	0.61	0.59
tblFleetMix	LDA	0.61	0.59
tblFleetMix	LDA	0.61	0.59
tblFleetMix	LDT1	0.04	0.05
tblFleetMix	LDT1	0.04	0.05
tblFleetMix	LDT1	0.04	0.05
tblFleetMix	LDT1	0.04	0.05
tblFleetMix	LDT2	0.18	0.18
tblFleetMix	LDT2	0.18	0.18
tblFleetMix	LDT2	0.18	0.18
tblFleetMix	LDT2	0.18	0.18
tblFleetMix	LHD1	0.01	0.02

Vantage CA3 Data Center (Phase 1 Operational) - Santa Clara County, Annual

tblFleetMix	LHD1	0.01	0.02
tblFleetMix	LHD1	0.01	0.02
tblFleetMix	LHD1	0.01	0.02
tblFleetMix	LHD2	5.0110e-003	5.2523e-003
tblFleetMix	LHD2	5.0110e-003	5.2523e-003
tblFleetMix	LHD2	5.0110e-003	5.2523e-003
tblFleetMix	LHD2	5.0110e-003	5.2523e-003
tblFleetMix	MCY	5.2800e-003	5.1046e-003
tblFleetMix	MCY	5.2800e-003	5.1046e-003
tblFleetMix	MCY	5.2800e-003	5.1046e-003
tblFleetMix	MCY	5.2800e-003	5.1046e-003
tblFleetMix	MDV	0.11	0.11
tblFleetMix	MDV	0.11	0.11
tblFleetMix	MDV	0.11	0.11
tblFleetMix	MDV	0.11	0.11
tblFleetMix	MH	7.2000e-004	7.5925e-004
tblFleetMix	MH	7.2000e-004	7.5925e-004
tblFleetMix	MH	7.2000e-004	7.5925e-004
tblFleetMix	MH	7.2000e-004	7.5925e-004
tblFleetMix	MHD	0.01	0.01
tblFleetMix	MHD	0.01	0.01
tblFleetMix	MHD	0.01	0.01
tblFleetMix	MHD	0.01	0.01
tblFleetMix	OBUS	2.1680e-003	1.6221e-003
tblFleetMix	OBUS	2.1680e-003	1.6221e-003
tblFleetMix	OBUS	2.1680e-003	1.6221e-003
tblFleetMix	OBUS	2.1680e-003	1.6221e-003

Vantage CA3 Data Center (Phase 1 Operational) - Santa Clara County, Annual

tblFleetMix	SBUS	6.2900e-004	9.2343e-004
tblFleetMix	SBUS	6.2900e-004	9.2343e-004
tblFleetMix	SBUS	6.2900e-004	9.2343e-004
tblFleetMix	SBUS	6.2900e-004	9.2343e-004
tblFleetMix	UBUS	1.5290e-003	1.2609e-003
tblFleetMix	UBUS	1.5290e-003	1.2609e-003
tblFleetMix	UBUS	1.5290e-003	1.2609e-003
tblFleetMix	UBUS	1.5290e-003	1.2609e-003
tblGrading	AcresOfGrading	0.00	4.00
tblLandUse	LandUseSquareFeet	66,220.00	66,215.00
tblLandUse	LandUseSquareFeet	40,075.20	40,233.76
tblLandUse	LotAcreage	0.37	0.13
tblLandUse	LotAcreage	0.38	0.14
tblLandUse	LotAcreage	3.39	1.22
tblLandUse	LotAcreage	0.41	0.15
tblLandUse	LotAcreage	0.57	0.21
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00

Vantage CA3 Data Center (Phase 1 Operational) - Santa Clara County, Annual

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblProjectCharacteristics	CH4IntensityFactor	0	0.029
tblProjectCharacteristics	CO2IntensityFactor	0	222
tblProjectCharacteristics	N2OIntensityFactor	0	0.006
tblTripsAndVMT	VendorTripNumber	58.00	0.00
tblTripsAndVMT	WorkerTripNumber	146.00	0.00
tblTripsAndVMT	WorkerTripNumber	29.00	0.00
tblVehicleEF	HHD	0.34	0.02
tblVehicleEF	HHD	0.05	0.05
tblVehicleEF	HHD	0.08	0.00
tblVehicleEF	HHD	1.61	6.34
tblVehicleEF	HHD	0.91	0.40
tblVehicleEF	HHD	3.69	5.9190e-003
tblVehicleEF	HHD	4,386.48	1,065.38
tblVehicleEF	HHD	1,557.95	1,436.68
tblVehicleEF	HHD	11.75	0.05
tblVehicleEF	HHD	13.99	5.44
tblVehicleEF	HHD	1.98	2.68
tblVehicleEF	HHD	19.39	2.32

Vantage CA3 Data Center (Phase 1 Operational) - Santa Clara County, Annual

tblVehicleEF	HHD	8.0650e-003	2.6700e-003
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	6.1860e-003	0.02
tblVehicleEF	HHD	1.0500e-004	1.0000e-006
tblVehicleEF	HHD	7.7170e-003	2.5550e-003
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8320e-003	8.8780e-003
tblVehicleEF	HHD	5.9180e-003	0.02
tblVehicleEF	HHD	9.7000e-005	1.0000e-006
tblVehicleEF	HHD	9.8000e-005	3.0000e-006
tblVehicleEF	HHD	5.1360e-003	1.1600e-004
tblVehicleEF	HHD	0.42	0.43
tblVehicleEF	HHD	6.1000e-005	1.0000e-006
tblVehicleEF	HHD	0.09	0.03
tblVehicleEF	HHD	4.1700e-004	5.1000e-005
tblVehicleEF	HHD	0.09	3.0000e-006
tblVehicleEF	HHD	0.04	9.9140e-003
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	1.7800e-004	0.00
tblVehicleEF	HHD	9.8000e-005	3.0000e-006
tblVehicleEF	HHD	5.1360e-003	1.1600e-004
tblVehicleEF	HHD	0.48	0.49
tblVehicleEF	HHD	6.1000e-005	1.0000e-006
tblVehicleEF	HHD	0.15	0.08
tblVehicleEF	HHD	4.1700e-004	5.1000e-005
tblVehicleEF	HHD	0.10	3.0000e-006

Vantage CA3 Data Center (Phase 1 Operational) - Santa Clara County, Annual

tblVehicleEF	LDA	3.3580e-003	1.9580e-003
tblVehicleEF	LDA	4.7330e-003	0.05
tblVehicleEF	LDA	0.50	0.56
tblVehicleEF	LDA	1.08	2.16
tblVehicleEF	LDA	234.26	243.25
tblVehicleEF	LDA	55.12	51.59
tblVehicleEF	LDA	0.04	0.03
tblVehicleEF	LDA	0.06	0.18
tblVehicleEF	LDA	1.6260e-003	1.3530e-003
tblVehicleEF	LDA	2.2310e-003	1.7460e-003
tblVehicleEF	LDA	1.4980e-003	1.2460e-003
tblVehicleEF	LDA	2.0520e-003	1.6060e-003
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.09	0.09
tblVehicleEF	LDA	0.02	0.03
tblVehicleEF	LDA	8.4470e-003	7.4560e-003
tblVehicleEF	LDA	0.04	0.03
tblVehicleEF	LDA	0.06	0.21
tblVehicleEF	LDA	2.3450e-003	2.3960e-003
tblVehicleEF	LDA	5.6900e-004	5.0800e-004
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.09	0.09
tblVehicleEF	LDA	0.02	0.03
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.03
tblVehicleEF	LDA	0.07	0.23
tblVehicleEF	LDT1	7.8390e-003	4.1630e-003

Vantage CA3 Data Center (Phase 1 Operational) - Santa Clara County, Annual

tblVehicleEF	LDT1	0.01	0.06
tblVehicleEF	LDT1	1.00	0.94
tblVehicleEF	LDT1	2.29	2.34
tblVehicleEF	LDT1	292.52	290.48
tblVehicleEF	LDT1	68.20	62.35
tblVehicleEF	LDT1	0.10	0.08
tblVehicleEF	LDT1	0.13	0.23
tblVehicleEF	LDT1	2.1830e-003	1.7620e-003
tblVehicleEF	LDT1	2.9190e-003	2.2460e-003
tblVehicleEF	LDT1	2.0100e-003	1.6220e-003
tblVehicleEF	LDT1	2.6840e-003	2.0650e-003
tblVehicleEF	LDT1	0.08	0.08
tblVehicleEF	LDT1	0.21	0.16
tblVehicleEF	LDT1	0.06	0.07
tblVehicleEF	LDT1	0.02	0.02
tblVehicleEF	LDT1	0.15	0.08
tblVehicleEF	LDT1	0.15	0.31
tblVehicleEF	LDT1	2.9360e-003	2.8620e-003
tblVehicleEF	LDT1	7.2200e-004	6.1400e-004
tblVehicleEF	LDT1	0.08	0.08
tblVehicleEF	LDT1	0.21	0.16
tblVehicleEF	LDT1	0.06	0.07
tblVehicleEF	LDT1	0.03	0.03
tblVehicleEF	LDT1	0.15	0.08
tblVehicleEF	LDT1	0.16	0.33
tblVehicleEF	LDT2	4.9930e-003	3.2450e-003
tblVehicleEF	LDT2	6.4640e-003	0.07

Vantage CA3 Data Center (Phase 1 Operational) - Santa Clara County, Annual

tblVehicleEF	LDT2	0.68	0.79
tblVehicleEF	LDT2	1.42	2.78
tblVehicleEF	LDT2	332.30	314.13
tblVehicleEF	LDT2	77.35	68.01
tblVehicleEF	LDT2	0.07	0.07
tblVehicleEF	LDT2	0.11	0.27
tblVehicleEF	LDT2	1.6420e-003	1.3860e-003
tblVehicleEF	LDT2	2.2820e-003	1.7470e-003
tblVehicleEF	LDT2	1.5110e-003	1.2760e-003
tblVehicleEF	LDT2	2.0990e-003	1.6060e-003
tblVehicleEF	LDT2	0.04	0.06
tblVehicleEF	LDT2	0.10	0.12
tblVehicleEF	LDT2	0.04	0.06
tblVehicleEF	LDT2	0.01	0.01
tblVehicleEF	LDT2	0.07	0.06
tblVehicleEF	LDT2	0.09	0.31
tblVehicleEF	LDT2	3.3280e-003	3.0950e-003
tblVehicleEF	LDT2	7.9700e-004	6.7000e-004
tblVehicleEF	LDT2	0.04	0.06
tblVehicleEF	LDT2	0.10	0.12
tblVehicleEF	LDT2	0.04	0.06
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.07	0.06
tblVehicleEF	LDT2	0.10	0.34
tblVehicleEF	LHD1	5.3570e-003	5.1620e-003
tblVehicleEF	LHD1	0.02	8.5450e-003
tblVehicleEF	LHD1	0.02	0.02

Vantage CA3 Data Center (Phase 1 Operational) - Santa Clara County, Annual

tblVehicleEF	LHD1	0.15	0.19
tblVehicleEF	LHD1	1.02	0.77
tblVehicleEF	LHD1	2.58	1.08
tblVehicleEF	LHD1	8.98	8.94
tblVehicleEF	LHD1	687.79	794.16
tblVehicleEF	LHD1	32.26	11.83
tblVehicleEF	LHD1	0.07	0.06
tblVehicleEF	LHD1	1.10	0.73
tblVehicleEF	LHD1	0.99	0.32
tblVehicleEF	LHD1	8.6000e-004	8.2500e-004
tblVehicleEF	LHD1	0.01	9.7470e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	9.5500e-004	2.5800e-004
tblVehicleEF	LHD1	8.2300e-004	7.9000e-004
tblVehicleEF	LHD1	2.5220e-003	2.4370e-003
tblVehicleEF	LHD1	0.01	9.7200e-003
tblVehicleEF	LHD1	8.7800e-004	2.3700e-004
tblVehicleEF	LHD1	2.6370e-003	2.0240e-003
tblVehicleEF	LHD1	0.10	0.08
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.3460e-003	1.0320e-003
tblVehicleEF	LHD1	0.12	0.09
tblVehicleEF	LHD1	0.32	0.20
tblVehicleEF	LHD1	0.26	0.08
tblVehicleEF	LHD1	9.0000e-005	8.7000e-005
tblVehicleEF	LHD1	6.7510e-003	7.7550e-003
tblVehicleEF	LHD1	3.7100e-004	1.1700e-004

Vantage CA3 Data Center (Phase 1 Operational) - Santa Clara County, Annual

tblVehicleEF	LHD1	2.6370e-003	2.0240e-003
tblVehicleEF	LHD1	0.10	0.08
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.3460e-003	1.0320e-003
tblVehicleEF	LHD1	0.15	0.11
tblVehicleEF	LHD1	0.32	0.20
tblVehicleEF	LHD1	0.29	0.08
tblVehicleEF	LHD2	3.3720e-003	3.1550e-003
tblVehicleEF	LHD2	7.5730e-003	7.0600e-003
tblVehicleEF	LHD2	6.7190e-003	8.4310e-003
tblVehicleEF	LHD2	0.12	0.14
tblVehicleEF	LHD2	0.55	0.62
tblVehicleEF	LHD2	1.16	0.63
tblVehicleEF	LHD2	13.98	14.00
tblVehicleEF	LHD2	705.76	768.73
tblVehicleEF	LHD2	24.06	7.83
tblVehicleEF	LHD2	0.10	0.10
tblVehicleEF	LHD2	0.69	0.88
tblVehicleEF	LHD2	0.44	0.18
tblVehicleEF	LHD2	1.2420e-003	1.4230e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	4.1600e-004	1.3300e-004
tblVehicleEF	LHD2	1.1880e-003	1.3610e-003
tblVehicleEF	LHD2	2.6910e-003	2.6880e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.8300e-004	1.2300e-004

Vantage CA3 Data Center (Phase 1 Operational) - Santa Clara County, Annual

tblVehicleEF	LHD2	8.1500e-004	1.0700e-003
tblVehicleEF	LHD2	0.03	0.04
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	4.3700e-004	5.4700e-004
tblVehicleEF	LHD2	0.10	0.11
tblVehicleEF	LHD2	0.07	0.10
tblVehicleEF	LHD2	0.09	0.04
tblVehicleEF	LHD2	1.3600e-004	1.3400e-004
tblVehicleEF	LHD2	6.8630e-003	7.4240e-003
tblVehicleEF	LHD2	2.6100e-004	7.8000e-005
tblVehicleEF	LHD2	8.1500e-004	1.0700e-003
tblVehicleEF	LHD2	0.03	0.04
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	4.3700e-004	5.4700e-004
tblVehicleEF	LHD2	0.12	0.13
tblVehicleEF	LHD2	0.07	0.10
tblVehicleEF	LHD2	0.10	0.05
tblVehicleEF	MCY	0.45	0.33
tblVehicleEF	MCY	0.16	0.26
tblVehicleEF	MCY	18.74	18.87
tblVehicleEF	MCY	10.18	9.03
tblVehicleEF	MCY	169.68	210.17
tblVehicleEF	MCY	45.14	61.04
tblVehicleEF	MCY	1.15	1.15
tblVehicleEF	MCY	0.32	0.27
tblVehicleEF	MCY	2.0080e-003	1.9690e-003
tblVehicleEF	MCY	3.7340e-003	3.0390e-003

Vantage CA3 Data Center (Phase 1 Operational) - Santa Clara County, Annual

tblVehicleEF	MCY	1.8770e-003	1.8400e-003
tblVehicleEF	MCY	3.5160e-003	2.8590e-003
tblVehicleEF	MCY	0.90	0.90
tblVehicleEF	MCY	0.70	0.69
tblVehicleEF	MCY	0.49	0.49
tblVehicleEF	MCY	2.20	2.21
tblVehicleEF	MCY	0.60	0.55
tblVehicleEF	MCY	2.20	1.94
tblVehicleEF	MCY	2.0680e-003	2.0800e-003
tblVehicleEF	MCY	6.8300e-004	6.0400e-004
tblVehicleEF	MCY	0.90	0.90
tblVehicleEF	MCY	0.70	0.69
tblVehicleEF	MCY	0.49	0.49
tblVehicleEF	MCY	2.73	2.74
tblVehicleEF	MCY	0.60	0.55
tblVehicleEF	MCY	2.39	2.11
tblVehicleEF	MDV	9.4310e-003	3.9100e-003
tblVehicleEF	MDV	0.02	0.08
tblVehicleEF	MDV	1.06	0.86
tblVehicleEF	MDV	2.68	3.12
tblVehicleEF	MDV	444.47	380.23
tblVehicleEF	MDV	101.69	81.34
tblVehicleEF	MDV	0.13	0.08
tblVehicleEF	MDV	0.23	0.32
tblVehicleEF	MDV	1.8000e-003	1.5070e-003
tblVehicleEF	MDV	2.4830e-003	1.9110e-003
tblVehicleEF	MDV	1.6590e-003	1.3900e-003

Vantage CA3 Data Center (Phase 1 Operational) - Santa Clara County, Annual

tblVehicleEF	MDV	2.2840e-003	1.7580e-003
tblVehicleEF	MDV	0.06	0.07
tblVehicleEF	MDV	0.16	0.14
tblVehicleEF	MDV	0.06	0.07
tblVehicleEF	MDV	0.02	0.02
tblVehicleEF	MDV	0.11	0.06
tblVehicleEF	MDV	0.20	0.38
tblVehicleEF	MDV	4.4500e-003	3.7430e-003
tblVehicleEF	MDV	1.0640e-003	8.0200e-004
tblVehicleEF	MDV	0.06	0.07
tblVehicleEF	MDV	0.16	0.14
tblVehicleEF	MDV	0.06	0.07
tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.11	0.06
tblVehicleEF	MDV	0.22	0.42
tblVehicleEF	MH	0.03	0.01
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	1.96	1.11
tblVehicleEF	MH	5.58	2.13
tblVehicleEF	MH	1,212.08	1,532.75
tblVehicleEF	MH	58.85	18.68
tblVehicleEF	MH	1.29	1.36
tblVehicleEF	MH	0.81	0.25
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	1.1290e-003	2.7400e-004
tblVehicleEF	MH	3.2190e-003	3.2750e-003

Vantage CA3 Data Center (Phase 1 Operational) - Santa Clara County, Annual

tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	1.0380e-003	2.5200e-004
tblVehicleEF	MH	0.81	0.71
tblVehicleEF	MH	0.07	0.06
tblVehicleEF	MH	0.28	0.25
tblVehicleEF	MH	0.09	0.07
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	0.32	0.10
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	6.8600e-004	1.8500e-004
tblVehicleEF	MH	0.81	0.71
tblVehicleEF	MH	0.07	0.06
tblVehicleEF	MH	0.28	0.25
tblVehicleEF	MH	0.12	0.09
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	0.35	0.11
tblVehicleEF	MHD	0.02	3.5450e-003
tblVehicleEF	MHD	4.5180e-003	1.9320e-003
tblVehicleEF	MHD	0.05	9.4870e-003
tblVehicleEF	MHD	0.38	0.39
tblVehicleEF	MHD	0.36	0.26
tblVehicleEF	MHD	5.92	1.14
tblVehicleEF	MHD	132.71	73.35
tblVehicleEF	MHD	1,189.79	1,095.06
tblVehicleEF	MHD	61.47	9.38
tblVehicleEF	MHD	0.36	0.43
tblVehicleEF	MHD	1.11	1.44

Vantage CA3 Data Center (Phase 1 Operational) - Santa Clara County, Annual

tblVehicleEF	MHD	10.17	1.70
tblVehicleEF	MHD	1.2300e-004	4.2700e-004
tblVehicleEF	MHD	3.1090e-003	6.9550e-003
tblVehicleEF	MHD	9.0500e-004	1.1900e-004
tblVehicleEF	MHD	1.1800e-004	4.0900e-004
tblVehicleEF	MHD	2.9680e-003	6.6480e-003
tblVehicleEF	MHD	8.3200e-004	1.1000e-004
tblVehicleEF	MHD	8.9400e-004	4.1700e-004
tblVehicleEF	MHD	0.04	0.02
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	4.6300e-004	2.1100e-004
tblVehicleEF	MHD	0.04	0.02
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.35	0.05
tblVehicleEF	MHD	1.2790e-003	6.9600e-004
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	7.1800e-004	9.3000e-005
tblVehicleEF	MHD	8.9400e-004	4.1700e-004
tblVehicleEF	MHD	0.04	0.02
tblVehicleEF	MHD	0.04	0.02
tblVehicleEF	MHD	4.6300e-004	2.1100e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.38	0.06
tblVehicleEF	OBUS	0.01	7.0630e-003
tblVehicleEF	OBUS	6.3660e-003	4.0130e-003
tblVehicleEF	OBUS	0.03	0.02

Vantage CA3 Data Center (Phase 1 Operational) - Santa Clara County, Annual

tblVehicleEF	OBUS	0.24	0.57
tblVehicleEF	OBUS	0.44	0.47
tblVehicleEF	OBUS	5.01	1.90
tblVehicleEF	OBUS	99.56	91.93
tblVehicleEF	OBUS	1,293.67	1,341.74
tblVehicleEF	OBUS	66.88	15.48
tblVehicleEF	OBUS	0.21	0.37
tblVehicleEF	OBUS	0.88	1.44
tblVehicleEF	OBUS	2.72	1.09
tblVehicleEF	OBUS	1.9000e-005	1.2000e-004
tblVehicleEF	OBUS	2.6550e-003	7.0290e-003
tblVehicleEF	OBUS	8.0900e-004	1.4200e-004
tblVehicleEF	OBUS	1.8000e-005	1.1500e-004
tblVehicleEF	OBUS	2.5210e-003	6.7120e-003
tblVehicleEF	OBUS	7.4400e-004	1.3000e-004
tblVehicleEF	OBUS	1.1720e-003	1.0840e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.03	0.05
tblVehicleEF	OBUS	5.1500e-004	4.8000e-004
tblVehicleEF	OBUS	0.04	0.03
tblVehicleEF	OBUS	0.03	0.04
tblVehicleEF	OBUS	0.31	0.09
tblVehicleEF	OBUS	9.6200e-004	8.7300e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	7.5700e-004	1.5300e-004
tblVehicleEF	OBUS	1.1720e-003	1.0840e-003
tblVehicleEF	OBUS	0.02	0.02

Vantage CA3 Data Center (Phase 1 Operational) - Santa Clara County, Annual

tblVehicleEF	OBUS	0.05	0.06
tblVehicleEF	OBUS	5.1500e-004	4.8000e-004
tblVehicleEF	OBUS	0.05	0.03
tblVehicleEF	OBUS	0.03	0.04
tblVehicleEF	OBUS	0.34	0.10
tblVehicleEF	SBUS	0.83	0.05
tblVehicleEF	SBUS	0.02	6.3560e-003
tblVehicleEF	SBUS	0.08	4.7830e-003
tblVehicleEF	SBUS	8.17	2.18
tblVehicleEF	SBUS	1.05	0.52
tblVehicleEF	SBUS	9.75	0.70
tblVehicleEF	SBUS	1,109.35	347.39
tblVehicleEF	SBUS	1,051.90	1,060.99
tblVehicleEF	SBUS	56.07	3.98
tblVehicleEF	SBUS	8.47	3.53
tblVehicleEF	SBUS	3.71	4.87
tblVehicleEF	SBUS	12.10	0.81
tblVehicleEF	SBUS	8.0590e-003	3.9050e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	9.0100e-004	4.6000e-005
tblVehicleEF	SBUS	7.7100e-003	3.7360e-003
tblVehicleEF	SBUS	2.6280e-003	2.7270e-003
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	8.2900e-004	4.2000e-005
tblVehicleEF	SBUS	3.4510e-003	5.3700e-004
tblVehicleEF	SBUS	0.04	5.2210e-003

Vantage CA3 Data Center (Phase 1 Operational) - Santa Clara County, Annual

tblVehicleEF	SBUS	0.97	0.24
tblVehicleEF	SBUS	1.4880e-003	2.2700e-004
tblVehicleEF	SBUS	0.11	0.09
tblVehicleEF	SBUS	0.02	0.01
tblVehicleEF	SBUS	0.48	0.03
tblVehicleEF	SBUS	0.01	3.3060e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	7.2900e-004	3.9000e-005
tblVehicleEF	SBUS	3.4510e-003	5.3700e-004
tblVehicleEF	SBUS	0.04	5.2210e-003
tblVehicleEF	SBUS	1.40	0.35
tblVehicleEF	SBUS	1.4880e-003	2.2700e-004
tblVehicleEF	SBUS	0.14	0.10
tblVehicleEF	SBUS	0.02	0.01
tblVehicleEF	SBUS	0.53	0.03
tblVehicleEF	UBUS	0.27	1.35
tblVehicleEF	UBUS	0.04	1.4170e-003
tblVehicleEF	UBUS	4.81	10.12
tblVehicleEF	UBUS	7.98	0.14
tblVehicleEF	UBUS	2,067.88	1,597.13
tblVehicleEF	UBUS	103.85	1.39
tblVehicleEF	UBUS	9.47	0.73
tblVehicleEF	UBUS	14.57	0.01
tblVehicleEF	UBUS	0.59	0.07
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.21	5.3280e-003
tblVehicleEF	UBUS	1.1460e-003	1.5000e-005

Vantage CA3 Data Center (Phase 1 Operational) - Santa Clara County, Annual

tblVehicleEF	UBUS	0.25	0.03
tblVehicleEF	UBUS	3.0000e-003	8.3320e-003
tblVehicleEF	UBUS	0.20	5.0960e-003
tblVehicleEF	UBUS	1.0540e-003	1.4000e-005
tblVehicleEF	UBUS	2.2820e-003	1.9000e-005
tblVehicleEF	UBUS	0.04	1.3300e-004
tblVehicleEF	UBUS	1.1230e-003	8.0000e-006
tblVehicleEF	UBUS	0.58	0.02
tblVehicleEF	UBUS	8.3050e-003	2.1000e-005
tblVehicleEF	UBUS	0.58	5.8830e-003
tblVehicleEF	UBUS	0.02	0.01
tblVehicleEF	UBUS	1.1810e-003	1.4000e-005
tblVehicleEF	UBUS	2.2820e-003	1.9000e-005
tblVehicleEF	UBUS	0.04	1.3300e-004
tblVehicleEF	UBUS	1.1230e-003	8.0000e-006
tblVehicleEF	UBUS	0.90	1.38
tblVehicleEF	UBUS	8.3050e-003	2.1000e-005
tblVehicleEF	UBUS	0.63	6.4410e-003
tblVehicleTrips	ST_TR	22.75	0.00
tblVehicleTrips	ST_TR	1.32	0.13
tblVehicleTrips	ST_TR	2.46	0.25
tblVehicleTrips	SU_TR	16.74	0.00
tblVehicleTrips	SU_TR	0.68	0.07
tblVehicleTrips	SU_TR	1.05	0.11
tblVehicleTrips	WD_TR	1.89	0.00
tblVehicleTrips	WD_TR	6.97	0.71
tblVehicleTrips	WD_TR	11.03	1.12

Vantage CA3 Data Center (Phase 1 Operational) - Santa Clara County, Annual

tblWater	IndoorWaterUseRate	49,834,375.00	416,814.00
tblWater	IndoorWaterUseRate	5,776,346.81	62,861.00
tblWater	OutdoorWaterUseRate	3,540,341.59	0.00

2.0 Emissions Summary

Vantage CA3 Data Center (Phase 1 Operational) - Santa Clara County, Annual

2.1 Overall Construction

Unmitigated Construction

[illegible]

Mitigated Construction

[illegible][illegible]

Vantage CA3 Data Center (Phase 1 Operational) - Santa Clara County, Annual

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
		Highest		

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.1042	3.0000e-005	2.9000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	5.6300e-003	5.6300e-003	1.0000e-005	0.0000	6.0000e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0397	0.0939	0.4777	1.4700e-003	0.1498	1.1300e-003	0.1510	0.0401	1.0500e-003	0.0411	0.0000	137.1672	137.1672	5.6800e-003	0.0000	137.3093
Waste						0.0000	0.0000		0.0000	0.0000	60.3959	0.0000	60.3959	3.5693	0.0000	149.6283
Water						0.0000	0.0000		0.0000	0.0000	0.1522	0.6477	0.7999	0.0157	3.9000e-004	1.3079
Total	1.1438	0.0939	0.4806	1.4700e-003	0.1498	1.1400e-003	0.1510	0.0401	1.0600e-003	0.0412	60.5481	137.8206	198.3686	3.5907	3.9000e-004	288.2516

Vantage CA3 Data Center (Phase 1 Operational) - Santa Clara County, Annual

2.2 Overall Operational**Mitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.1042	3.0000e-005	2.9000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	5.6300e-003	5.6300e-003	1.0000e-005	0.0000	6.0000e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0397	0.0939	0.4777	1.4700e-003	0.1498	1.1300e-003	0.1510	0.0401	1.0500e-003	0.0411	0.0000	137.1672	137.1672	5.6800e-003	0.0000	137.3093
Waste						0.0000	0.0000		0.0000	0.0000	60.3959	0.0000	60.3959	3.5693	0.0000	149.6283
Water						0.0000	0.0000		0.0000	0.0000	0.1522	0.6477	0.7999	0.0157	3.9000e-004	1.3079
Total	1.1438	0.0939	0.4806	1.4700e-003	0.1498	1.1400e-003	0.1510	0.0401	1.0600e-003	0.0412	60.5481	137.8206	198.3686	3.5907	3.9000e-004	288.2516

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail**Construction Phase**

Vantage CA3 Data Center (Phase 1 Operational) - Santa Clara County, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2022	12/31/2021	5	0	
2	Site Preparation	Site Preparation	1/29/2022	1/28/2022	5	0	
3	Grading	Grading	2/5/2022	2/4/2022	5	0	
4	Building Construction	Building Construction	2/17/2022	2/16/2022	5	0	
5	Paving	Paving	1/5/2023	1/4/2023	5	0	
6	Architectural Coating	Architectural Coating	1/31/2023	1/30/2023	5	0	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 4

Acres of Paving: 1.52

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 372,000; Non-Residential Outdoor: 124,000; Striped Parking Area: 3,973 (Architectural Coating – sqft)

OffRoad Equipment

Vantage CA3 Data Center (Phase 1 Operational) - Santa Clara County, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	0	8.00	81	0.73
Demolition	Excavators	0	8.00	158	0.38
Demolition	Rubber Tired Dozers	0	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	0	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Grading	Excavators	0	8.00	158	0.38
Grading	Graders	0	8.00	187	0.41
Grading	Rubber Tired Dozers	0	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Building Construction	Cranes	0	7.00	231	0.29
Building Construction	Forklifts	0	8.00	89	0.20
Building Construction	Generator Sets	0	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Building Construction	Welders	0	8.00	46	0.45
Paving	Cement and Mortar Mixers	0	6.00	9	0.56
Paving	Pavers	0	8.00	130	0.42
Paving	Paving Equipment	0	6.00	132	0.36
Paving	Rollers	0	6.00	80	0.38
Paving	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Architectural Coating	Air Compressors	0	6.00	78	0.48

Trips and VMT

Vantage CA3 Data Center (Phase 1 Operational) - Santa Clara County, Annual

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	0	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	0	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	0	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	0	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	0	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	0	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.3 Site Preparation - 2022

Unmitigated Construction On-Site

[illegible]

Vantage CA3 Data Center (Phase 1 Operational) - Santa Clara County, Annual

3.3 Site Preparation - 2022

Unmitigated Construction Off-Site

[illegible]

Mitigated Construction On-Site

[illegible]

Vantage CA3 Data Center (Phase 1 Operational) - Santa Clara County, Annual

3.3 Site Preparation - 2022

Mitigated Construction Off-Site

[illegible]

3.4 Grading - 2022

Unmitigated Construction On-Site

[illegible]

Vantage CA3 Data Center (Phase 1 Operational) - Santa Clara County, Annual

3.4 Grading - 2022

Unmitigated Construction Off-Site

[illegible]

Mitigated Construction On-Site

[illegible]

Vantage CA3 Data Center (Phase 1 Operational) - Santa Clara County, Annual

3.4 Grading - 2022

Mitigated Construction Off-Site

[illegible]

3.5 Building Construction - 2022

Unmitigated Construction On-Site

[illegible]

Vantage CA3 Data Center (Phase 1 Operational) - Santa Clara County, Annual

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

[illegible]

Mitigated Construction On-Site

[illegible]

Vantage CA3 Data Center (Phase 1 Operational) - Santa Clara County, Annual

3.5 Building Construction - 2022

Mitigated Construction Off-Site

[illegible]

3.6 Paving - 2023

Unmitigated Construction On-Site

[illegible]

Vantage CA3 Data Center (Phase 1 Operational) - Santa Clara County, Annual

3.6 Paving - 2023

Unmitigated Construction Off-Site

[illegible]

Mitigated Construction On-Site

[illegible]

Vantage CA3 Data Center (Phase 1 Operational) - Santa Clara County, Annual

3.6 Paving - 2023

Mitigated Construction Off-Site

[illegible]

3.7 Architectural Coating - 2023

Unmitigated Construction On-Site

[illegible]

Vantage CA3 Data Center (Phase 1 Operational) - Santa Clara County, Annual

3.7 Architectural Coating - 2023

Unmitigated Construction Off-Site

[illegible]

Mitigated Construction On-Site

[illegible]

Vantage CA3 Data Center (Phase 1 Operational) - Santa Clara County, Annual

3.7 Architectural Coating - 2023**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.0 Operational Detail - Mobile**4.1 Mitigation Measures Mobile**

Vantage CA3 Data Center (Phase 1 Operational) - Santa Clara County, Annual

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0397	0.0939	0.4777	1.4700e-003	0.1498	1.1300e-003	0.1510	0.0401	1.0500e-003	0.0411	0.0000	137.1672	137.1672	5.6800e-003	0.0000	137.3093
Unmitigated	0.0397	0.0939	0.4777	1.4700e-003	0.1498	1.1300e-003	0.1510	0.0401	1.0500e-003	0.0411	0.0000	137.1672	137.1672	5.6800e-003	0.0000	137.3093

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	0.00	0.00	0.00		
General Light Industry	104.90	19.21	10.34	231,085	231,085
General Light Industry	17.75	3.25	1.75	39,101	39,101
General Light Industry	12.60	2.31	1.24	27,761	27,761
General Light Industry	17.75	3.25	1.75	39,101	39,101
General Office Building	18.48	4.13	1.82	33,573	33,573
General Office Building	17.92	4.00	1.76	32,555	32,555
Parking Lot	0.00	0.00	0.00		
Total	189.41	36.14	18.66	403,175	403,175

4.3 Trip Type Information

Vantage CA3 Data Center (Phase 1 Operational) - Santa Clara County, Annual

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	9.50	7.30	7.30	33.00	48.00	19.00	66	28	6
General Light Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3
General Light Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3
General Light Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3
General Light Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3
General Office Building	9.50	7.30	7.30	33.00	48.00	19.00	77	19	4
General Office Building	9.50	7.30	7.30	33.00	48.00	19.00	77	19	4
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.590614	0.052782	0.178085	0.107083	0.021013	0.005252	0.013411	0.022090	0.001622	0.001261	0.005105	0.000923	0.000759
General Light Industry	0.590614	0.052782	0.178085	0.107083	0.021013	0.005252	0.013411	0.022090	0.001622	0.001261	0.005105	0.000923	0.000759
General Office Building	0.590614	0.052782	0.178085	0.107083	0.021013	0.005252	0.013411	0.022090	0.001622	0.001261	0.005105	0.000923	0.000759
Parking Lot	0.590614	0.052782	0.178085	0.107083	0.021013	0.005252	0.013411	0.022090	0.001622	0.001261	0.005105	0.000923	0.000759

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Vantage CA3 Data Center (Phase 1 Operational) - Santa Clara County, Annual

[illegible]

5.2 Energy by Land Use - NaturalGas

Unmitigated

[illegible]

Vantage CA3 Data Center (Phase 1 Operational) - Santa Clara County, Annual

5.2 Energy by Land Use - NaturalGas

Mitigated

[illegible]

Vantage CA3 Data Center (Phase 1 Operational) - Santa Clara County, Annual

5.3 Energy by Land Use - Electricity**Unmitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
General Light Industry	0	0.0000	0.0000	0.0000	0.0000
General Office Building	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

Vantage CA3 Data Center (Phase 1 Operational) - Santa Clara County, Annual

5.3 Energy by Land Use - Electricity**Mitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
General Light Industry	0	0.0000	0.0000	0.0000	0.0000
General Office Building	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

6.0 Area Detail**6.1 Mitigation Measures Area**

Vantage CA3 Data Center (Phase 1 Operational) - Santa Clara County, Annual

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.1042	3.0000e-005	2.9000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	5.6300e-003	5.6300e-003	1.0000e-005	0.0000	6.0000e-003
Unmitigated	1.1042	3.0000e-005	2.9000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	5.6300e-003	5.6300e-003	1.0000e-005	0.0000	6.0000e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1307					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.9732					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.7000e-004	3.0000e-005	2.9000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	5.6300e-003	5.6300e-003	1.0000e-005	0.0000	6.0000e-003
Total	1.1042	3.0000e-005	2.9000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	5.6300e-003	5.6300e-003	1.0000e-005	0.0000	6.0000e-003

Vantage CA3 Data Center (Phase 1 Operational) - Santa Clara County, Annual

6.2 Area by SubCategory**Mitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1307					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.9732					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.7000e-004	3.0000e-005	2.9000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	5.6300e-003	5.6300e-003	1.0000e-005	0.0000	6.0000e-003
Total	1.1042	3.0000e-005	2.9000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	5.6300e-003	5.6300e-003	1.0000e-005	0.0000	6.0000e-003

7.0 Water Detail**7.1 Mitigation Measures Water**

Vantage CA3 Data Center (Phase 1 Operational) - Santa Clara County, Annual

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.7999	0.0157	3.9000e-004	1.3079
Unmitigated	0.7999	0.0157	3.9000e-004	1.3079

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 1.09616	0.3863	5.0000e-005	1.0000e-005	0.3907
General Light Industry	0.416814 / 0	0.3594	0.0136	3.3000e-004	0.7970
General Office Building	0.062861 / 0	0.0542	2.0500e-003	5.0000e-005	0.1202
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		0.7999	0.0157	3.9000e-004	1.3079

Vantage CA3 Data Center (Phase 1 Operational) - Santa Clara County, Annual

7.2 Water by Land Use**Mitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 1.09616	0.3863	5.0000e-005	1.0000e-005	0.3907
General Light Industry	0.416814 / 0	0.3594	0.0136	3.3000e-004	0.7970
General Office Building	0.062861 / 0	0.0542	2.0500e-003	5.0000e-005	0.1202
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		0.7999	0.0157	3.9000e-004	1.3079

8.0 Waste Detail

8.1 Mitigation Measures Waste

Vantage CA3 Data Center (Phase 1 Operational) - Santa Clara County, Annual

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	60.3959	3.5693	0.0000	149.6283
Unmitigated	60.3959	3.5693	0.0000	149.6283

8.2 Waste by Land Use**Unmitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.08	0.0162	9.6000e-004	0.0000	0.0402
General Light Industry	267.22	54.2433	3.2057	0.0000	134.3853
General Office Building	30.23	6.1364	0.3627	0.0000	15.2027
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		60.3959	3.5693	0.0000	149.6283

Vantage CA3 Data Center (Phase 1 Operational) - Santa Clara County, Annual

8.2 Waste by Land Use**Mitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.08	0.0162	9.6000e-004	0.0000	0.0402
General Light Industry	267.22	54.2433	3.2057	0.0000	134.3853
General Office Building	30.23	6.1364	0.3627	0.0000	15.2027
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		60.3959	3.5693	0.0000	149.6283

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
----------------	--------	-----------	-----------	-------------	-------------	-----------

10.0 Stationary Equipment**Fire Pumps and Emergency Generators**

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
----------------	--------	-----------	------------	-------------	-------------	-----------

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
----------------	--------	----------------	-----------------	---------------	-----------

User Defined Equipment

Vantage CA3 Data Center (Phase 1 Operational) - Santa Clara County, Annual

Equipment Type	Number
----------------	--------

11.0 Vegetation

Vantage CA3 Data Center (Phase 2 Full Buildout) - Santa Clara County, Annual

Vantage CA3 Data Center (Phase 2 Full Buildout)

Santa Clara County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	33.00	1000sqft	0.27	33,000.00	0
General Office Building	32.00	1000sqft	0.26	32,000.00	0
General Light Industry	295.50	1000sqft	2.43	295,500.00	0
General Light Industry	25.00	1000sqft	0.57	25,000.00	0
General Light Industry	35.50	1000sqft	0.29	35,500.00	0
General Light Industry	50.00	1000sqft	0.41	50,000.00	0
Parking Lot	66.21	1000sqft	1.52	66,210.00	0
City Park	0.92	Acre	0.92	40,234.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	58
Climate Zone	4			Operational Year	2025
Utility Company	User Defined				
CO2 Intensity (lb/MW hr)	277	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Vantage CA3 Data Center (Phase 2 Full Buildout) - Santa Clara County, Annual

Project Characteristics - CO2 intensity factor from Silicon Valley Power (utility provider) for 2025.

Land Use - Land use square footage for full buildout

Construction Phase - Construction emissions estimated separately

Off-road Equipment - Construction emissions estimated separately

Off-road Equipment - Construction emissions estimated separately

Off-road Equipment - Construction emissions estimated separately

Trips and VMT - Construction emissions estimated separately

Vehicle Trips - Project trip rates are estimated in Table 11 of AQ appendix

Vehicle Emission Factors - EMFAC 2017 emission factors

Vehicle Emission Factors -

Vehicle Emission Factors -

Energy Use - Energy emissions are estimated separately

Water And Wastewater - Indoor water usage is calculated using annual water usage provided by Vantage (911,000 gallons/year) and distributed land use types by square footage.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	0.00
tblConstructionPhase	NumDays	230.00	0.00
tblConstructionPhase	NumDays	20.00	0.00
tblEnergyUse	LightingElect	3.08	0.00
tblEnergyUse	LightingElect	3.88	0.00
tblEnergyUse	LightingElect	0.35	0.00
tblEnergyUse	NT24E	3.70	0.00
tblEnergyUse	NT24E	7.84	0.00
tblEnergyUse	NT24NG	6.67	0.00
tblEnergyUse	NT24NG	0.06	0.00

Vantage CA3 Data Center (Phase 2 Full Buildout) - Santa Clara County, Annual

tblEnergyUse	T24E	1.48	0.00
tblEnergyUse	T24E	6.11	0.00
tblEnergyUse	T24NG	19.71	0.00
tblEnergyUse	T24NG	16.31	0.00
tblFleetMix	HHD	0.02	0.02
tblFleetMix	HHD	0.02	0.02
tblFleetMix	HHD	0.02	0.02
tblFleetMix	HHD	0.02	0.02
tblFleetMix	LDA	0.62	0.59
tblFleetMix	LDA	0.62	0.59
tblFleetMix	LDA	0.62	0.59
tblFleetMix	LDA	0.62	0.59
tblFleetMix	LDT1	0.04	0.05
tblFleetMix	LDT1	0.04	0.05
tblFleetMix	LDT1	0.04	0.05
tblFleetMix	LDT1	0.04	0.05
tblFleetMix	LDT2	0.18	0.18
tblFleetMix	LDT2	0.18	0.18
tblFleetMix	LDT2	0.18	0.18
tblFleetMix	LDT2	0.18	0.18
tblFleetMix	LHD1	0.01	0.02
tblFleetMix	LHD1	0.01	0.02
tblFleetMix	LHD1	0.01	0.02
tblFleetMix	LHD1	0.01	0.02
tblFleetMix	LHD2	5.0160e-003	5.3459e-003
tblFleetMix	LHD2	5.0160e-003	5.3459e-003
tblFleetMix	LHD2	5.0160e-003	5.3459e-003

Vantage CA3 Data Center (Phase 2 Full Buildout) - Santa Clara County, Annual

tblFleetMix	LHD2	5.0160e-003	5.3459e-003
tblFleetMix	MCY	5.2190e-003	5.0484e-003
tblFleetMix	MCY	5.2190e-003	5.0484e-003
tblFleetMix	MCY	5.2190e-003	5.0484e-003
tblFleetMix	MCY	5.2190e-003	5.0484e-003
tblFleetMix	MDV	0.10	0.11
tblFleetMix	MDV	0.10	0.11
tblFleetMix	MDV	0.10	0.11
tblFleetMix	MDV	0.10	0.11
tblFleetMix	MH	6.9100e-004	7.4591e-004
tblFleetMix	MH	6.9100e-004	7.4591e-004
tblFleetMix	MH	6.9100e-004	7.4591e-004
tblFleetMix	MH	6.9100e-004	7.4591e-004
tblFleetMix	MHD	0.01	0.01
tblFleetMix	MHD	0.01	0.01
tblFleetMix	MHD	0.01	0.01
tblFleetMix	MHD	0.01	0.01
tblFleetMix	OBUS	2.1830e-003	1.5554e-003
tblFleetMix	OBUS	2.1830e-003	1.5554e-003
tblFleetMix	OBUS	2.1830e-003	1.5554e-003
tblFleetMix	OBUS	2.1830e-003	1.5554e-003
tblFleetMix	SBUS	6.3400e-004	9.1610e-004
tblFleetMix	SBUS	6.3400e-004	9.1610e-004
tblFleetMix	SBUS	6.3400e-004	9.1610e-004
tblFleetMix	SBUS	6.3400e-004	9.1610e-004
tblFleetMix	UBUS	1.5080e-003	1.2346e-003
tblFleetMix	UBUS	1.5080e-003	1.2346e-003

Vantage CA3 Data Center (Phase 2 Full Buildout) - Santa Clara County, Annual

tblFleetMix	UBUS	1.5080e-003	1.2346e-003
tblFleetMix	UBUS	1.5080e-003	1.2346e-003
tblLandUse	LandUseSquareFeet	40,075.20	40,234.00
tblLandUse	LotAcreage	0.73	0.26
tblLandUse	LotAcreage	0.76	0.27
tblLandUse	LotAcreage	6.78	2.43
tblLandUse	LotAcreage	0.81	0.29
tblLandUse	LotAcreage	1.15	0.41
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblProjectCharacteristics	CH4IntensityFactor	0	0.029
tblProjectCharacteristics	CO2IntensityFactor	0	277
tblProjectCharacteristics	N2OIntensityFactor	0	0.006
tblTripsAndVMT	VendorTripNumber	95.00	0.00
tblTripsAndVMT	WorkerTripNumber	236.00	0.00
tblTripsAndVMT	WorkerTripNumber	47.00	0.00
tblVehicleEF	HHD	0.32	0.02
tblVehicleEF	HHD	0.05	0.05
tblVehicleEF	HHD	0.07	4.4152e-007
tblVehicleEF	HHD	1.54	6.32

Vantage CA3 Data Center (Phase 2 Full Buildout) - Santa Clara County, Annual

tblVehicleEF	HHD	0.93	0.41
tblVehicleEF	HHD	3.69	5.9249e-003
tblVehicleEF	HHD	4,258.83	1,030.26
tblVehicleEF	HHD	1,538.25	1,386.58
tblVehicleEF	HHD	11.71	0.05
tblVehicleEF	HHD	13.31	5.35
tblVehicleEF	HHD	1.86	2.67
tblVehicleEF	HHD	19.34	2.32
tblVehicleEF	HHD	6.5900e-003	2.5050e-003
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	6.0790e-003	0.02
tblVehicleEF	HHD	1.1100e-004	6.1400e-007
tblVehicleEF	HHD	6.3050e-003	2.3967e-003
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8400e-003	8.8873e-003
tblVehicleEF	HHD	5.8150e-003	0.02
tblVehicleEF	HHD	1.0200e-004	5.6455e-007
tblVehicleEF	HHD	9.5000e-005	1.8958e-006
tblVehicleEF	HHD	4.7640e-003	8.6122e-005
tblVehicleEF	HHD	0.40	0.43
tblVehicleEF	HHD	5.9000e-005	1.0665e-006
tblVehicleEF	HHD	0.09	0.03
tblVehicleEF	HHD	4.0600e-004	3.7912e-005
tblVehicleEF	HHD	0.08	2.3092e-006
tblVehicleEF	HHD	0.04	9.5864e-003
tblVehicleEF	HHD	0.01	0.01

Vantage CA3 Data Center (Phase 2 Full Buildout) - Santa Clara County, Annual

tblVehicleEF	HHD	1.7700e-004	4.6865e-007
tblVehicleEF	HHD	9.5000e-005	1.8958e-006
tblVehicleEF	HHD	4.7640e-003	8.6122e-005
tblVehicleEF	HHD	0.46	0.49
tblVehicleEF	HHD	5.9000e-005	1.0665e-006
tblVehicleEF	HHD	0.15	0.08
tblVehicleEF	HHD	4.0600e-004	3.7912e-005
tblVehicleEF	HHD	0.09	2.5283e-006
tblVehicleEF	LDA	2.7870e-003	1.5232e-003
tblVehicleEF	LDA	3.6670e-003	0.04
tblVehicleEF	LDA	0.44	0.49
tblVehicleEF	LDA	0.90	2.01
tblVehicleEF	LDA	214.54	229.23
tblVehicleEF	LDA	50.82	48.71
tblVehicleEF	LDA	0.04	0.03
tblVehicleEF	LDA	0.05	0.15
tblVehicleEF	LDA	0.04	0.04
tblVehicleEF	LDA	8.0000e-003	8.0000e-003
tblVehicleEF	LDA	1.5710e-003	1.2393e-003
tblVehicleEF	LDA	2.2130e-003	1.6285e-003
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	2.0000e-003	2.0000e-003
tblVehicleEF	LDA	1.4470e-003	1.1411e-003
tblVehicleEF	LDA	2.0350e-003	1.4974e-003
tblVehicleEF	LDA	0.02	0.03
tblVehicleEF	LDA	0.08	0.08
tblVehicleEF	LDA	0.02	0.03

Vantage CA3 Data Center (Phase 2 Full Buildout) - Santa Clara County, Annual

tblVehicleEF	LDA	6.9950e-003	5.5752e-003
tblVehicleEF	LDA	0.03	0.03
tblVehicleEF	LDA	0.05	0.18
tblVehicleEF	LDA	2.1480e-003	2.2444e-003
tblVehicleEF	LDA	5.2300e-004	4.7708e-004
tblVehicleEF	LDA	0.02	0.03
tblVehicleEF	LDA	0.08	0.08
tblVehicleEF	LDA	0.02	0.03
tblVehicleEF	LDA	0.01	8.1039e-003
tblVehicleEF	LDA	0.03	0.03
tblVehicleEF	LDA	0.05	0.19
tblVehicleEF	LDT1	6.2290e-003	3.1242e-003
tblVehicleEF	LDT1	8.5310e-003	0.05
tblVehicleEF	LDT1	0.83	0.77
tblVehicleEF	LDT1	1.85	2.17
tblVehicleEF	LDT1	271.39	275.18
tblVehicleEF	LDT1	63.79	59.10
tblVehicleEF	LDT1	0.08	0.06
tblVehicleEF	LDT1	0.10	0.20
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	8.0000e-003	8.0000e-003
tblVehicleEF	LDT1	2.0340e-003	1.5352e-003
tblVehicleEF	LDT1	2.7490e-003	1.9953e-003
tblVehicleEF	LDT1	0.02	0.02
tblVehicleEF	LDT1	2.0000e-003	2.0000e-003
tblVehicleEF	LDT1	1.8720e-003	1.4125e-003
tblVehicleEF	LDT1	2.5270e-003	1.8346e-003

Vantage CA3 Data Center (Phase 2 Full Buildout) - Santa Clara County, Annual

tblVehicleEF	LDT1	0.07	0.07
tblVehicleEF	LDT1	0.18	0.13
tblVehicleEF	LDT1	0.06	0.06
tblVehicleEF	LDT1	0.02	0.01
tblVehicleEF	LDT1	0.13	0.07
tblVehicleEF	LDT1	0.12	0.25
tblVehicleEF	LDT1	2.7230e-003	2.6953e-003
tblVehicleEF	LDT1	6.7000e-004	5.7889e-004
tblVehicleEF	LDT1	0.07	0.07
tblVehicleEF	LDT1	0.18	0.13
tblVehicleEF	LDT1	0.06	0.06
tblVehicleEF	LDT1	0.02	0.02
tblVehicleEF	LDT1	0.13	0.07
tblVehicleEF	LDT1	0.13	0.27
tblVehicleEF	LDT2	4.2320e-003	2.6573e-003
tblVehicleEF	LDT2	5.1880e-003	0.06
tblVehicleEF	LDT2	0.61	0.69
tblVehicleEF	LDT2	1.22	2.60
tblVehicleEF	LDT2	307.30	293.82
tblVehicleEF	LDT2	71.92	63.66
tblVehicleEF	LDT2	0.06	0.05
tblVehicleEF	LDT2	0.08	0.23
tblVehicleEF	LDT2	0.04	0.04
tblVehicleEF	LDT2	8.0000e-003	8.0000e-003
tblVehicleEF	LDT2	1.6620e-003	1.3050e-003
tblVehicleEF	LDT2	2.3470e-003	1.6653e-003
tblVehicleEF	LDT2	0.02	0.02

Vantage CA3 Data Center (Phase 2 Full Buildout) - Santa Clara County, Annual

tblVehicleEF	LDT2	2.0000e-003	2.0000e-003
tblVehicleEF	LDT2	1.5280e-003	1.2013e-003
tblVehicleEF	LDT2	2.1580e-003	1.5312e-003
tblVehicleEF	LDT2	0.04	0.06
tblVehicleEF	LDT2	0.09	0.11
tblVehicleEF	LDT2	0.03	0.06
tblVehicleEF	LDT2	0.01	0.01
tblVehicleEF	LDT2	0.07	0.06
tblVehicleEF	LDT2	0.07	0.26
tblVehicleEF	LDT2	3.0770e-003	2.8770e-003
tblVehicleEF	LDT2	7.3900e-004	6.2357e-004
tblVehicleEF	LDT2	0.04	0.06
tblVehicleEF	LDT2	0.09	0.11
tblVehicleEF	LDT2	0.03	0.06
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.07	0.06
tblVehicleEF	LDT2	0.08	0.29
tblVehicleEF	LHD1	4.8850e-003	4.8221e-003
tblVehicleEF	LHD1	0.01	7.2913e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.14	0.18
tblVehicleEF	LHD1	0.88	0.66
tblVehicleEF	LHD1	2.27	1.01
tblVehicleEF	LHD1	8.98	8.77
tblVehicleEF	LHD1	672.30	764.47
tblVehicleEF	LHD1	30.64	11.28
tblVehicleEF	LHD1	0.07	0.05

Vantage CA3 Data Center (Phase 2 Full Buildout) - Santa Clara County, Annual

tblVehicleEF	LHD1	0.91	0.57
tblVehicleEF	LHD1	0.90	0.29
tblVehicleEF	LHD1	8.5200e-004	8.5741e-004
tblVehicleEF	LHD1	0.08	0.08
tblVehicleEF	LHD1	0.01	9.8072e-003
tblVehicleEF	LHD1	0.01	9.0911e-003
tblVehicleEF	LHD1	8.5600e-004	2.3906e-004
tblVehicleEF	LHD1	8.1500e-004	8.2032e-004
tblVehicleEF	LHD1	0.03	0.03
tblVehicleEF	LHD1	2.5500e-003	2.4518e-003
tblVehicleEF	LHD1	0.01	8.6510e-003
tblVehicleEF	LHD1	7.8700e-004	2.1980e-004
tblVehicleEF	LHD1	2.4330e-003	1.8121e-003
tblVehicleEF	LHD1	0.10	0.07
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.2680e-003	9.4393e-004
tblVehicleEF	LHD1	0.11	0.09
tblVehicleEF	LHD1	0.31	0.19
tblVehicleEF	LHD1	0.22	0.06
tblVehicleEF	LHD1	9.0000e-005	8.5003e-005
tblVehicleEF	LHD1	6.5890e-003	7.4615e-003
tblVehicleEF	LHD1	3.4900e-004	1.1160e-004
tblVehicleEF	LHD1	2.4330e-003	1.8121e-003
tblVehicleEF	LHD1	0.10	0.07
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.2680e-003	9.4393e-004
tblVehicleEF	LHD1	0.13	0.10

Vantage CA3 Data Center (Phase 2 Full Buildout) - Santa Clara County, Annual

tblVehicleEF	LHD1	0.31	0.19
tblVehicleEF	LHD1	0.25	0.07
tblVehicleEF	LHD2	3.0460e-003	2.9269e-003
tblVehicleEF	LHD2	6.5970e-003	6.3425e-003
tblVehicleEF	LHD2	5.2800e-003	7.0912e-003
tblVehicleEF	LHD2	0.12	0.14
tblVehicleEF	LHD2	0.51	0.56
tblVehicleEF	LHD2	1.04	0.57
tblVehicleEF	LHD2	13.87	13.74
tblVehicleEF	LHD2	694.28	740.94
tblVehicleEF	LHD2	23.21	7.36
tblVehicleEF	LHD2	0.09	0.09
tblVehicleEF	LHD2	0.50	0.68
tblVehicleEF	LHD2	0.38	0.16
tblVehicleEF	LHD2	1.1820e-003	1.4523e-003
tblVehicleEF	LHD2	0.09	0.09
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.9000e-004	1.2183e-004
tblVehicleEF	LHD2	1.1310e-003	1.3894e-003
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	2.6980e-003	2.6966e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.5800e-004	1.1202e-004
tblVehicleEF	LHD2	6.9200e-004	9.1283e-004
tblVehicleEF	LHD2	0.03	0.04
tblVehicleEF	LHD2	0.01	0.02

Vantage CA3 Data Center (Phase 2 Full Buildout) - Santa Clara County, Annual

tblVehicleEF	LHD2	3.8500e-004	4.8483e-004
tblVehicleEF	LHD2	0.10	0.11
tblVehicleEF	LHD2	0.06	0.09
tblVehicleEF	LHD2	0.07	0.04
tblVehicleEF	LHD2	1.3500e-004	1.3135e-004
tblVehicleEF	LHD2	6.7490e-003	7.1523e-003
tblVehicleEF	LHD2	2.5000e-004	7.2869e-005
tblVehicleEF	LHD2	6.9200e-004	9.1283e-004
tblVehicleEF	LHD2	0.03	0.04
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	3.8500e-004	4.8483e-004
tblVehicleEF	LHD2	0.11	0.12
tblVehicleEF	LHD2	0.06	0.09
tblVehicleEF	LHD2	0.08	0.04
tblVehicleEF	MCY	0.45	0.32
tblVehicleEF	MCY	0.16	0.25
tblVehicleEF	MCY	18.24	18.37
tblVehicleEF	MCY	10.23	9.09
tblVehicleEF	MCY	170.37	210.00
tblVehicleEF	MCY	44.38	60.43
tblVehicleEF	MCY	1.14	1.14
tblVehicleEF	MCY	0.32	0.27
tblVehicleEF	MCY	0.01	0.01
tblVehicleEF	MCY	4.0000e-003	4.0000e-003
tblVehicleEF	MCY	2.0610e-003	2.0310e-003
tblVehicleEF	MCY	3.4990e-003	2.9305e-003
tblVehicleEF	MCY	5.0400e-003	5.0400e-003

Vantage CA3 Data Center (Phase 2 Full Buildout) - Santa Clara County, Annual

tblVehicleEF	MCY	1.0000e-003	1.0000e-003
tblVehicleEF	MCY	1.9250e-003	1.8965e-003
tblVehicleEF	MCY	3.2870e-003	2.7506e-003
tblVehicleEF	MCY	0.89	0.90
tblVehicleEF	MCY	0.67	0.67
tblVehicleEF	MCY	0.48	0.48
tblVehicleEF	MCY	2.17	2.18
tblVehicleEF	MCY	0.56	0.52
tblVehicleEF	MCY	2.17	1.92
tblVehicleEF	MCY	2.0660e-003	2.0782e-003
tblVehicleEF	MCY	6.7500e-004	5.9800e-004
tblVehicleEF	MCY	0.89	0.90
tblVehicleEF	MCY	0.67	0.67
tblVehicleEF	MCY	0.48	0.48
tblVehicleEF	MCY	2.70	2.71
tblVehicleEF	MCY	0.56	0.52
tblVehicleEF	MCY	2.36	2.09
tblVehicleEF	MDV	7.6840e-003	2.9887e-003
tblVehicleEF	MDV	0.01	0.06
tblVehicleEF	MDV	0.90	0.72
tblVehicleEF	MDV	2.22	2.80
tblVehicleEF	MDV	414.29	354.96
tblVehicleEF	MDV	95.41	75.70
tblVehicleEF	MDV	0.11	0.06
tblVehicleEF	MDV	0.19	0.26
tblVehicleEF	MDV	0.04	0.04
tblVehicleEF	MDV	8.0000e-003	8.0000e-003

Vantage CA3 Data Center (Phase 2 Full Buildout) - Santa Clara County, Annual

tblVehicleEF	MDV	1.7530e-003	1.3715e-003
tblVehicleEF	MDV	2.4300e-003	1.7376e-003
tblVehicleEF	MDV	0.02	0.02
tblVehicleEF	MDV	2.0000e-003	2.0000e-003
tblVehicleEF	MDV	1.6150e-003	1.2649e-003
tblVehicleEF	MDV	2.2340e-003	1.5977e-003
tblVehicleEF	MDV	0.06	0.07
tblVehicleEF	MDV	0.15	0.12
tblVehicleEF	MDV	0.06	0.06
tblVehicleEF	MDV	0.02	0.01
tblVehicleEF	MDV	0.10	0.06
tblVehicleEF	MDV	0.16	0.31
tblVehicleEF	MDV	4.1460e-003	3.4724e-003
tblVehicleEF	MDV	9.9300e-004	7.4143e-004
tblVehicleEF	MDV	0.06	0.07
tblVehicleEF	MDV	0.15	0.12
tblVehicleEF	MDV	0.06	0.06
tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.10	0.06
tblVehicleEF	MDV	0.18	0.34
tblVehicleEF	MH	0.02	8.5737e-003
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	1.43	0.80
tblVehicleEF	MH	4.93	1.94
tblVehicleEF	MH	1,202.55	1,472.19
tblVehicleEF	MH	58.11	17.63
tblVehicleEF	MH	1.13	1.26

Vantage CA3 Data Center (Phase 2 Full Buildout) - Santa Clara County, Annual

tblVehicleEF	MH	0.74	0.24
tblVehicleEF	MH	0.13	0.13
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	1.0400e-003	2.5028e-004
tblVehicleEF	MH	0.06	0.06
tblVehicleEF	MH	3.2210e-003	3.2832e-003
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	9.5600e-004	2.3012e-004
tblVehicleEF	MH	0.69	0.58
tblVehicleEF	MH	0.06	0.05
tblVehicleEF	MH	0.25	0.21
tblVehicleEF	MH	0.07	0.06
tblVehicleEF	MH	0.02	0.01
tblVehicleEF	MH	0.29	0.09
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	6.6700e-004	1.7444e-004
tblVehicleEF	MH	0.69	0.58
tblVehicleEF	MH	0.06	0.05
tblVehicleEF	MH	0.25	0.21
tblVehicleEF	MH	0.10	0.08
tblVehicleEF	MH	0.02	0.01
tblVehicleEF	MH	0.31	0.10
tblVehicleEF	MHD	0.02	3.6172e-003
tblVehicleEF	MHD	3.7120e-003	1.5118e-003
tblVehicleEF	MHD	0.04	8.8697e-003
tblVehicleEF	MHD	0.37	0.39

Vantage CA3 Data Center (Phase 2 Full Buildout) - Santa Clara County, Annual

tblVehicleEF	MHD	0.31	0.21
tblVehicleEF	MHD	4.99	1.02
tblVehicleEF	MHD	133.65	70.85
tblVehicleEF	MHD	1,182.56	1,065.91
tblVehicleEF	MHD	60.25	8.98
tblVehicleEF	MHD	0.36	0.40
tblVehicleEF	MHD	1.09	1.45
tblVehicleEF	MHD	10.18	1.70
tblVehicleEF	MHD	9.6000e-005	3.2271e-004
tblVehicleEF	MHD	0.13	0.13
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	3.1040e-003	7.0641e-003
tblVehicleEF	MHD	8.5200e-004	1.1297e-004
tblVehicleEF	MHD	9.1000e-005	3.0875e-004
tblVehicleEF	MHD	0.06	0.06
tblVehicleEF	MHD	3.0000e-003	3.0000e-003
tblVehicleEF	MHD	2.9630e-003	6.7519e-003
tblVehicleEF	MHD	7.8400e-004	1.0387e-004
tblVehicleEF	MHD	7.8000e-004	3.5534e-004
tblVehicleEF	MHD	0.04	0.02
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	4.2300e-004	1.8758e-004
tblVehicleEF	MHD	0.04	0.01
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.30	0.05
tblVehicleEF	MHD	1.2870e-003	6.7217e-004
tblVehicleEF	MHD	0.01	0.01

Vantage CA3 Data Center (Phase 2 Full Buildout) - Santa Clara County, Annual

tblVehicleEF	MHD	6.9000e-004	8.8849e-005
tblVehicleEF	MHD	7.8000e-004	3.5534e-004
tblVehicleEF	MHD	0.04	0.02
tblVehicleEF	MHD	0.03	0.02
tblVehicleEF	MHD	4.2300e-004	1.8758e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.33	0.05
tblVehicleEF	OBUS	0.01	7.0666e-003
tblVehicleEF	OBUS	5.3980e-003	3.3172e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.24	0.60
tblVehicleEF	OBUS	0.39	0.39
tblVehicleEF	OBUS	4.64	1.79
tblVehicleEF	OBUS	101.21	94.25
tblVehicleEF	OBUS	1,288.15	1,303.83
tblVehicleEF	OBUS	66.36	14.82
tblVehicleEF	OBUS	0.22	0.39
tblVehicleEF	OBUS	0.92	1.46
tblVehicleEF	OBUS	2.67	1.10
tblVehicleEF	OBUS	2.0000e-005	1.2737e-004
tblVehicleEF	OBUS	0.13	0.13
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	2.8390e-003	7.4739e-003
tblVehicleEF	OBUS	8.5700e-004	1.4735e-004
tblVehicleEF	OBUS	1.9000e-005	1.2186e-004
tblVehicleEF	OBUS	0.06	0.06

Vantage CA3 Data Center (Phase 2 Full Buildout) - Santa Clara County, Annual

tblVehicleEF	OBUS	3.0000e-003	3.0000e-003
tblVehicleEF	OBUS	2.6960e-003	7.1375e-003
tblVehicleEF	OBUS	7.8800e-004	1.3548e-004
tblVehicleEF	OBUS	1.1610e-003	1.0874e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.03	0.05
tblVehicleEF	OBUS	5.1700e-004	4.8644e-004
tblVehicleEF	OBUS	0.04	0.02
tblVehicleEF	OBUS	0.03	0.04
tblVehicleEF	OBUS	0.29	0.09
tblVehicleEF	OBUS	9.7700e-004	8.9517e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	7.4500e-004	1.4662e-004
tblVehicleEF	OBUS	1.1610e-003	1.0874e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.04	0.06
tblVehicleEF	OBUS	5.1700e-004	4.8644e-004
tblVehicleEF	OBUS	0.05	0.03
tblVehicleEF	OBUS	0.03	0.04
tblVehicleEF	OBUS	0.32	0.09
tblVehicleEF	SBUS	0.82	0.06
tblVehicleEF	SBUS	0.01	5.7285e-003
tblVehicleEF	SBUS	0.07	5.1559e-003
tblVehicleEF	SBUS	8.35	2.37
tblVehicleEF	SBUS	0.87	0.47
tblVehicleEF	SBUS	8.98	0.74
tblVehicleEF	SBUS	1,084.06	345.98

Vantage CA3 Data Center (Phase 2 Full Buildout) - Santa Clara County, Annual

tblVehicleEF	SBUS	1,038.50	1,037.30
tblVehicleEF	SBUS	57.91	4.26
tblVehicleEF	SBUS	7.20	3.34
tblVehicleEF	SBUS	3.06	4.41
tblVehicleEF	SBUS	11.67	0.90
tblVehicleEF	SBUS	5.9830e-003	3.3294e-003
tblVehicleEF	SBUS	0.74	0.74
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	9.4800e-004	5.1198e-005
tblVehicleEF	SBUS	5.7240e-003	3.1853e-003
tblVehicleEF	SBUS	0.32	0.32
tblVehicleEF	SBUS	2.6150e-003	2.7112e-003
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	8.7200e-004	4.7075e-005
tblVehicleEF	SBUS	3.3380e-003	5.9785e-004
tblVehicleEF	SBUS	0.03	5.7952e-003
tblVehicleEF	SBUS	0.99	0.26
tblVehicleEF	SBUS	1.5210e-003	2.6714e-004
tblVehicleEF	SBUS	0.10	0.08
tblVehicleEF	SBUS	0.02	0.01
tblVehicleEF	SBUS	0.45	0.03
tblVehicleEF	SBUS	0.01	3.2943e-003
tblVehicleEF	SBUS	0.01	9.9088e-003
tblVehicleEF	SBUS	7.3400e-004	4.2185e-005
tblVehicleEF	SBUS	3.3380e-003	5.9785e-004
tblVehicleEF	SBUS	0.03	5.7952e-003

Vantage CA3 Data Center (Phase 2 Full Buildout) - Santa Clara County, Annual

tblVehicleEF	SBUS	1.43	0.38
tblVehicleEF	SBUS	1.5210e-003	2.6714e-004
tblVehicleEF	SBUS	0.12	0.09
tblVehicleEF	SBUS	0.02	0.01
tblVehicleEF	SBUS	0.49	0.03
tblVehicleEF	UBUS	0.23	1.66
tblVehicleEF	UBUS	0.04	1.6702e-003
tblVehicleEF	UBUS	3.99	12.57
tblVehicleEF	UBUS	7.27	0.14
tblVehicleEF	UBUS	2,026.89	1,657.48
tblVehicleEF	UBUS	110.88	1.39
tblVehicleEF	UBUS	7.88	0.71
tblVehicleEF	UBUS	14.06	0.01
tblVehicleEF	UBUS	0.58	0.07
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.17	5.2023e-003
tblVehicleEF	UBUS	1.1660e-003	1.5176e-005
tblVehicleEF	UBUS	0.25	0.03
tblVehicleEF	UBUS	3.0000e-003	8.3315e-003
tblVehicleEF	UBUS	0.16	4.9757e-003
tblVehicleEF	UBUS	1.0720e-003	1.3953e-005
tblVehicleEF	UBUS	2.0210e-003	2.3551e-005
tblVehicleEF	UBUS	0.03	2.0107e-004
tblVehicleEF	UBUS	1.0840e-003	1.0645e-005
tblVehicleEF	UBUS	0.41	0.02
tblVehicleEF	UBUS	7.6040e-003	3.9758e-005
tblVehicleEF	UBUS	0.57	6.9811e-003

Vantage CA3 Data Center (Phase 2 Full Buildout) - Santa Clara County, Annual

tblVehicleEF	UBUS	0.02	0.01
tblVehicleEF	UBUS	1.2400e-003	1.3800e-005
tblVehicleEF	UBUS	2.0210e-003	2.3551e-005
tblVehicleEF	UBUS	0.03	2.0107e-004
tblVehicleEF	UBUS	1.0840e-003	1.0645e-005
tblVehicleEF	UBUS	0.68	1.70
tblVehicleEF	UBUS	7.6040e-003	3.9758e-005
tblVehicleEF	UBUS	0.62	7.6434e-003
tblVehicleTrips	ST_TR	22.75	0.00
tblVehicleTrips	ST_TR	1.32	0.13
tblVehicleTrips	ST_TR	2.46	0.25
tblVehicleTrips	SU_TR	16.74	0.00
tblVehicleTrips	SU_TR	0.68	0.07
tblVehicleTrips	SU_TR	1.05	0.11
tblVehicleTrips	WD_TR	1.89	0.00
tblVehicleTrips	WD_TR	6.97	0.71
tblVehicleTrips	WD_TR	11.03	1.12
tblWater	IndoorWaterUseRate	93,887,500.00	785,278.00
tblWater	IndoorWaterUseRate	11,552,693.62	125,722.00
tblWater	OutdoorWaterUseRate	7,080,683.19	0.00

2.0 Emissions Summary

Vantage CA3 Data Center (Phase 2 Full Buildout) - Santa Clara County, Annual

[illegible][illegible]

Vantage CA3 Data Center (Phase 2 Full Buildout) - Santa Clara County, Annual

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
		Highest		

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	2.0916	4.0000e-005	4.9300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	9.6200e-003	9.6200e-003	3.0000e-005	0.0000	0.0102
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0663	0.1643	0.8182	2.6400e-003	0.2851	2.0300e-003	0.2872	0.0763	1.9000e-003	0.0782	0.0000	247.2960	247.2960	9.8600e-003	0.0000	247.5426
Waste						0.0000	0.0000		0.0000	0.0000	114.4808	0.0000	114.4808	6.7656	0.0000	283.6214
Water						0.0000	0.0000		0.0000	0.0000	0.2890	1.1014	1.3904	0.0298	7.2000e-004	2.3514
Total	2.1578	0.1644	0.8231	2.6400e-003	0.2851	2.0500e-003	0.2872	0.0763	1.9200e-003	0.0782	114.7698	248.4070	363.1768	6.8053	7.2000e-004	533.5256

Vantage CA3 Data Center (Phase 2 Full Buildout) - Santa Clara County, Annual

2.2 Overall Operational**Mitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	2.0916	4.0000e-005	4.9300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	9.6200e-003	9.6200e-003	3.0000e-005	0.0000	0.0102
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0663	0.1643	0.8182	2.6400e-003	0.2851	2.0300e-003	0.2872	0.0763	1.9000e-003	0.0782	0.0000	247.2960	247.2960	9.8600e-003	0.0000	247.5426
Waste						0.0000	0.0000		0.0000	0.0000	114.4808	0.0000	114.4808	6.7656	0.0000	283.6214
Water						0.0000	0.0000		0.0000	0.0000	0.2890	1.1014	1.3904	0.0298	7.2000e-004	2.3514
Total	2.1578	0.1644	0.8231	2.6400e-003	0.2851	2.0500e-003	0.2872	0.0763	1.9200e-003	0.0782	114.7698	248.4070	363.1768	6.8053	7.2000e-004	533.5256

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail**Construction Phase**

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Building Construction	Building Construction	1/1/2024	12/31/2023	5	0	
2	Paving	Paving	11/16/2024	11/15/2024	5	0	
3	Architectural Coating	Architectural Coating	12/14/2024	12/13/2024	5	0	

Vantage CA3 Data Center (Phase 2 Full Buildout) - Santa Clara County, Annual

Acres of Grading (Site Preparation Phase): 0**Acres of Grading (Grading Phase): 0****Acres of Paving: 1.52****Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 706,500; Non-Residential Outdoor: 235,500; Striped Parking Area: 3,973 (Architectural Coating – sqft)****OffRoad Equipment**

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Building Construction	Cranes	0	7.00	231	0.29
Building Construction	Forklifts	0	8.00	89	0.20
Building Construction	Generator Sets	0	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Building Construction	Welders	0	8.00	46	0.45
Paving	Pavers	0	8.00	130	0.42
Paving	Paving Equipment	0	8.00	132	0.36
Paving	Rollers	0	8.00	80	0.38
Architectural Coating	Air Compressors	0	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Building Construction	0	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	0	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	0	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Vantage CA3 Data Center (Phase 2 Full Buildout) - Santa Clara County, Annual

3.3 Paving - 2024

Unmitigated Construction On-Site

[illegible]

Unmitigated Construction Off-Site

[illegible]

Vantage CA3 Data Center (Phase 2 Full Buildout) - Santa Clara County, Annual

3.3 Paving - 2024

Mitigated Construction On-Site

[illegible]

Mitigated Construction Off-Site

[illegible]

Vantage CA3 Data Center (Phase 2 Full Buildout) - Santa Clara County, Annual

3.4 Architectural Coating - 2024

Unmitigated Construction On-Site

[illegible]

Unmitigated Construction Off-Site

[illegible]

Vantage CA3 Data Center (Phase 2 Full Buildout) - Santa Clara County, Annual

3.4 Architectural Coating - 2024**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.0 Operational Detail - Mobile

Vantage CA3 Data Center (Phase 2 Full Buildout) - Santa Clara County, Annual

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0663	0.1643	0.8182	2.6400e-003	0.2851	2.0300e-003	0.2872	0.0763	1.9000e-003	0.0782	0.0000	247.2960	247.2960	9.8600e-003	0.0000	247.5426
Unmitigated	0.0663	0.1643	0.8182	2.6400e-003	0.2851	2.0300e-003	0.2872	0.0763	1.9000e-003	0.0782	0.0000	247.2960	247.2960	9.8600e-003	0.0000	247.5426

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	0.00	0.00	0.00		
General Light Industry	209.81	38.42	20.69	462,169	462,169
General Light Industry	17.75	3.25	1.75	39,101	39,101
General Light Industry	25.21	4.62	2.49	55,523	55,523
General Light Industry	35.50	6.50	3.50	78,201	78,201
General Office Building	36.96	8.25	3.63	67,145	67,145
General Office Building	35.84	8.00	3.52	65,111	65,111
Parking Lot	0.00	0.00	0.00		
Total	361.06	69.03	35.57	767,249	767,249

4.3 Trip Type Information

Vantage CA3 Data Center (Phase 2 Full Buildout) - Santa Clara County, Annual

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	9.50	7.30	7.30	33.00	48.00	19.00	66	28	6
General Light Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3
General Light Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3
General Light Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3
General Light Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3
General Office Building	9.50	7.30	7.30	33.00	48.00	19.00	77	19	4
General Office Building	9.50	7.30	7.30	33.00	48.00	19.00	77	19	4
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.593207	0.053200	0.175281	0.106471	0.020913	0.005346	0.013514	0.022567	0.001555	0.001235	0.005048	0.000916	0.000746
General Light Industry	0.593207	0.053200	0.175281	0.106471	0.020913	0.005346	0.013514	0.022567	0.001555	0.001235	0.005048	0.000916	0.000746
General Office Building	0.593207	0.053200	0.175281	0.106471	0.020913	0.005346	0.013514	0.022567	0.001555	0.001235	0.005048	0.000916	0.000746
Parking Lot	0.593207	0.053200	0.175281	0.106471	0.020913	0.005346	0.013514	0.022567	0.001555	0.001235	0.005048	0.000916	0.000746

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Vantage CA3 Data Center (Phase 2 Full Buildout) - Santa Clara County, Annual

[illegible]

5.2 Energy by Land Use - NaturalGas

Unmitigated

[illegible]

Vantage CA3 Data Center (Phase 2 Full Buildout) - Santa Clara County, Annual

5.2 Energy by Land Use - NaturalGas

Mitigated

[illegible]

Vantage CA3 Data Center (Phase 2 Full Buildout) - Santa Clara County, Annual

5.3 Energy by Land Use - Electricity**Unmitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
General Light Industry	0	0.0000	0.0000	0.0000	0.0000
General Office Building	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

Vantage CA3 Data Center (Phase 2 Full Buildout) - Santa Clara County, Annual

5.3 Energy by Land Use - Electricity**Mitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
General Light Industry	0	0.0000	0.0000	0.0000	0.0000
General Office Building	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

6.0 Area Detail**6.1 Mitigation Measures Area**

Vantage CA3 Data Center (Phase 2 Full Buildout) - Santa Clara County, Annual

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	2.0916	4.0000e-005	4.9300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	9.6200e-003	9.6200e-003	3.0000e-005	0.0000	0.0102
Unmitigated	2.0916	4.0000e-005	4.9300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	9.6200e-003	9.6200e-003	3.0000e-005	0.0000	0.0102

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.2470					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.8442					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	4.5000e-004	4.0000e-005	4.9300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	9.6200e-003	9.6200e-003	3.0000e-005	0.0000	0.0102
Total	2.0916	4.0000e-005	4.9300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	9.6200e-003	9.6200e-003	3.0000e-005	0.0000	0.0102

Vantage CA3 Data Center (Phase 2 Full Buildout) - Santa Clara County, Annual

6.2 Area by SubCategory**Mitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.2470					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.8442					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	4.5000e-004	4.0000e-005	4.9300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	9.6200e-003	9.6200e-003	3.0000e-005	0.0000	0.0102
Total	2.0916	4.0000e-005	4.9300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	9.6200e-003	9.6200e-003	3.0000e-005	0.0000	0.0102

7.0 Water Detail**7.1 Mitigation Measures Water**

Vantage CA3 Data Center (Phase 2 Full Buildout) - Santa Clara County, Annual

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	1.3904	0.0298	7.2000e-004	2.3514
Unmitigated	1.3904	0.0298	7.2000e-004	2.3514

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 1.09616	0.4821	5.0000e-005	1.0000e-005	0.4864
General Light Industry	0.785278 / 0	0.7830	0.0256	6.2000e-004	1.6076
General Office Building	0.125722 / 0	0.1254	4.1100e-003	1.0000e-004	0.2574
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		1.3904	0.0298	7.3000e-004	2.3514

Vantage CA3 Data Center (Phase 2 Full Buildout) - Santa Clara County, Annual

7.2 Water by Land Use**Mitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 1.09616	0.4821	5.0000e-005	1.0000e-005	0.4864
General Light Industry	0.785278 / 0	0.7830	0.0256	6.2000e-004	1.6076
General Office Building	0.125722 / 0	0.1254	4.1100e-003	1.0000e-004	0.2574
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		1.3904	0.0298	7.3000e-004	2.3514

8.0 Waste Detail

8.1 Mitigation Measures Waste

Vantage CA3 Data Center (Phase 2 Full Buildout) - Santa Clara County, Annual

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	114.4808	6.7656	0.0000	283.6214
Unmitigated	114.4808	6.7656	0.0000	283.6214

8.2 Waste by Land Use**Unmitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.08	0.0162	9.6000e-004	0.0000	0.0402
General Light Industry	503.44	102.1938	6.0395	0.0000	253.1807
General Office Building	60.45	12.2708	0.7252	0.0000	30.4004
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		114.4808	6.7656	0.0000	283.6214

Vantage CA3 Data Center (Phase 2 Full Buildout) - Santa Clara County, Annual

8.2 Waste by Land Use**Mitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.08	0.0162	9.6000e-004	0.0000	0.0402
General Light Industry	503.44	102.1938	6.0395	0.0000	253.1807
General Office Building	60.45	12.2708	0.7252	0.0000	30.4004
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		114.4808	6.7656	0.0000	283.6214

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
----------------	--------	-----------	-----------	-------------	-------------	-----------

10.0 Stationary Equipment**Fire Pumps and Emergency Generators**

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
----------------	--------	-----------	------------	-------------	-------------	-----------

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
----------------	--------	----------------	-----------------	---------------	-----------

User Defined Equipment

Vantage CA3 Data Center (Phase 2 Full Buildout) - Santa Clara County, Annual

Equipment Type	Number
----------------	--------

11.0 Vegetation

APPENDIX B
PETERSON POWER SYSTEMS: ecoCUBE
DESIGN CRITERIA EMISSIONS
SPECIFICATION SHEET

APPENDIX B

Biological Resource Assessment

**Biological Resources Assessment
CA3-2590 Walsh Avenue
City of Santa Clara, Santa Clara County, California**

Project Applicant:
Vantage Data Centers
45200 Vantage Data Plaza
Sterling, VA 20166

Contact: Greg Thompson, Senior Director

Prepared by:
FirstCarbon Solutions
1350 Treat Boulevard, Suite 380
Walnut Creek, CA 94597
888.826.5814

Contact: Kevin Derby, Senior Biologist

Date: March 30, 2021

THIS PAGE INTENTIONALLY LEFT BLANK

Table of Contents

Section 1: Introduction	1
1.1 - Project Location.....	1
1.2 - Project Description	1
Section 2: Regulatory Setting	7
2.1 - Federal	7
2.2 - State.....	8
Section 3: Methods	13
3.1 - Literature Review.....	13
3.2 - Field Survey	15
Section 4: Results.....	17
4.1 - Environmental Setting	17
4.2 - Vegetation Communities and Land Cover	21
4.3 - Wildlife	21
4.4 - Wildlife Movement Corridors.....	22
4.5 - Trees	22
Section 5: Sensitive Biological Resources.....	23
5.1 - Sensitive Natural Communities	23
5.2 - Special-status Plant Species	23
5.3 - Special-status Wildlife Species	23
5.4 - Jurisdictional Waters and Wetlands	25
5.5 - Protected Trees.....	25
Section 6: Impact Analysis and Recommendations	33
6.1 - Special-status Wildlife Species	33
6.2 - Protected Trees.....	34
Appendix A: Site Photographs	
Appendix B: Special-status Species Tables	
Appendix C: Tree Inventory Report	

List of Tables

Table 1: Soil Type Present within Project Site.....	17
---	----

List of Exhibits

Exhibit 1: Regional Location Map	3
Exhibit 2: Local Vicinity Map.....	5
Exhibit 3: Soils Map	19
Exhibit 4: Land Cover and Vegetation.....	27
Exhibit 5: CNDDDB Special-status Species Occurrences within a 5-mile Radius	29
Exhibit 6: Proposed Project with Tree Locations	31

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 1: INTRODUCTION

At the request of Advantage Data Centers (project applicant), FirstCarbon Solutions(FCS) conducted a Biological Resource Assessment (BRA) for the proposed CA3-2590 Walsh Avenue Project (proposed project) located in Santa Clara, California. The purpose of the BRA was to (1) document existing and potentially occurring biological resources on the project site and adjacent areas; (2) summarize relevant local, State, and federal laws and regulations pertaining to biological resources; (3) analyze potential project-related impacts on regulation and protected biological resources; and (4) recommend appropriate measures to mitigate potential impacts on biological resources to less-than-significant levels.

1.1 - Project Location

The proposed project site is located in the City of Santa Clara, in Santa Clara County, California (Exhibit 1). The proposed CA3DC site encompasses approximately 6.69 acres and is located at 2590 Walsh Avenue in Santa Clara, California, Assessor's Parcel Number (APN) 216-28-112 (Exhibit 2). The project site is located within Township 6S, Range 1W, Section 33 of the *San Jose West, California* United States Geological Survey (USGS) 7.5-minute Topographic Quadrangle Map.

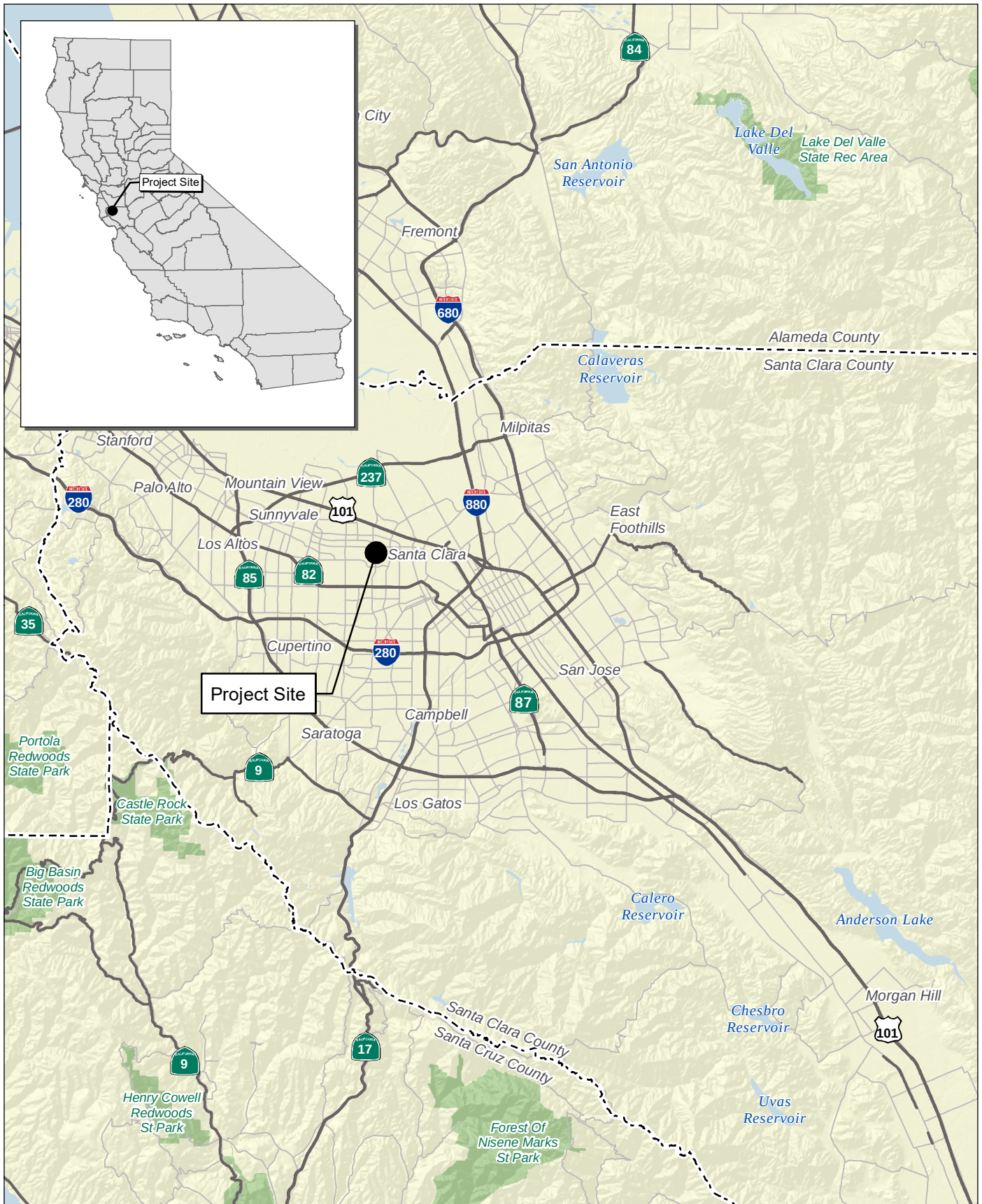
The property is irregularly shaped and is generally bound to the northwest by a microelectronics testing facility, to the northeast by a software research and development facility, to the south by a railroad line operated by Caltrain, to the east by Walsh Avenue, and to the west by a Silicon Valley Power (SVP) substation. The Vantage Santa Clara Data Center Campus CA1 is located to the east of the site across Walsh Avenue. The main entrance to the CA3DC building is located on Walsh Avenue at the northeast corner of the property, with a secondary entrance also on Walsh Avenue near the northernmost portion of the property. The closest residential uses are to the south across the railroad right-of-way.

1.2 - Project Description

The project applicant proposes to construct an emergency backup generating facility (CA3BGF) with a generation capacity of up to 96 megawatts to support the need for the CA3DC to provide an uninterruptible power supply for the tenant's servers. The CA3BGF would consist of 44 diesel-fired backup generators arranged in a generation yard located on the north side of the CA3DC. Forty of the generators would be dedicated to supporting the electricity needs of the data center in case of a loss of utility power, and four of the generators would be used to support redundant critical cooling equipment and other general building and life safety services (house generators). Project elements would also include switchgear and distribution cabling to interconnect the generators to their respective portion of the building.

The existing single-story office building would be demolished. The proposed project would remove the existing shrubs and groundcovers on the site, while protecting in-place trees that are not in conflict with proposed utilities, grading, stormwater treatment facilities, and architectural improvements.

THIS PAGE INTENTIONALLY LEFT BLANK



Source: Census 2000 Data, The California Spatial Information Library (CaSIL).

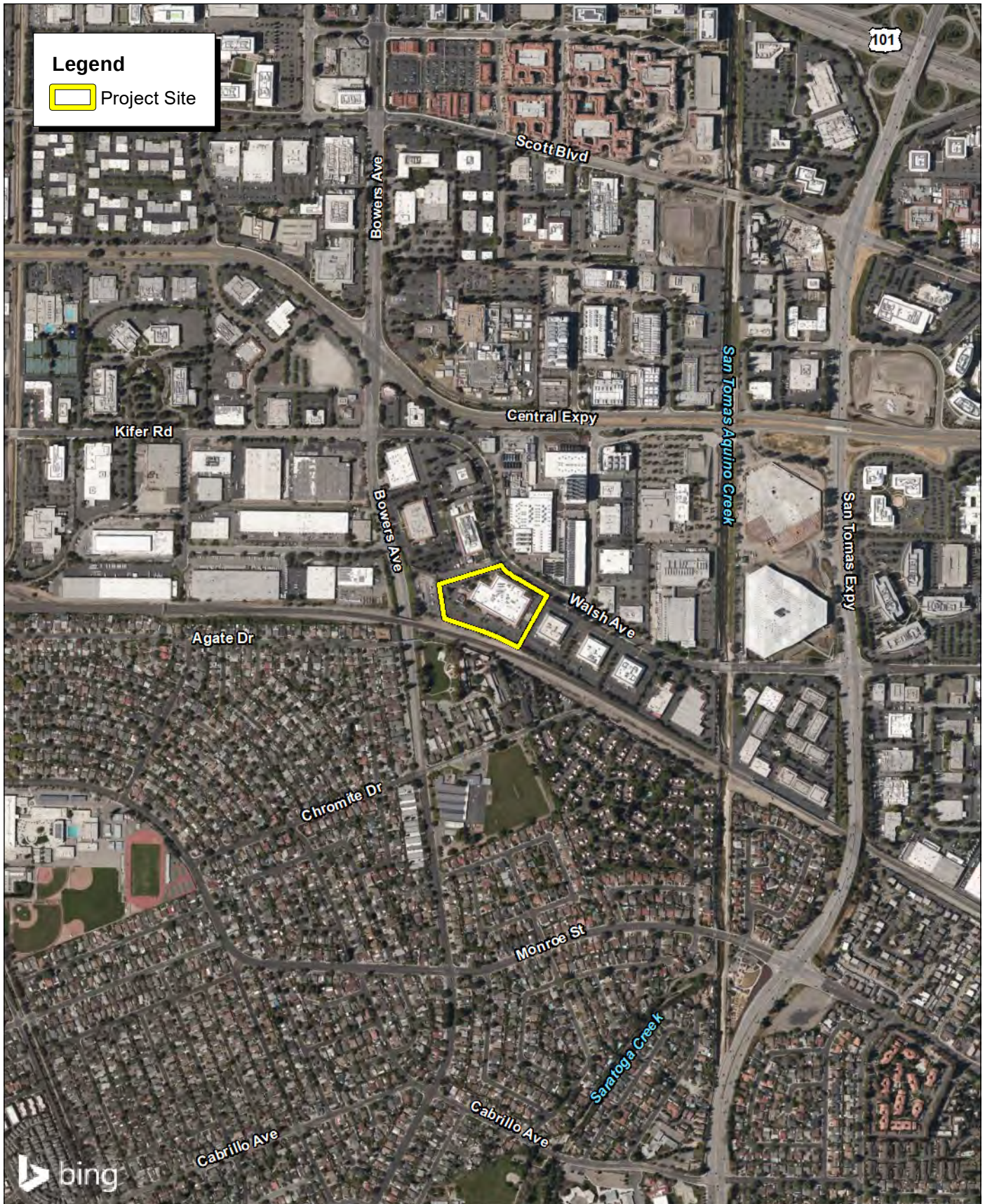
FIRSTCARBON
SOLUTIONS™



5 2.5 0 5
Miles

Exhibit 1 Regional Location Map

THIS PAGE INTENTIONALLY LEFT BLANK



Source: Bing Aerial Imagery.

FIRSTCARBON
SOLUTIONS™



1,000 500 0 1,000
Feet

Exhibit 2 Local Vicinity Map

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 2: REGULATORY SETTING

2.1 - Federal

2.1.1 - Endangered Species Act

The United States Fish and Wildlife Service (USFWS) has jurisdiction over species listed as threatened or endangered under the Federal Endangered Species Act (FESA). Section 9 of FESA protects listed species from “take,” which is broadly defined as actions taken to “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct.” FESA protects threatened and endangered plants and animals and their critical habitat. Candidate species are those proposed for listing; these species are usually treated by resource agencies as if they were actually listed during the environmental review process.

2.1.2 - Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) implements international treaties between the United States and other nations devised to protect migratory birds, their parts, eggs, and nests from activities such as hunting, pursuing, capturing, killing, selling, and shipping, unless expressly authorized in the regulations or by permit. All migratory birds and their nests are protected from direct, intentional take and other impacts under the MBTA (16 United States Code [USC] § 703, *et seq.*).

2.1.3 - Bald and Golden Eagle Protection Act

The golden eagle (*Aquila chrysaetos*) and bald eagle (*Haliaeetus leucocephalus*) are afforded additional protection under the Eagle Protection Act, amended in 1973 (16 USC § 669, *et seq.*), and the Bald and Golden Eagle Protection Act (16 USC §§ 668–668d).

2.1.4 - Clean Water Act

Section 404

The United States Army Corps of Engineers (USACE) administers Section 404 of the federal Clean Water Act (CWA), which regulates the discharge of dredge and fill material into waters of the United States. The USACE has established a series of nationwide permits that authorize certain activities in waters of the United States if a proposed activity can demonstrate compliance with standard conditions. Normally, the USACE requires an individual permit for an activity that will affect an area equal to or greater than 0.5 acre or greater of waters of the United States. Projects that result in impacts to less than 0.5 acre of waters of the United States can normally be conducted pursuant to one of the nationwide permits if consistent with the standard permit conditions. The USACE also has discretionary authority to require an Environmental Impact Statement for projects that result in impacts to an area between 0.1 and 0.5 acre. Use of any nationwide permit is contingent on the activities having no impacts on endangered species.

Section 401

As stated in Section 401 of the CWA, “any applicant for a federal permit for activities that involve a discharge to waters of the State, shall provide the federal permitting agency a certification from the State in which the discharge is proposed that states that the discharge will comply with the applicable provisions under the Federal Clean Water Act.” Therefore, before the USACE will issue a Section 404 permit, applicants must apply for and receive a Section 401 Water Quality Certification from the Regional Water Quality Control Board (RWQCB).

2.2 - State

2.2.1 - CEQA Guidelines

The following California Environmental Quality Act (CEQA) Guidelines Appendix G checklist questions serve as thresholds of significance when evaluating the potential impacts of a proposed project on biological resources. Impacts are considered significant if a project would:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as being a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife (CDFW) or USFWS.
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the CDFW or USFWS.
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
- Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or State habitat conservation plan.

2.2.2 - California Endangered Species Act

The State of California enacted the California Endangered Species Act (CESA) in 1984. CESA is similar to FESA but pertains to State-listed endangered and threatened species. CESA requires State agencies to consult with the CDFW when preparing CEQA documents to ensure that the State lead agency actions do not jeopardize the continued existence of a listed species or result in the destruction or adverse modification of habitat essential to the continued existence of those species, if there are reasonable and prudent alternatives available (Fish and Game Code [FGC] § 2080). CESA directs agencies to consult with the CDFW on projects or actions that could affect listed species, directs the CDFW to determine whether jeopardy would occur, and allows the CDFW to identify “reasonable and prudent alternatives” to the project consistent with conserving the species. CESA

allows the CDFW to authorize exceptions to the State’s prohibition against take of a listed species if the “take” of a listed species is incidental to carrying out an otherwise lawful project that has been approved under CEQA (FGC § 2081).

2.2.3 - California Fish and Game Code

Under CESA, the CDFW has the responsibility for maintaining a list of endangered and threatened species (FGC § 2070). FGC Sections 2050 through 2098 outline the protection provided to California’s rare, endangered, and threatened species. Section 2080 of the Fish and Game Code prohibits the taking of plants and animals listed under the CESA. Section 2081 established an incidental take permit program for State-listed species. The CDFW maintains a list of “candidate species,” which it formally notices as being under review for addition to the list of endangered or threatened species.

In addition, the Native Plant Protection Act of 1977 (NPPA) (FGC § 1900, *et seq.*) prohibits the taking, possessing, or sale within the State of any plants with a State designation of rare, threatened, or endangered (as defined by the CDFW). An exception to this prohibition in the NPPA allows landowners, under specified circumstances, to take listed plant species, provided that the owners first notify the CDFW and give the agency at least 10 days to come and retrieve (and presumably replant) the plants before they are plowed under or otherwise destroyed. Fish and Game Code Section 1913 exempts from “take” prohibition “the removal of endangered or rare native plants from a canal, lateral ditch, building site, or road, or other right of way.” Project impacts to these species are not considered significant unless the species are known to have a high potential to occur within the area of disturbance associated with construction of the proposed project.

The CDFW also maintains lists of “Species of Special Concern” that serve as species “watch lists.” The CDFW has identified many Species of Special Concern. Species with this status have limited distribution or the extent of their habitats has been reduced substantially, such that their populations may be threatened. Thus, their populations are monitored, and they may receive special attention during environmental review. While they do not have statutory protection, they may be considered rare under CEQA and thereby warrant specific protection measures.

Sensitive species that would qualify for listing but are not currently listed are afforded protection under CEQA. CEQA Guidelines Section 15065 (Mandatory Findings of Significance) requires that a substantial reduction in numbers of a rare or endangered species be considered a significant effect. CEQA Guidelines Section 15380 (Rare or Endangered Species) provides for the assessment of unlisted species as rare or endangered under CEQA if the species can be shown to meet the criteria for listing. Unlisted plant species on the California Native Plant Society (CNPS) List ranked 1A, 1B, and 2 would typically require evaluation under CEQA.

Sections 3500 to 5500 of the Fish and Game Code outline protection for fully protected species of mammals, birds, reptiles, amphibians, and fish. Species that are fully protected by these sections may not be taken or possessed at any time. The CDFW cannot issue permits or licenses that authorize the take of any fully protected species, except under certain circumstances such as scientific research and live capture and relocation of such species pursuant to a permit for the protection of livestock.

Under Section 3503.5 of the Fish and Game Code, it is unlawful to take, possess, or destroy any birds in the orders of *Falconiformes* or *Strigiformes* (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto. To comply with the requirements of CESA, an agency reviewing a proposed project within its jurisdiction must determine whether any state-listed endangered or threatened species may be present in the project study area and determine whether the proposed project will have a potentially significant impact on such species. In addition, the CDFW encourages informal consultation on any proposed project that may impact a candidate species.

Project-related impacts to species on the CESA endangered or threatened list would be considered significant. State-listed species are fully protected under the mandates of CESA. “Take” of protected species incidental to otherwise lawful management activities may be authorized under Fish and Game Code Section 206.591. Authorization from the CDFW would be in the form of an Incidental Take Permit.

Section 1602 of the Fish and Game Code requires any entity to notify the CDFW before beginning any activity that “may substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of any river, stream, or lake” or “deposit debris, waste, or other materials that could pass into any river, stream, or lake.” “River, stream, or lake” includes waters that are episodic and perennial and ephemeral streams, desert washes, and watercourses with a subsurface flow. A Lake or Streambed Alteration Agreement will be required if the CDFW determines that project activities may substantially adversely affect fish or wildlife resources through alterations to a covered body of water.

2.2.4 - California Porter-Cologne Water Quality Control Act

The RWQCB regulates actions that would involve “discharging waste, or proposing to discharge waste, within any region that could affect the water of the State” (Water Code § 13260(a)), pursuant to provisions of the Porter-Cologne Water Quality Control Act. “Waters of the State” are defined as “any surface water or groundwater, including saline waters, within the boundaries of the State” (Water Code § 13050(e)).

2.2.5 - California Native Plant Society

The CNPS maintains a rank of plant species that are native to California and that have low population numbers, have limited distribution, or are otherwise threatened with extinction. This information is published in the Inventory of Rare and Endangered Vascular Plants of California. The following identifies the definitions of the CNPS ranks:

- **Rank 1A:** Plants presumed Extinct in California
- **Rank 1B:** Plants Rare, Threatened, or Endangered in California and elsewhere
- **Rank 2A:** Plants presumed extirpated in California but common elsewhere
- **Rank 2B:** Plants rare, threatened, or endangered in California but more common elsewhere
- **Rank 3:** Plants about which we need more information—A Review List
- **Rank 4:** Plants of limited distribution—A Watch List

All plants appearing on the CNPS List ranked 1 or 2 are considered to meet the CEQA Guidelines Section 15380 criteria. While only some of the plants ranked 3 and 4 meet the definitions of threatened or endangered species, potential impacts to these species or their habitats should be analyzed during the preparation of environmental documents relating to CEQA, as they may meet the definition of Rare or Endangered under CEQA Guidelines Section 15380 criteria.

2.2.6 - Habitat Conservation Plan

The proposed project does not lie within the boundaries of any adopted Habitat Conservation Plan (HCP), Natural Community Conservation Plan (NCCP), or other approved local, regional, or State habitat conservation plan. The Santa Clara Valley Habitat Plan study boundary is nearby, but this property does not fall within its influence.

2.2.7 - Regional and Local

City of Santa Clara General Plan

The Conservation Goals and Policies Element of the Santa Clara General Plan includes the following goals and policies relevant to biological resources.

5.10.1 Conservation Goals and Policies

Conservation Goals:

- 5.10.1-G1** The protection of fish, wildlife and their habitats, including rare and endangered species.
- 5.10.1-G2** Conservation and restoration of riparian vegetation and habitat.
- 5.10.1-G3** Adequate solid waste disposal capacity through effective programs for recycling and composting.
- 5.10.1-G4** Adequate wastewater treatment and conveyance capacities.

Conservation Policies:

- 5.10.1-P1** Require environmental review prior to approval of any development with the potential to degrade the habitat of any threatened or endangered species.
- 5.10.1-P2** Work with Santa Clara Valley Water District and require that new development follow the “Guidelines and Standards for Lands Near Streams” to protect streams and riparian habitats.
- 5.10.1-P3** Require preservation of all City-designated heritage trees listed in the Heritage Tree Appendix 8.10 of the General Plan.
- 5.10.1-P4** Protect all healthy cedars, redwoods, oaks, olives, bay laurel and pepper trees of any size, and all other trees over 36 inches in circumference measured from 48 inches above-grade on private and public property as well as in the public right-of-way.

- 5.10.1-P5** Encourage enhancement of land adjacent to creeks in order to foster the reinstatement of natural riparian corridors where possible.
- 5.10.1-P6** Require adequate wastewater treatment and sewer conveyance capacity for all new development.
- 5.10.1-P7** Encourage the use of local recycling facilities to divert waste from landfills.
- 5.10.1-P8** Increase to 80 percent reduction for solid waste tonnage by 2020, or as consistent with the CAP.
- 5.10.1-P9** Encourage curbside recycling and composting of organic and yard waste.
- 5.10.1-P10** Promote the reduction, recycling and safe disposal of household hazardous wastes through public education and awareness and through an increase in hazardous waste collection events.
- 5.10.1-P11** Require use of native plants and wildlife-compatible non-native plants, when feasible, for landscaping on City property.
- 5.10.1-P12** Encourage property owners and landscapers to use native plants and wildlife-compatible non-native plants, when feasible.

Santa Clara City Code

Chapter 12.35 of the Santa Clara City Code defines codes regarding trees and shrubs.

12.35.020 Alteration or removal—Permit required

No tree, plant or shrub planted or growing in the streets or public places of the City shall be altered or removed without obtaining a written permit from the superintendent of streets. No person without such authorization shall trench around or alongside of any such tree, plant or shrub with the intent of cutting the roots thereof or otherwise damaging the same. (Ord. 931 § 2; Ord. 1140 § 7, 4-19-68. Formerly § 30-2).

SECTION 3: METHODS

3.1 - Literature Review

FCS conducted a literature review of existing documentation, topographic maps and aerial photographs, soil surveys, special-status species databases, and local tree ordinances to provide a baseline from which to evaluate the biological resources that occur or have the potential to occur on the project site and/or in the project vicinity.

3.1.1 - Existing Documentation

As part of the literature review, an FCS Biologist examined existing environmental documentation for the project site and local vicinity. This documentation included literature pertaining to the habitat requirements of special-status species with the potential to occur in the project vicinity; and federal register listings, protocols, and species data provided by the USFWS and CDFW. These and other documents are cited within this report.

3.1.2 - Topographic Maps and Aerial Photographs

An FCS Biologist reviewed current USGS 7.5-minute topographic quadrangle map(s) and aerial photographs as a preliminary analysis of the existing conditions within the project site and immediate vicinity.¹ Information obtained from the topographic maps included elevation, general watershed information, and potential drainage feature locations. Additional information about watersheds and drainages was obtained using Google Earth in conjunction with the United States Environmental Protection Agency (EPA) Watershed Assessment, Tracking, and Environmental Results System (WATERS).² Aerial photographs provided a perspective of the current site conditions relative to on-site and off-site land use, plant community locations, and potential locations of wildlife movement corridors.

3.1.3 - Soil Surveys

An FCS Biologist reviewed United States Department of Agriculture (USDA) published soil surveys to determine soil series (i.e., group of soils with similar profiles) and soil mapping units occurring on the project site.³ The soil profiles include major horizons with similar thickness, arrangement, and other important characteristics. The soil series are further subdivided into soil mapping units that provide specific information regarding soil characteristics. Many special-status plant species have a limited distribution based exclusively on soil type. Therefore, pertinent USDA soil survey maps were

¹ United States Geological Survey (USGS). 2021. National Geospatial Program. Website: https://www.usgs.gov/core-science-systems/national-geospatial-program/us-topo-maps-america?qt-science_support_page_related_con=4#qt-science_support_page_related_con. Accessed February 23, 2021.

² United States Environmental Protection Agency (EPA). 2021. Watershed Assessment, Tracking and Environmental Results System (WATERS). Website: <https://www.epa.gov/waterdata/waters-watershed-assessment-tracking-environmental-results-system>. Accessed February 23, 2021.

³ Natural Resources Conservation Service (NRCS). 2021. Web Soil Survey (WSS). United States Department of Agriculture (USDA). Website: <https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>. Accessed February 23, 2021.

reviewed to determine the existing soil mapping units within the project site and to establish whether the soil conditions on-site are suitable for any special-status plant species.

3.1.4 - Special-status Species Database Search

An FCS Biologist compiled a list of threatened, endangered, and otherwise special-status species previously recorded within the project vicinity based on a search of the CNDDDB and the CNPS Electronic Inventory (CNPSEI) of Rare and Endangered Vascular Plants of California for the *San Jose West*, California United States Geological Survey (USGS) 7.5-minute Topographic Quadrangle Map ^{4,5}

The CNDDDB Biogeographic Information and Observation System (BIOS 5) database was used to determine the distance between the known occurrences of special-status species and the project site.⁶

3.1.5 - Trees

Prior to conducting the reconnaissance-level field survey, an FCS Biologist reviewed applicable City and County ordinances pertaining to tree preservation and protection, and ascertained whether tree replacement measures or permits for the removal of protected trees are required. Based on the number of landscape trees on-site and the City's tree preservation policy, ISA Board-Certified Master Arborist Samuel Oakley with Arborwell Professional Tree Management (Arborwell) was contracted to conduct a tree inventory. The tree inventory report including all on-site trees can be found in Appendix C.

During the inventory, a total of 108 trees of 12 species were quantified on-site. The 12 species, including counts and condition, are listed in a table (Appendix C).

All individual trees on the property are likely protected as defined by the City Code, Chapter 12.35.020: "[N]o tree, plant or shrub planted or growing in the streets or public places of the City shall be altered or removed without obtaining a written permit from the superintendent of streets. No person without such authorization shall trench around or alongside of any such tree, plant or shrub with the intent of cutting the roots thereof or otherwise damaging the same."

3.1.6 - Jurisdictional Waters and Wetlands

Prior to conducting the reconnaissance-level survey, an FCS Biologist reviewed EPA WATERS and aerial photographs to identify potential natural drainage features and water bodies.⁷ In general, all surface drainage features identified as blue-line streams on USGS maps and linear patches of vegetation are expected to exhibit evidence of flows and are considered potentially subject to State and federal regulatory authority as waters of the United States and/or State. A preliminary

⁴ California Department of Fish and Wildlife (CDFW). 2021. CNDDDB RareFind 5 California Natural Diversity Database Query for Special-Status Species. Website: <https://map.dfg.ca.gov/rarefind/view/RareFind.aspx>. Accessed February 23, 2021.

⁵ California Native Plant Society (CNPS). 2021. California Native Plant Society Rare and Endangered Plant Inventory. Website: <http://www.rareplants.cnps.org/>. Accessed February 23, 2021.

⁶ California Department of Fish and Wildlife (CDFW). 2021. Biogeographic Information and Observation System (BIOS 5). Website: <https://map.dfg.ca.gov/bios/>. Accessed February 23, 2021.

⁷ United States Environmental Protection Agency (EPA). 2021. Watershed Assessment, Tracking and Environmental Results System (WATERS). Website: <https://www.epa.gov/waterdata/waters-watershed-assessment-tracking-environmental-results-system>. Accessed February 23, 2021.

assessment was conducted to determine the location of any existing drainages and limits of project-related grading activities to aid in determining whether a formal delineation of waters of the United States or State is necessary.

3.2 - Field Survey

FCS Senior Biologist, Kevin Derby, conducted a field survey of the project site on February 24, 2021, between approximately 11:00 a.m. and 2:00 p.m. The objective of the survey was not to extensively search for every species occurring within the project site, but to ascertain general site conditions and identify whether existing vegetation communities provide suitable habitat for special-status plant or wildlife species. Special-status or unusual biological resources identified during the literature review were ground-truthed during the field survey for mapping accuracy. Special attention was paid to sensitive habitats and areas potentially supporting special-status floral and faunal species.

3.2.1 - Vegetation

Common plant species observed during the reconnaissance-level survey were identified by visual characteristics and morphology in the field and recorded in a field notebook. Uncommon and fewer familiar plants were identified with the use of taxonomical guides, including Jepson eFlora and Calflora.^{8,9} Taxonomic nomenclature used in this study follows The Jepson Manual: Vascular Plants of California.¹⁰ Common plant names, when not available from The Jepson Manual, were taken from other regionally specific references. Vegetation types and boundaries were noted on aerial photographs, verified through field observation, and digitized using ESRI ArcGIS software® ArcMap 10.0. By incorporating collected field data and interpreting aerial photographs, a map of habitat types, land cover types, and other biological resources within the project site was prepared. Vegetation community and land cover types used to help classify habitat types are based on the Manual of California Vegetation (MCV) and cross-referenced with the CDFW Natural Communities List.^{11,12}

3.2.2 - Wildlife

Wildlife species detected during the reconnaissance-level survey by sight, calls, tracks, scat, or other signs were recorded. Notations were made regarding suitable habitat for those special-status species determined to have the potential to occur within the project site.¹³ Appropriate field guides were

⁸ Jepson Flora Project (eds.) 2021. Jepson eFlora, <https://ucjeps.berkeley.edu/eflora/>. Accessed on February 23, 2021.

⁹ Calflora. 2021. Calflora: Information on California plants for education, research, and conservation. Website: <http://www.calflora.org/>. February 23, 2021.

¹⁰ Baldwin, B. et al. 2012. The Jepson Manual: Vascular Plants of California. Berkeley: University of California Press. County of San Bernardino (Bernardino). 2007 (amended 2015).

¹¹ Sawyer, J.O., T. Keeler-Wolf, and J.M. Evens. 2009. A Manual of California Vegetation, Second Edition. California Native Plant Society, Sacramento. 1300 pp.

¹² California Department of Fish and Wildlife (CDFW). 2021. Natural Communities List, Sacramento: California Department of Fish and Wildlife. Website: <https://wildlife.ca.gov/Data/VegCAMP/Natural-Communities#sensitive%20natural%20communities>. Accessed February 23, 2021.

¹³ California Department of Fish and Wildlife (CDFW). 2020. CNDDDB RareFind 5 California Natural Diversity Database Query for Special-Status Species. Website: <https://map.dfg.ca.gov/rarefind/view/RareFind.aspx>. Accessed February 23, 2021.

used to assist in species identification during surveys, such as Peterson, Reid, and Stebbins.^{14,15,16} Online resources such as eBird and California Herps were also consulted, as necessary.^{17,18}

3.2.3 - Wildlife Movement Corridors

Wildlife movement corridors link areas of suitable wildlife habitat that are otherwise separated by rugged terrain, changes in vegetation, or human disturbance. Urbanization and the resulting fragmentation of open space areas create isolated “islands” of wildlife habitat, forming separated populations. Corridors act as an effective link between populations.

The project site was evaluated for evidence of a wildlife movement corridor during the reconnaissance-level survey. The scope of the biological resource assessment did not include a formal wildlife movement corridor study utilizing track plates, camera stations, scent stations, or snares. Rather, the focus of this study was to determine whether a change in land use at the project site could have significant impacts on the regional movement of wildlife. Conclusions are based on the information compiled during the literature review, including aerial photographs, USGS topographic maps and resource maps for the vicinity; the field survey; and professional experience with the desired topography, habitat, and resource requirements of the special-status species potentially utilizing the project site and vicinity.

¹⁴ Peterson, T.R. 2010. A Field Guide to Birds of Western North America, 4th Edition. Boston: Houghton Mifflin Harcourt.

¹⁵ Reid, F. 2006. A Field Guide to Mammals of North America, 4th Edition. Boston: Houghton Mifflin Harcourt.

¹⁶ Stebbins, R.C. 2003. A Field Guide to Western Reptiles and Amphibians. Third Edition. Boston: Houghton Mifflin Harcourt.

¹⁷ eBird. 2020. Online bird occurrence database. Website: <http://ebird.org/content/ebird/>. February 23, 2021.

¹⁸ California Herps. 2021. A Guide to the Amphibians and Reptiles of California. Website: <http://www.californiaherps.com/> Accessed February 23, 2021.

SECTION 4: RESULTS

This section summarizes the results of the literature search, database review, and reconnaissance-level survey conducted by FCS Senior Biologist, Kevin Derby, on February 24, 2021. Weather conditions during the field survey were sunny, with an average temperature around 60°F (degrees Fahrenheit). Winds were minimal at the time of the survey.

4.1 - Environmental Setting

The project site is currently developed with an approximately 112,000-square-foot single-story office and warehouse building and associated paved surface parking and loading dock. The existing building is made of concrete, wood, and stucco. The building facade consists of Mission-style stucco archways with a sloping tile roof. Native and non-native trees and ornamental landscaping are located along the Walsh Avenue frontage of the property, as well as the northern, western, and southern property boundaries. The property is zoned ML-Light Industrial.

4.1.1 - Topography

The project site and vicinity are generally flat, which is typical of previously developed land.

4.1.2 - Soils

The Natural Resource Conservation Service (NRCS) Web Soil Survey (WSS) depicts one soil type within the project site (Exhibit 3).¹⁹ This soil type and its primary characteristics are summarized in Table 1.

Table 1: Soil Type Present within Project Site

Soil Name	Slope	Description	Acreage On-site
Urban Land	0–2%	The Urban Land, alluvial fan soil type is derived from disturbed and human transported material in highly urbanized areas.	6.74 acres

¹⁹ Natural Resources Conservation Service (NRCS). 2021. Web Soil Survey (WSS). United States Department of Agriculture (USDA). Website: <https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>. Accessed February 23, 2021.

THIS PAGE INTENTIONALLY LEFT BLANK



Source: Bing Aerial Imagery. USDA Soils Data Mart, Santa Clara Western Area.



THIS PAGE INTENTIONALLY LEFT BLANK

4.2 - Vegetation Communities and Land Cover

4.2.1 - Urban/Developed—6.74 Acres

Urban/developed land includes areas that have been constructed upon or physically altered to an extent that native vegetation is no longer supported, and the site retains no soil substrate. Developed land is characterized by permanent or semi-permanent structures, pavement or hardscape, and landscaped areas that often require irrigation. Areas where no natural land is evident because a large quantity of debris or other materials has been placed upon it may also be considered urban/developed. Urban/developed areas are typically unvegetated or landscaped with a variety of ornamental (usually non-native) plants.

The project site is entirely covered with pavement, buildings, parking lots, and landscaped areas with 108 planted native and ornamental trees and numerous shrubs (Exhibit 4).

4.3 - Wildlife

Urban/developed land cover types provide limited habitat for wildlife species. Wildlife activity was low during the field survey and consisted of avian species. The following discussions regarding the wildlife species observed within the project site are organized by taxonomic group. Each discussion contains representative examples of a particular taxonomic group either observed or expected to occur on-site.

4.3.1 - Amphibians

No amphibian species were observed on-site during the field survey, and no habitat is adjacent to or near the project site.

4.3.2 - Birds

Bird species observed on-site included American crow (*Corvus brachyrhynchos*), rock pigeon (*Columba livia*), house sparrow (*Passer domesticus*), house finch (*Haemorhous mexicanus*), and Anna's hummingbird (*Calypte anna*). With more than 100 trees on-site, nesting and roosting habitat are available for passerine bird species. CNDDDB²⁰ records for Swainson's hawk (*Buteo swainsoni*) and burrowing owl (*Athene cunicularia*) within 5 miles of the project site suggest there is potential for these species to occur within the project site, albeit low. However, no signs of burrowing owl or Swainson's hawk were observed on-site during the field survey. Raptors tend to favor nesting near foraging habitat, whereas the project site is in the middle of an urban area.

4.3.3 - Mammals

No small mammal burrows were observed in landscaped portions of the project site. It is expected that wildlife adapted to urban areas (e.g., racoons, possums, and rats) may utilize the landscaped areas and travel in the shrub and tree line along the railroad corridor adjacent to the rear parking lot on the project site.

²⁰ California Department of Fish and Wildlife (CDFW). 2021. Biogeographic Information and Observation System (BIOS 5). Website: <https://map.dfg.ca.gov/bios/>. Accessed February 23, 2021.

The existing building could potentially house bat species in roof cavities or other suitable crevasses, especially when the building is unused. The building was thoroughly investigated for signs of bats (e.g., large cracks and cavities, bat guano). Although there are small cavities under roof tiles, there was no sign of bat guano on the building or the ground around the perimeter of the building. The property appears actively maintained; as the landscaped areas were trimmed, and the parking lot and building were generally clean.

4.3.4 - Reptiles

Western fence lizard (*Sceloporus occidentalis*), which is common in disturbed and developed areas, was observed on-site during the field survey. No other species or habitats for reptiles were observed.

4.4 - Wildlife Movement Corridors

The entire site is urban/developed and does not contain habitat features such as riparian corridors or waterways that could function as wildlife corridors. The project site is also surrounded by roads, highways, and a railroad corridor, as well as other urban development that limits wildlife movement.

4.5 - Trees

The project site contains 108 trees in the landscaped areas. An inventory of trees conducted by Arborwell is included in Appendix C.

SECTION 5: SENSITIVE BIOLOGICAL RESOURCES

The following section discusses the existing site conditions and potential for sensitive biological resources to occur within the project site.

5.1 - Sensitive Natural Communities

Sensitive natural communities are classified based on the federal, State, or local laws that limit development, limited distributions, and habitat requirements of special-status plant or wildlife species that occur within them.

The project site does not contain sensitive natural communities because of past and current land use (including existing development and ongoing disturbance) and the absence of any natural communities within the project site.

5.2 - Special-status Plant Species

The Special-status Plant Species Table (Appendix B, Table 1) lists 41 special-status plant species and CNPS sensitive species that have been recorded within the *San Jose West*, California Topographic Quadrangle and the eight surrounding quadrangles by the CNDDDB and CNPSEI.^{21,22,23} The table also includes the species' status and required habitat. None of the species in the table has the potential to occur within the project site because no native natural habitat that could support native special-status plant species occurs within the project site.

Based upon the literature review, field survey, and professional experience, no special-status plant species are expected to occur within the project site because of the absence of suitable habitat, previous land use, and the urban/developed land cover.

5.3 - Special-status Wildlife Species

The Special-status Wildlife Species Table (Appendix B, Table 2) identifies 62 federally and State-listed threatened and/or endangered wildlife species and State Species of Special Concern that have the potential to occur within the *San Jose West*, California Topographic Quadrangle and the eight surrounding quadrangles. The table includes the species' status, required habitat types and features. Appendix B-2 includes all special-status wildlife species that have been determined unlikely to occur on-site, primarily based on the absence of suitable habitat and the lack of recorded occurrence in the project vicinity.

Pallid bat (*Antrozous pallidus*) is listed as a California Species of Special Concern by the CDFW. The pallid bat is a light-brown or sandy colored, long-eared, moderately-sized bat that occurs throughout

²¹ United States Geological Survey (USGS). 2020. National Geospatial Program. Website: <https://www.usgs.gov>

²² California Department of Fish and Wildlife (CDFW). 2021. CNDDDB RareFind 5 California Natural Diversity Database Query for Special-Status Species. Website: <https://map.dfg.ca.gov/rarefind/view/RareFind.aspx>. Accessed February 23, 2021.

²³ California Native Plant Society (CNPS). 2021. California Native Plant Society Rare and Endangered Plant Inventory. Website: <http://www.rareplants.cnps.org/>. Accessed February 23, 2021.

California except for the northwest corner of the State and the high Sierra Nevada.²⁴ Pallid bats are most commonly found in oak savannah and in open dry habitats with rocky areas, trees, buildings, or bridge structures that are used for roosting.^{25,26} Coastal colonies commonly roost in deep crevices in rocky outcroppings; in buildings; under bridges; and in the crevices, hollows, and exfoliating bark of trees. Night roosts often occur in open buildings, porches, garages, highway bridges, and mines. Colonies can range in size from a few individuals to more than 100;²⁷ they usually consist of at least 20 individuals.²⁸ Pallid bats typically winter in canyon bottoms and riparian areas. After mating during the late fall and winter, females leave to form maternity colonies, often on ridge tops or other warmer locales.²⁹ Pallid bat roosts are very susceptible to human disturbance, and urban development has been cited as the most significant factor contributing to their regional decline.³⁰

Maternity colonies for pallid bat or any other bat species are unlikely to be present within the project site; no evidence of a bat roost was observed, and no structures or trees with high-quality roost sites were detected on the site during the reconnaissance-level site visit on February 24, 2021. Pallid bats may move through the site occasionally because this species forages for miles surrounding a maternity colony; however, the site does not provide foraging habitat (other than illuminated lamps in the parking lot that attract insects) because of the lack of open habitat.

No fish or other aquatic species are expected to occur on-site because of the lack of suitable water features. Additionally, the lack of vernal pools precludes the presence of vernal pool fairy shrimp (*Branchinecta lynchi*). No suitable habitat exists for amphibian and semi-aquatic species such as California tiger salamander (*Ambystoma californiense*) and western pond turtle (*Emys marmorata*).

5.3.1 - Nesting Birds

The project site contains 108 ornamental and native landscape trees that provide potential nesting habitat. This includes 43 coastal sequoia trees that could provide suitable nesting habitat for many bird species, including raptors and hummingbirds. Additionally, shrubs and other landscape planting could provide nesting habitat for passerine species. The potential for specific species to occur on-site is discussed in more detail below.

Swainson's Hawk

Swainson's hawk is listed as threatened under CESA.³¹ Swainson's hawk is a medium-sized bird of prey with relatively long, pointed wings that curve up somewhat in a slight dihedral while the bird is

²⁴ Zeiner, D., Laudenslayer, W.F. and Mayer, K.E. eds., 1990. California's wildlife (Vol. 2). State of California, Resources Agency, Department of Fish and Game.

²⁵ Ibid.

²⁶ Ferguson H, Azerrad JM. Pallid bat, *Antrozous pallidus*. Management Recommendations for Washington's Priority Species. 2004;5:14.

²⁷ Barbour, R.W. and Davis, W.H., 1969. Bats of America (No. 599.40973 B3).

²⁸ Wilson, D.E. and Ruff, S., 1999. North American I Mammals. Smithsonian Institution, Washington, DC.

²⁹ Johnston, D. S., B. Hepburn, J. Krauel, T. Stewart, and D. Rambaldini. 2006. Winter roosting and foraging ecology of pallid bats in central coastal California. Abstract. Bat Research News 47:115.

³⁰ Miner, K.L. and Stokes, D.C., 2005. Bats in the south coast ecoregion: status, conservation issues, and research needs. In: Kus, Barbara E., and Beyers, Jan L., technical coordinators. Planning for Biodiversity: Bringing Research and Management Together. Gen. Tech. Rep. PSW-GTR-195. Albany, CA: Pacific Southwest Research Station, Forest Service, US Department of Agriculture: 211-227, 195.

³¹ California Department of Fish and Wildlife (CDFW). 2020. California Natural Diversity Database (CNDDDB). Special Animals List. Sacramento, CA. Updated July 2020.

in flight. Adult females weigh between 900 and 1,100 grams (32 to 39 ounces), and males from 800 to 1,000 grams (28 to 35 ounces). The most distinctive identifying features of an adult Swainson's hawk are its dark head and breast band that is distinctive from the lighter-colored belly, and the lighter linings on the underside of the wing that are lighter than the dark-gray flight feathers.

The Swainson's hawk breeds in the western United States and Canada and winters in South America as far south as Argentina. The breeding season for Swainson's hawk in the Central Valley typically lasts from March to the end of July.³² It typically forages in open grasslands and has become increasingly dependent on agriculture, especially alfalfa crops, as native communities are converted to agricultural lands. The diet of the Swainson's hawk in California consists of small rodents such as voles; however, other small mammals, birds, and insects are also preyed upon. Swainson's hawk often nests near riparian woodlands. They will also use lone trees in agricultural fields or pastures, and roadside trees that are adjacent to suitable foraging habitat.³³

CNDDDB records indicate no Swainson's hawk occurrences within 5 miles of the project site. Given this fact and the lack of suitable foraging habitat in the highly urbanized area, presence of Swainson's hawks on the project site is unlikely.

Burrowing Owl

Burrowing owl occurs in open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. This species utilizes, modifies, and nests in burrows created by other species, most notably the California ground squirrel (*Otospermophilus beecheyi*). There are two recorded occurrences of this species within 5 miles of the project site (Exhibit 5). No burrows were detected on or adjacent to the project site during the field survey. Therefore, there is no potential nesting habitat for burrowing owl on-site, making it very unlikely that burrowing owl would be on-site during the breeding season (generally between February 15 and August 31), post-breeding dispersal season (generally between September 1 and November 30), or wintering season (generally between December 1 and February 14).

5.4 - Jurisdictional Waters and Wetlands

There are no features that are potentially regulated as jurisdictional waters of the United States or waters of the State, or wetlands.

5.5 - Protected Trees

The proposed project would remove 65 (mostly parking lot) trees on-site because of transmission line clearance requirements mandated by SVP and various conflicts with proposed civil and architectural improvements Exhibit 6. Six of these trees are already dead or in poor health and should be removed as a safety precaution. It appears 43 trees can be avoided during construction. The City's landscape ordinance mandates a 2:1 replacement with 24-inch box-size trees, or 1:1

³² California Department of Fish and Wildlife (CDFW). 2000. Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley. Swainson's Hawk Technical Advisory Committee. Sacramento, California. May 31, 2000. Website: <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=83990&inline>

³³ California Department of Fish and Wildlife (CDFW). 2020. Swainson's Hawks in California. Website: <https://wildlife.ca.gov/Conservation/Birds/Swainson-Hawks>

replacement with 36-inch box-size trees. The proposed project would mitigate for the loss of the 65 trees through a combination of 24- and 36-inch box-size trees.

New landscaping consisting of trees, large and medium shrubs, and groundcovers will be installed along the property boundaries, building perimeters, stormwater treatment facilities, and landscape beds distributed throughout the parking facilities. Trees would be planted 5 feet away from new or existing water mains or utility lines.



Source: Bing Aerial Imagery.

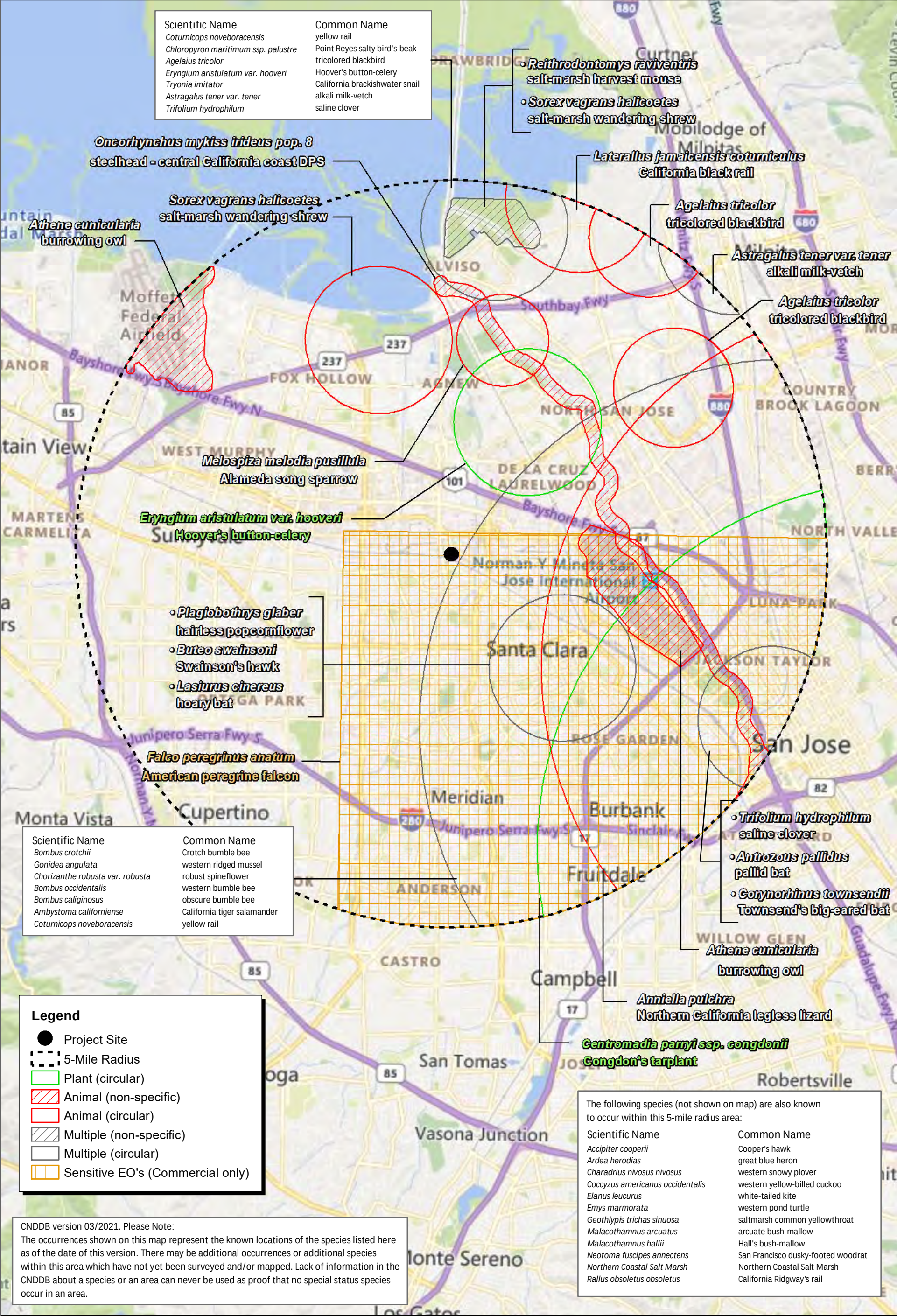
FIRSTCARBON
SOLUTIONS™



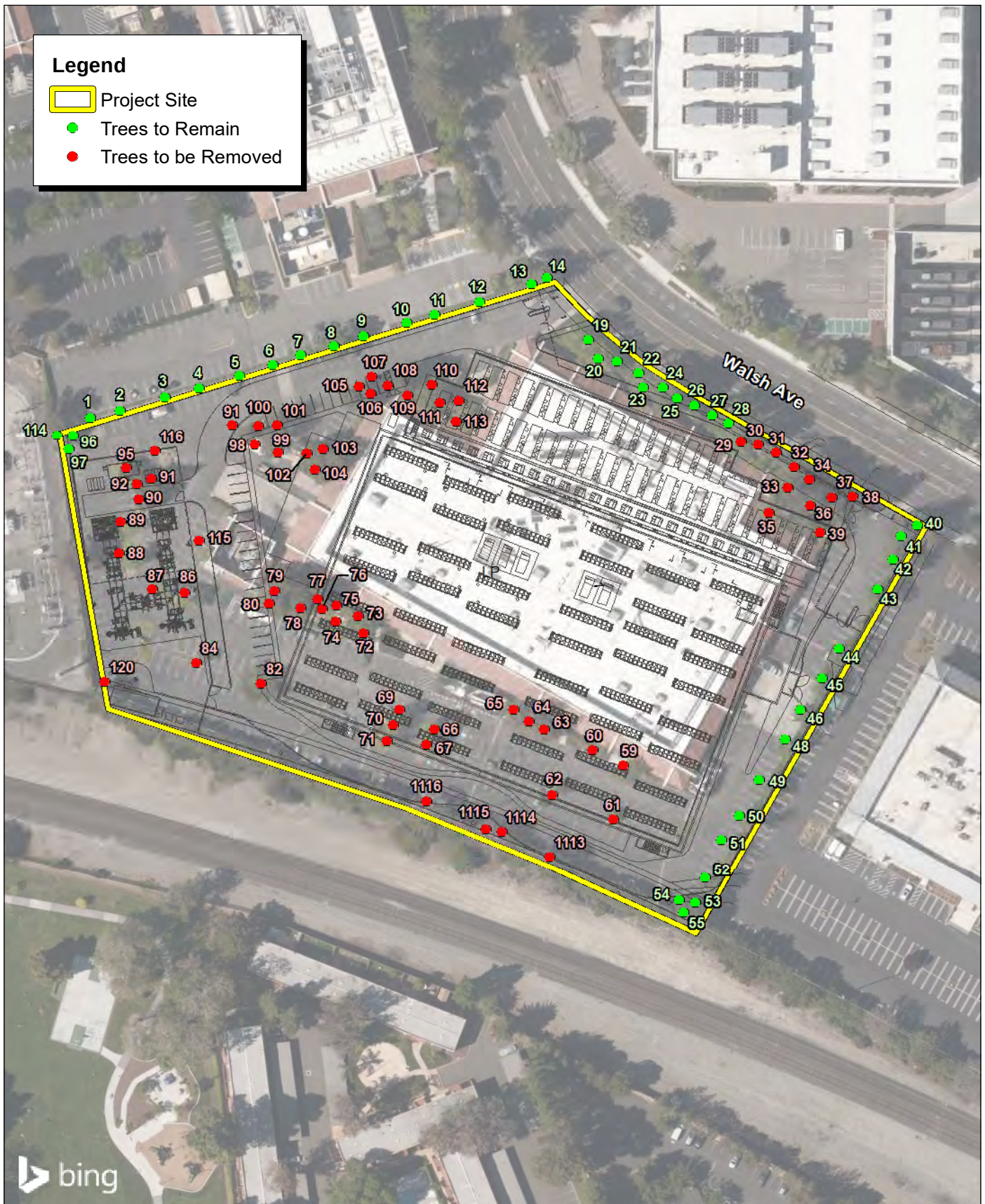
200 100 0 200
Feet

Exhibit 4 Land Cover

THIS PAGE INTENTIONALLY LEFT BLANK



THIS PAGE INTENTIONALLY LEFT BLANK



Source: Bing Aerial Imagery.

FIRSTCARBON
SOLUTIONS™



125 62.5 0 125 Feet

Exhibit 6 Proposed Project with Tree Locations

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 6: IMPACT ANALYSIS AND RECOMMENDATIONS

The following discussion addresses potential project impacts on regulated biological resources, including special-status species, and recommends measures to avoid and/or mitigate impacts to a less-than-significant level under CEQA.

6.1 - Special-status Wildlife Species

The following section analyzes potential project-related impacts on special-status wildlife species and establishes avoidance and minimization measures to reduce potential project-related impacts to less-than-significant levels.

6.1.1 - Nesting Birds

The numerous ornamental trees and the stand of large eucalyptus trees along the eastern boundary of the project site could provide suitable habitat for a variety of species of nesting birds. Relatively undisturbed grassland and barren areas provide potential nesting opportunities for ground-nesting birds. Construction activities that occur during the avian nesting season (generally February 15 to August 31) could disturb nesting sites for bird species protected under the Fish and Game Code or MBTA. The removal of trees during the nesting season could result in direct harm to nesting birds, while noise, light, and other man-made disturbances may cause nesting birds to abandon their nests.

The project applicant should implement the following avoidance and minimization measures to ensure that project impacts on nesting birds are less than significant.

MM BIO-1 Protection of Active Bird Nests (includes pre-construction survey and implementation of avoidance buffer, if found).

1. Removal of trees shall be limited to only those necessary to construct the proposed project as reflected in the relevant project approval documents.
2. If the project requires trees to be removed during the nesting season, pre-construction surveys shall be conducted 7 days prior to tree removal to determine whether or not active nests are present.
3. If an active nest is located during pre-construction surveys, a qualified Biologist shall determine an appropriately sized avoidance buffer based on the species and anticipated disturbance level. A qualified Biologist shall delineate the avoidance buffer using Environmentally Sensitive Area fencing, pin flags, and/or yellow caution tape. The buffer zone shall be maintained around the active nest site(s) until the young have fledged and are foraging independently. No construction activities or construction foot traffic shall be allowed to occur within the avoidance buffer(s).

4. The qualified Biologist shall monitor the active nest during construction activities to prevent any potential impacts that may result from the construction of the proposed project, until the young have fledged.

6.1.2 - Roosting or Nesting Bat Species

MM BIO-2 Avoid and Minimize Impacts to Bat Species

- If suitable roosting habitat for special-status bat species shall be affected by project construction (e.g., removal of buildings and modification of bridges), a qualified Wildlife Biologist shall conduct surveys for special-status bats during the appropriate time of day to maximize detectability to determine whether bats are roosting near the work area no fewer than 7 days and no more than 14 days prior to beginning ground disturbance and/or construction. Survey methodology may include visual surveys of bats (e.g., observation of bats during foraging period), inspection for suitable habitat, bat sign (e.g., guano), or use of ultrasonic detectors (e.g., Anabat). Visual surveys shall include trees within 0.25 mile of project construction activities. The type of survey shall depend on the condition of the potential roosting habitat. If no bat roosts are found, then no further study is required.
- If evidence of bat use is observed, the number and species of bats using the roost shall be determined. Bat detectors may be used to supplement survey efforts.
- If roosts are determined to be present and must be removed, the bats shall be excluded from the roosting site before the facility is removed. A mitigation program addressing compensation, exclusion methods, and roost removal procedures shall be developed prior to implementation. Exclusion methods may include use of one-way doors at roost entrances (i.e., bats may leave, but not re-enter), or sealing roost entrances when the site can be confirmed to contain no bats. Exclusion efforts may be restricted during periods of sensitive activity (e.g., during hibernation or while females in maternity colonies are nursing young).

6.2 - Protected Trees

The project site contains 108 mature trees, all of which may be protected by the City of Santa Clara Municipal Code. Chapter 12.35.020 states that “no tree, plant or shrub planted or growing in the streets or public places of the City shall be altered or removed without obtaining a written permit from the superintendent of streets. No person without such authorization shall trench around or alongside of any such tree, plant or shrub with the intent of cutting the roots thereof or otherwise damaging the same.”³⁴ Based on preliminary project plans, it is likely that 65 trees on-site meeting this definition would need to be removed to accommodate the proposed project. The precise boundary of the public right-of-way should be determined/confirmed with the City to establish the exact number of protected trees, and removal numbers may be adjusted if avoidance measures are

³⁴ Santa Clara City Code – A Codification of the General Ordinances of the City of Santa Clara. 2021. City of Santa Clara. effective February 23, 2021. Website: <https://santaclaraca.gov/> Code access website: <https://www.codepublishing.com/CA/SantaClara/>

not effective, but the numbers in this document reflect the most current information and project plans. Appendix C includes a stand-alone Arborist Report/Tree Inventory prepared by Arborwell that catalogued the trees on-site, identifies which will need to be removed to accommodate the proposed project, and identifies which (if any) are protected under the Municipal Code.

MM BIO-3 Tree Removal Permit

The project applicant shall obtain the appropriate tree removal permits from the City of Santa Clara for removal of all healthy mature trees. Acquisition of this permit will include details of the final mitigation numbers. The City's landscape ordinance mandates a 2:1 replacement with 24-inch box-size trees, or 1:1 replacement with 36-inch box-size trees. The proposed project would mitigate for the loss of the 65 trees through a combination of 24- and 36-inch box-size trees.

MM BIO-4 Trees to Remain: Avoidance and Minimization of Impacts

The project applicant will follow the Tree Protection Measures for trees that are to remain in place, as stated in the Arborist Report/Tree Inventory on pages 5-12 (Appendix C). These measures include but are not limited to fencing, erosion control, pruning, root cutting, no compaction tree protection zones, watering/irrigation considerations, etc.

THIS PAGE INTENTIONALLY LEFT BLANK

Appendix A: Site Photographs

THIS PAGE INTENTIONALLY LEFT BLANK



Photograph 1: Looking northwest along Walsh Avenue (2/24/21).



Photograph 2: Looking west at existing building (2/24/21).



Photograph 3: Looking west at existing building (2/24/21).



Photograph 4: Looking west down alley on southeast side of the building (2/24/21).



Photograph 5: Large trees on northeast side of building (2/24/21).



Photograph 6: Large trees on north side of building (2/24/21).



Photograph 7: Looking southeast along Walsh Avenue (2/24/21).



Photograph 8: Looking west along alley on north side of building (2/24/21).



Photograph 9: Coastal sequoias in the north parking lot (2/24/21).



Photograph 10: Hedge row along substation on northwest portion of project site (2/24/21).



Photograph 11: Looking southeast in rear parking lot (2/24/21).



Photograph 12: Looking southeast in rear parking lot (2/24/21).



Photograph 13: Looking south towards railroad right of way in rear parking lot (2/24/21).



Photograph 14: Typical terra cotta type roof style (2/24/21).



Photograph 15: Looking northwest in rear parking lot (2/24/21).



Photograph 16: Looking northeast along alley on southeast side of the building (2/24/21).

Appendix B:
Special-status Species Tables

THIS PAGE INTENTIONALLY LEFT BLANK



Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database



Query Criteria: Quad> IS (San Jose West (3712138)> OR San Jose East (3712137)> OR Mountain View (3712241)> OR Milpitas (3712148)> OR Cupertino (3712231)> OR Calaveras Reservoir (3712147)> OR Castle Rock Ridge (3712221)> OR Los Gatos (3712128)> OR Santa Teresa Hills (3712127))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<i>Accipiter cooperii</i> Cooper's hawk	ABNKC12040	None	None	G5	S4	WL
<i>Adela oplerella</i> Opler's longhorn moth	IILEE0G040	None	None	G2	S2	
<i>Agelaius tricolor</i> tricolored blackbird	ABPBXB0020	None	Threatened	G1G2	S1S2	SSC
<i>Ambystoma californiense</i> California tiger salamander	AAAAA01180	Threatened	Threatened	G2G3	S2S3	WL
<i>Amsinckia lunaris</i> bent-flowered fiddleneck	PDBOR01070	None	None	G3	S3	1B.2
<i>Aneides niger</i> Santa Cruz black salamander	AAAAD01070	None	None	G3	S3	SSC
<i>Anniella pulchra</i> Northern California legless lizard	ARACC01020	None	None	G3	S3	SSC
<i>Anodonta californiensis</i> California floater	IMBIV04220	None	None	G3Q	S2?	
<i>Antrozous pallidus</i> pallid bat	AMACC10010	None	None	G4	S3	SSC
<i>Aquila chrysaetos</i> golden eagle	ABNKC22010	None	None	G5	S3	FP
<i>Arctostaphylos silvicola</i> Bonny Doon manzanita	PDERI041F0	None	None	G1	S1	1B.2
<i>Ardea alba</i> great egret	ABNGA04040	None	None	G5	S4	
<i>Ardea herodias</i> great blue heron	ABNGA04010	None	None	G5	S4	
<i>Astragalus tener var. tener</i> alkali milk-vetch	PDFAB0F8R1	None	None	G2T1	S1	1B.2
<i>Athene cunicularia</i> burrowing owl	ABNSB10010	None	None	G4	S3	SSC
<i>Atriplex depressa</i> brittlescale	PDCHE042L0	None	None	G2	S2	1B.2
<i>Atriplex minuscula</i> lesser saltscale	PDCHE042M0	None	None	G2	S2	1B.1
<i>Balsamorhiza macrolepis</i> big-scale balsamroot	PDAST11061	None	None	G2	S2	1B.2



Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database



Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<i>Bombus caliginosus</i> obscure bumble bee	IIHYM24380	None	None	G4?	S1S2	
<i>Bombus crotchii</i> Crotch bumble bee	IIHYM24480	None	Candidate Endangered	G3G4	S1S2	
<i>Bombus occidentalis</i> western bumble bee	IIHYM24250	None	Candidate Endangered	G2G3	S1	
<i>Buteo swainsoni</i> Swainson's hawk	ABNKC19070	None	Threatened	G5	S3	
<i>Calasellus californicus</i> An isopod	ICMAL34010	None	None	G2	S2	
<i>Calyptridium parryi</i> var. <i>hesseae</i> Santa Cruz Mountains pussypaws	PDPOR09052	None	None	G3G4T2	S2	1B.1
<i>Campanula exigua</i> chaparral harebell	PDCAM020A0	None	None	G2	S2	1B.2
<i>Centromadia parryi</i> ssp. <i>congdonii</i> Congdon's tarplant	PDAST4R0P1	None	None	G3T1T2	S1S2	1B.1
<i>Charadrius nivosus nivosus</i> western snowy plover	ABNNB03031	Threatened	None	G3T3	S2	SSC
<i>Chlorogalum pomeridianum</i> var. <i>minus</i> dwarf soaproot	PMLIL0G042	None	None	G5T3	S3	1B.2
<i>Chloropyron maritimum</i> ssp. <i>palustre</i> Point Reyes salty bird's-beak	PDSCR0J0C3	None	None	G4?T2	S2	1B.2
<i>Chorizanthe pungens</i> var. <i>hartwegiana</i> Ben Lomond spineflower	PDPGN040M1	Endangered	None	G2T1	S1	1B.1
<i>Chorizanthe robusta</i> var. <i>robusta</i> robust spineflower	PDPGN040Q2	Endangered	None	G2T1	S1	1B.1
<i>Circus hudsonius</i> northern harrier	ABNKC11011	None	None	G5	S3	SSC
<i>Cirsium fontinale</i> var. <i>campylon</i> Mt. Hamilton thistle	PDAST2E163	None	None	G2T2	S2	1B.2
<i>Clarkia concinna</i> ssp. <i>automixa</i> Santa Clara red ribbons	PDONA050A1	None	None	G5?T3	S3	4.3
<i>Coccyzus americanus occidentalis</i> western yellow-billed cuckoo	ABNRB02022	Threatened	Endangered	G5T2T3	S1	
<i>Collinsia multicolor</i> San Francisco collinsia	PDSCR0H0B0	None	None	G2	S2	1B.2
<i>Corynorhinus townsendii</i> Townsend's big-eared bat	AMACC08010	None	None	G4	S2	SSC
<i>Coturnicops noveboracensis</i> yellow rail	ABNME01010	None	None	G4	S1S2	SSC
<i>Cypseloides niger</i> black swift	ABNUA01010	None	None	G4	S2	SSC



Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database



Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<i>Dicamptodon ensatus</i> California giant salamander	AAAAH01020	None	None	G3	S2S3	SSC
<i>Dipodomys heermanni berkeleyensis</i> Berkeley kangaroo rat	AMAFD03061	None	None	G4T1	S1	
<i>Dipodomys venustus venustus</i> Santa Cruz kangaroo rat	AMAFD03042	None	None	G4T1	S1	
<i>Dirca occidentalis</i> western leatherwood	PDTHY03010	None	None	G2	S2	1B.2
<i>Dudleya abramsii ssp. setchellii</i> Santa Clara Valley dudleya	PDCRA040Z0	Endangered	None	G4T2	S2	1B.1
<i>Egretta thula</i> snowy egret	ABNGA06030	None	None	G5	S4	
<i>Elanus leucurus</i> white-tailed kite	ABNKC06010	None	None	G5	S3S4	FP
<i>Emys marmorata</i> western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
<i>Erethizon dorsatum</i> North American porcupine	AMAFJ01010	None	None	G5	S3	
<i>Eryngium aristulatum var. hooveri</i> Hoover's button-celery	PDAP10Z043	None	None	G5T1	S1	1B.1
<i>Euphydryas editha bayensis</i> Bay checkerspot butterfly	IILEPK4055	Threatened	None	G5T1	S1	
<i>Extriplex joaquinana</i> San Joaquin spearscale	PDCHE041F3	None	None	G2	S2	1B.2
<i>Falco peregrinus anatum</i> American peregrine falcon	ABNKD06071	Delisted	Delisted	G4T4	S3S4	FP
<i>Fritillaria liliacea</i> fragrant fritillary	PMLIL0V0C0	None	None	G2	S2	1B.2
<i>Geothlypis trichas sinuosa</i> saltmarsh common yellowthroat	ABPBX1201A	None	None	G5T3	S3	SSC
<i>Gonidea angulata</i> western ridged mussel	IMBIV19010	None	None	G3	S1S2	
<i>Hoita strobilina</i> Loma Prieta hoita	PDFAB5Z030	None	None	G2?	S2?	1B.1
<i>Lasiurus cinereus</i> hoary bat	AMACC05030	None	None	G3G4	S4	
<i>Lasthenia conjugens</i> Contra Costa goldfields	PDAST5L040	Endangered	None	G1	S1	1B.1
<i>Laterallus jamaicensis coturniculus</i> California black rail	ABNME03041	None	Threatened	G3G4T1	S1	FP
<i>Lepidurus packardii</i> vernal pool tadpole shrimp	ICBRA10010	Endangered	None	G4	S3S4	



Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database



Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<i>Lessingia micradenia</i> var. <i>glabrata</i> smooth lessingia	PDAST5S062	None	None	G2T2	S2	1B.2
<i>Malacothamnus arcuatus</i> arcuate bush-mallow	PDMAL0Q0E0	None	None	G2Q	S2	1B.2
<i>Malacothamnus hallii</i> Hall's bush-mallow	PDMAL0Q0F0	None	None	G2	S2	1B.2
<i>Masticophis lateralis euryxanthus</i> Alameda whipsnake	ARADB21031	Threatened	Threatened	G4T2	S2	
<i>Melospiza melodia pusillula</i> Alameda song sparrow	ABPBXA301S	None	None	G5T2?	S2S3	SSC
<i>Microcina homi</i> Hom's micro-blind harvestman	ILARA47020	None	None	G1	S1	
<i>Monolopia gracilens</i> woodland woollythreads	PDAST6G010	None	None	G3	S3	1B.2
<i>Myotis evotis</i> long-eared myotis	AMACC01070	None	None	G5	S3	
<i>Myotis yumanensis</i> Yuma myotis	AMACC01020	None	None	G5	S4	
<i>Navarretia prostrata</i> prostrate vernal pool navarretia	PDPLM0C0Q0	None	None	G2	S2	1B.2
<i>Neotoma fuscipes annectens</i> San Francisco dusky-footed woodrat	AMAFF08082	None	None	G5T2T3	S2S3	SSC
North Central Coast Drainage Sacramento Sucker/Roach River North Central Coast Drainage Sacramento Sucker/Roach River	CARA2623CA	None	None	GNR	SNR	
Northern Coastal Salt Marsh Northern Coastal Salt Marsh	CTT52110CA	None	None	G3	S3.2	
<i>Nycticorax nycticorax</i> black-crowned night heron	ABNGA11010	None	None	G5	S4	
<i>Oncorhynchus kisutch</i> pop. 4 coho salmon - central California coast ESU	AFCHA02034	Endangered	Endangered	G5T2T3Q	S2	
<i>Oncorhynchus mykiss irideus</i> pop. 8 steelhead - central California coast DPS	AFCHA0209G	Threatened	None	G5T2T3Q	S2S3	
<i>Pandion haliaetus</i> osprey	ABNKC01010	None	None	G5	S4	WL
<i>Pedicularis dudleyi</i> Dudley's lousewort	PDSCR1K0D0	None	Rare	G2	S2	1B.2
<i>Penstemon rattanii</i> var. <i>kleei</i> Santa Cruz Mountains beardtongue	PDSCR1L5B1	None	None	G4T2	S2	1B.2
<i>Pentachaeta bellidiflora</i> white-rayed pentachaeta	PDAST6X030	Endangered	Endangered	G1	S1	1B.1
<i>Phrynosoma blainvillii</i> coast horned lizard	ARACF12100	None	None	G3G4	S3S4	SSC



Selected Elements by Scientific Name
California Department of Fish and Wildlife
California Natural Diversity Database



Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<i>Piperia candida</i> white-flowered rein orchid	PMORC1X050	None	None	G3	S3	1B.2
<i>Plagiobothrys glaber</i> hairless popcornflower	PDBOR0V0B0	None	None	GX	SX	1A
<i>Progne subis</i> purple martin	ABPAU01010	None	None	G5	S3	SSC
<i>Puccinellia simplex</i> California alkali grass	PMPOA53110	None	None	G3	S2	1B.2
<i>Rallus obsoletus obsoletus</i> California Ridgway's rail	ABNME05011	Endangered	Endangered	G3T1	S1	FP
<i>Rana boylei</i> foothill yellow-legged frog	AAABH01050	None	Endangered	G3	S3	SSC
<i>Rana draytonii</i> California red-legged frog	AAABH01022	Threatened	None	G2G3	S2S3	SSC
<i>Reithrodontomys raviventris</i> salt-marsh harvest mouse	AMAFF02040	Endangered	Endangered	G1G2	S1S2	FP
<i>Rynchops niger</i> black skimmer	ABNNM14010	None	None	G5	S2	SSC
<i>Sanicula saxatilis</i> rock sanicle	PDAP11Z0H0	None	Rare	G2	S2	1B.2
<i>Senecio aphanactis</i> chaparral ragwort	PDAST8H060	None	None	G3	S2	2B.2
<i>Serpentine Bunchgrass</i> Serpentine Bunchgrass	CTT42130CA	None	None	G2	S2.2	
<i>Sidalcea malachroides</i> maple-leaved checkerbloom	PDMAL110E0	None	None	G3	S3	4.2
<i>Sorex vagrans halicoetes</i> salt-marsh wandering shrew	AMABA01071	None	None	G5T1	S1	SSC
<i>Spirinchus thaleichthys</i> longfin smelt	AFCHB03010	Candidate	Threatened	G5	S1	
<i>Sternula antillarum browni</i> California least tern	ABNNM08103	Endangered	Endangered	G4T2T3Q	S2	FP
<i>Streptanthus albidus ssp. albidus</i> Metcalf Canyon jewelflower	PDBRA2G011	Endangered	None	G2T1	S1	1B.1
<i>Streptanthus albidus ssp. peramoenus</i> most beautiful jewelflower	PDBRA2G012	None	None	G2T2	S2	1B.2
<i>Suaeda californica</i> California seablite	PDCHE0P020	Endangered	None	G1	S1	1B.1
<i>Taxidea taxus</i> American badger	AMAJF04010	None	None	G5	S3	SSC
<i>Trifolium buckwestiorum</i> Santa Cruz clover	PDFAB402W0	None	None	G2	S2	1B.1



Selected Elements by Scientific Name
California Department of Fish and Wildlife
California Natural Diversity Database



Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<i>Trifolium hydrophilum</i> saline clover	PDFAB400R5	None	None	G2	S2	1B.2
<i>Trimerotropis infantilis</i> Zayante band-winged grasshopper	IIORT36030	Endangered	None	G1	S1	
<i>Tryonia imitator</i> mimic tryonia (=California brackishwater snail)	IMGASJ7040	None	None	G2	S2	

Record Count: 105

**Appendix C:
Tree Inventory Report**

THIS PAGE INTENTIONALLY LEFT BLANK



2590 Walsh Tree Inventory

2950 Walsh Avenue
Santa Clara, California

Prepared for:
First Carbon Solutions
1350 Treat Boulevard
Walnut Creek, California 94597

Prepared by:
Samuel Oakley
ISA Board Certified Master Arborist WE-9474B TRAQ
ASCA Registered Consulting Arborist #556

Introduction

Arborwell was retained to inventory all trees on the 2590 Walsh Avenue property in Santa Clara, CA. The property will undergo planned renovations in the near future. The inventory was performed in February 2021. Included in this report is a site plan of tree locations (Exhibit 1) and the inventory matrix (Exhibit 2).

Assignment & Scope

This report intends to record the state of the trees on the aforementioned property as observed on the date of the inventory. Data collected per individual tree for the inventory are as follows:

- tag number
- common name
- species
- diameter in inches at fifty-four (54) inches above grade
- health
- structure
- condition
- suitability for preservation

Of the data collected in the field, health and structure were combined to give each tree a condition rating. The health of the tree is determined by its current size, canopy density, coloration, the appearance of any abnormalities or deficiencies and the overall health of the trunk, crown, and visible roots. The structure of the tree was evaluated based on the tree's natural, expected growth habit and form versus current growth habit, as well as the tree's inherent and exhibited structural integrity and deficiencies. Health and condition are subjective and species-dependent.

Note that the recommendations in this report are based on visual inspection on the above-ground parts of the tree at the time of the site visit. No soil was removed for below-grade inspection and no aerial inspection was performed. Information in this letter may warrant further investigation as site conditions change over time.

Method

The specific tasks performed are as follows:

- Identify the trees on the property.
- Record the tag number on the identified trees.
- Measure the diameter of the individual at fifty-four (54) inches above grade (unless noted).
- Observe the assessment data for each tree. Determine the tree's health and structural integrity, assign a current condition rating ranging from poor to excellent:

Excellent – Exemplary health and structure for species; a healthy tree with limited signs or symptoms of disease;

Good - Some minor deficiencies noted in health and/or structure, with potential for corrective measures to be performed to improve upon condition (including but not limited to fertilizer, pruning, and chemical applications);

Moderate - Higher level and/or incidence of deficiencies noted in health and/or structure, including possible hazardous conditions signs and symptoms observed, with higher corrective measures and input required to improve condition and, where applicable, mitigate hazard risk;

Fair - Significant deficiencies noted in health and/or structure, some irreversible, and may include hazardous condition signs and symptoms observed requiring corrective action; some individuals may require removal;

Poor - Includes any of or combination of the following: very low canopy density, major disease signs and symptoms, dying or dead trees, imminent, irreversible hazardous condition present.

- Record comments and observations regarding the health and structure, noting any significant defects, health issues, or other observational notes of trees to be removed.
- Prepare a written report that presents findings and submit the report via email as a PDF document.

Tree Count and Composition

During the inventory, a total of one hundred and eight (108) trees were quantified on-site. The 108 individuals are comprised of twelve (12) species. The 12 species are in the following table, including counts and condition.

All individuals on the property are likely protected as defined by the City of Santa Clara's City Code, Chapter 12.35.020, "no tree, plant or shrub planted or growing in the streets or public places of the City shall be altered or removed without obtaining a written permit from the superintendent of streets. No person without such authorization shall trench around or alongside of any such tree, plant or shrub with the intent of cutting the roots thereof or otherwise damaging the same." The precise boundary of the public right-of-way should be determined to establish the exact number of protected trees.

Botanical Name	Common Name	Count	Condition = Poor/Dead	Condition = Fair	Condition = Good	Condition = Excellent
<i>Ceratonia siliqua</i>	Carob	3	1	1	1	0
<i>Fraxinus uhdei</i>	Evergreen Ash	22	0	12	0	10
<i>Alnus cordata</i>	Italian Alder	0	0	0	0	0
<i>Juglan nigra</i>	Black Walnut	1	1	0	0	0
<i>Lagerstroemia indica</i>	Crape myrtle	3	0	0	0	3
<i>Laurus nobilis</i>	Laurel	1	0	1	0	0
<i>Liquidambar styraciflua</i>	Sweetgum	20	0	3	17	0
<i>Liriodendron tulipifera</i>	Tulip Tree	8	0	2	3	3
<i>Pinus Radiata</i>	Monterey Pine	3	3	0	0	0
<i>Prunus cerasifera</i>	Purpleleaf Plum	1	0	1	0	0
<i>Pyrus kawakamii</i>	Evergreen Pear	3	1	0	1	1
<i>Sequoia sempervirens</i>	Coastal Redwood	43	0	0	8	35
Total	12	108	6	20	30	52

Discussion

The project site was an unoccupied commercial property in Santa Clara. The property was relatively flat with no undulations. Neither the parking nor the building have been used. There appeared to be no supplemental watering supplied to the trees. There are many high-value trees but some decline as a result of discontinued irrigation and care.

No recent pruning has occurred and several have large wounds from breakage. All tree wounds are serious when it comes to tree health. No matter what size the wound is, the damage done is irreversible. The tree must devote a great deal of energy and many resources into trying to seal off the damaged area to prevent further complications. The wounded area is an opening for wood-rotting organisms and decay fungi to enter and cause further damage. These often attack the injured bark and invade adjacent healthy tissue, greatly enlarging the wound and extending the damage.

If there are any trees desired to be retained that are identified as suitable for preservation in Exhibit 1, care should be implemented in accordance with the tree protection measures in the following section during the project as they will contribute to the value of the site over the long-term. Though it may not be possible due project constraints, due care should be taken to preserve these individuals if their preservation is the desired outcome.

Tree Protection Measures

The objective of this section is to reduce the negative impacts of construction on trees to a less than significant level. Trees vary in their ability to adapt to altered growing conditions, while mature trees have established stable biological systems in the preexisting physical environment. Disruption of this environment by construction activities interrupts the tree's physiological processes, causing depletion of energy reserves and a decline in vigor. This sometime is exhibited as death. Typically, this reaction may develop several years or more after disruption.

The tree protection regulations are intended to guide a construction project to ensure that appropriate practices will be implemented in the field to eliminate undesirable consequences that may result from uninformed or careless acts, and preserve both trees and property values.

The following a required to be implemented along with the TPP:

1. The project arborist or contractor shall verify, in writing, that all preconstruction conditions have been met (tree fencing, erosion control, pruning, etc.)
2. The demolition, grading and underground contractors, construction superintendent and other pertinent personnel are required to meet with the project arborist at the site prior to beginning work to review procedures, tree protection measures and to establish haul routes, staging, areas, contacts, watering, etc.
3. Fenced enclosures shall be erected around trees to be protected to achieve three primary goals:
 - a. To keep the foliage crowns and branching structure of the trees to be preserved clear from contact by equipment, materials and activities;
 - b. Preserve roots intact and maintain proper soil conditions in a non-compacted state and;

- c. To identify the tree protection zone (TPZ) in which no soil disturbance is permitted and activities are restricted.

Tree Protection Zone (TPZ)

Each tree to be preserved shall have a designated TPZ identifying the area sufficiently large enough to protect the tree and roots from disturbance. The recommended TPZ area can be determined by the canopy footprint. The TPZ shall be shown on all site plans for the project. Improvements or activities such as paving, utility and irrigation trenching and other ancillary activities shall occur outside the TPZ, unless authorized by the project arborist. Unless otherwise specified, the protective fencing shall serve as the TPZ boundaries.

Activities prohibited within the TPZ include:

- Storage or parking vehicles, building materials, refuse, excavated spoils or dumping of poisonous materials on or around trees and roots. Poisonous materials include, but are not limited to, paint, petroleum products, concrete or stucco mix, dirty water or any other material which may be deleterious to tree health.
- The use of tree trunks as a winch support, anchorage, as a temporary power pole, sign posts or other similar function.
- Cutting of tree roots by utility trenching, foundation digging, placement of curbs and trenches and other miscellaneous excavation without prior approval of the project arborist.
- Soil disturbance or grade/drainage changes

Activities permitted or required within the TPZ include:

- **Mulching:** During construction, wood chips shall be spread within the TPZ to a six (6) inch depth, leaving the trunk clear of mulch to help inadvertent compaction and moisture loss from occurring. The mulch may be removed if improvements or other landscaping is required. Mulch material shall be two (2) inch unpainted, untreated wood chip mulch or approved equal.
- **Root Buffer:** When areas under the tree canopy cannot be fenced, a temporary buffer is required and shall cover the root zone and remain in place at the specified thickness until final grading stage.
- **Irrigation, aeration, fertilizing or other beneficial practices** that have been specifically approved for use within the TPZ.

Size and type of fence

All trees to be preserved shall be protected with five or six (5-6) foot high chain link fences. Fences are to be mounted on two-inch diameter galvanized iron posts, driven into the ground to a depth of at least two (2) feet at no more than ten (10) foot spacing. This detail shall appear on grading, demolition and improvement plans. If chain link fencing is not available, orange plastic fencing may be used. Plastic orange fencing may be used as an alternative to chain link for temporary construction zones.

Duration of Tree Protection Fencing

Tree fencing shall be erected prior to demolition, grading or construction and remain in place until final inspection.

“Warning” Signage

Warning signs a minimum of 8.5x11-inches shall be prominently displayed on each fence. The sign shall clearly state:

WARNING - Tree Protection Zone - This fence shall not be removed and is subject to a penalty.

Tree protection fencing, if required to be moved, has to be moved under the direction of the project arborist. All tree protection zones need to be clear of debris and construction materials, and cleared of weeds regardless if fencing is present or not. A general rule is that the tree protection zone is to be at the dripline of the tree if fencing is not present. Tree protection fencing needs to be restored to its proper dimensions immediately following activity that resulted in the removal of tree protection fencing.

Pruning, Surgery and Removal

Prior to construction, trees may require that branches be pruned clear from structures, activities, building encroachment or may need to be strengthened by means of mechanical support (cabling) or surgery. Such pruning, surgery or the removal of trees shall adhere to the following standards:

1. Pruning limitations:

- **Minimum Pruning:** If the project arborist recommends that trees be pruned, and the type of pruning is left unspecified, the standard pruning shall consist of ‘crown cleaning’ as defined by ISA Pruning Guidelines. Trees shall be pruned to reduce hazards and develop a strong, safe framework.

- **Maximum Pruning:** Maximum pruning should only occur in the rarest situation approved by the project arborist. No more than one-fourth (1/4) of the functioning leaf and stem area may be removed within one (1) calendar year of any tree, or removal of foliage so as to cause the unbalancing of the tree. It must be recognized that trees are individual in form and structure, and that pruning needs may not always fit strict rules. The project arborist shall assume all responsibility for special pruning practices that vary from the standards outlined in this TPP.
- **Tree Workers:** Pruning shall not be attempted by construction or contractor personnel, but shall be performed by a qualified tree care specialist or certified tree worker.

Activities during Construction & Demolition near Trees

Soil disturbance or other injurious and detrimental activity within the TPZ is prohibited unless approved by the project arborist. If an injurious event inadvertently occurs, or soil disturbance has been specifically conditioned for project approval, then the following mitigation is required:

- **Soil Compaction:** If compaction of the soil occurs, it shall be mitigated as outlined in Soil Compaction Damage, and/or Soil Improvement.
- **Grading Limitations within the Tree Protection Zone:**
 - Grade changes outside of the TPZ shall not significantly alter drainage to the tree.
 - Grade changes within the TPZ are not permitted.
 - Grade changes under specifically approved circumstances shall not allow more than six (6) inches of fill soil added or allow more than four (4) inches of existing soil to be removed from natural grade unless mitigated.

Trenching, Excavation and Equipment Use

Excavation or boring activity within the TPZ is restricted to the following activities, conditions and requirements if approved by the project arborist:

- **Notification.** Contractor shall notify the project arborist a minimum of twenty-four (24) hours in advance of the activity in the TPZ.

- Root Severance. Roots that are encountered shall be cut to sound wood and repaired. Roots two (2) inches and greater must remain injury free.
- Excavation. Any approved excavation, demolition or extraction of material shall be performed with equipment sitting outside the TPZ. Methods permitted are by hand digging, hydraulic or pneumatic air excavation technology. Avoid excavation within the TPZ during hot, dry weather.
 - a. If excavation or trenching for drainage, utilities, irrigation lines, etc., it is the duty of the contractor to tunnel under any roots two (2) inches in diameter and greater.
 - b. Prior to excavation for foundation/footings/walls, grading or trenching within the TPZ, roots shall first be severed cleanly one (1) foot outside the TPZ and to the depth of the future excavation. The trench must then be hand dug and roots pruned with a saw, sawzall, narrow trencher with sharp blades or other approved root pruning equipment.
- Heavy Equipment. Use of backhoes, steel tread tractors or any heavy vehicles within the TPZ is prohibited

Root Severance

Cutting and removal of roots smaller than two (2) inches in diameter shall be done by chain saw or hand saw to provide a flat and smooth cut and cause the least damage possible to the root and tree's health. Cutting roots by means of tractor-type equipment or other than chain saws and hand saws is prohibited.

Proper pruning technique shall encourage callusing of the roots. Root cutting and removal shall not exceed thirty-five (35) percent of total root surface.

The Contractor shall remove any wood chips or debris that may be left over from root removal that may affect the construction of improvements as directed by the City Engineer.

If any roots over two (2) inches in diameter are severed during any excavation, the following procedure shall be followed:

1. The roots shall be shaded by immediately covering the entire trench with plywood, or by covering the sides of the trench with burlap sheeting that is kept moist by watering twice per day.
2. When ready to backfill, each root shall be severed cleanly with a handsaw. Where practical, they should be cut back to a side root. Immediately, a

plastic bag shall be placed over the fresh cut, and secured with a rubber band or electrical tape. Shading should immediately be placed until backfilling occurs.

3. Plastic bags shall be removed prior to backfilling.
4. Backfill shall be clean, native material free of debris, gravel or wood chips.

If roots three (3) inches in diameter, or larger, are encountered during excavation, Contractor shall contact the Public Works Construction Section and the City Parks Division immediately and request a field inspection by the Engineer and the City Tree Supervisor, or their designated representatives, and obtain instruction as to how the roots should be treated. No roots three (3) inches in diameter, or larger, shall be cut and removed without prior approval from the City Engineer and the City Tree Supervisor, or their designated representatives. Failure to notify the Public Works Department or the Parks Division for root inspection will result in the Contractor paying for damages and/or replacing the damaged tree as determined by the Engineer.

Irrigation Program

Irrigate to wet the soil within the TPZ to a depth of twenty-four to thirty (24-30) inches at least once a month, preferably twice a month. Ten (10) gallons per inch DBH is a sufficient amount. Begin irrigating immediately prior to any construction activity. Alternatively, sub-surface irrigation may be used at regular specified intervals by injecting on approximate three (3) foot centers, ten (10) gallons of water per inch trunk diameter within the TPZ. Duration shall be until project completion plus monthly until seasonal rainfall totals at least eight (8) inches of rain, unless specified otherwise by the project arborist.

Damage to Trees - Reporting

Any damage or injury to trees shall be reported within six (6) hours to the project arborist and job superintendent or City Arborist so that mitigation can take place. All mechanical or chemical injury to branches, trunk or to roots over two (2) inches in diameter shall be reported in the monthly inspection report. In the event of injury, the following mitigation and damage control measures shall apply:

- Root injury: If trenches are cut and tree roots two (2) inches or larger are encountered they must be cleanly cut back to a sound wood lateral root. The end of the root shall be covered with either a plastic bag and secured with tape or rubber band, or be coated with latex paint. All exposed root areas within the TPZ shall be backfilled or covered within one (1) hour. Exposed roots may be kept from drying out by temporarily covering the roots and

draping layered burlap or carpeting over the upper three (3) feet of trench walls. The materials must be kept wet until backfilled to reduce evaporation from the trench walls.

- Bark or trunk wounding: Current bark tracing and treatment methods shall be performed by a qualified tree care specialist within two (2) days.
- Scaffold branch or leaf canopy injury: Remove broken or torn branches back to an appropriate branch capable of resuming terminal growth within five (5) days. If leaves are heat scorched from equipment exhaust pipes, consult the project arborist within six (6) hours.

Any damage any tree's canopy will need to be restoratively pruned effective immediately after the damage occurs and no later than 48 hours after the damage occurs.

Inspection Schedule

The project arborist retained by the applicant shall conduct the following required inspections of the construction site:

- Inspections shall verify that the type of tree protection and/or plantings be consistent with the standards outlined within this TPP. For each required inspection or meeting, a written summary of the changing tree related conditions, actions taken, and condition of trees shall be provided to the contactor.
 - Inspection of Protective Tree Fencing.
 - Pre-Construction Meeting. Prior to commencement of construction, the contractor shall conduct a pre-construction meeting to discuss tree protection with the job site superintendent, grading equipment operators, and the project arborist.
 - Inspection of Rough Grading. The project arborist shall perform an inspection during the course of rough grading adjacent to the TPZ to ensure trees will not be injured by compaction, cut or fill, drainage and trenching, and if required, inspect aeration systems, tree wells, drains and special paving. The contractor shall provide the project arborist at least forty-eight (48) hours advance notice of such activity.
 - Monthly Inspections. The project arborist shall perform monthly inspections to monitor changing conditions and tree health. The City Arborist shall be in receipt of an inspection summary during the first

week of each calendar month or, immediately if there are any changes to the approved plans or protection measures.

- o Any special activity within the Tree Protection Zone. Work in this area (TPZ) requires the direct on-site supervision of the project arborist.

Conclusion

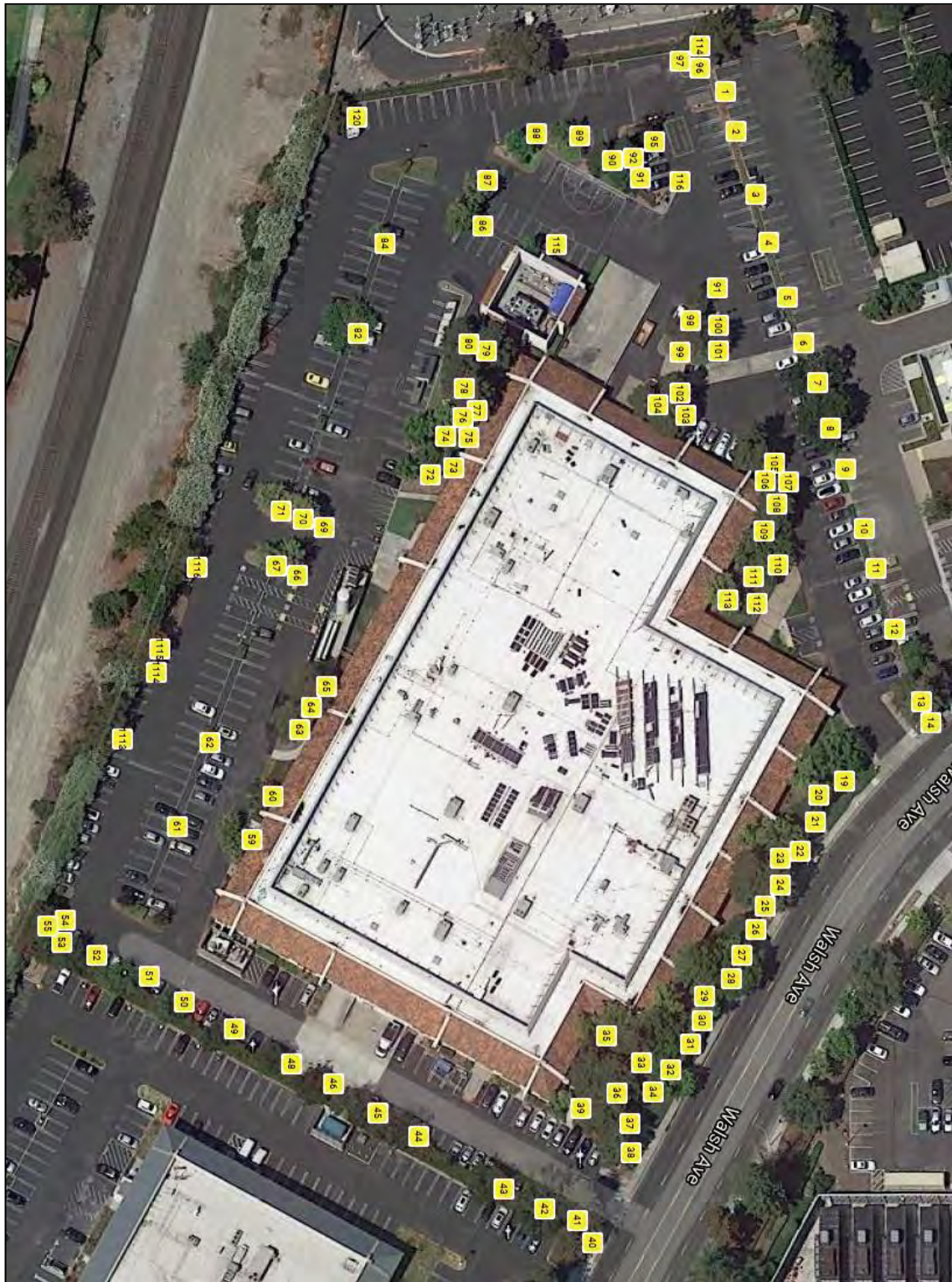
It is the nature of trees exposed to construction that some do not survive, and mortality cannot be predicted. In the event that due care is exercised, all of the trees on the project are expected to remain healthy and alive.

Assumptions and Limiting Conditions

The following are limitations to this report:

- All information presented herein covers only the trees examined at the area of inspection, and reflects the condition observed of said trees at the time of inspection.
- Observations were performed visually without probing, dissecting, coring, or excavation, unless noted above, and in no way shall the observer be held responsible for any defects that could have only been discovered by performing said services in specific area(s) where a defect was located.
- No guarantee or warranty is made, expressed or implied, that defects of the trees inspected may not arise in the future.
- No assurance can be offered that if the recommendation and precautionary measures are accepted and followed, that the desired results may be attained.
- No responsibility is assumed for the methods used by any person or company executing the recommendations provided in this report.
- The information provided herein represents an opinion, and in no way is the reporting of a specified finding, conclusion, or value based on the retainer.
- This report is proprietary to Arborwell, Inc., and may not be reproduced in whole or part without written consent. This report has been prepared exclusively for use of the parties to which it has been submitted.
- Should any part of this report be altered, damaged, corrupted, or lost, the entire evaluation shall be invalid.

Exhibit 1 – Tree Locations



2337 AMERICAN AVE, HAYWARD, CA 94545
1993 East Bayshore road, Redwood City, CA 94063

OFFICE: (888) 969-8733
CELL: (925) 518-2028
SOAKLEY@ARBORWELL.COM

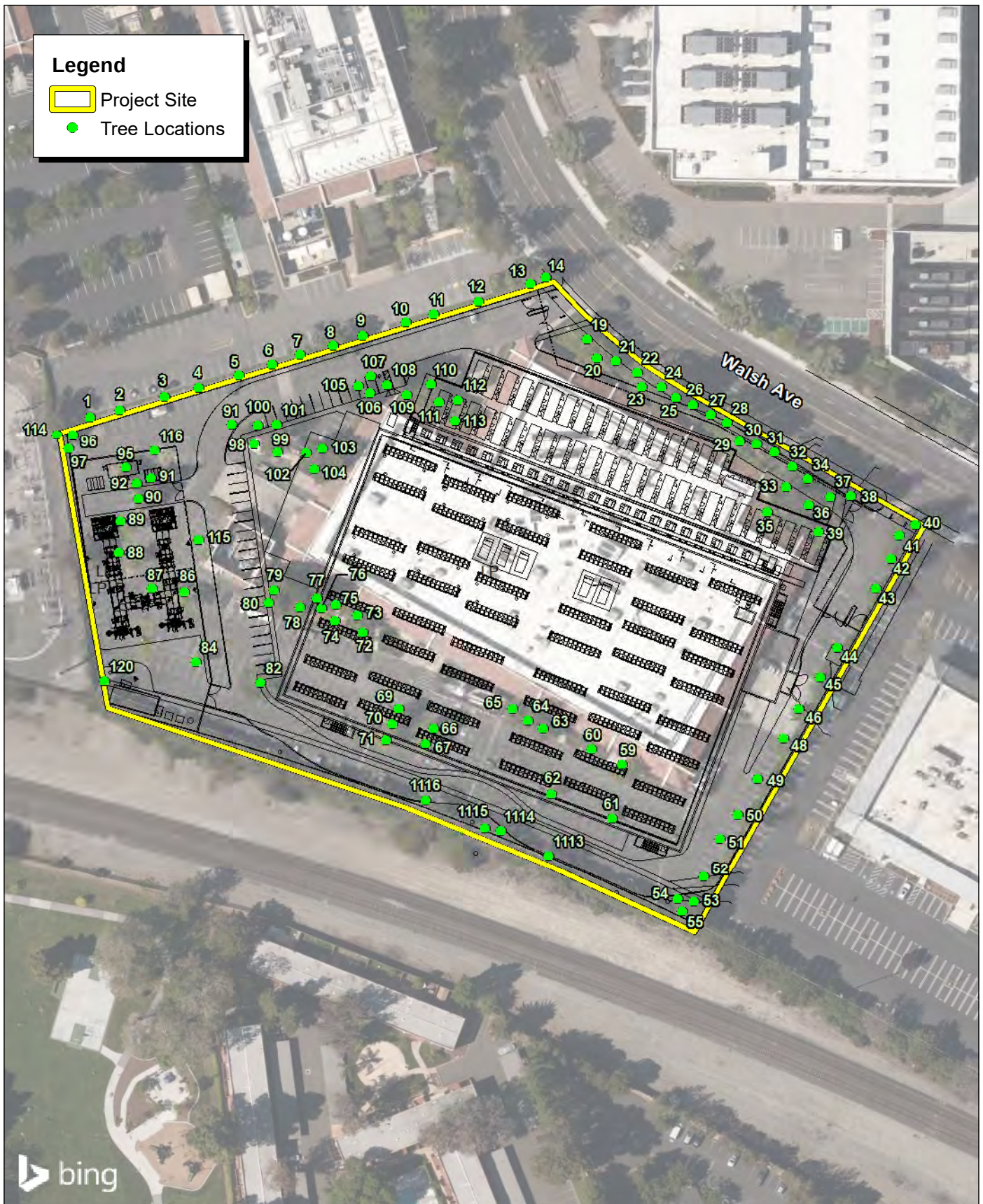


Exhibit 2 - 2590 Walsh Avenue Inventory Matrix
2950 Walsh Avenue, Santa Clara

Tag #	Botanical Name	Common Name	DBH (inches)	Health Rating	Structure Rating	Condition	Disposition	Suitability for Preservation
1	Fraxinus uhdei	Evergreen Ash	2	Excellent	Excellent	Excellent	Preserve	High
2	Fraxinus uhdei	Evergreen Ash	2	Excellent	Excellent	Excellent	Preserve	High
3	Fraxinus uhdei	Evergreen Ash	2	Excellent	Excellent	Excellent	Preserve	High
4	Fraxinus uhdei	Evergreen Ash	2	Excellent	Excellent	Excellent	Preserve	High
5	Fraxinus uhdei	Evergreen Ash	2	Excellent	Excellent	Excellent	Preserve	High
6	Fraxinus uhdei	Evergreen Ash	2	Excellent	Excellent	Excellent	Preserve	High
7	Fraxinus uhdei	Evergreen Ash	34	Fair	Fair	Fair	Preserve	Moderate
8	Fraxinus uhdei	Evergreen Ash	34	Fair	Fair	Fair	Preserve	Moderate
9	Fraxinus uhdei	Evergreen Ash	2	Excellent	Excellent	Excellent	Preserve	High
10	Fraxinus uhdei	Evergreen Ash	2	Excellent	Excellent	Excellent	Preserve	High
11	Fraxinus uhdei	Evergreen Ash	2	Excellent	Excellent	Excellent	Preserve	High
12	Fraxinus uhdei	Evergreen Ash	2	Excellent	Excellent	Excellent	Preserve	High
13	Sequoia sempervirens	Coastal Redwood	28	Excellent	Excellent	Excellent	Preserve	High
14	Sequoia sempervirens	Coastal Redwood	30	Excellent	Excellent	Excellent	Preserve	High
19	Liquidambar styraciflua	Sweetgum	28	Good	Good	Good	Preserve	Moderate
20	Liquidambar styraciflua	Sweetgum	24	Good	Fair	Good	Preserve	Moderate
21	Sequoia sempervirens	Coastal Redwood	24	Excellent	Excellent	Excellent	Preserve	High
22	Liriodendron tulipifera	Tulip Tree	28	Excellent	Excellent	Excellent	Preserve	High
23	Sequoia sempervirens	Coastal Redwood	40	Excellent	Excellent	Excellent	Preserve	High
24	Sequoia sempervirens	Coastal Redwood	14	Excellent	Excellent	Excellent	Preserve	High
25	Liriodendron tulipifera	Tulip Tree	26	Excellent	Good	Excellent	Preserve	High
26	Liriodendron tulipifera	Tulip Tree	26	Excellent	Good	Excellent	Preserve	High
27	Liquidambar styraciflua	Sweetgum	12	Good	Fair	Good	Preserve	Moderate

Tag #	Botanical Name	Common Name	DBH (inches)	Health Rating	Structure Rating	Condition	Disposition	Suitability for Preservation
28	Liquidambar styraciflua	Sweetgum	13	Good	Fair	Good	Preserve	Moderate
29	Liriodendron tulipifera	Tulip Tree	10	Fair	Good	Fair	Remove Based On Conflicts With Layout	Moderate
30	Liriodendron tulipifera	Tulip Tree	10	Fair	Good	Fair	Remove Based On Conflicts With Layout	Moderate
31	Sequoia sempervirens	Coastal Redwood	40	Excellent	Excellent	Excellent	Remove Based On Conflicts With Layout	High
32	Sequoia sempervirens	Coastal Redwood	40	Excellent	Excellent	Excellent	Remove Based On Conflicts With Layout	High
33	Sequoia sempervirens	Coastal Redwood	40	Excellent	Excellent	Excellent	Remove Based On Conflicts With Layout	High
34	Sequoia sempervirens	Coastal Redwood	40	Excellent	Excellent	Excellent	Remove Based On Conflicts With Layout	High
35	Liquidambar styraciflua	Sweetgum	10	Good	Fair	Good	Remove Based On Conflicts With Layout	Moderate
36	Sequoia sempervirens	Coastal Redwood	40	Excellent	Excellent	Excellent	Remove Based On Conflicts With Layout	High
37	Sequoia sempervirens	Coastal Redwood	40	Excellent	Excellent	Excellent	Remove Based On Conflicts With Layout	High
38	Sequoia sempervirens	Coastal Redwood	40	Excellent	Excellent	Excellent	Remove Based On Conflicts With Layout	High
39	Liquidambar styraciflua	Sweetgum	10	Good	Fair	Good	Remove Based On Conflicts With Layout	Moderate
40	Sequoia sempervirens	Coastal Redwood	26	Excellent	Excellent	Excellent	Preserve	High
41	Sequoia sempervirens	Coastal Redwood	30	Excellent	Excellent	Excellent	Preserve	High
42	Fraxinus uhdei	Evergreen Ash	26	Fair	Fair	Fair	Preserve	Moderate
43	Fraxinus uhdei	Evergreen Ash	26	Fair	Fair	Fair	Preserve	Moderate
44	Fraxinus uhdei	Evergreen Ash	26	Fair	Fair	Fair	Preserve	Moderate
45	Fraxinus uhdei	Evergreen Ash	26	Fair	Fair	Fair	Preserve	Moderate
46	Fraxinus uhdei	Evergreen Ash	26	Fair	Fair	Fair	Preserve	Moderate
48	Fraxinus uhdei	Evergreen Ash	26	Fair	Fair	Fair	Preserve	Moderate
49	Fraxinus uhdei	Evergreen Ash	26	Fair	Fair	Fair	Preserve	Moderate
50	Fraxinus uhdei	Evergreen Ash	26	Fair	Fair	Fair	Preserve	Moderate
51	Fraxinus uhdei	Evergreen Ash	26	Fair	Fair	Fair	Preserve	Moderate
52	Fraxinus uhdei	Evergreen Ash	26	Fair	Fair	Fair	Preserve	Moderate

Tag #	Botanical Name	Common Name	DBH (inches)	Health Rating	Structure Rating	Condition	Disposition	Suitability for Preservation
53	Sequoia sempervirens	Coastal Redwood	18	Excellent	Excellent	Excellent	Preserve	High
54	Sequoia sempervirens	Coastal Redwood	14	Excellent	Excellent	Excellent	Preserve	High
55	Sequoia sempervirens	Coastal Redwood	18	Excellent	Excellent	Excellent	Preserve	High
59	Pyrus kawakamii	Evergreen Pear	14	Good	Good	Good	Remove Based On Conflicts With Layout	Moderate
60	Pyrus kawakamii	Evergreen Pear	14	Dead	Dead	Dead	Remove Based On Conflicts With Layout	Low
61	Ceratonia siliqua	Carob	6	Good	Good	Good	Remove Based On Conflicts With Layout	Low
62	Ceratonia siliqua	Carob	12	Poor	Poor	Poor	Remove Based On Conflicts With Layout	Low
63	Sequoia sempervirens	Coastal Redwood	36	Good	Excellent	Good	Remove Based On Conflicts With Layout	High
64	Sequoia sempervirens	Coastal Redwood	34	Good	Excellent	Good	Remove Based On Conflicts With Layout	High
65	Sequoia sempervirens	Coastal Redwood	30	Good	Excellent	Good	Remove Based On Conflicts With Layout	High
66	Liquidambar styraciflua	Sweetgum	10	Good	Good	Good	Remove Based On Conflicts With Layout	Moderate
67	Liquidambar styraciflua	Sweetgum	6	Good	Good	Good	Remove Based On Conflicts With Layout	Moderate
69	Liquidambar styraciflua	Sweetgum	10	Good	Good	Good	Remove Based On Conflicts With Layout	Moderate
70	Liquidambar styraciflua	Sweetgum	6	Good	Good	Good	Remove Based On Conflicts With Layout	Moderate
71	Liquidambar styraciflua	Sweetgum	8	Good	Good	Good	Remove Based On Conflicts With Layout	Moderate
72	Liquidambar styraciflua	Sweetgum	12	Good	Good	Good	Remove Based On Conflicts With Layout	Moderate
73	Liquidambar styraciflua	Sweetgum	12	Good	Good	Good	Remove Based On Conflicts With Layout	Moderate
74	Liquidambar styraciflua	Sweetgum	14	Good	Good	Good	Remove Based On Conflicts With Layout	Moderate
75	Liquidambar styraciflua	Sweetgum	8	Good	Good	Good	Remove Based On Conflicts With Layout	Moderate
76	Liquidambar styraciflua	Sweetgum	12	Good	Good	Good	Remove Based On Conflicts With Layout	Moderate
77	Sequoia sempervirens	Coastal Redwood	36	Good	Excellent	Good	Remove Based On Conflicts With Layout	High
78	Sequoia sempervirens	Coastal Redwood	36	Good	Excellent	Good	Remove Based On Conflicts With Layout	High
79	Sequoia sempervirens	Coastal Redwood	34	Good	Excellent	Good	Remove Based On Conflicts With Layout	High
80	Sequoia sempervirens	Coastal Redwood	36	Good	Excellent	Good	Remove Based On Conflicts With Layout	High

Tag #	Botanical Name	Common Name	DBH (inches)	Health Rating	Structure Rating	Condition	Disposition	Suitability for Preservation
82	Ceratonia siliqua	Carob	20	Fair	Fair	Fair	Remove Based On Conflicts With Layout	Low
84	Liquidambar styraciflua	Sweetgum	8	Fair	Fair	Fair	Remove Based On Conflicts With Layout	Low
86	Liquidambar styraciflua	Sweetgum	8	Fair	Fair	Fair	Remove Based On Conflicts With Layout	Low
87	Liquidambar styraciflua	Sweetgum	8	Fair	Fair	Fair	Remove Based On Conflicts With Layout	Low
88	Liriodendron tulipifera	Tulip Tree	12	Good	Good	Good	Remove Based On Conflicts With Layout	Moderate
89	Liriodendron tulipifera	Tulip Tree	12	Good	Good	Good	Remove Based On Conflicts With Layout	Moderate
90	Sequoia sempervirens	Coastal Redwood	32	Excellent	Excellent	Excellent	Remove Based On Conflicts With Layout	High
91	Sequoia sempervirens	Coastal Redwood	14	Excellent	Excellent	Excellent	Remove Based On Conflicts With Layout	High
91	Sequoia sempervirens	Coastal Redwood	28	Excellent	Excellent	Excellent	Remove Based On Conflicts With Layout	High
92	Sequoia sempervirens	Coastal Redwood	30	Excellent	Excellent	Excellent	Remove Based On Conflicts With Layout	High
95	Prunus cerasifera	Purpleleaf Plum	8	Fair	Fair	Fair	Remove Based On Conflicts With Layout	Low
96	Sequoia sempervirens	Coastal Redwood	12	Excellent	Excellent	Excellent	Preserve	High
97	Sequoia sempervirens	Coastal Redwood	8	Excellent	Excellent	Excellent	Preserve	High
98	Sequoia sempervirens	Coastal Redwood	14	Excellent	Excellent	Excellent	Remove Based On Conflicts With Layout	High
99	Sequoia sempervirens	Coastal Redwood	14	Excellent	Excellent	Excellent	Remove Based On Conflicts With Layout	High
100	Sequoia sempervirens	Coastal Redwood	16	Excellent	Excellent	Excellent	Remove Based On Conflicts With Layout	High
101	Sequoia sempervirens	Coastal Redwood	14	Good	Excellent	Good	Remove Based On Conflicts With Layout	High
102	Sequoia sempervirens	Coastal Redwood	28	Excellent	Good	Excellent	Remove Based On Conflicts With Layout	High
103	Sequoia sempervirens	Coastal Redwood	32	Excellent	Excellent	Excellent	Remove Based On Conflicts With Layout	High
104	Sequoia sempervirens	Blackwood Acacia	20	Excellent	Excellent	Excellent	Remove Based On Conflicts With Layout	High
105	Sequoia sempervirens	Coastal Redwood	32	Excellent	Excellent	Excellent	Remove Based On Conflicts With Layout	High
106	Sequoia sempervirens	Coastal Redwood	32	Excellent	Excellent	Excellent	Remove Based On Conflicts With Layout	High
107	Sequoia sempervirens	Coastal Redwood	36	Excellent	Excellent	Excellent	Remove Based On Conflicts With Layout	High
108	Sequoia sempervirens	Coastal Redwood	38	Excellent	Excellent	Excellent	Remove Based On Conflicts With Layout	High

Tag #	Botanical Name	Common Name	DBH (inches)	Health Rating	Structure Rating	Condition	Disposition	Suitability for Preservation
109	Pyrus kawakamii	Evergreen Pear	13	Excellent	Excellent	Excellent	Remove Based On Conflicts With Layout	High
110	Lagerstroemia indica	Crapemyrtle	4	Excellent	Excellent	Excellent	Remove Based On Conflicts With Layout	High
111	Lagerstroemia indica	Crapemyrtle	4	Excellent	Excellent	Excellent	Remove Based On Conflicts With Layout	High
112	Lagerstroemia indica	Crapemyrtle	4	Excellent	Excellent	Excellent	Remove Based On Conflicts With Layout	High
113	Liquidambar styraciflua	Sweetgum	10	Good	Fair	Good	Remove Based On Conflicts With Layout	Moderate
114	Sequoia sempervirens	Coastal Redwood	6	Excellent	Excellent	Excellent	Preserve	High
115	Liriodendron tulipifera	Tulip Tree	6	Good	Good	Good	Remove Based On Conflicts With Layout	Moderate
116	Laurus nobilis	Laurel	2	Fair	Fair	Fair	Remove Based On Conflicts With Layout	Low
120	Sequoia sempervirens	Coastal Redwood	18	Excellent	Excellent	Excellent	Remove Based On Conflicts With Layout	High
1113	Pinus Radiata	Monterey Pine	36	Poor	Poor	Poor	Remove Based On Condition	Low
1114	Pinus Radiata	Monterey Pine	36	Dead	Dead	Dead	Remove Based On Condition	Low
1115	Juglan nigra	Black Walnut	24	Poor	Poor	Poor	Remove Based On Condition	Low
1116	Pinus Radiata	Monterey Pine	36	Dead	Dead	Dead	Remove Based On Condition	Low

THIS PAGE INTENTIONALLY LEFT BLANK

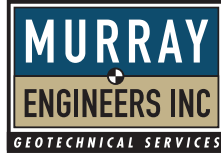
APPENDIX C

Cultural Resource Assessment

Filed under Request For Confidential Designation with CEC

APPENDIX D

Preliminary Geotechnical Assessment



July 17, 2020
Project No. 3326-1L1

Vantage Data Centers
Attn: Mr. Spencer Myers
2820 Northwestern Parkway
Santa Clara, California 95051

**RE: LIMITED PRE-PURCHASE INVESTIGATION,
COMMERCIAL PROPERTY,
2590 WALSH AVENUE,
SANTA CLARA, CALIFORNIA**

Ladies & Gentlemen:

We are pleased to present the results of our limited preliminary geotechnical evaluation of the property at 2590 Walsh Avenue in Santa Clara, California. The purpose of our preliminary evaluation was to provide you, as the prospective buyer, with an assessment of the local geotechnical conditions, preliminary site-specific subsurface conditions, and primary geotechnical constraints to and feasibility of construction on the property. The site location is indicated on the Vicinity Map, Plate 1.

Although plans are highly tentative at this time, we understand that should you decide to purchase the property and pursue site re-development, the Project would consist of demolishing the existing improvements and constructing two new data center buildings on the site. We anticipate that the new data center buildings will be on the order of four stories above grade without basement. Additional site improvements will likely include a substation on the west side of the site, exterior paving for driveways and walkways, and concrete equipment pads. The layout of the existing improvements and the approximate layout of the proposed improvements is shown on the Site Plan, Plate 2. The final building layout, number of building stories, representative building dead plus live loads, and an overall site development plan is not certain at this time.

Our preliminary evaluation consisted of reviewing local geologic and hazard maps; performing a limited site reconnaissance; performing a preliminary subsurface exploration consisting of eight seismic cone penetration tests (SCPTs) extending to depths of approximately 120 feet below existing grade and recording the shear wave velocity at one meter intervals over the depth explored at the locations shown on Plate 2, attached; conducting an evaluation of liquefaction potential; and evaluating conceptual foundation options for new building construction at the site. If you purchase the property and decide to construct a new data center building, a follow-up design level investigation will be required in order to develop detailed geotechnical design parameters that can be used to design the new building.



SITE DESCRIPTION & MAPPED GEOLOGIC CONDITIONS

The 6.69-acre, relatively flat property is located in a developed commercial area of Santa Clara, and is bounded by Walsh Avenue to the northeast, a rail road owned by the Peninsula Corridor Joint Powers Board to the southwest that was originally operated by the Southern Pacific Railroad, a City-owned property to the west, and developed commercial properties to the northwest and southeast. The property is situated at an average elevation of 45 feet, and is developed with an approximately 111,600 square-foot, single-story research and development building that was constructed circa the early 1980s. The existing building has six loading docks, and is surrounded by exterior driveway and parking areas paved with asphaltic concrete, concrete walkways, a trash enclosure, concrete equipment pads, and landscaping.

According to the Geologic Map of the San Jose West Quadrangle, California (Wentworth and others, 1999), the site is located in an area underlain by Holocene age (less than 11,000 years old) levee deposits and basin deposits. The relevant portion of the geologic map is included as Plate 3, Vicinity Geologic Map. Levee deposits are generally described as loose, moderate- to well-sorted sandy or clayey silt grading to sandy or silty clay. Basin deposits are generally described as dark-colored clay with very fine silty clay, rich in organic material, and deposited beyond the levees and flood plains in the flood basins where stilling flood waters drop their finest sediment. These geologic materials may be susceptible to some degree of compressibility when subject to new building loads.

According to the State of California Official Seismic Hazard Zones Map for the San Jose West Quadrangle (California Geological Survey, 2002), the site is located in an area considered potentially susceptible to earthquake-induced liquefaction. A copy of the relevant portion of this map is presented on the State Seismic Hazard Zones Map, Plate 4. Plate 1.2 of the State Seismic Hazard Zone Report 058 (California Geological Survey, 2002) estimates the depth to groundwater in the site vicinity to be less than 10 feet below existing site grades. In addition, according to the Association of Bay Area Governments (ABAG) Earthquake Liquefaction Susceptibility Map (Knudsen and others, 2000), the site is located in an area considered to have a moderate susceptibility to earthquake-induced liquefaction. A copy of the relevant portion of this map is presented on the Liquefaction Susceptibility Map, Plate 5.

Based on the USGS Topographic Map of the area (see Plate 1), Saratoga Creek bisects the central portion of the site with a northwest-southeast orientation. Based on our review of select historical topographic maps dating back to 1897 and historical aerial photographs dating back to 1948 available online through NETROnline at <https://www.historicaerials.com/viewer>, the section of Saratoga Creek within the area of the site was already channelized by 1897. The location of the original stream channel prior to

channelization is not known, and the stream channel likely meandered prior to channelization. The channelized drainage is visible on historical aerial photographs dated 1968 and earlier, but is no longer visible in the 1980 historical aerial photographs. The channelized section of Saratoga Creek that passes through the site was presumably undergrounded in some kind of a culvert at the time of original site development. Unfortunately, due to the historical nature of this work, the exact dimensions (width, depth, exact orientation across the site) and details of the backfill are unknown. Based on our limited review of historical aerial photographs and USGS topographic maps, an approximate orientation of the former channelized creek alignment is shown on the Site Plan, Plate 2.

SEISMIC CONE PENETRATION TESTING

Cone penetration testing (CPT) is a subsurface exploration method (ASTM Test Method D 5778) whereby soil characteristics are measured using an integrated electronic cone system hydraulically pushed into the ground. The cone device measures cone bearing (q_c), sleeve friction (f_s) and pore water pressure (u_2) at 2-centimeter intervals during penetration and correlates this information on a log in graphic form. The CPT measurements were developed using a 150 MPa capacity cone with a tip area of 15 cm² and a friction sleeve area of 225 cm²; the penetrometers used are designed with equal end area friction sleeves, a net end area ratio of 0.8 and cone tips with a 60 degree apex angle. The cones we utilized contain a polyethylene porous filter element that is 6 mm thick and located directly behind the cone tip for measurement of pore water pressure.

Soil classification and behavior type can be estimated from empirical relationships between q_c , f_s , and u_2 . Generally, cohesive soils (silts and clays) have a higher friction ratio due to small cone bearing pressure and generate large excess pore water pressures, while cohesionless soils (sands and gravels) have a low friction ratio due to large cone bearing pressure and generate very little or negative excess pore water pressures. This information can also be used to very approximately develop SPT blow counts or relative density by using empirical relationships.

Shear wave velocity testing was performed at one meter intervals for all eight of the soundings in order to collect internal velocities. The shear wave velocity results were obtained by a 28-Hertz, horizontally active geophone that was rigidly mounted in the body of the cone penetrometer, 0.2 meters behind the cone tip. Shear waves are typically generated by using an impact hammer horizontally striking a beam that is held in place by a normal load. The hammer and beam act as a contact trigger that initiates the recording of the seismic wave traces. For impulsive devices, an accelerometer trigger may be used. The traces are recorded using an up-hole integrated digital oscilloscope which is part of the seismic CPT data acquisition system.

Please refer to the SCPT Appendix – Presentation of Site Investigation Results for detailed logs of SCPT-1 through SCPT-8. We note the soils types and the interpreted SPT blow counts are necessarily approximate and should be used only as a guide. They should not be taken to be precisely correct.

SUMMARY OF RESULTS AND LIQUEFACTION EVALUATION

Liquefaction is a phenomenon in which an increase in the excess pore water pressure results in partial to full loss of soil shear strength and stiffness. In order for liquefaction to occur, the following four factors are required: 1) saturated soil or soil situated below the groundwater table; 2) undrained loading (strong ground shaking), such as by earthquake; 3) contractive soil response during cyclic shear loading, which is often the case for a soil which is initially in a loose or uncompacted state; and 4) susceptible soil type; such as clean, uniformly graded sands, non-plastic silts, or gravels. Structures situated above temporarily liquefied soils may sink or tilt, potentially resulting in significant structural damage.

As noted above, the site is located in an area considered potentially susceptible to earthquake-induced liquefaction (see Plates 4 and 5, attached). However, these maps are notoriously conservative for a variety of reasons including the use of sparse and inaccurate data. Therefore an evaluation based on site-specific data will frequently show that there is little or no real potential for earthquake-induced liquefaction.

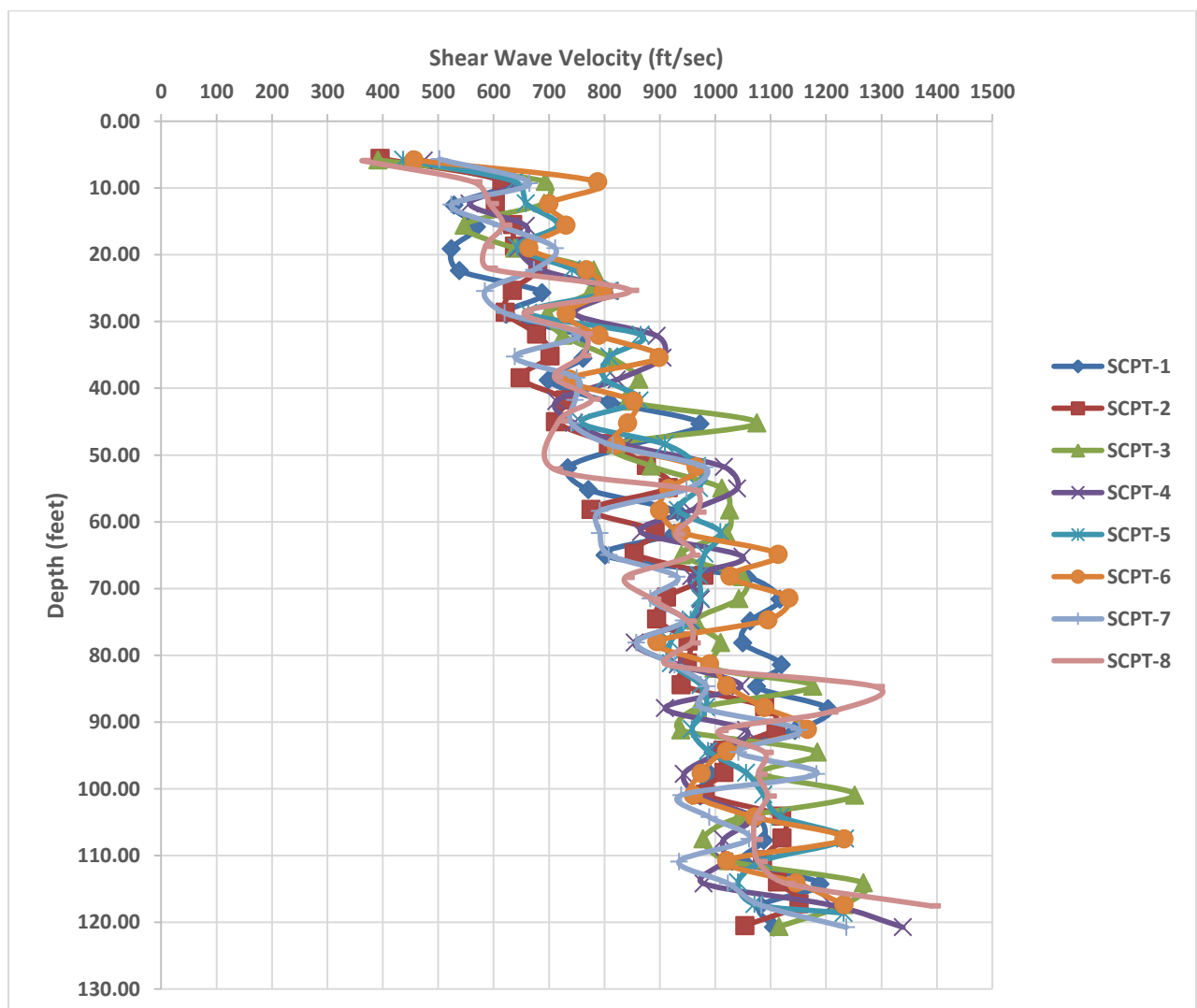
Based on our review of published state seismic hazard data, it appears the historically-highest groundwater level in the area of the site is less than 10 feet below the ground surface. Based on our interpretation of the CPT data, including pore pressure dissipation tests performed in most of the SCPTs, the groundwater table was most likely encountered at depths varying between approximately 4 feet to 8 below grade for SCPT-2 through SCPT-8, and approximately 13 feet below grade for SCPT-1. The shallowest groundwater table elevation inferred from dissipation tests was approximately 4 feet below grade in SCPT-3 and 4.6 feet in SCPT-7. A summary of this data can be found in the Cone Penetration Test Summary section of the SCPT appendix.

In this case the eight SCPTs indicated that the site is underlain predominantly by relatively compact clayey silts and silty clays. In seven of the eight SCPTs there are occasional sand layers although almost none are seen in SCPT-5. Where sand layers are seen, they are relatively thin and occur at different depths so likely they are lenses rather than continuous layers. There is no evidence of levee or overbank deposits containing clean sands in any of the SCPTs. In our opinion there is a potential for encountering pockets of loose fill and weak fill associated with historical creek channelization and undergrounding of Saratoga Creek in between the SCPT locations. Although we believe such materials would have no

effect on a well-designed foundation system, it is possible that some degree of earthwork grading operations may be required to address areas of existing fill.

The measured shear wave velocities are shown in Figure 1, below. The average shear wave velocity in the upper 100 feet varies from 767 ft/s to 859 ft/s, thus the site falls within Site Class D in accordance with the 2019 CBC. Because they are relatively thin the occasional sand layers do not stand out in Figure 1, although careful inspection suggests that they have higher than average shear wave velocities which are above 700 ft/s, the approximate upper limit for sands susceptible to liquefaction according to Andrus and Stokoe (2000). As pointed out by Pyke (2003), lenses of sand are in any case less susceptible to liquefaction than continuous layers.

Figure 1: Plot of Measured Shear Wave Velocities Versus Depth



Further evidence for the relatively compact state of soils at this site is provided in Figures 2a through 2h below, in which the relative densities obtained from the SCPT data are plotted against the soil behavior type index, I_c using the Jamiolkowski (1985) correlation for clean sands. The soil behavior type index, I_c , indicates in an approximate way the amount of silty and clayey fines in a soil. Values lower than 1.64 indicate a clean sand, values above 2.05 indicate a sandy silt and values about 2.6 indicate a clayey material. Thus, the standard correlations based on laboratory tests on freshly deposited clean sands are at best directly applicable only to soils with an I_c of less than 1.64.

It may be seen in Figures 2a through 2h, that for soils with I_c less than 1.64, apparent relative densities on the order of 90 percent are being indicated. This result should not be taken literally, but it is a good indicator of relatively compact materials. Because the Jamiolkowski correlation includes no correction for fines, the lower values of apparent relative density obtained for soils with a higher I_c are not so much an indication of less compact material as they are of greater fines content. That has some implication for compressibility and whether deep foundations are required, which will need to be evaluated in a final site investigation should Vantage decide to purchase the property.

Figure 2a

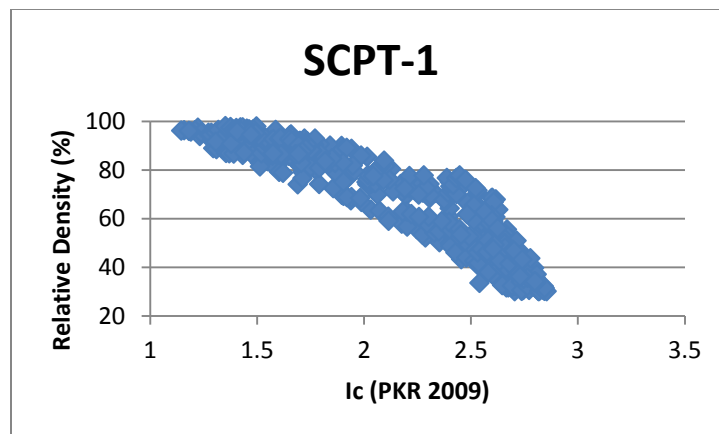


Figure 2b

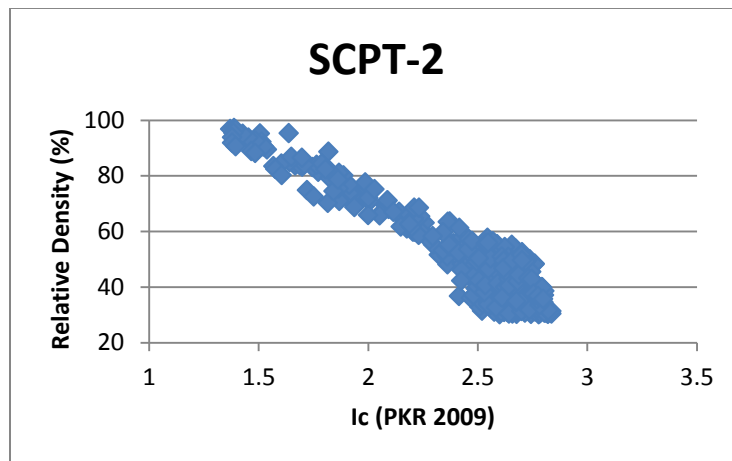


Figure 2c

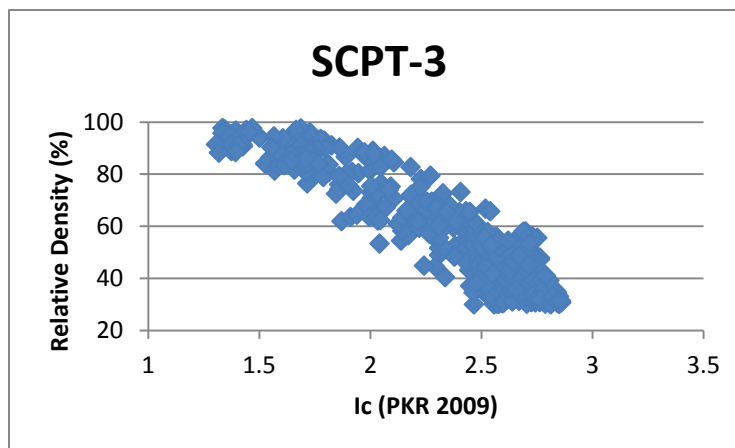


Figure 2d

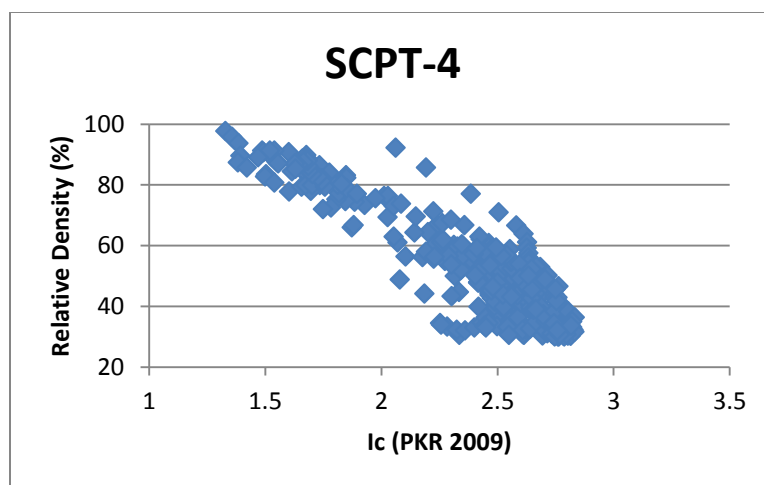


Figure 2e

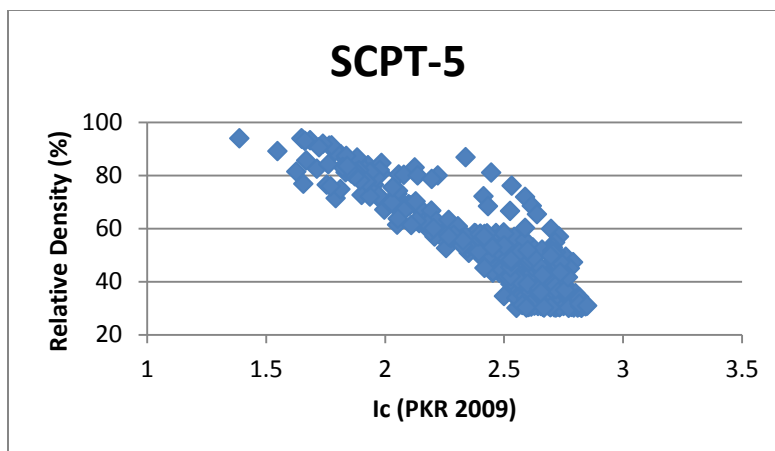


Figure 2f

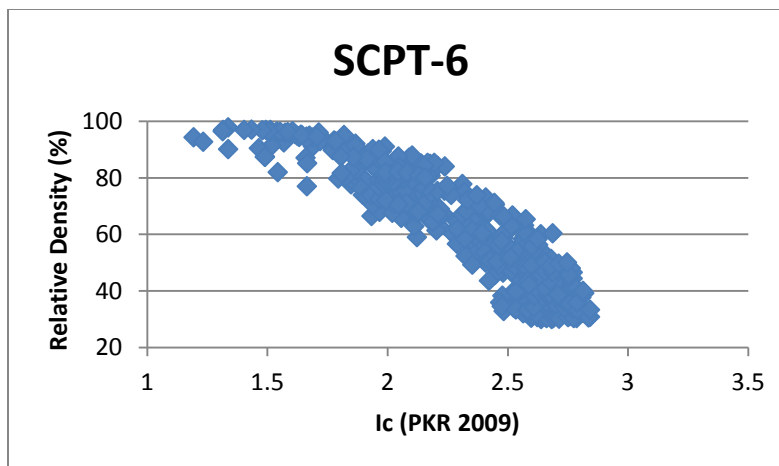


Figure 2g

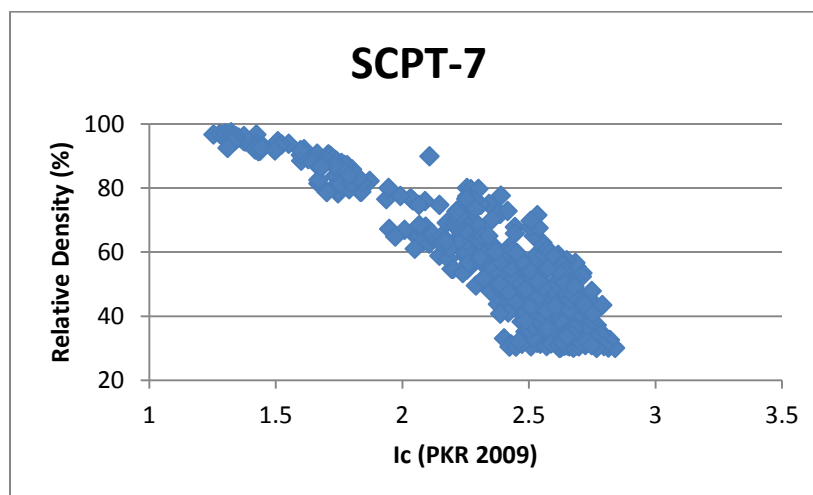
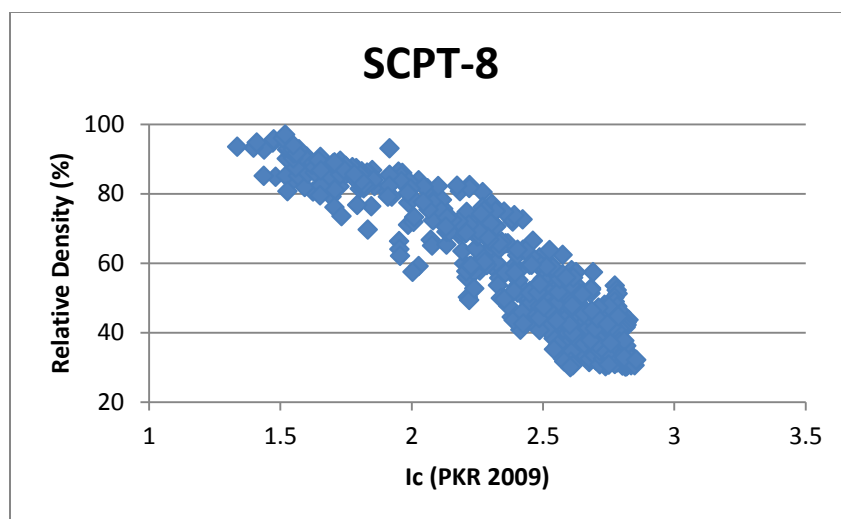


Figure 2h



Based on our preliminary investigation, in our opinion there is a low to negligible risk of liquefaction at this site, and therefore there is a very low potential for liquefaction-induced settlement and lateral spreading/ground deformation to impact the existing or future buildings on the site.

ADDITIONAL PRELIMINARY FINDINGS & OPINIONS

Based on our preliminary investigation, it is our opinion that the proposed development is generally feasible from a geotechnical standpoint. In our opinion, the primary geotechnical constraints and considerations that will likely affect the design and construction of the proposed development are listed below and discussed in more detail below:

1. Strong Ground Shaking During an Earthquake
2. Static Ground Settlement (Non-Seismic) Due to Placement of New Building Loads
3. Potential Presence of Highly Expansive Surficial Clay

Strong Ground Shaking – Based on our review of published geologic maps, although no faults have been mapped across the site, the properties lie relatively close to active faults. The main trace of the active San Andreas and San Gregorio faults are located off-shore approximately 10.2 and 23.3 miles southwest of the site, respectively. The Hayward and Calaveras faults are located approximately 7.6 and 10.6 miles northeast of the site, respectively. In addition, the potentially active Monte Vista-Shannon fault zone is located approximately 6.6 miles southwest of the site. Therefore, strong ground shaking can be expected over the design life of the development during moderate to large earthquake events. As a result, the improvements should be designed in accordance with current earthquake resistant standards, including the 2019 CBC guidelines and design parameters that would be presented in a design-level report for the project. It should be clearly

understood that these guidelines and parameters will not prevent damage to structures; rather they are intended to prevent catastrophic collapse. The project structural engineer should be consulted for additional details relating to an upgraded seismic design.

Static Ground Settlement (Non-Seismic) Due to Placement of New Building Loads – Based on our review of published maps, our experience, and our review of the CPT logs, it appears that fine-grained potentially compressible soils are present beneath the site that may be susceptible to static consolidation settlement over time dependent on the magnitude of applied building loads.

Potential Presence of Expansive Surficial Clay – In addition to the above two main constraints, in our opinion there may also be a potential for encountering expansive surficial clay soils, which would also have to be evaluated as part of a future design-level investigation with additional subsurface exploration (borings) and laboratory testing. Furthermore, in our opinion there appears to be a potential for encountering shallow groundwater which could impact excavations such as for foundations, utility trenches, elevator pits, sewage ejector pits, or similar, potentially requiring dewatering or other mitigation measures by the contractor.

CONCLUSIONS:

In our opinion the proposed four-story data center buildings and electrical substation maybe be supported on auger cast piles or driven piles extending to depths on the order of approximately 60 to 80 feet below grade. However we note there may be a possibility that shallow mat foundations could be utilized instead of deep foundations, depending on the results of a future design-level geotechnical investigation that would include additional subsurface exploration in the form of deep borings, laboratory testing on high quality samples recovered from the borings, and supplemental geotechnical engineering analyses that take into account the planned building loads. We should evaluate the potential for consolidation settlements resulting from the proposed buildings and substation as part of a future design level investigation, if you decide to purchase the properties and redevelop.

In our opinion, it appears likely that lightly-loaded structures such as trash enclosures or generator pads could be supported on shallow foundations. Pavement design will depend on the findings of a future detailed design-level investigation, which would include borings to identify thicknesses of existing surficial fill and expansive potential of surficial clayey soil.

We note that excavation of deep geotechnical borings and laboratory testing was not feasible as part of this limited pre-purchase investigation due to the timing constraint imposed on our scope of work, the availability of deep boring drilling contractors, and required time for laboratory testing of recovered soil materials. We recommend that design and construction of any site redevelopment project be preceded by a design-level geotechnical investigation,

which would involve subsurface exploration consisting of at least four deep borings with recovery of soil samples, geotechnical laboratory testing, additional geotechnical analyses, and development of detailed geotechnical recommendations for the design and construction of the proposed construction.

LIMITATIONS

The opinions and suggested recommendations presented above are based on our experience in the general area and the limited subsurface information collected within our scope of services and should be considered preliminary. Because of the limited extent of our services, conditions not brought to our attention were not evaluated. A more detailed investigation that would include deep soil borings and additional CPTs, laboratory testing, and additional geotechnical analyses could result in modifications to our preliminary conclusions. A detailed investigation of this nature is beyond the scope of this limited preliminary evaluation. In addition, another consultant with a different background in training and experience could form different opinions about the site. We recommend the proposed development be preceded by a detailed design-level geotechnical investigation, which would include additional subsurface exploration with geotechnical borings, laboratory testing, and supplemental analyses.

Our limited preliminary geotechnical investigation has been performed in accordance with geotechnical engineering principles and practices generally accepted at this time and location. We make no warranty, expressed or implied.

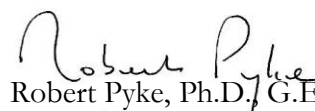
If you have any questions concerning our limited pre-purchase evaluation, please do not hesitate to call.

Sincerely,

MURRAY ENGINEERS, INC.


Kristofer T. Korth, P.E.
Senior Engineer

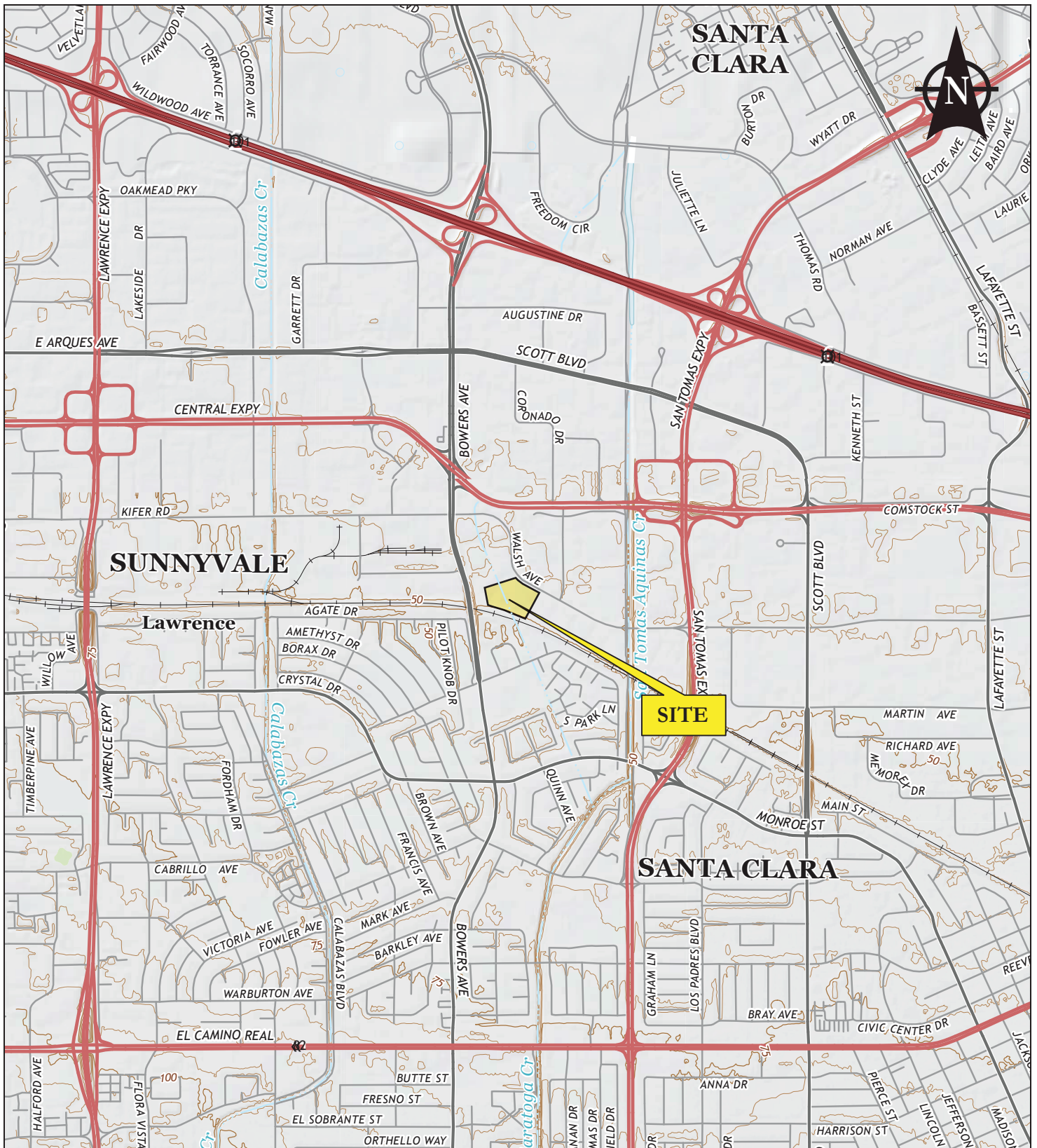



Robert Pyke, Ph.D., G.E.
Principal Geotechnical Engineer



Attachments: Plate 1 – Vicinity Map
Plate 2 – Site Plan
Plate 3 – Vicinity Geologic Map
Plate 4 – State Seismic Hazard Zones Map
Plate 5 - ABAG Liquefaction Susceptibility Map
SCPT Appendix – Presentation of Site Investigation Results





Base: USGS Topographic Maps, San Jose West Quadrangle, 7.5-Minute Series, 2015 Scale: 1 inch = 2,000 feet

MURRAY ENGINEERS INC GEOTECHNICAL SERVICES	LIMITED PRE-PURCHASE INVESTIGATION 2590 WALSH AVENUE SANTA CLARA, CALIFORNIA PROJECT NO. 3326-1L1	VICINITY MAP PLATE 1
	JULY 2020	

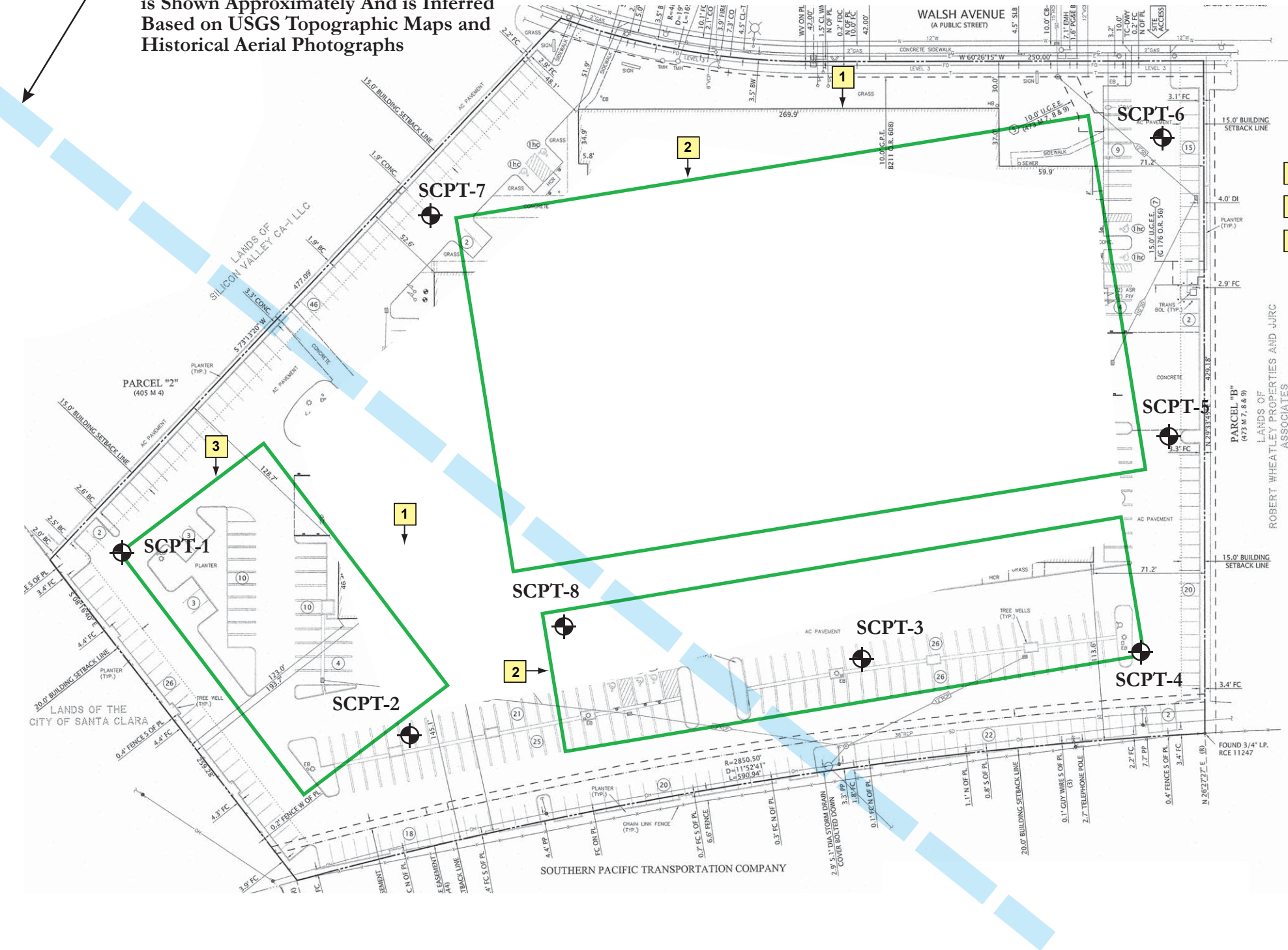
Walsh Avenue



Approximate Location of Former Channelized Creek Channel, Location is Shown Approximately And is Inferred Based on USGS Topographic Maps and Historical Aerial Photographs

KEY NOTES

- 1 Area of (E) Building to be Removed (Solid)
- 2 Approximate Outline of Proposed Four-Story Data Center Building (Solid)
- 3 Approximate Outline of Proposed Substation (Solid)



LEGEND

SCPT-2 Approximate Location of SCPT by Murray Engineers, Inc., June 24, 2020
Base: A.L.T.A./ A.C.S.M. Land Survey, by Kier & Wright Civil Engineers & Surveyors, Inc., dated February 7, 2007
Approximate Scale: 1 inch = 80 feet

MURRAY ENGINEERS INC GEOTECHNICAL SERVICES	SITE PLAN	
LIMITED PRE-PURCHASE INVESTIGATION 2590 WALSH AVENUE SANTA CLARA, CALIFORNIA		
PROJECT NO. 3326-1L1	JULY 2020	PLATE 2

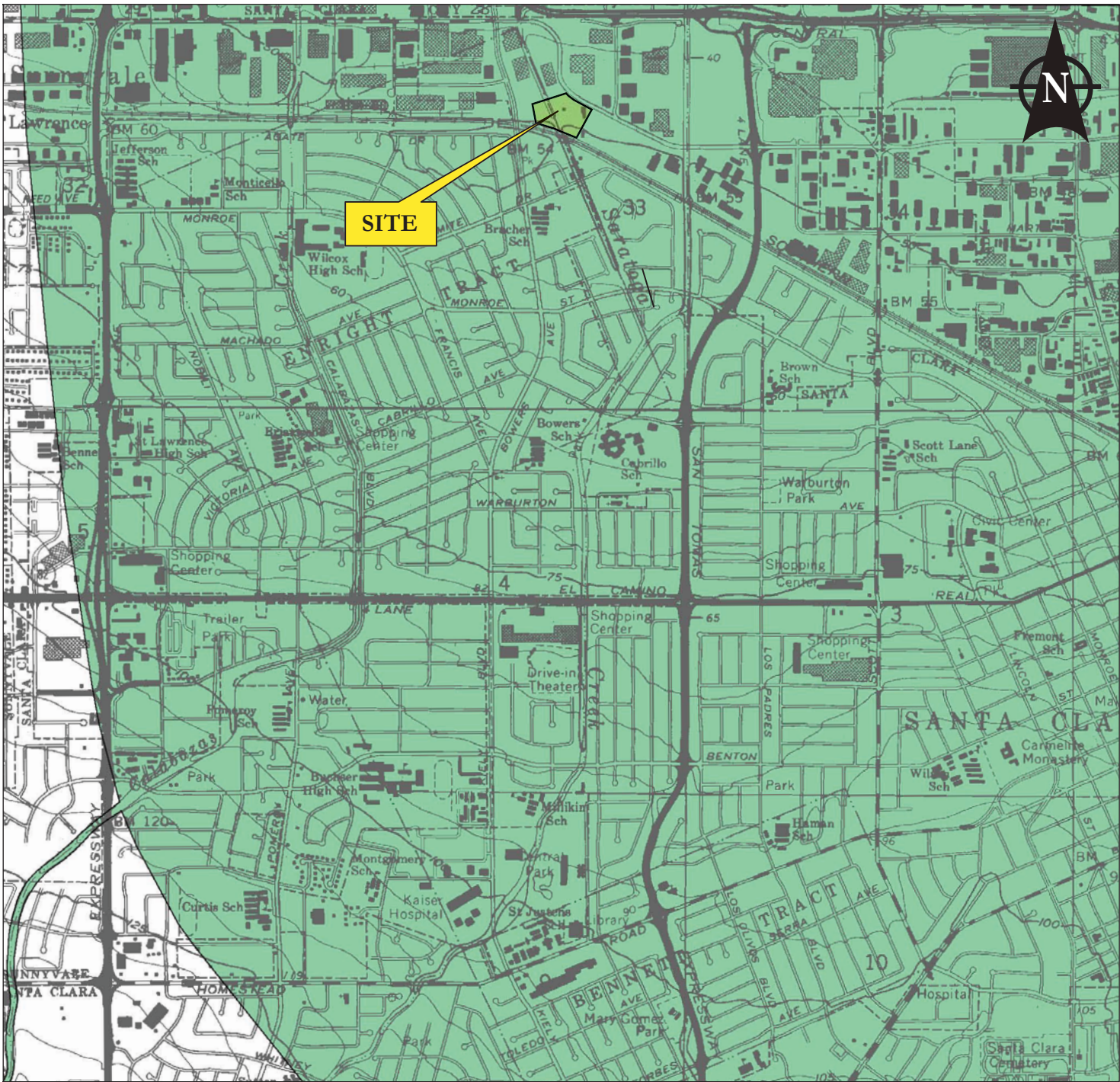


Legend & Selected Map Symbols

Qhb	Basin Deposits		Geologic Contact
Qhf2	Older Alluvial Fan Deposits		
Qhl	Levee Deposits		
Qht	Stream Terrace Deposits		

Base: Preliminary Geologic Map of the San Jose 30 X 60 Minute Quadrangle, California, Wentworth et. al., 1999
 Approximate Scale: 1 inch = 2,000 feet

MURRAY ENGINEERS INC GEOTECHNICAL SERVICES	LIMITED PRE-PURCHASE INVESTIGATION 2590 WALSH AVENUE SANTA CLARA, CALIFORNIA		VICINITY GEOLOGIC MAP
	PROJECT NO. 3326-1L1	JULY 2020	PLATE 3



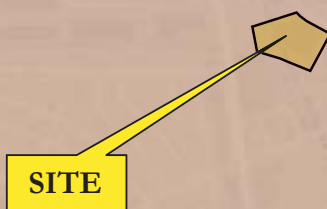
LEGEND



Areas where historic occurrence of liquefaction, or local, geological, geotechnical and groundwater conditions indicate a potential for earthquake-induced liquefaction

Base: State of California Seismic Hazard Zone Map, San Jose West Quadrangle, 2002 | Scale: 1 inch = 2,000 feet

	LIMITED PRE-PURCHASE INVESTIGATION 2590 WALSH AVENUE SANTA CLARA, CALIFORNIA	STATE SEISMIC HAZARD ZONES MAP
PROJECT NO. 3326-1L1	JULY 2020	PLATE 4



Legend & Map Symbols

Earthquake Liquefaction Susceptibility

-  Very Low
-  Low
-  Moderate
-  High
-  Very High

Santa Clara

Base: Association of Bay Area Governments, 2003, ABAG Shaking Intensity Maps and Information,
<https://mtc.maps.arcgis.com/apps/webappviewer/index.html?id=4a6f3f1259df42eab29b35dfcd086fc8>
Scale: 1 inch = 2,000 feet

PRESENTATION OF SITE INVESTIGATION RESULTS

Vantage Potential Campus

Prepared for:

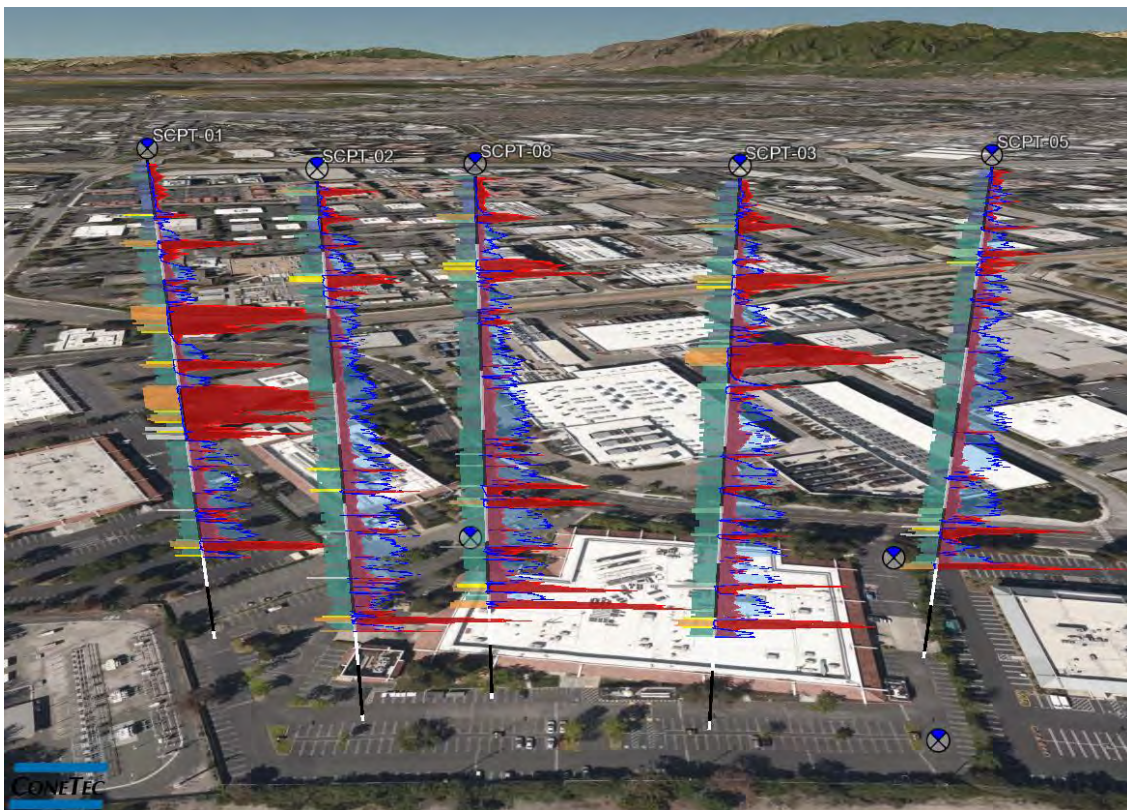
Murray Engineers

ConeTec Job No: 20-56-21016

Project Start Date: 24-Jun-2020

Project End Date: 24-Jun-2020

Report Date: 26-Jun-2020



Prepared by:

ConeTec Inc.
820 Aladdin Avenue
San Leandro, CA 94577

Tel: (510) 357-3677

ConeTecCA@conetec.com
www.conetec.com
www.conetecdataservices.com



Introduction

The enclosed report presents the results of the site investigation program conducted by ConeTec Inc. for Murray Engineers of Los Altos, CA. The program consisted of cone penetration testing (CPTu) at eight (8) locations. Shear wave velocities were recorded in all the soundings.

Project Information

Project	
Client	Murray Engineers
Project	Vantage Potential Campus
ConeTec Project #	20-56-21016

An aerial overview from Google Earth including the CPT test locations is presented below.



Rig Description	Deployment System	Test Type
CPT truck rig (C15 & C17)	30-ton truck mounted cylinder	SCPTu

Coordinates		
Test Type	Collection Method	EPSG Number
SCPTu	Consumer grade GPS	32610



Cone Penetrometers Used for this Project						
Cone Description	Cone Number	Cross Sectional Area (cm ²)	Sleeve Area (cm ²)	Tip Capacity (bar)	Sleeve Capacity (bar)	Pore Pressure Capacity (psi)
496:T1500F15U1K	496	15	225	1500	15	1000
499:T1500F15U1K	499	15	225	1500	15	1000
The CPT summary shows the cone used on each sounding.						

Cone Penetration Test	
Depth reference	Depths are referenced to the existing ground surface at the time of test.
Tip and sleeve data offset	0.1 Meter This has been accounted for in the CPT data files.
Additional Comments	Advanced plots with I_c , Φ , $S_u(Nkt)$, and $N1(60)I_c$, Seismic plots, as well as Soil Behavior Type (SBT) Scatter plots have been included in the data release package.

Calculated Geotechnical Parameter Tables	
Additional information	The Normalized Soil Behaviour Type Chart based on Q_{tn} (SBT Q_{tn}) (Robertson, 2009) was used to classify the soil for this project. A detailed set of calculated CPTu parameters have been generated and are provided in Excel format files in the release folder. The CPTu parameter calculations are based on values of corrected tip resistance (q_t) sleeve friction (f_s) and pore pressure (u_2). Effective stresses are calculated based on unit weights that have been assigned to the individual soil behaviour type zones and the assumed equilibrium pore pressure profile. Soils were classified as either drained or undrained based on the Q_{tn} Normalized Soil Behaviour Type Chart (Robertson, 2009). Calculations for both drained and undrained parameters were included for materials that classified as silt mixtures (zone 4).

Limitations

This report has been prepared for the exclusive use of Murray Engineers (Client) for the project titled "Vantage Potential Campus". The report's contents may not be relied upon by any other party without the express written permission of ConeTec, Inc. (ConeTec). ConeTec has provided site investigation services, prepared the factual data reporting, and provided geotechnical parameter calculations consistent with current best practices. No other warranty, expressed or implied, is made.

The information presented in the report document and the accompanying data set pertain to the specific project, site conditions and objectives described to ConeTec by the Client. In order to properly understand the factual data, assumptions and calculations, reference must be made to the documents provided and their accompanying data sets, in their entirety.



The cone penetration tests (CPTu) are conducted using an integrated electronic piezocone penetrometer and data acquisition system manufactured by Adara Systems Ltd. of Richmond, British Columbia, Canada.

ConeTec's piezocone penetrometers are compression type designs in which the tip and friction sleeve load cells are independent and have separate load capacities. The piezocones use strain gauged load cells for tip and sleeve friction and a strain gauged diaphragm type transducer for recording pore pressure. The piezocones also have a platinum resistive temperature device (RTD) for monitoring the temperature of the sensors, an accelerometer type dual axis inclinometer and a geophone sensor for recording seismic signals. All signals are amplified down hole within the cone body and the analog signals are sent to the surface through a shielded cable.

ConeTec penetrometers are manufactured with various tip, friction and pore pressure capacities in both 10 cm² and 15 cm² tip base area configurations in order to maximize signal resolution for various soil conditions. The specific piezocone used for each test is described in the CPT summary table presented in the first Appendix. The 15 cm² penetrometers do not require friction reducers as they have a diameter larger than the deployment rods. The 10 cm² piezocones use a friction reducer consisting of a rod adapter extension behind the main cone body with an enlarged cross sectional area (typically 44 mm diameter over a length of 32 mm with tapered leading and trailing edges) located at a distance of 585 mm above the cone tip.

The penetrometers are designed with equal end area friction sleeves, a net end area ratio of 0.8 and cone tips with a 60 degree apex angle.

All ConeTec piezocones can record pore pressure at various locations. Unless otherwise noted, the pore pressure filter is located directly behind the cone tip in the "u₂" position (ASTM Type 2). The filter is 6 mm thick, made of porous plastic (polyethylene) having an average pore size of 125 microns (90-160 microns). The function of the filter is to allow rapid movements of extremely small volumes of water needed to activate the pressure transducer while preventing soil ingress or blockage.

The piezocone penetrometers are manufactured with dimensions, tolerances and sensor characteristics that are in general accordance with the current ASTM D5778 standard. ConeTec's calibration criteria also meet or exceed those of the current ASTM D5778 standard. An illustration of the piezocone penetrometer is presented in Figure CPTu.



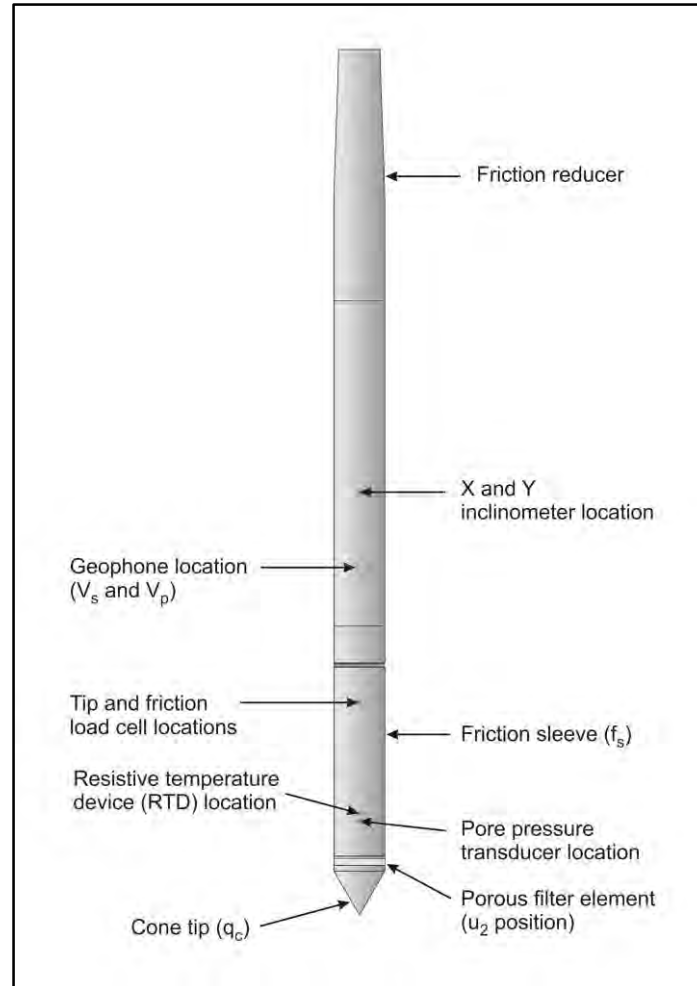


Figure CPTu. Piezocone Penetrometer (15 cm²)

The ConeTec data acquisition systems consist of a Windows based computer and a signal conditioner and power supply interface box with a 16 bit (or greater) analog to digital (A/D) converter. The data is recorded at fixed depth increments using a depth wheel attached to the push cylinders or by using a spring loaded rubber depth wheel that is held against the cone rods. The typical recording intervals are either 2.5 cm or 5.0 cm depending on project requirements; custom recording intervals are possible. The system displays the CPTu data in real time and records the following parameters to a storage media during penetration:

- Depth
- Uncorrected tip resistance (q_c)
- Sleeve friction (f_s)
- Dynamic pore pressure (u)
- Additional sensors such as resistivity, passive gamma, ultra violet induced fluorescence, if applicable

All testing is performed in accordance to ConeTec's CPT operating procedures which are in general accordance with the current ASTM D5778 standard.

Prior to the start of a CPTu sounding a suitable cone is selected, the cone and data acquisition system are powered on, the pore pressure system is saturated with either glycerin or silicone oil and the baseline readings are recorded with the cone hanging freely in a vertical position.

The CPTu is conducted at a steady rate of 2 cm/s, within acceptable tolerances. Typically one meter length rods with an outer diameter of 1.5 inches are added to advance the cone to the sounding termination depth. After cone retraction final baselines are recorded.

Additional information pertaining to ConeTec's cone penetration testing procedures:

- Each filter is saturated in silicone oil or glycerin under vacuum pressure prior to use
- Recorded baselines are checked with an independent multi-meter
- Baseline readings are compared to previous readings
- Soundings are terminated at the client's target depth or at a depth where an obstruction is encountered, excessive rod flex occurs, excessive inclination occurs, equipment damage is likely to take place, or a dangerous working environment arises
- Differences between initial and final baselines are calculated to ensure zero load offsets have not occurred and to ensure compliance with ASTM standards

The interpretation of piezocone data for this report is based on the corrected tip resistance (q_t), sleeve friction (f_s) and pore water pressure (u). The interpretation of soil type is based on the correlations developed by Robertson (1990) and Robertson (2009). It should be noted that it is not always possible to accurately identify a soil type based on these parameters. In these situations, experience, judgment and an assessment of other parameters may be used to infer soil behavior type.

The recorded tip resistance (q_c) is the total force acting on the piezocone tip divided by its base area. The tip resistance is corrected for pore pressure effects and termed corrected tip resistance (q_t) according to the following expression presented in Robertson et al, 1986:

$$q_t = q_c + (1-a) \cdot u_2$$

where: q_t is the corrected tip resistance

q_c is the recorded tip resistance

u_2 is the recorded dynamic pore pressure behind the tip (u_2 position)

a is the Net Area Ratio for the piezocone (0.8 for ConeTec probes)

The sleeve friction (f_s) is the frictional force on the sleeve divided by its surface area. As all ConeTec piezocones have equal end area friction sleeves, pore pressure corrections to the sleeve data are not required.

The dynamic pore pressure (u) is a measure of the pore pressures generated during cone penetration. To record equilibrium pore pressure, the penetration must be stopped to allow the dynamic pore pressures to stabilize. The rate at which this occurs is predominantly a function of the permeability of the soil and the diameter of the cone.

The friction ratio (R_f) is a calculated parameter. It is defined as the ratio of sleeve friction to the tip resistance expressed as a percentage. Generally, saturated cohesive soils have low tip resistance, high



friction ratios and generate large excess pore water pressures. Cohesionless soils have higher tip resistances, lower friction ratios and do not generate significant excess pore water pressure.

A summary of the CPTu soundings along with test details and individual plots are provided in the appendices. A set of interpretation files were generated for each sounding based on published correlations and are provided in Excel format in the data release folder. Information regarding the interpretation methods used is also included in the data release folder.

For additional information on CPTu interpretations, refer to Robertson et al. (1986), Lunne et al. (1997), Robertson (2009), Mayne (2013, 2014) and Mayne and Peuchen (2012).

Shear wave velocity testing is performed in conjunction with the piezocone penetration test (SCPTu) in order to collect interval velocities. For some projects seismic compression wave (V_p) velocity is also determined.

ConeTec's piezocone penetrometers are manufactured with a horizontally active geophone (28 hertz) that is rigidly mounted in the body of the cone penetrometer, 0.2 meters behind the cone tip.

Shear waves are typically generated by using an impact hammer horizontally striking a beam that is held in place by a normal load. In some instances an auger source or an imbedded impulsive source maybe used for both shear waves and compression waves. The hammer and beam act as a contact trigger that triggers the recording of the seismic wave traces. For impulsive devices an accelerometer trigger may be used. The traces are recorded using an up-hole integrated digital oscilloscope which is part of the SCPTu data acquisition system. An illustration of the shear wave testing configuration is presented in Figure SCPTu-1.

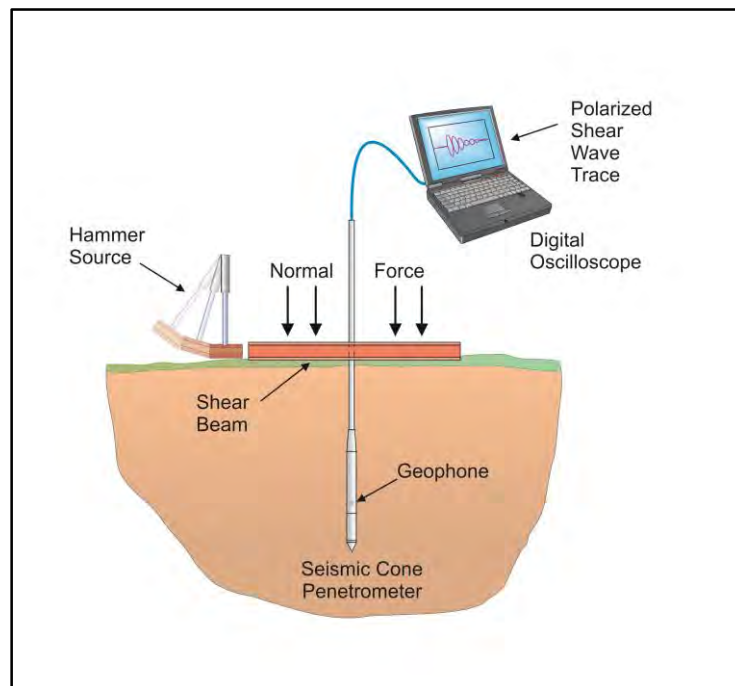


Figure SCPTu-1. Illustration of the SCPTu system

All testing is performed in accordance to ConeTec's SCPTu operating procedures.

Prior to the start of a SCPTu sounding, the procedures described in the Cone Penetration Test section are followed. In addition, the active axis of the geophone is aligned parallel to the beam (or source) and the horizontal offset between the cone and the source is measured and recorded.

Prior to recording seismic waves at each test depth, cone penetration is stopped and the rods are decoupled from the rig to avoid transmission of rig energy down the rods. Multiple wave traces are recorded for quality control purposes. After reviewing wave traces for consistency the cone is pushed to the next test depth (typically one meter intervals or as requested by the client). Figure SCPTu-2 presents an illustration of a SCPTu test.

For additional information on seismic cone penetration testing refer to Robertson et.al. (1986).

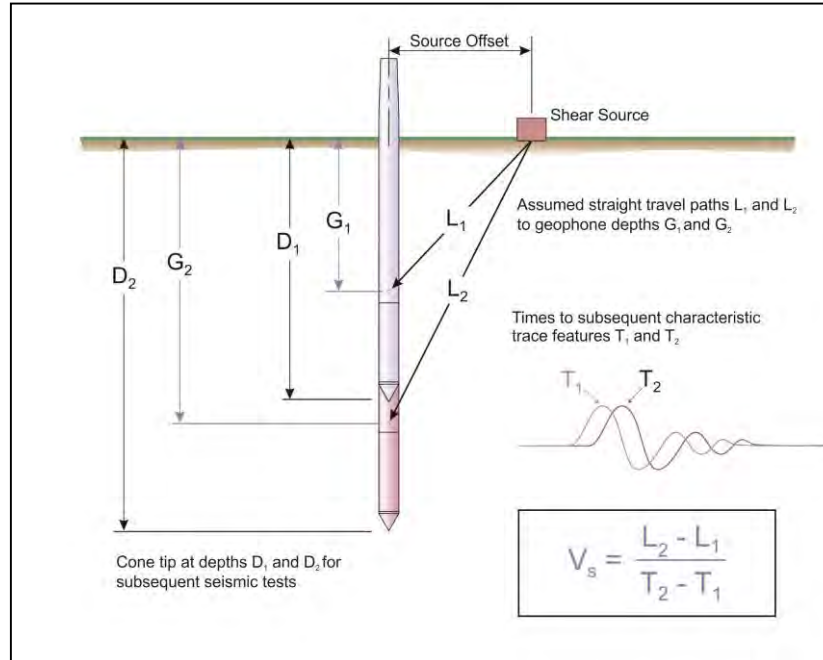


Figure SCPTu-2. Illustration of a seismic cone penetration test

Calculation of the interval velocities are performed by visually picking a common feature (e.g. the first characteristic peak, trough, or crossover) on all of the recorded wave sets and taking the difference in ray path divided by the time difference between subsequent features. Ray path is defined as the straight line distance from the seismic source to the geophone, accounting for beam offset, source depth and geophone offset from the cone tip.

The average shear wave velocity to a depth of 100 feet (30 meters) ($\bar{v}_s$) has been calculated and provided for all applicable soundings using the following equation presented in ASCE, 2010.

$$\bar{v}_s = \frac{\sum_{i=1}^n d_i}{\sum_{i=1}^n \frac{d_i}{v_{si}}}$$

where: $\bar{v}_s$ = average shear wave velocity ft/s (m/s)
 d_i = the thickness of any layer between 0 and 100 ft (30 m)
 v_{si} = the shear wave velocity in ft/s (m/s)
 $\sum_{i=1}^n d_i = 100 \text{ ft (30 m)}$

Average shear wave velocity, $\bar{v}_s$ is also referenced to V_{s100} or V_{s30} .

The layer travel times refers to the travel times propagating in the vertical direction, not the measured travel times from an offset source.

Tabular results and SCPTu plots are presented in the relevant appendix.

The cone penetration test is halted at specific depths to carry out pore pressure dissipation (PPD) tests, shown in Figure PPD-1. For each dissipation test the cone and rods are decoupled from the rig and the data acquisition system measures and records the variation of the pore pressure (u) with time (t).

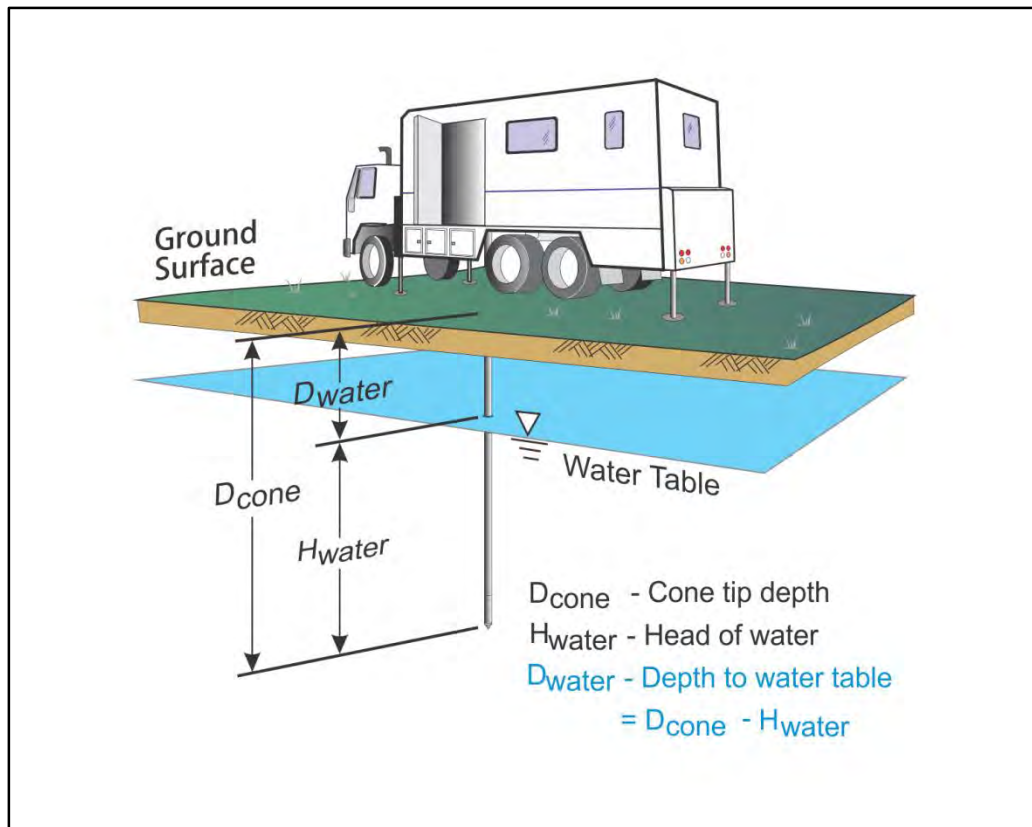


Figure PPD-1. Pore pressure dissipation test setup

Pore pressure dissipation data can be interpreted to provide estimates of ground water conditions, permeability, consolidation characteristics and soil behavior.

The typical shapes of dissipation curves shown in Figure PPD-2 are very useful in assessing soil type, drainage, in situ pore pressure and soil properties. A flat curve that stabilizes quickly is typical of a freely draining sand. Undrained soils such as clays will typically show positive excess pore pressure and have long dissipation times. Dilative soils will often exhibit dynamic pore pressures below equilibrium that then rise over time. Overconsolidated fine-grained soils will often exhibit an initial dilatory response where there is an initial rise in pore pressure before reaching a peak and dissipating.

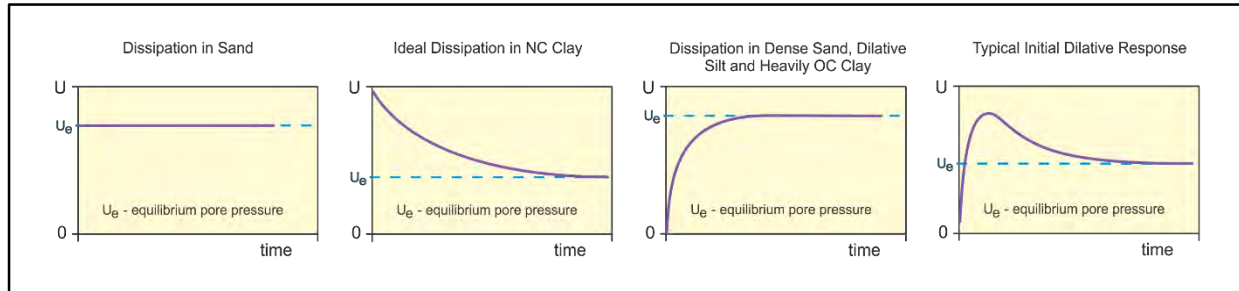


Figure PPD-2. Pore pressure dissipation curve examples

In order to interpret the equilibrium pore pressure (u_{eq}) and the apparent phreatic surface, the pore pressure should be monitored until such time as there is no variation in pore pressure with time as shown for each curve of Figure PPD-2.

In fine grained deposits the point at which 100% of the excess pore pressure has dissipated is known as t_{100} . In some cases this can take an excessive amount of time and it may be impractical to take the dissipation to t_{100} . A theoretical analysis of pore pressure dissipations by Teh and Houlsby (1991) showed that a single curve relating degree of dissipation versus theoretical time factor (T^*) may be used to calculate the coefficient of consolidation (c_h) at various degrees of dissipation resulting in the expression for c_h shown below.

$$c_h = \frac{T^* \cdot a^2 \cdot \sqrt{I_r}}{t}$$

Where:

- T^* is the dimensionless time factor (Table Time Factor)
- a is the radius of the cone
- I_r is the rigidity index
- t is the time at the degree of consolidation

Table Time Factor. T^* versus degree of dissipation (Teh and Houlsby, 1991)

Degree of Dissipation (%)	20	30	40	50	60	70	80
$T^* (u_2)$	0.038	0.078	0.142	0.245	0.439	0.804	1.60

The coefficient of consolidation is typically analyzed using the time (t_{50}) corresponding to a degree of dissipation of 50% (u_{50}). In order to determine t_{50} , dissipation tests must be taken to a pressure less than u_{50} . The u_{50} value is half way between the initial maximum pore pressure and the equilibrium pore pressure value, known as u_{100} . To estimate u_{50} , both the initial maximum pore pressure and u_{100} must be known or estimated. Other degrees of dissipations may be considered, particularly for extremely long dissipations.

At any specific degree of dissipation the equilibrium pore pressure (u at t_{100}) must be estimated at the depth of interest. The equilibrium value may be determined from one or more sources such as measuring the value directly (u_{100}), estimating it from other dissipations in the same profile, estimating the phreatic surface and assuming hydrostatic conditions, from nearby soundings, from client provided information, from site observations and/or past experience, or from other site instrumentation.

For calculations of c_h (Teh and Houlsby, 1991), t_{50} values are estimated from the corresponding pore pressure dissipation curve and a rigidity index (I_r) is assumed. For curves having an initial dilatory response in which an initial rise in pore pressure occurs before reaching a peak, the relative time from the peak value is used in determining t_{50} . In cases where the time to peak is excessive, t_{50} values are not calculated.

Due to possible inherent uncertainties in estimating I_r , the equilibrium pore pressure and the effect of an initial dilatory response on calculating t_{50} , other methods should be applied to confirm the results for c_h .

Additional published methods for estimating the coefficient of consolidation from a piezocone test are described in Burns and Mayne (1998, 2002), Jones and Van Zyl (1981), Robertson et al. (1992) and Sully et al. (1999).

A summary of the pore pressure dissipation tests and dissipation plots are presented in the relevant appendix.

REFERENCES

- ASTM D5778-12, 2012, "Standard Test Method for Performing Electronic Friction Cone and Piezocone Penetration Testing of Soils", ASTM, West Conshohocken, US.
- Burns, S.E. and Mayne, P.W., 1998, "Monotonic and dilatatory pore pressure decay during piezocone tests", Canadian Geotechnical Journal 26 (4): 1063-1073.
- Burns, S.E. and Mayne, P.W., 2002, "Analytical cavity expansion-critical state model cone dissipation in fine-grained soils", Soils & Foundations, Vol. 42(2): 131-137.
- Crow, H.L., Hunter, J.A., Bobrowsky, P.T., 2012, "National shear wave measurement guidelines for Canadian seismic site assessment", GeoManitoba 2012, Sept 30 to Oct 2, Winnipeg, Manitoba.
- Jones, G.A. and Van Zyl, D.J.A., 1981, "The piezometer probe: a useful investigation tool", Proceedings, 10th International Conference on Soil Mechanics and Foundation Engineering, Vol. 3, Stockholm: 489-495.
- Lunne, T., Robertson, P.K. and Powell, J. J. M., 1997, "Cone Penetration Testing in Geotechnical Practice", Blackie Academic and Professional.
- Mayne, P.W., 2013, "Evaluating yield stress of soils from laboratory consolidation and in-situ cone penetration tests", Sound Geotechnical Research to Practice (Holtz Volume) GSP 230, ASCE, Reston/VA: 406-420.
- Mayne, P.W., 2014, "Interpretation of geotechnical parameters from seismic piezocone tests", CPT'14 Keynote Address, Las Vegas, NV, May 2014.
- Mayne, P.W. and Peuchen, J., 2012, "Unit weight trends with cone resistance in soft to firm clays", Geotechnical and Geophysical Site Characterization 4, Vol. 1 (Proc. ISC-4, Pernambuco), CRC Press, London: 903-910.
- Robertson, P.K., 1990, "Soil Classification Using the Cone Penetration Test", Canadian Geotechnical Journal, Volume 27: 151-158.
- Robertson, P.K., 2009, "Interpretation of cone penetration tests – a unified approach", Canadian Geotechnical Journal, Volume 46: 1337-1355.
- Robertson, P.K., Campanella, R.G., Gillespie, D. and Greig, J., 1986, "Use of Piezometer Cone Data", Proceedings of InSitu 86, ASCE Specialty Conference, Blacksburg, Virginia.
- Robertson, P.K., Campanella, R.G., Gillespie D and Rice, A., 1986, "Seismic CPT to Measure In-Situ Shear Wave Velocity", Journal of Geotechnical Engineering ASCE, Vol. 112, No. 8: 791-803.
- Robertson, P.K., Sully, J.P., Woeller, D.J., Lunne, T., Powell, J.J.M. and Gillespie, D.G., 1992, "Estimating coefficient of consolidation from piezocone tests", Canadian Geotechnical Journal, 29(4): 551-557.
- Sully, J.P., Robertson, P.K., Campanella, R.G. and Woeller, D.J., 1999, "An approach to evaluation of field CPTU dissipation data in overconsolidated fine-grained soils", Canadian Geotechnical Journal, 36(2): 369-381.

REFERENCES

Teh, C.I., and Houlsby, G.T., 1991, "An analytical study of the cone penetration test in clay", *Geotechnique*, 41(1): 17-34.

The appendices listed below are included in the report:

- Cone Penetration Test Summary and Standard Cone Penetration Test Plots
- Advanced Cone Penetration Test Plots with I_c , Φ , $S_u(Nkt)$, and $N1(60)I_c$
- Soil Behavior Type (SBT) Zone Scatter Plots
- Seismic Cone Penetration Test Plots
- Seismic Cone Penetration Test Tabular Results
- Seismic Cone Penetration Test Shear Wave (V_s) Traces
- Pore Pressure Dissipation Summary and Pore Pressure Dissipation Plots

Cone Penetration Test Summary and Standard Cone Penetration Test Plots



Job No: 20-56-21016
Client: Murray Engineers
Project: Vantage Potential Campus
Start Date: 24-Jun-2020
End Date: 24-Jun-2020

CONE PENETRATION TEST SUMMARY

Sounding ID	File Name	Date	Cone	Assumed Phreatic Surface ¹ (ft)	Final Depth (ft)	Northing ² (m)	Easting ² (m)	Elevation ³ (ft)	Refer to Notation Number
SCPT-01	20-56-21016_SP01	24-Jun-2020	496:T1500F15U1K	12.6	120.73	4136529	590680	47	
SCPT-02	20-56-21016_SP02	24-Jun-2020	496:T1500F15U1K	7.0	120.49	4136476	590716	46	4
SCPT-03	20-56-21016_SP03	24-Jun-2020	499:T1500F15U1K	4.0	120.65	4136443	590799	47	
SCPT-04	20-56-21016_SP04	24-Jun-2020	499:T1500F15U1K	6.7	120.73	4136416	590848	47	
SCPT-05	20-56-21016_SP05	24-Jun-2020	496:T1500F15U1K	7.0	118.60	4136452	590872	46	4
SCPT-06	20-56-21016_SP06	24-Jun-2020	496:T1500F15U1K	7.8	120.65	4136498	590896	46	
SCPT-07	20-56-21016_SP07	24-Jun-2020	499:T1500F15U1K	4.6	120.73	4136559	590765	46	
SCPT-08	20-56-21016_SP08	24-Jun-2020	499:T1500F15U1K	7.0	119.26	4136474	590750	46	4

1. The assumed phreatic surface was based off the shallowest pore pressure dissipation test to reach equilibrium in the sounding.
2. The coordinates were acquired using consumer grade GPS equipment, datum: WGS 1984 / UTM Zone 10 North.
3. Elevations are referenced to the ground surface and are derived from Google Earth Elevation for the recorded coordinates.
4. The assumed phreatic surface is based off the shallowest pore pressure dissipation test at nearby soundings.



Murray Engineers

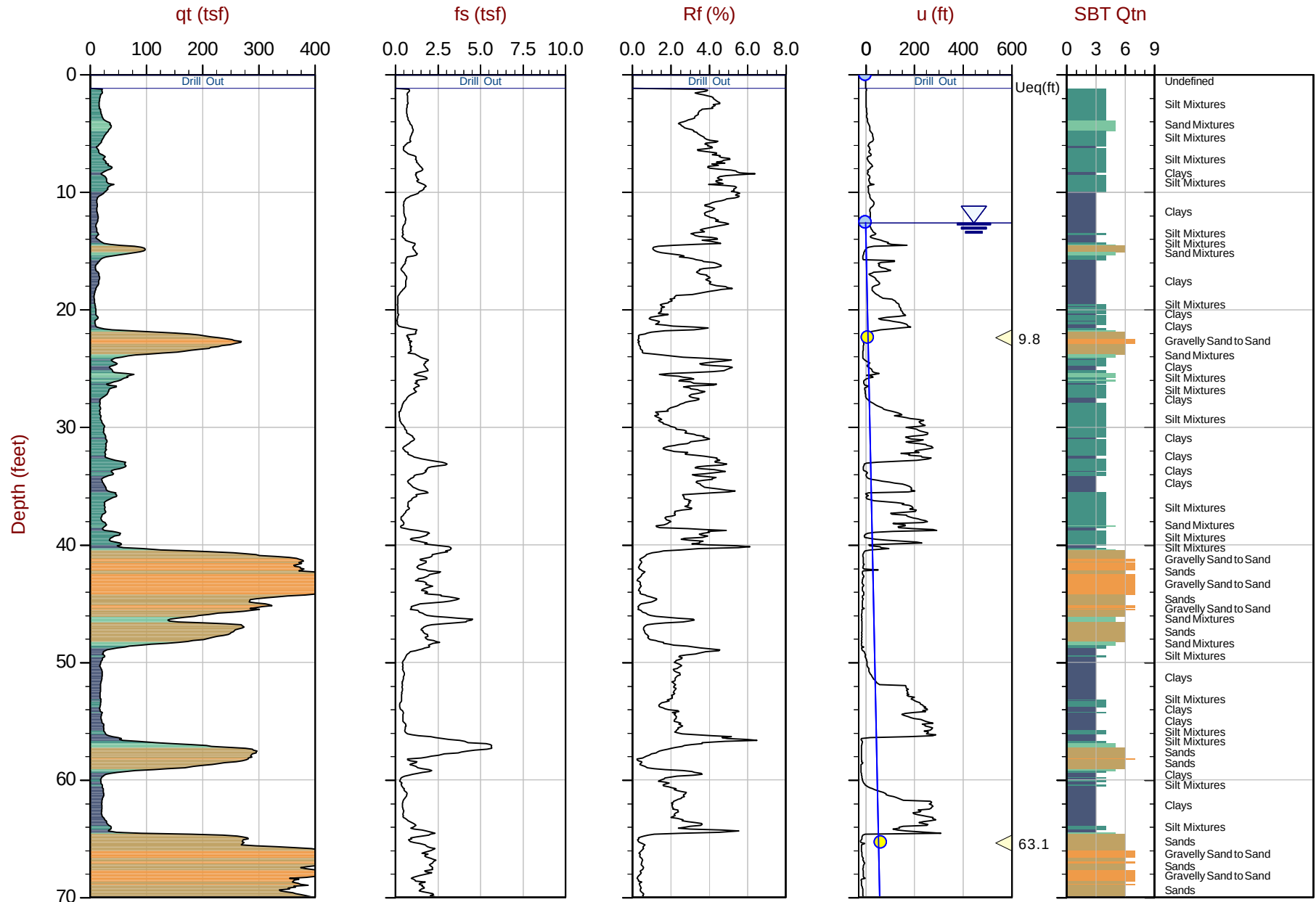
Job No: 20-56-21016

Date: 2020-06-24 08:04

Site: Vantage Potential Campus

Sounding: SCPT-01

Cone: 496:T1500F15U1K



Max Depth: 36.800 m / 120.73 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 20-56-21016_SP01.COR
Unit Wt: SBTQtn(PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM 10N N: 4136529m E: 590680m

● Equilibrium Pore Pressure (Ueq) ● Assumed Ueq ▲ Dissipation, Ueq achieved ▼ Dissipation, Ueq not achieved — Hydrostatic Line

The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.



Murray Engineers

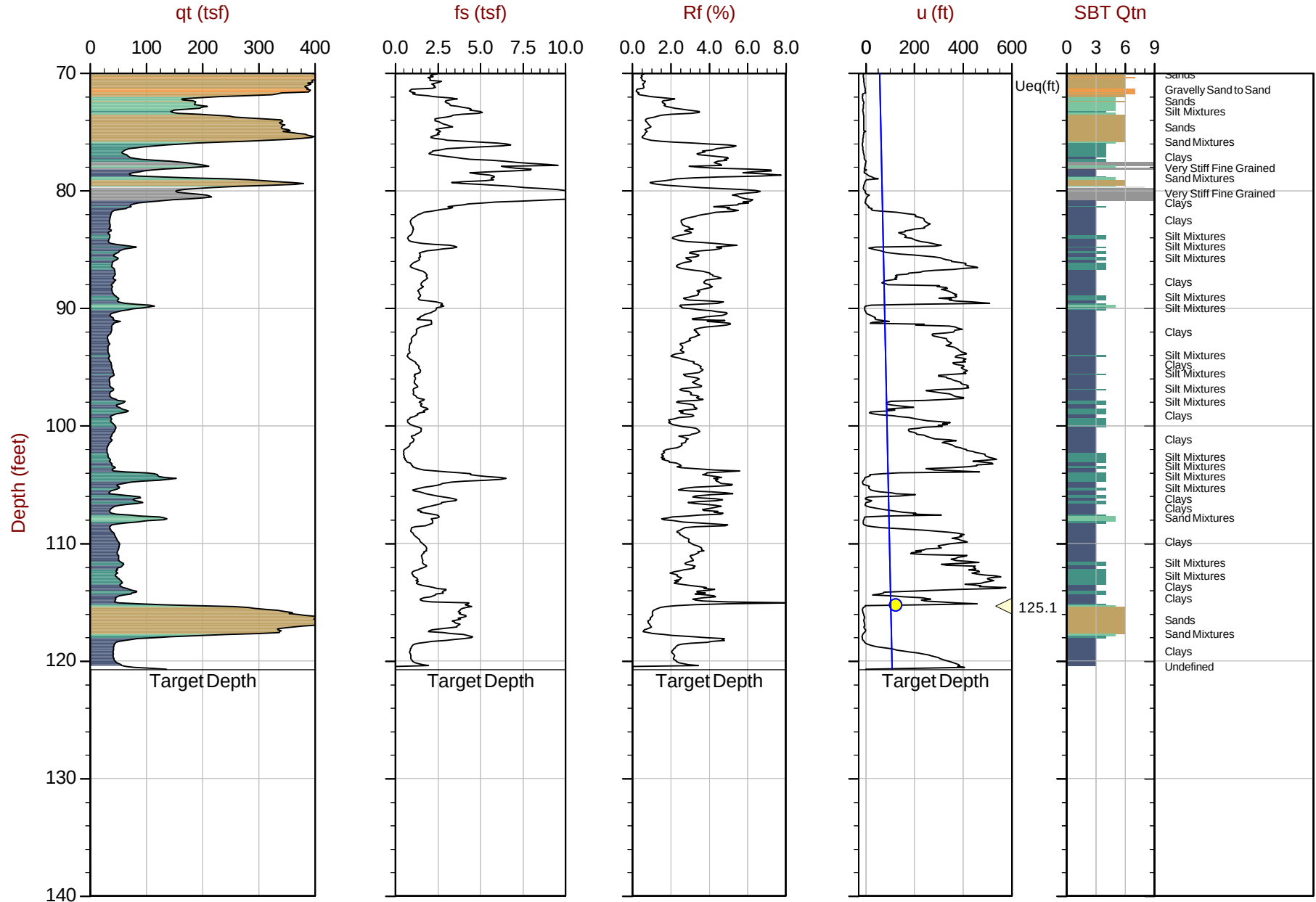
Job No: 20-56-21016

Date: 2020-06-24 08:04

Site: Vantage Potential Campus

Sounding: SCPT-01

Cone: 496:T1500F15U1K



Max Depth: 36.800 m / 120.73 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 20-56-21016_SP01.COR
Unit Wt: SBTQtn(PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM 10N N: 4136529m E: 590680m

● Equilibrium Pore Pressure (Ueq) ● Assumed Ueq ▲ Dissipation, Ueq achieved ▼ Dissipation, Ueq not achieved — Hydrostatic Line

The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.



Murray Engineers

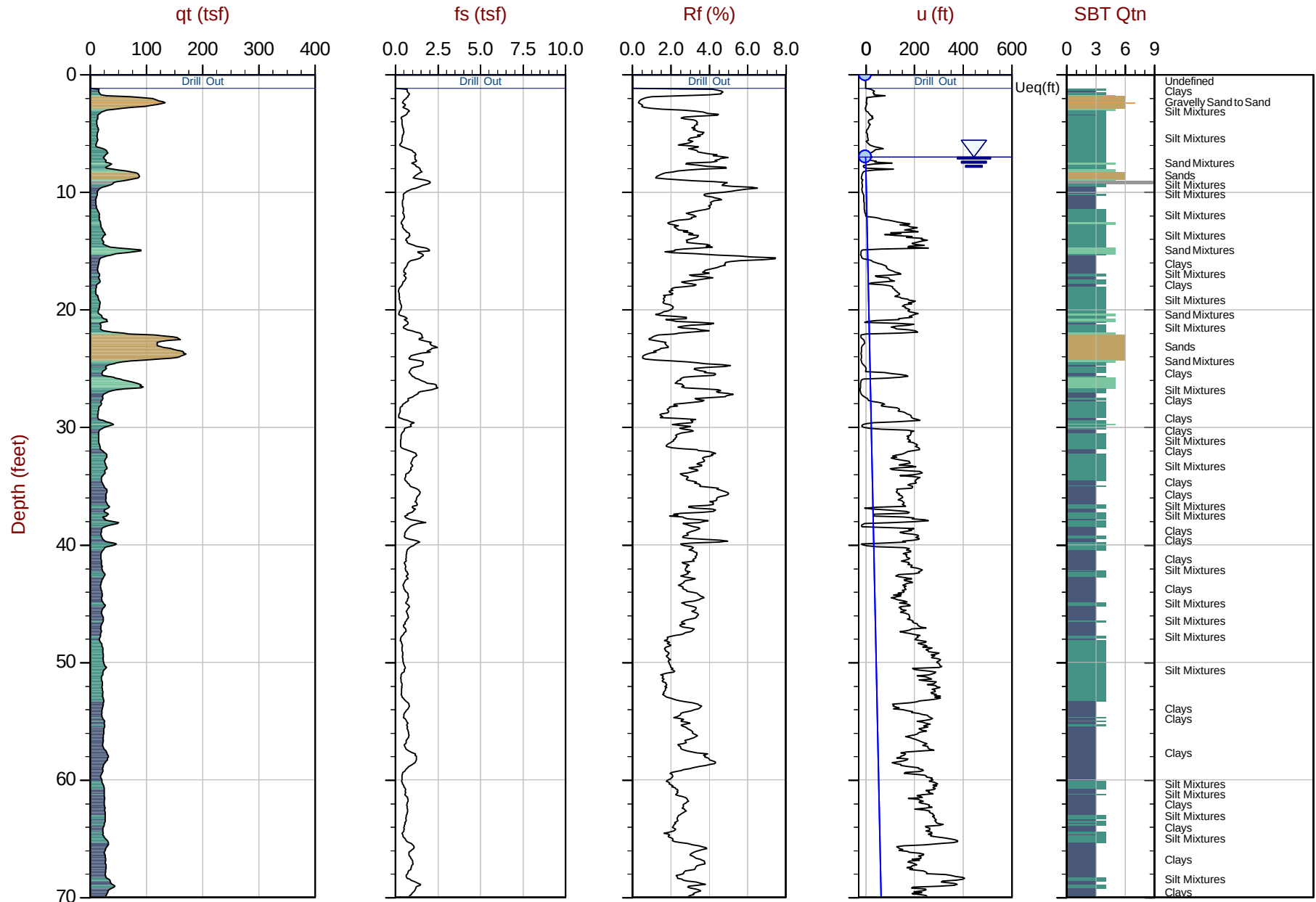
Job No: 20-56-21016

Date: 2020-06-24 10:13

Site: Vantage Potential Campus

Sounding: SCPT-02

Cone: 496:T1500F15U1K



Max Depth: 36.725 m / 120.49 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 20-56-21016_SP02.COR
Unit Wt: SBTQtn(PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM 10N N: 4136476m E: 590716m

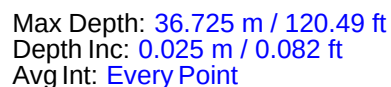
● Equilibrium Pore Pressure (Ueq) ● Assumed Ueq ▲ Dissipation, Ueq achieved ▼ Dissipation, Ueq not achieved — Hydrostatic Line

The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.



Site: Vantage Potential Campus

Cone: 496:T1500F15U1K



File: 20-56-21016_SP02.COR
Unit Wt: SBTQtn (PKR2009)

SBT: [Robertson, 2009 and 2010](#)
 Coords: [UTM 10N N: 4136476m E: 590716m](#)

● Equilibrium Pore Pressure (Ueq) ● Assumed Ueq ◀ Dissipation, Ueq achieved ◀ Dissipation, Ueq not achieved — Hydrostatic Line

The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.



Murray Engineers

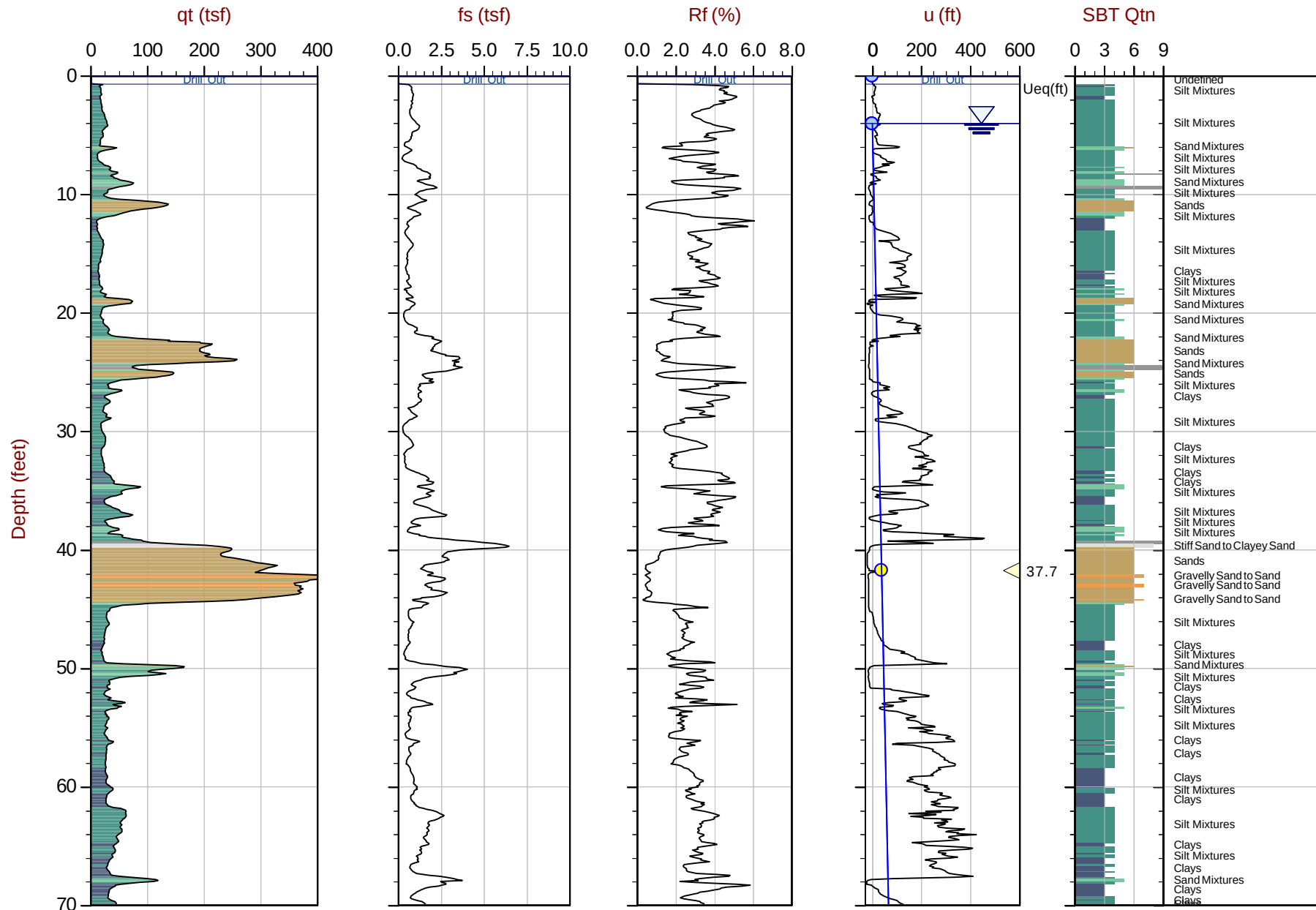
Job No: 20-56-21016

Date: 2020-06-24 10:05

Site: Vantage Potential Campus

Sounding: SCPT-03

Cone: 499:T1500F15U1K



Max Depth: 36.775 m / 120.65 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 20-56-21016_SP03.COR
Unit Wt: SBTQtn(PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM 10N N: 4136443m E: 590799m

● Equilibrium Pore Pressure (Ueq) ● Assumed Ueq ▲ Dissipation, Ueq achieved ▼ Dissipation, Ueq not achieved — Hydrostatic Line

The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.



Murray Engineers

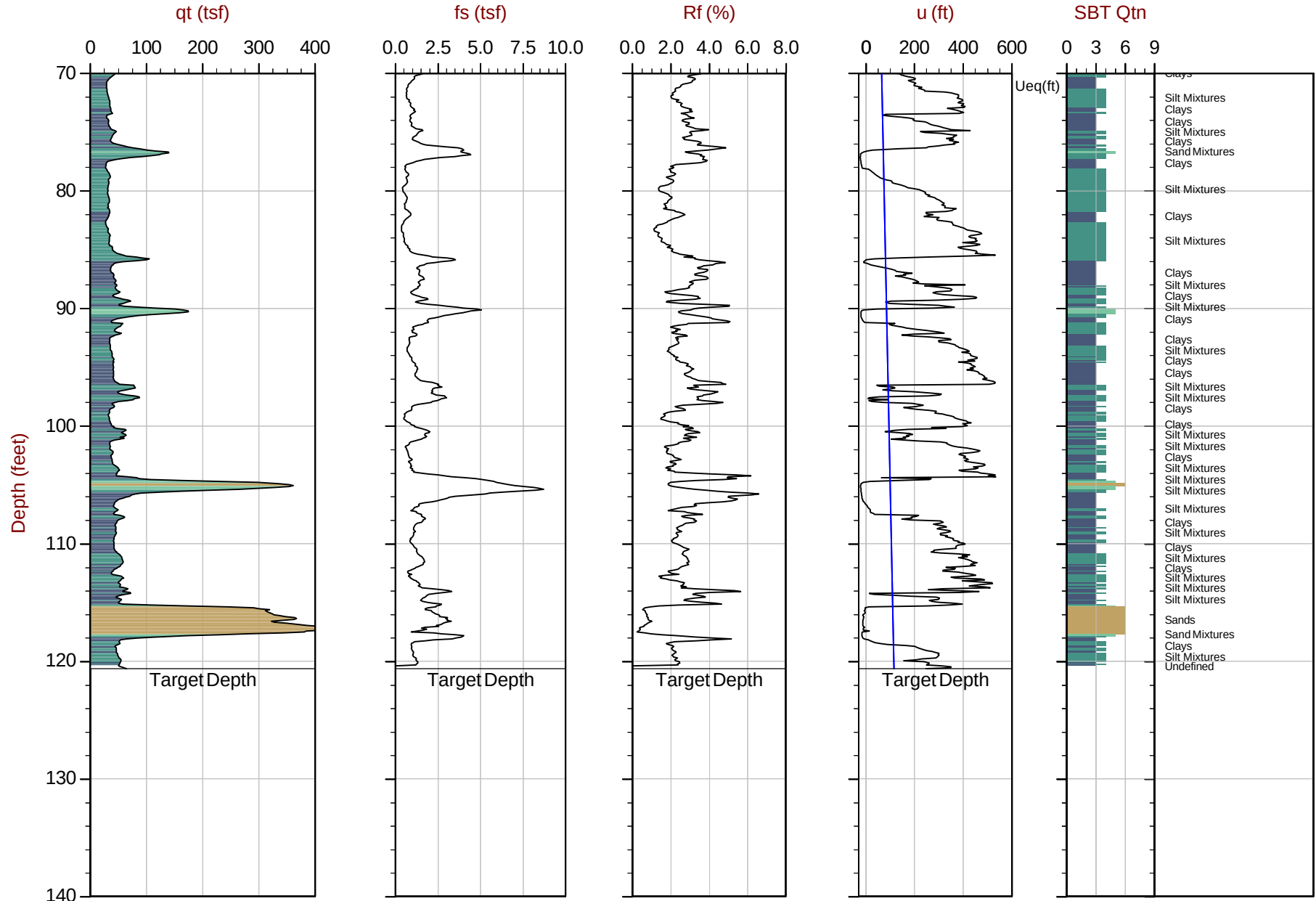
Job No: 20-56-21016

Date: 2020-06-24 10:05

Site: Vantage Potential Campus

Sounding: SCPT-03

Cone: 499:T1500F15U1K



Max Depth: 36.775 m / 120.65 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 20-56-21016_SP03.COR
Unit Wt: SBTQtn(PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM 10N N: 4136443m E: 590799m

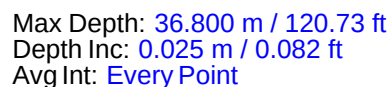
● Equilibrium Pore Pressure (Ueq) ● Assumed Ueq ▲ Dissipation, Ueq achieved ▼ Dissipation, Ueq not achieved — Hydrostatic Line

The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.



Site: Vantage Potential Campus

Cone: 499:T1500F15U1K



File: 20-56-21016_SP04.COR
Unit Wt: SBTQtn(PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM 10N N: 4136416m E: 590848m

● Equilibrium Pore Pressure (Ueq) ● Assumed Ueq ◀ Dissipation, Ueq achieved ◀ Dissipation, Ueq not achieved — Hydrostatic Line

The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.



Murray Engineers

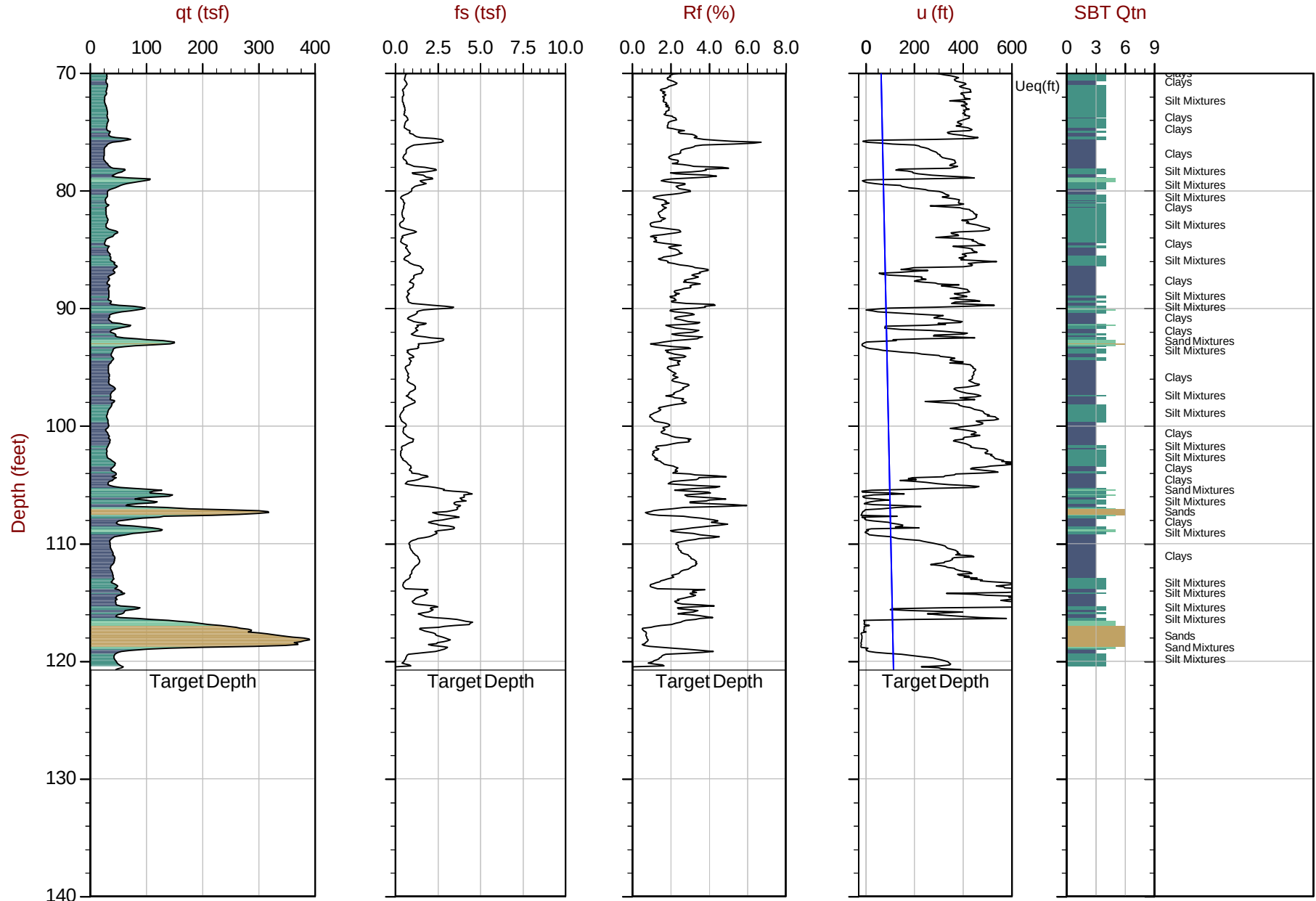
Job No: 20-56-21016

Date: 2020-06-24 08:12

Site: Vantage Potential Campus

Sounding: SCPT-04

Cone: 499:T1500F15U1K



Max Depth: 36.800 m / 120.73 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 20-56-21016_SP04.COR
Unit Wt: SBTQtn(PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM 10N N: 4136416m E: 590848m

● Equilibrium Pore Pressure (Ueq) ● Assumed Ueq ▲ Dissipation, Ueq achieved ▼ Dissipation, Ueq not achieved — Hydrostatic Line

The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.



Murray Engineers

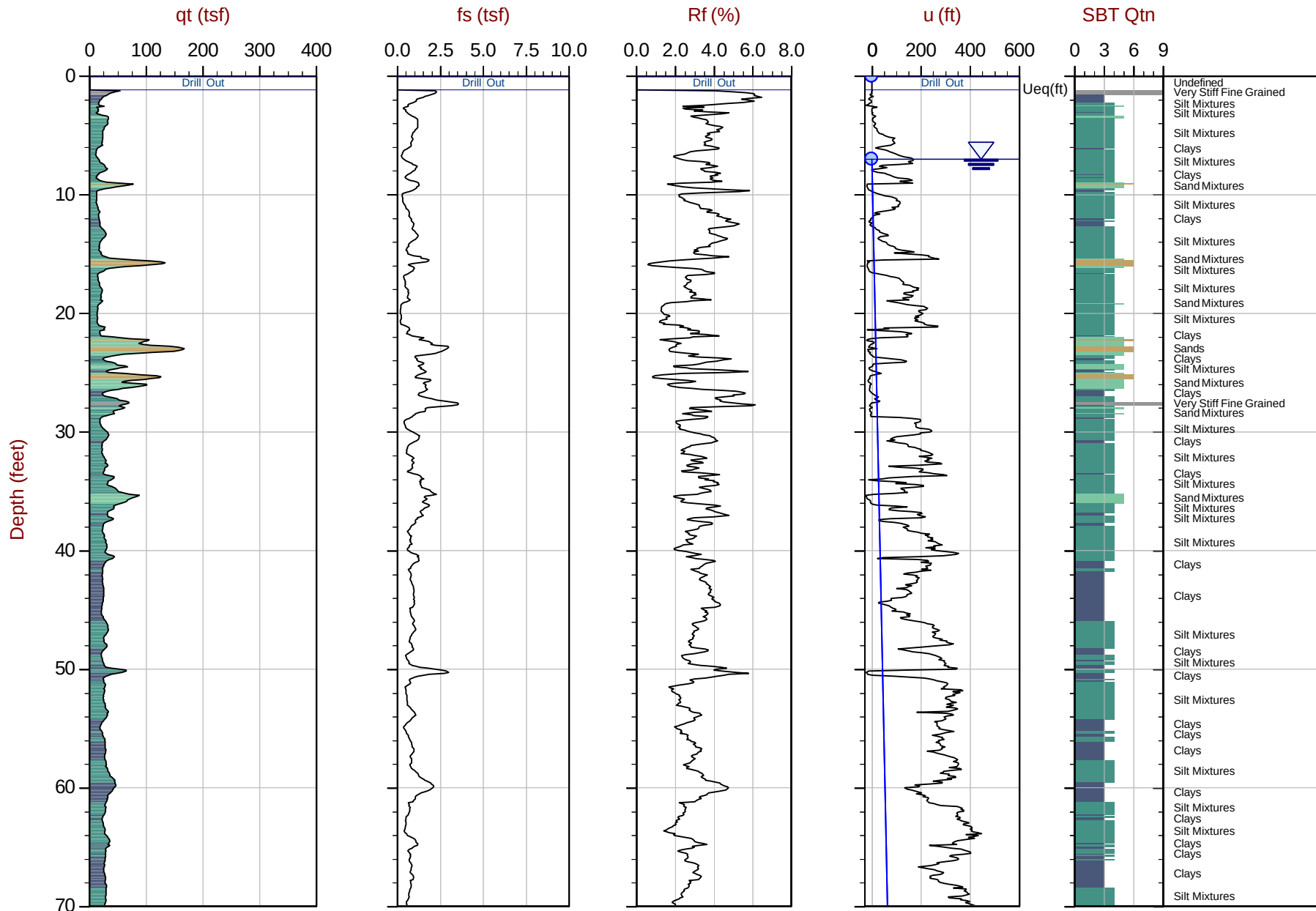
Job No: 20-56-21016

Date: 2020-06-24 11:46

Site: Vantage Potential Campus

Sounding: SCPT-05

Cone: 496:T1500F15U1K



Max Depth: 36.150 m / 118.60 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 20-56-21016_SP05.COR
Unit Wt: SBTQtn(PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM 10N N: 4136452m E: 590872m

● Equilibrium Pore Pressure (Ueq) ● Assumed Ueq ▲ Dissipation, Ueq achieved ▼ Dissipation, Ueq not achieved — Hydrostatic Line

The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.



Murray Engineers

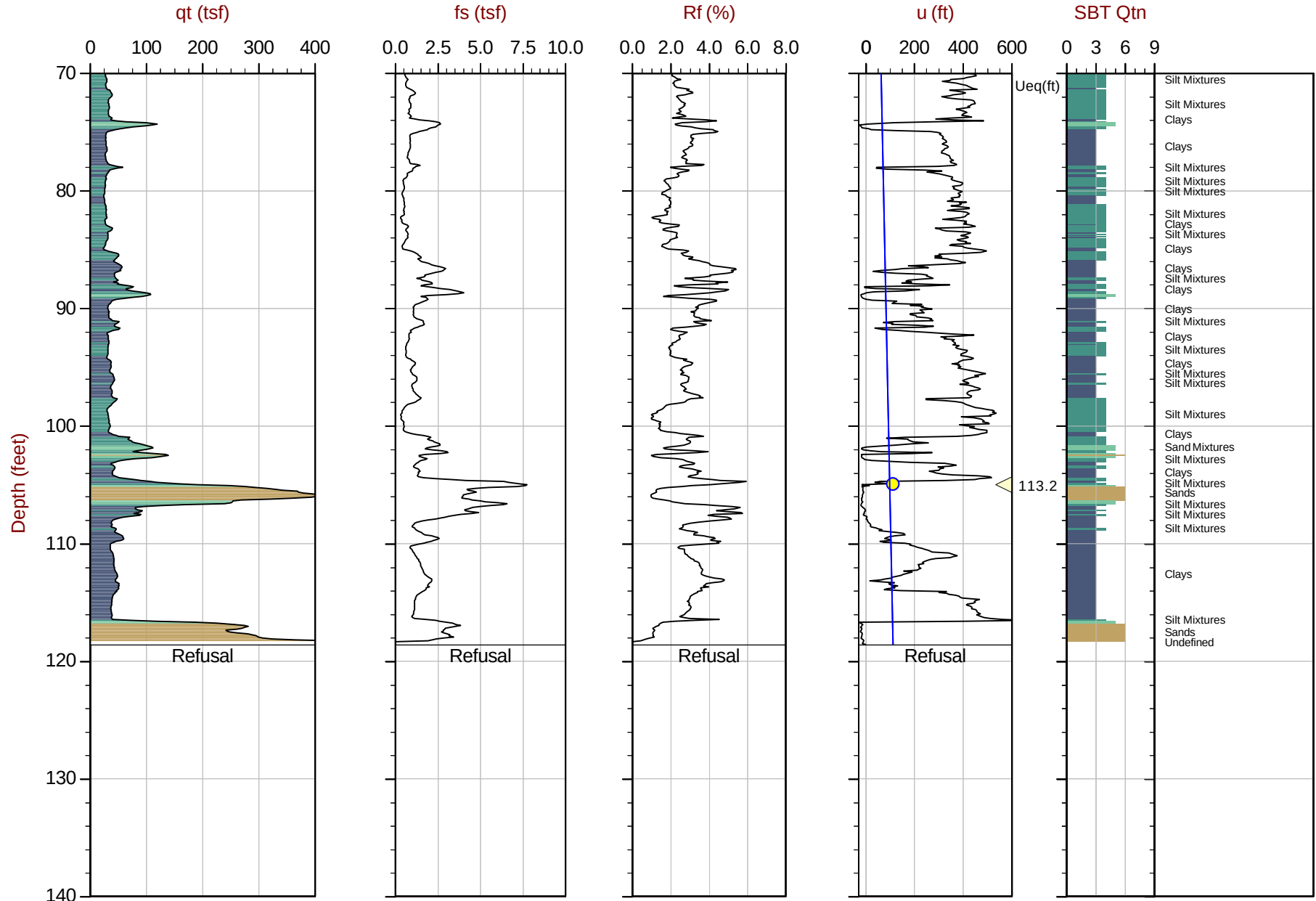
Job No: 20-56-21016

Date: 2020-06-24 11:46

Site: Vantage Potential Campus

Sounding: SCPT-05

Cone: 496:T1500F15U1K



Max Depth: 36.150 m / 118.60 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 20-56-21016_SP05.COR
Unit Wt: SBTQtn(PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM 10N N: 4136452m E: 590872m

● Equilibrium Pore Pressure (Ueq) ● Assumed Ueq ▲ Dissipation, Ueq achieved ▼ Dissipation, Ueq not achieved — Hydrostatic Line

The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.



Murray Engineers

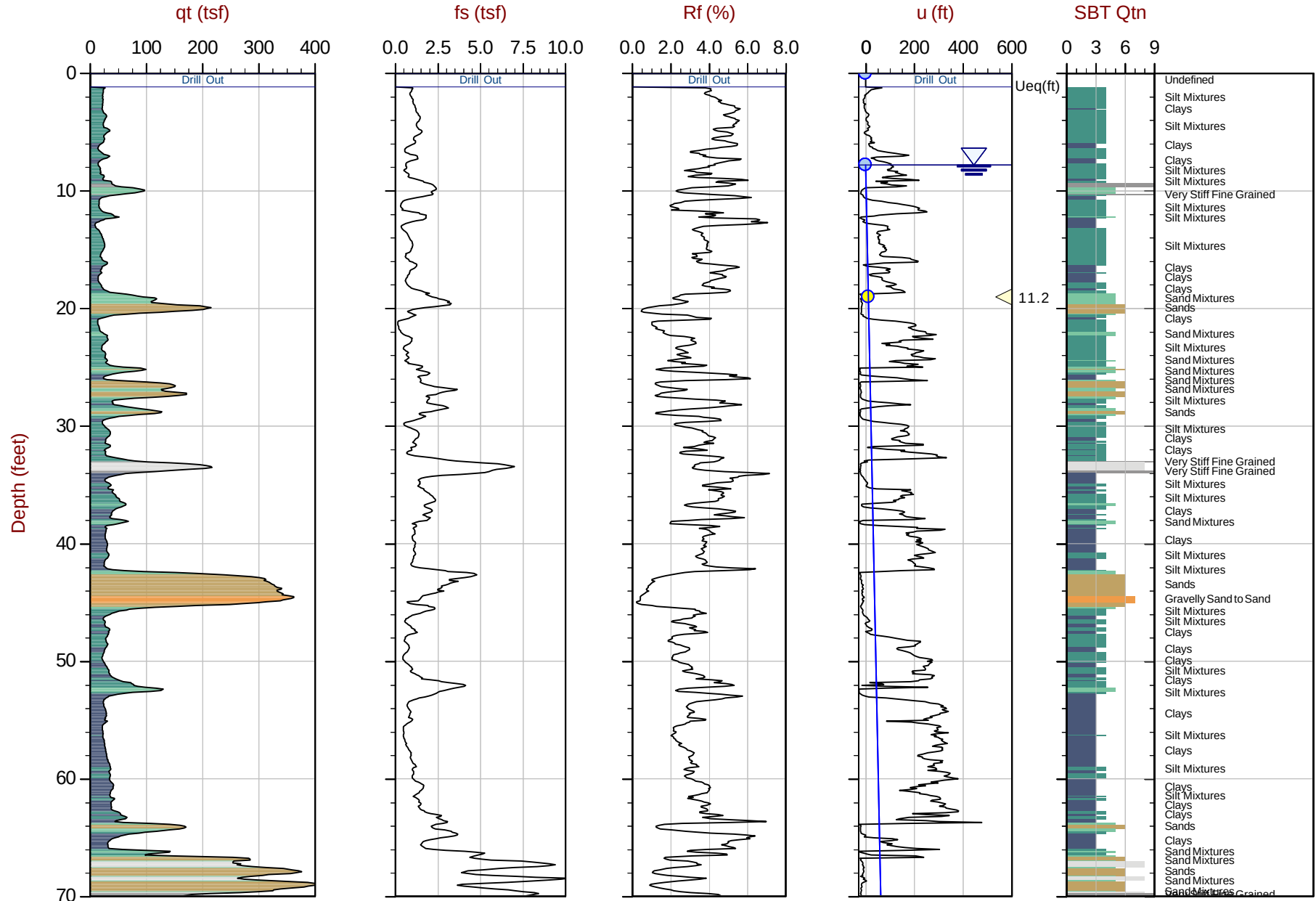
Job No: 20-56-21016

Date: 2020-06-24 13:03

Site: Vantage Potential Campus

Sounding: SCPT-06

Cone: 496:T1500F15U1K



Max Depth: 36.775 m / 120.65 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 20-56-21016_SP06.COR
Unit Wt: SBTQtn(PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM 10N N: 4136498m E: 590896m

● Equilibrium Pore Pressure (Ueq) ● Assumed Ueq ▲ Dissipation, Ueq achieved ▼ Dissipation, Ueq not achieved — Hydrostatic Line

The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.



Murray Engineers

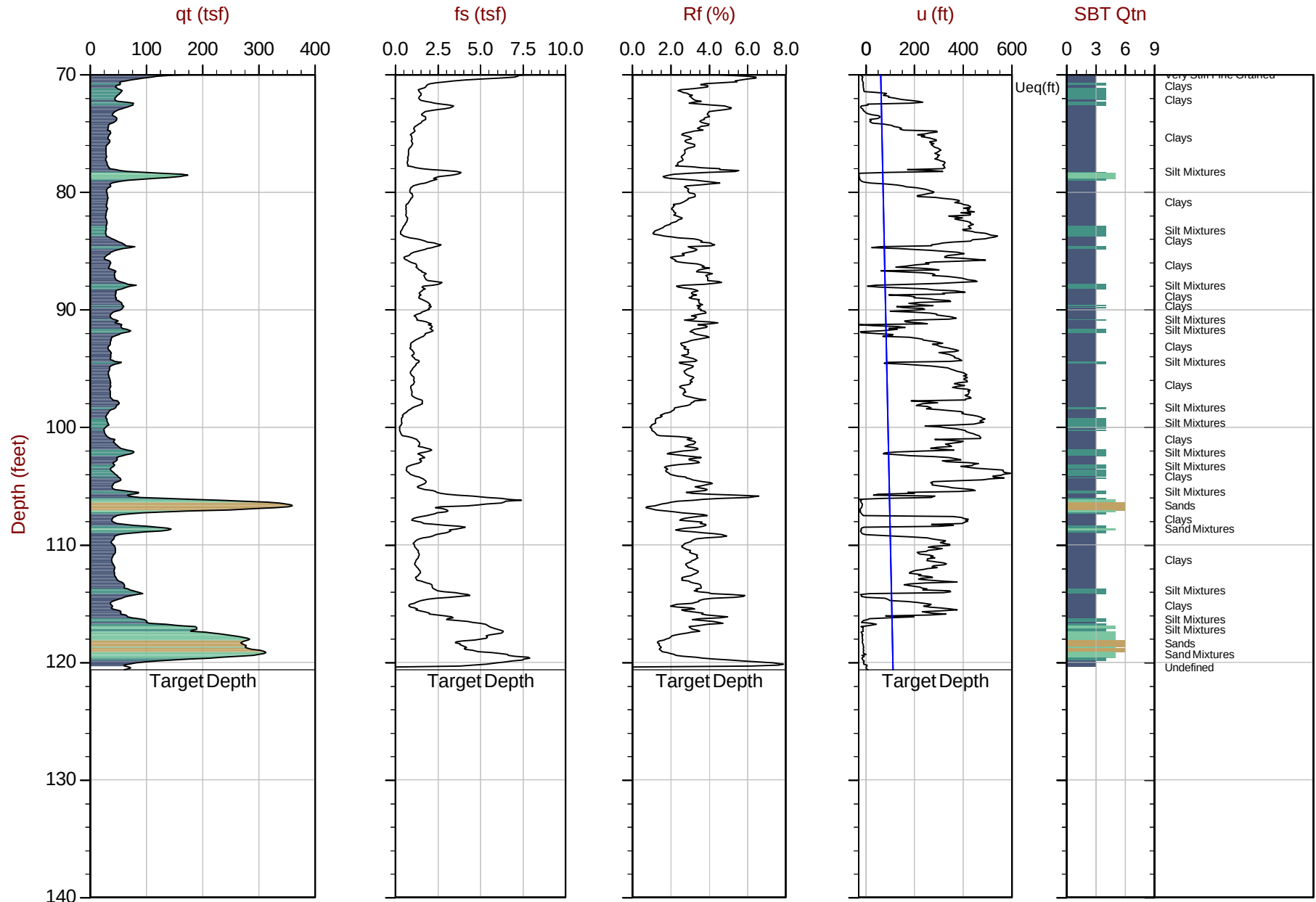
Job No: 20-56-21016

Date: 2020-06-24 13:03

Site: Vantage Potential Campus

Sounding: SCPT-06

Cone: 496:T1500F15U1K



Max Depth: 36.775 m / 120.65 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 20-56-21016_SP06.COR
Unit Wt: SBTQtn(PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM 10N N: 4136498m E: 590896m

● Equilibrium Pore Pressure (Ueq) ● Assumed Ueq ▲ Dissipation, Ueq achieved ▼ Dissipation, Ueq not achieved — Hydrostatic Line

The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.



Murray Engineers

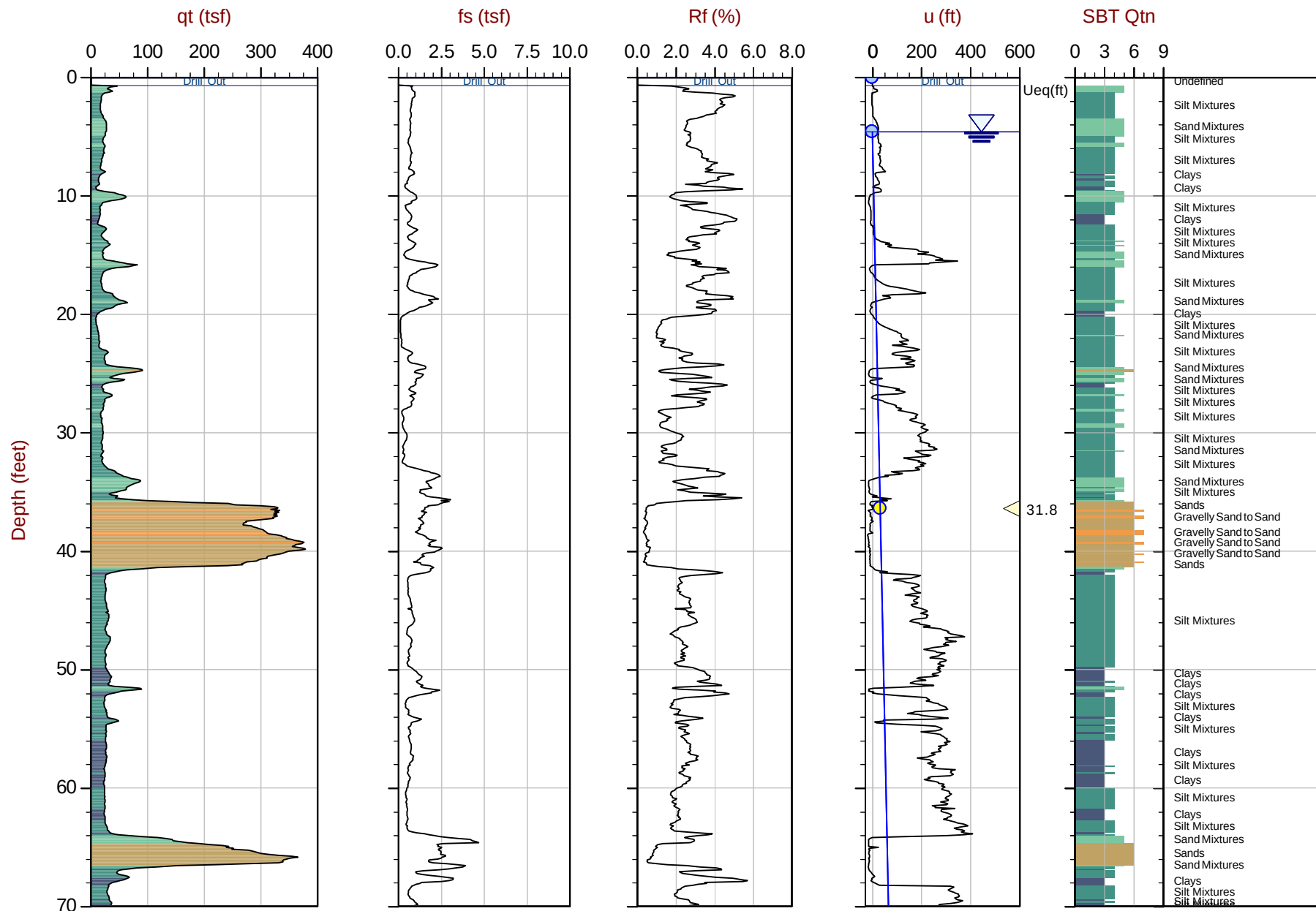
Job No: 20-56-21016

Date: 2020-06-24 13:21

Site: Vantage Potential Campus

Sounding: SCPT-07

Cone: 499:T1500F15U1K



Max Depth: 36.800 m / 120.73 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 20-56-21016_SP07.COR
Unit Wt: SBTQtn(PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM 10N N: 4136559m E: 590765m

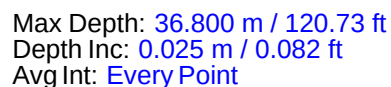
● Equilibrium Pore Pressure (Ueq) ● Assumed Ueq ▲ Dissipation, Ueq achieved ▼ Dissipation, Ueq not achieved — Hydrostatic Line

The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.



Site: Vantage Potential Campus

Cone: 499:T1500F15U1K



File: 20-56-21016_SP07.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM 10N N: 4136559m E: 590765m

● Equilibrium Pore Pressure (Ueq) ● Assumed Ueq ◀ Dissipation, Ueq achieved ◀ Dissipation, Ueq not achieved — Hydrostatic Line

The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.



Murray Engineers

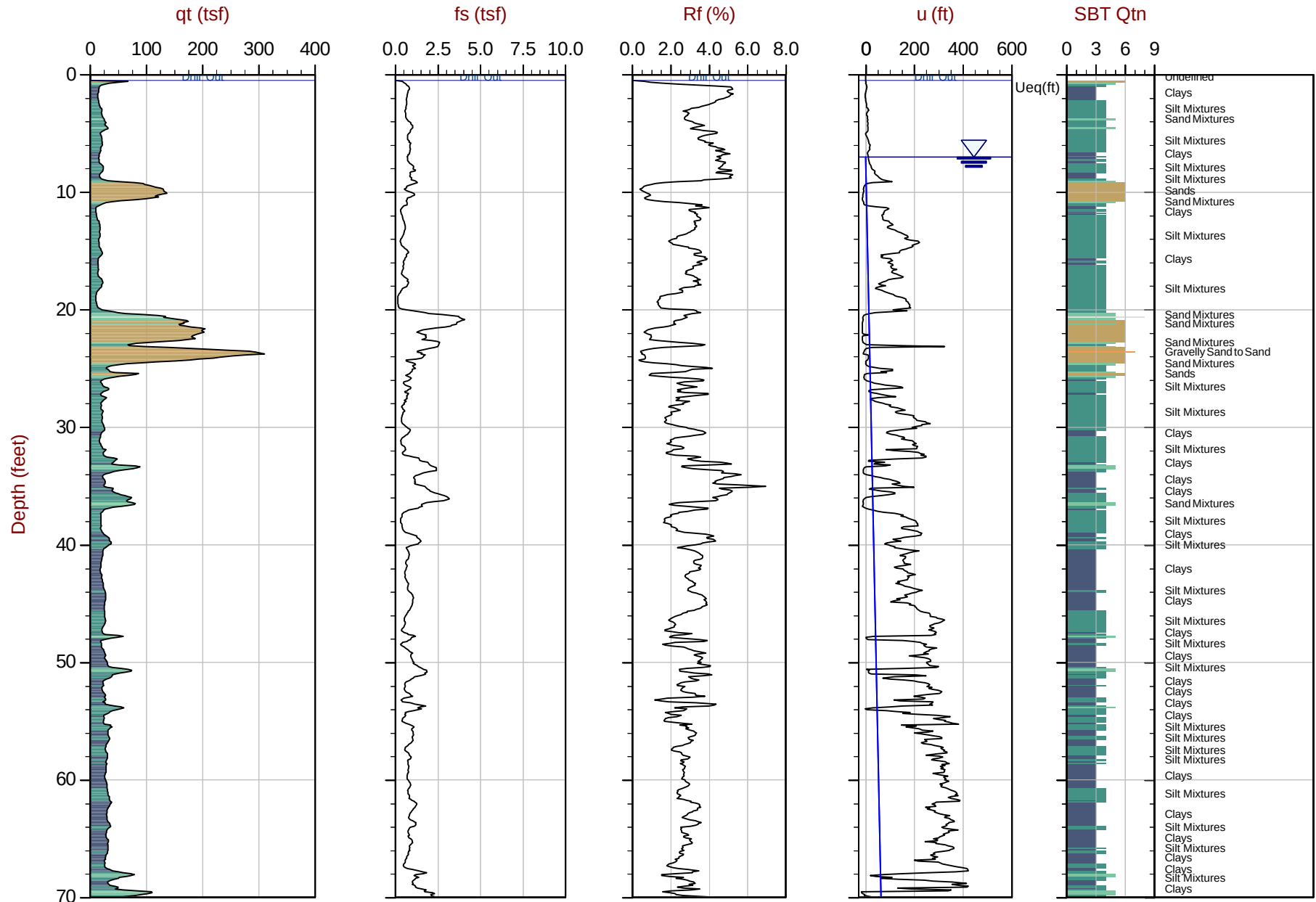
Job No: 20-56-21016

Date: 2020-06-24 11:36

Site: Vantage Potential Campus

Sounding: SCPT-08

Cone: 499:T1500F15U1K



Max Depth: 36.350 m / 119.26 ft

Depth Inc: 0.025 m / 0.082 ft

Avg Int: Every Point

File: 20-56-21016_SP08.COR

Unit Wt: SBTQtn(PKR2009)

SBT: Robertson, 2009 and 2010

Coords: UTM 10N N: 4136474m E: 590750m

● Equilibrium Pore Pressure (Ueq)

● Assumed Ueq

◀ Dissipation, Ueq achieved

◀ Dissipation, Ueq not achieved

— Hydrostatic Line

The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.



Murray Engineers

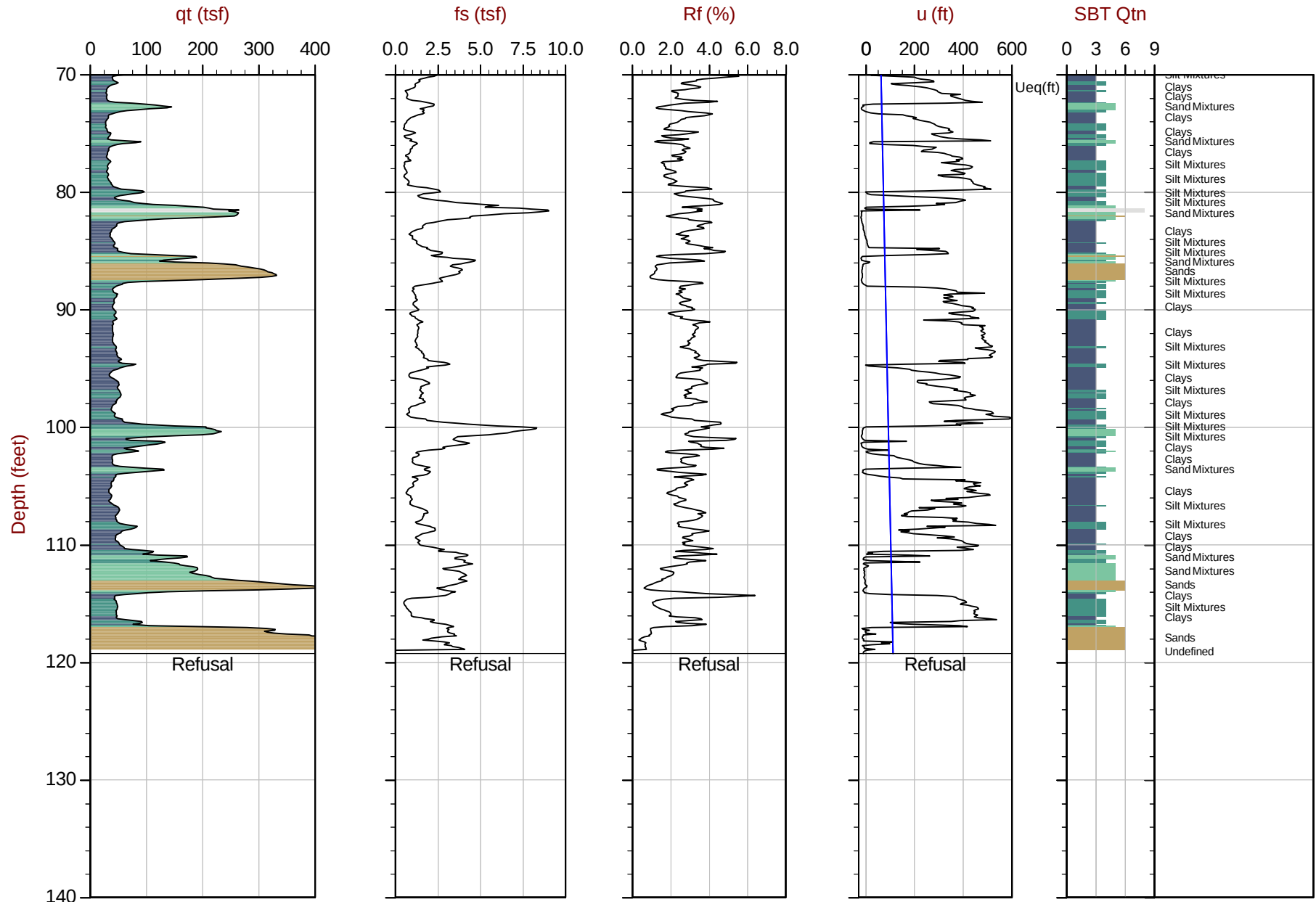
Job No: 20-56-21016

Date: 2020-06-24 11:36

Site: Vantage Potential Campus

Sounding: SCPT-08

Cone: 499:T1500F15U1K



Max Depth: 36.350 m / 119.26 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 20-56-21016_SP08.COR
Unit Wt: SBTQtn(PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM 10N N: 4136474m E: 590750m

● Equilibrium Pore Pressure (Ueq) ● Assumed Ueq ▲ Dissipation, Ueq achieved ▼ Dissipation, Ueq not achieved — Hydrostatic Line

The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Advanced Cone Penetration Test Plots with I_c , Φ , $S_u(Nkt)$, and $N1(60)I_c$





Murray Engineering

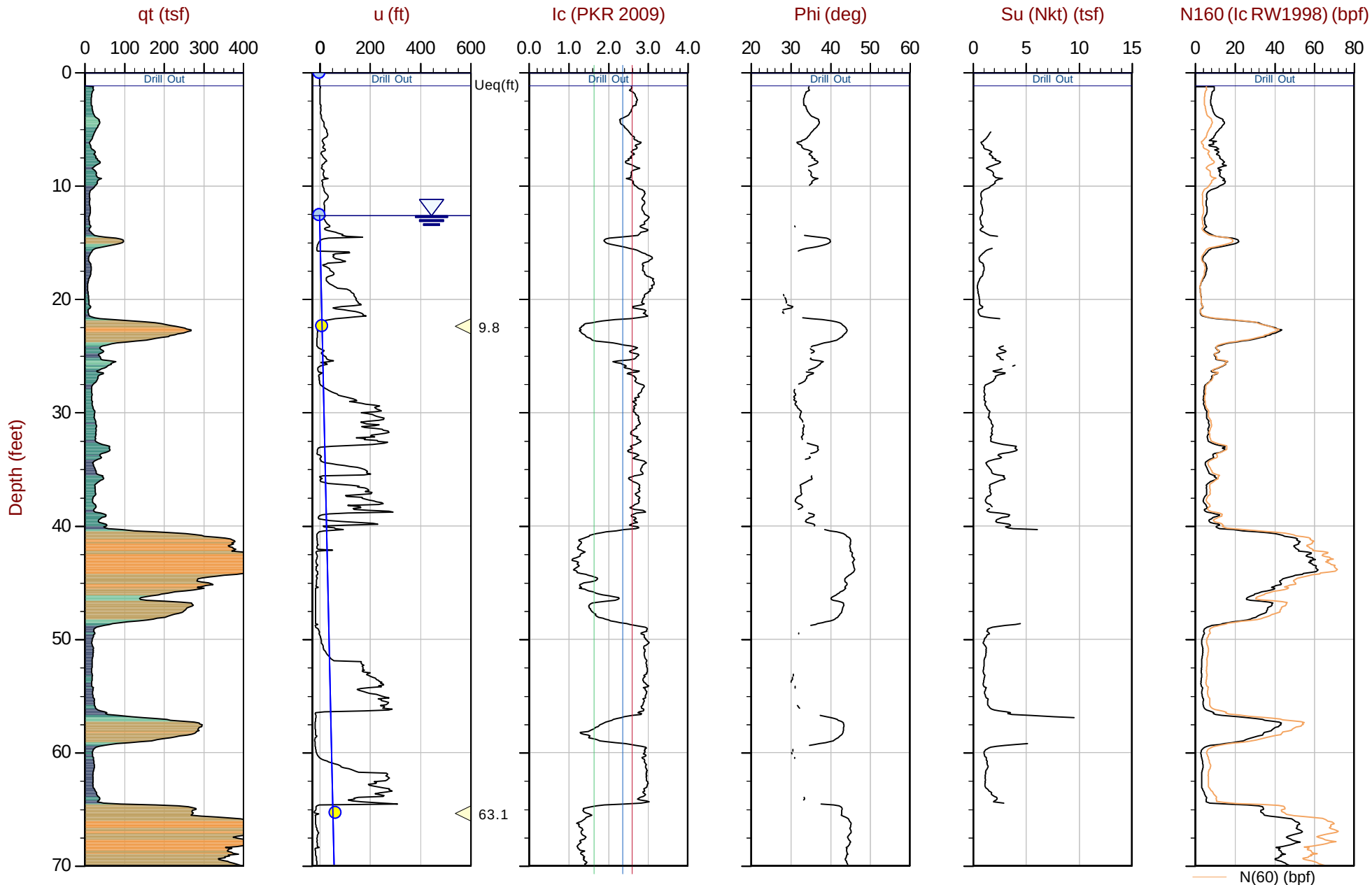
Job No: 20-56-21016

Date: 2020-06-24 08:04

Site: Vantage Potential Campus

Sounding: SCPT-01

Cone: 496:T1500F15U1K



Max Depth: 36.800 m / 120.73 ft

Depth Inc: 0.025 m / 0.082 ft

Avg Int: Every Point

File: 20-56-21016_SP01.COR

Unit Wt: SBTQn(PKR2009)

Su Nkt: 15.0

SBT: Robertson, 2009 and 2010

Coords: UTM 10N N: 4136529m E: 590680m

● Equilibrium Pore Pressure (Ueq)

● Assumed Ueq

▲ Dissipation, Ueq achieved

▲ Dissipation, Ueq not achieved

— Hydrostatic Line

The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.



Murray Engineering

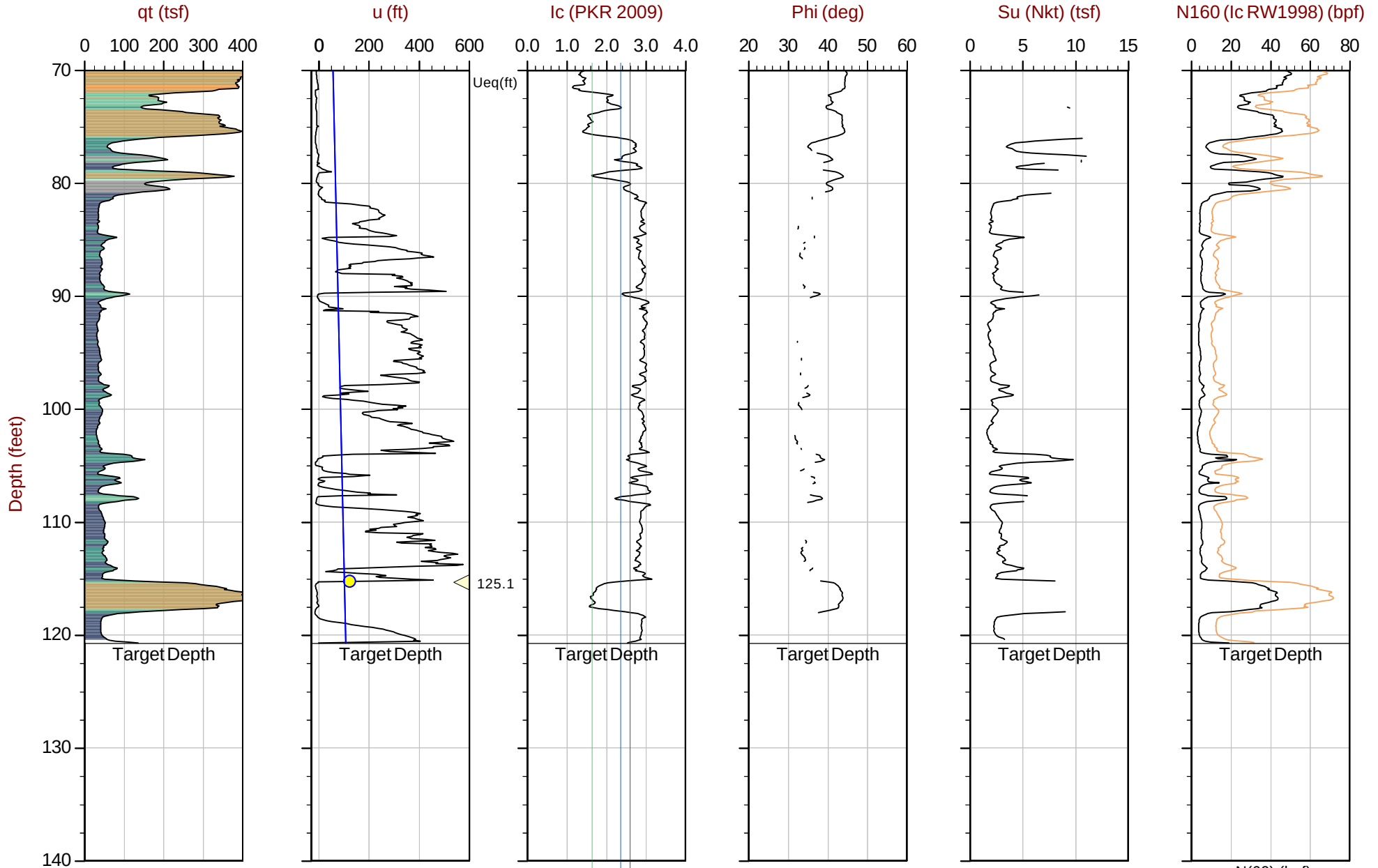
Job No: 20-56-21016

Date: 2020-06-24 08:04

Site: Vantage Potential Campus

Sounding: SCPT-01

Cone: 496:T1500F15U1K



Max Depth: 36.800 m / 120.73 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 20-56-21016_SP01.COR
Unit Wt: SBTQn(PKR2009)
Su Nkt: 15.0

SBT: Robertson, 2009 and 2010
Coords: UTM 10N N: 4136529m E: 590680m

● Equilibrium Pore Pressure (Ueq) ● Assumed Ueq ▲ Dissipation, Ueq achieved ▼ Dissipation, Ueq not achieved — Hydrostatic Line

The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.



Murray Engineering

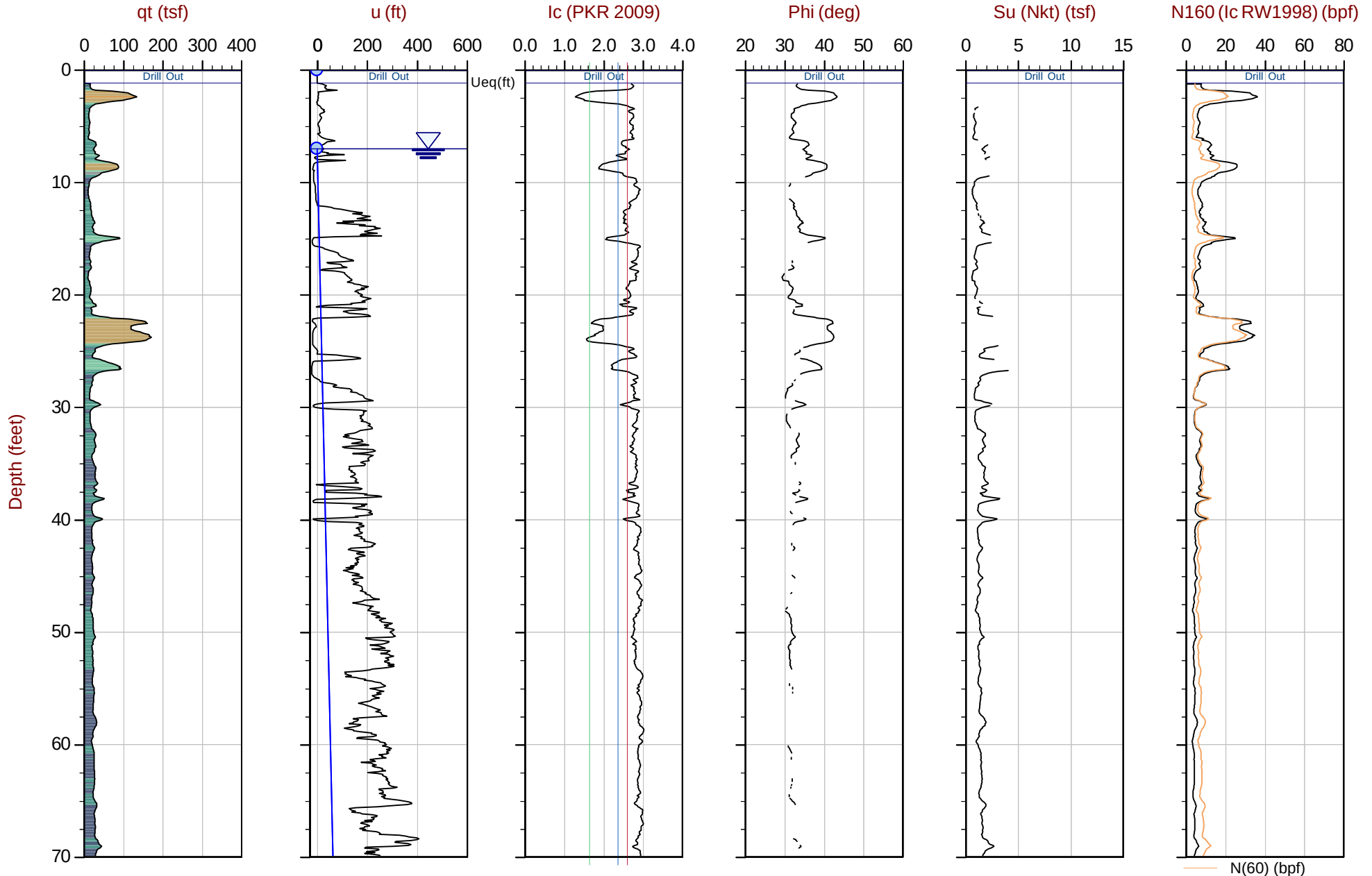
Job No: 20-56-21016

Date: 2020-06-24 10:13

Site: Vantage Potential Campus

Sounding: SCPT-02

Cone: 496:T1500F15U1K



Max Depth: 36.725 m / 120.49 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 20-56-21016_SP02.COR
Unit Wt: SBTQn(PKR2009)
Su Nkt: 15.0

SBT: Robertson, 2009 and 2010
Coords: UTM 10N N: 4136476m E: 590716m

● Equilibrium Pore Pressure (Ueq) ● Assumed Ueq ▲ Dissipation, Ueq achieved ▼ Dissipation, Ueq not achieved — Hydrostatic Line

The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.



Murray Engineering

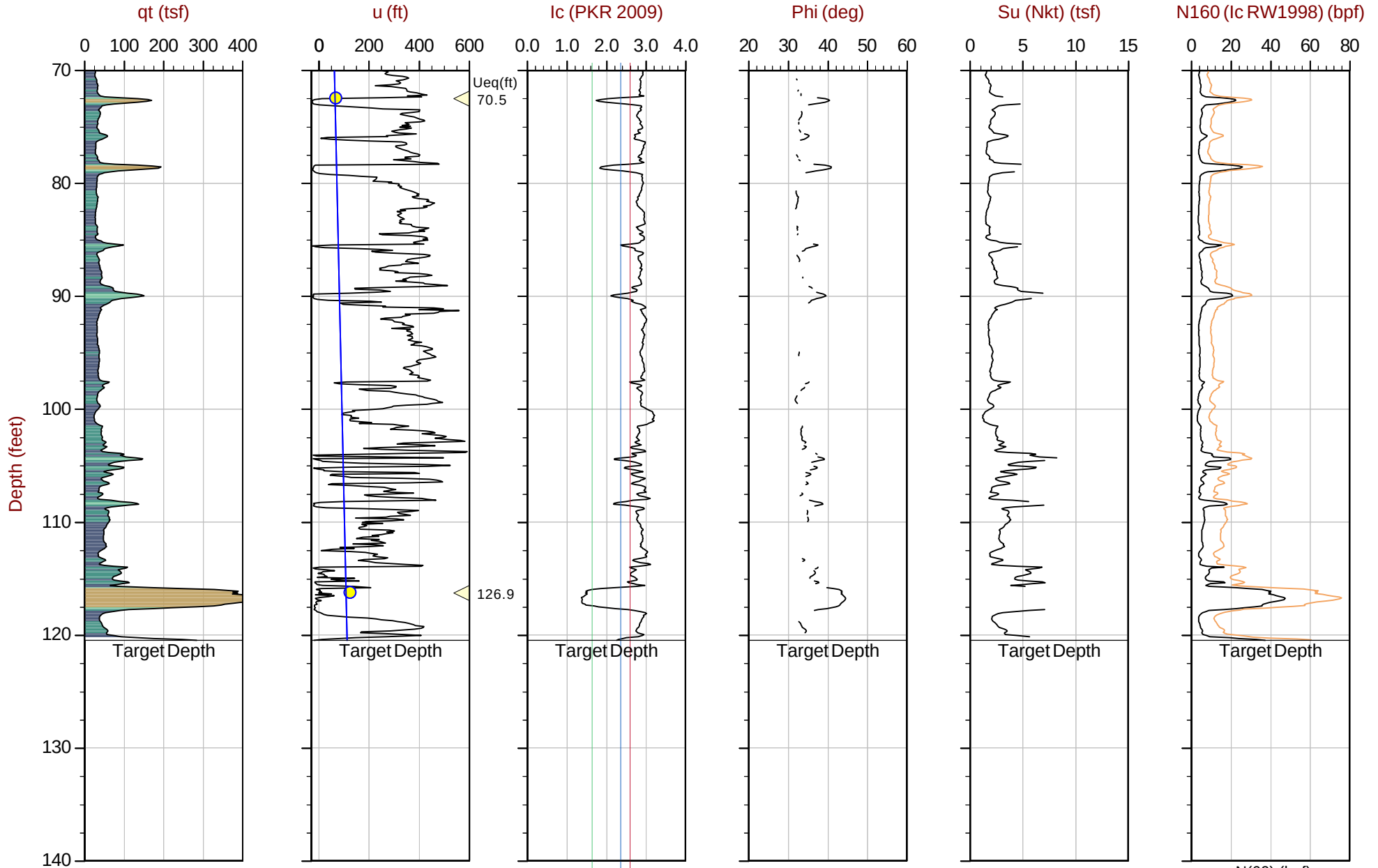
Job No: 20-56-21016

Date: 2020-06-24 10:13

Site: Vantage Potential Campus

Sounding: SCPT-02

Cone: 496:T1500F15U1K



Max Depth: 36.725 m / 120.49 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 20-56-21016_SP02.COR
Unit Wt: SBTQn(PKR2009)
Su Nkt: 15.0

SBT: Robertson, 2009 and 2010
Coords: UTM 10N N: 4136476m E: 590716m

● Equilibrium Pore Pressure (Ueq) ● Assumed Ueq ▲ Dissipation, Ueq achieved ▲ Dissipation, Ueq not achieved — Hydrostatic Line

The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.



Murray Engineering

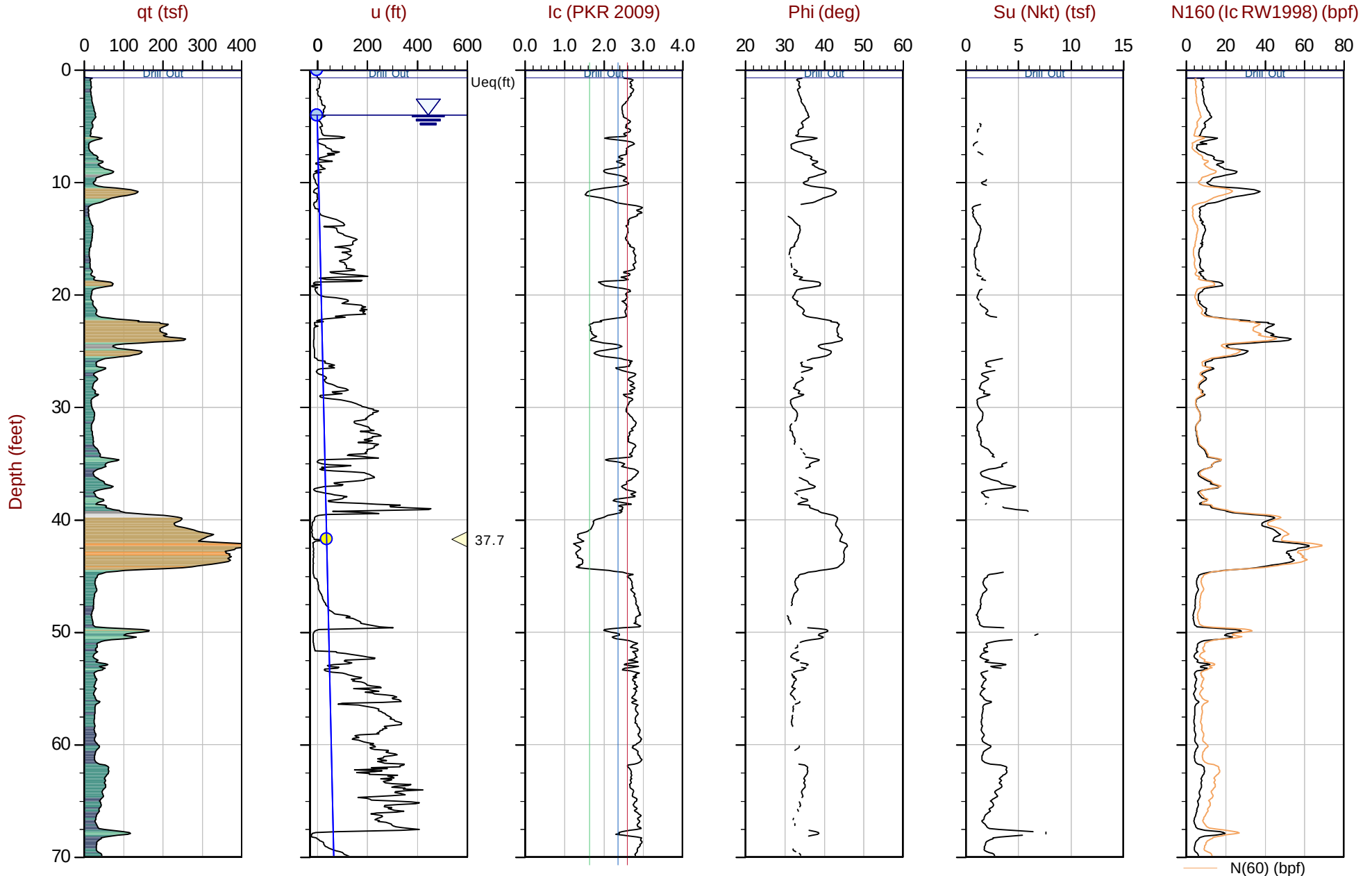
Job No: 20-56-21016

Date: 2020-06-24 10:05

Site: Vantage Potential Campus

Sounding: SCPT-03

Cone: 499:T1500F15U1K



Max Depth: 36.775 m / 120.65 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 20-56-21016_SP03.COR
Unit Wt: SBTQn(PKR2009)
Su Nkt: 15.0

SBT: Robertson, 2009 and 2010
Coords: UTM 10N N: 4136443m E: 590799m

● Equilibrium Pore Pressure (Ueq) ● Assumed Ueq ▲ Dissipation, Ueq achieved ▼ Dissipation, Ueq not achieved — Hydrostatic Line

The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.



Murray Engineering

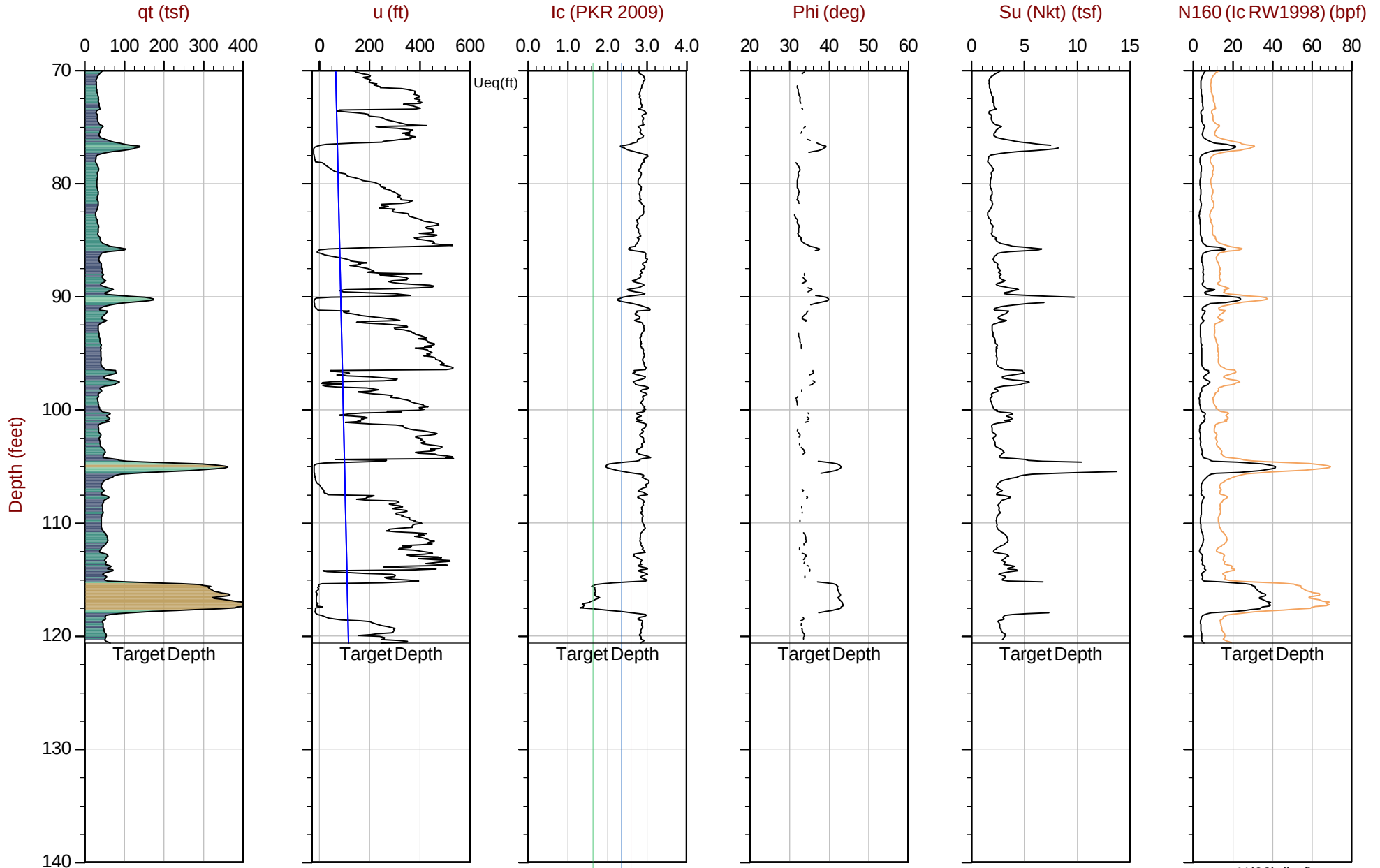
Job No: 20-56-21016

Date: 2020-06-24 10:05

Site: Vantage Potential Campus

Sounding: SCPT-03

Cone: 499:T1500F15U1K



Max Depth: 36.775 m / 120.65 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 20-56-21016_SP03.COR
Unit Wt: SBTQn(PKR2009)
Su Nkt: 15.0

SBT: Robertson, 2009 and 2010
Coords: UTM 10N N: 4136443m E: 590799m

● Equilibrium Pore Pressure (Ueq) ● Assumed Ueq ▲ Dissipation, Ueq achieved ▼ Dissipation, Ueq not achieved — Hydrostatic Line

The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.



Murray Engineering

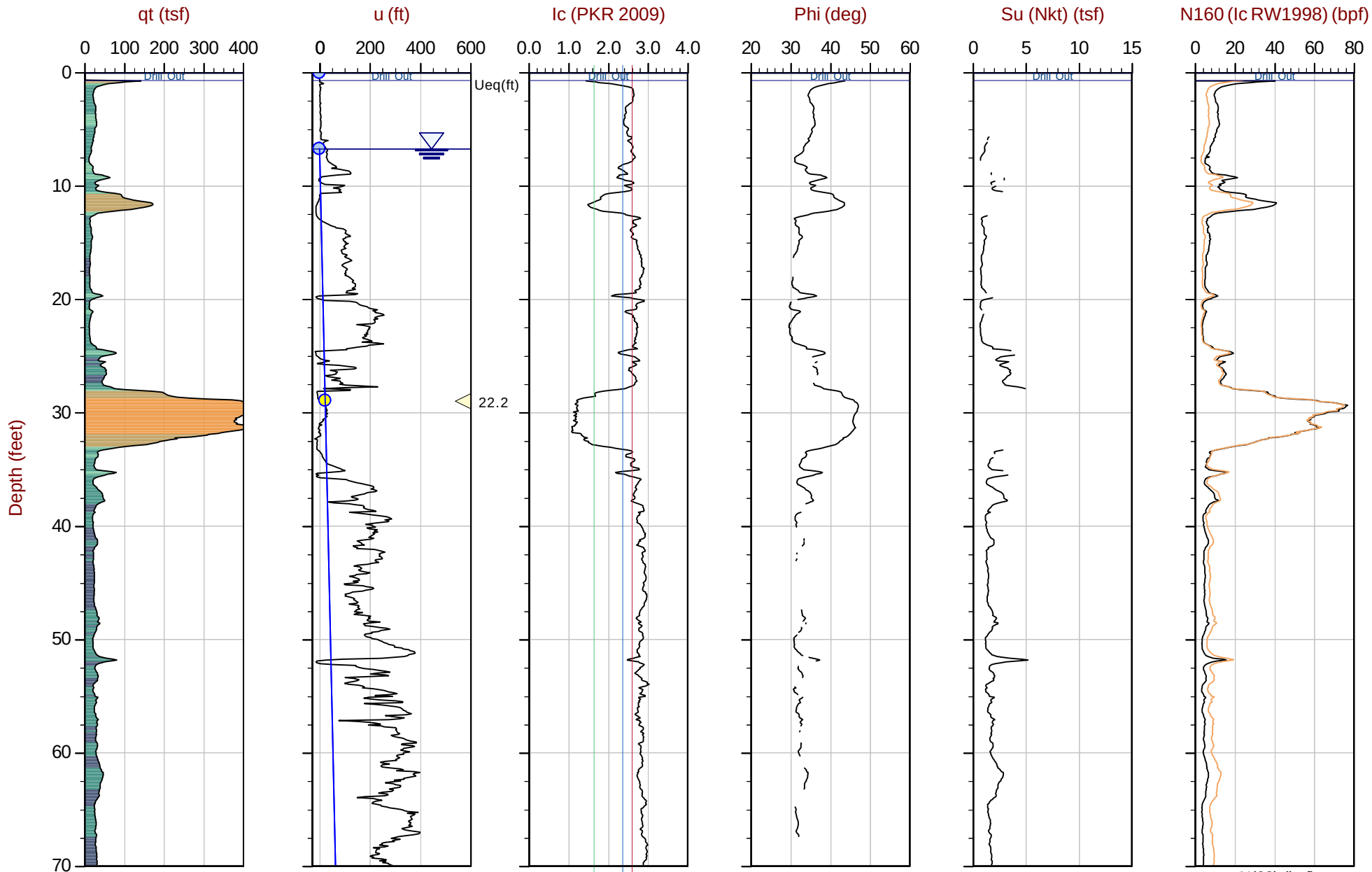
Job No: 20-56-21016

Date: 2020-06-24 08:12

Site: Vantage Potential Campus

Sounding: SCPT-04

Cone: 499:T1500F15U1K



Max Depth: 36.800 m / 120.73 ft

Depth Inc: 0.025 m / 0.082 ft

Avg Int: Every Point

File: 20-56-21016_SP04.COR

Unit Wt: SBTQn(PKR2009)

Su Nkt: 15.0

SBT: Robertson, 2009 and 2010

Coords: UTM 10N N: 4136416m E: 590848m

● Equilibrium Pore Pressure (Ueq)

● Assumed Ueq

▲ Dissipation, Ueq achieved

▲ Dissipation, Ueq not achieved

— Hydrostatic Line

The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.



Murray Engineering

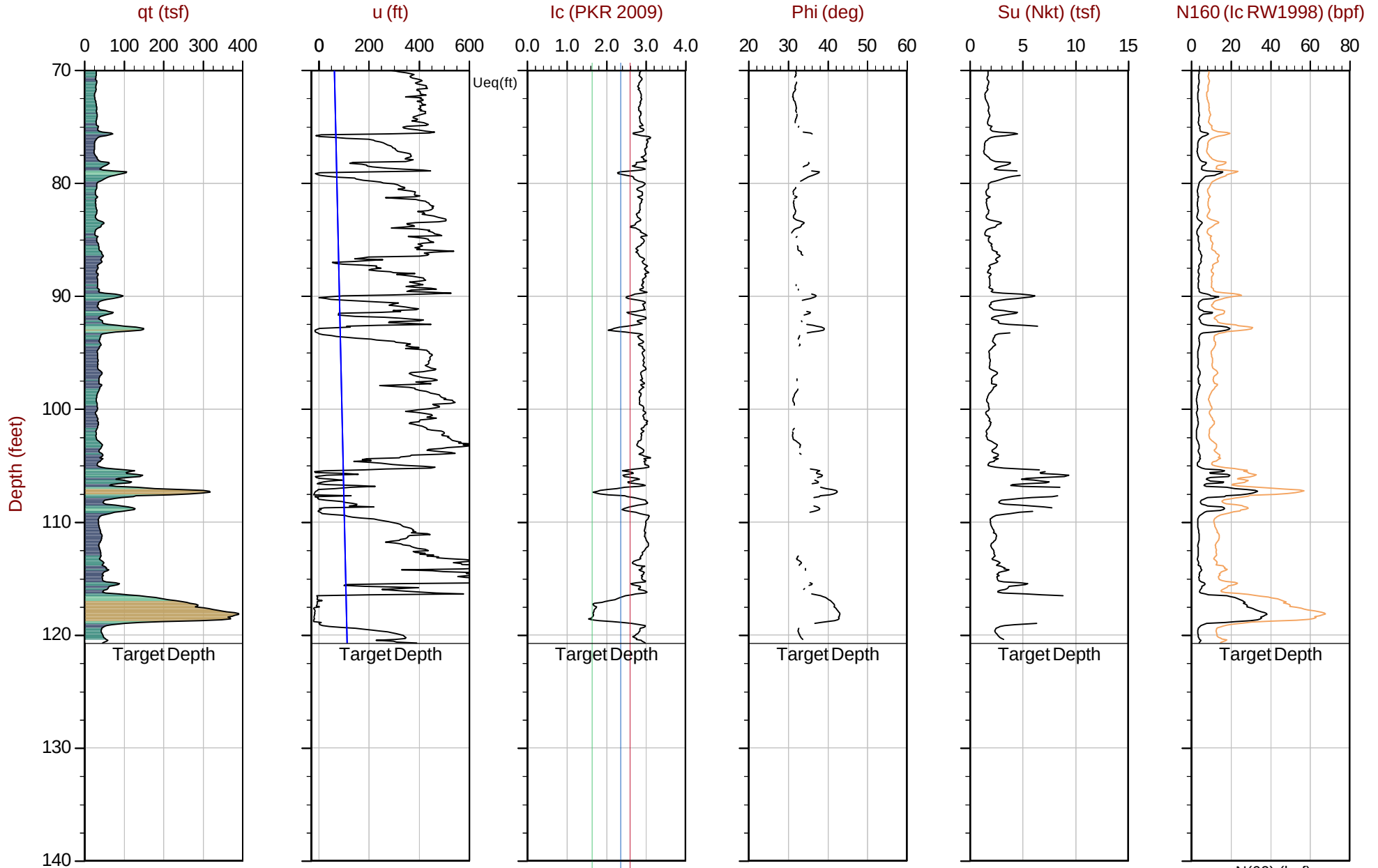
Job No: 20-56-21016

Date: 2020-06-24 08:12

Site: Vantage Potential Campus

Sounding: SCPT-04

Cone: 499:T1500F15U1K



Max Depth: 36.800 m / 120.73 ft

Depth Inc: 0.025 m / 0.082 ft

Avg Int: Every Point

File: 20-56-21016_SP04.COR

Unit Wt: SBTQn(PKR2009)

Su Nkt: 15.0

SBT: Robertson, 2009 and 2010

Coords: UTM 10N N: 4136416m E: 590848m

● Equilibrium Pore Pressure (Ueq)

● Assumed Ueq

◀ Dissipation, Ueq achieved

◀ Dissipation, Ueq not achieved

— Hydrostatic Line

The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.



Murray Engineering

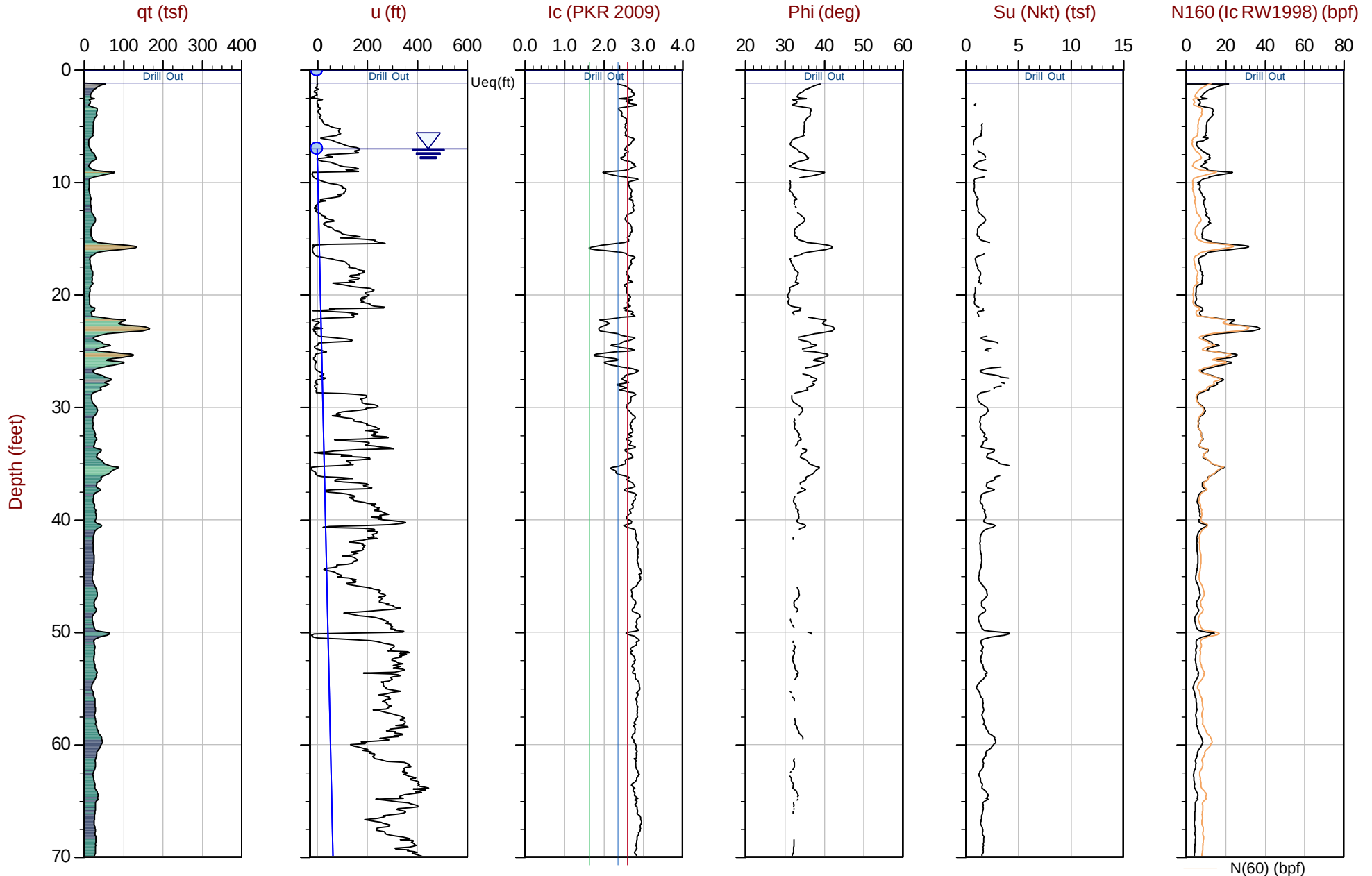
Job No: 20-56-21016

Date: 2020-06-24 11:46

Site: Vantage Potential Campus

Sounding: SCPT-05

Cone: 496:T1500F15U1K



Max Depth: 36.150 m / 118.60 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 20-56-21016_SP05.COR
Unit Wt: SBTQn(PKR2009)
Su Nkt: 15.0

SBT: Robertson, 2009 and 2010
Coords: UTM 10N N: 4136452m E: 590872m

● Equilibrium Pore Pressure (Ueq) ● Assumed Ueq ▲ Dissipation, Ueq achieved ▼ Dissipation, Ueq not achieved — Hydrostatic Line

The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.



Murray Engineering

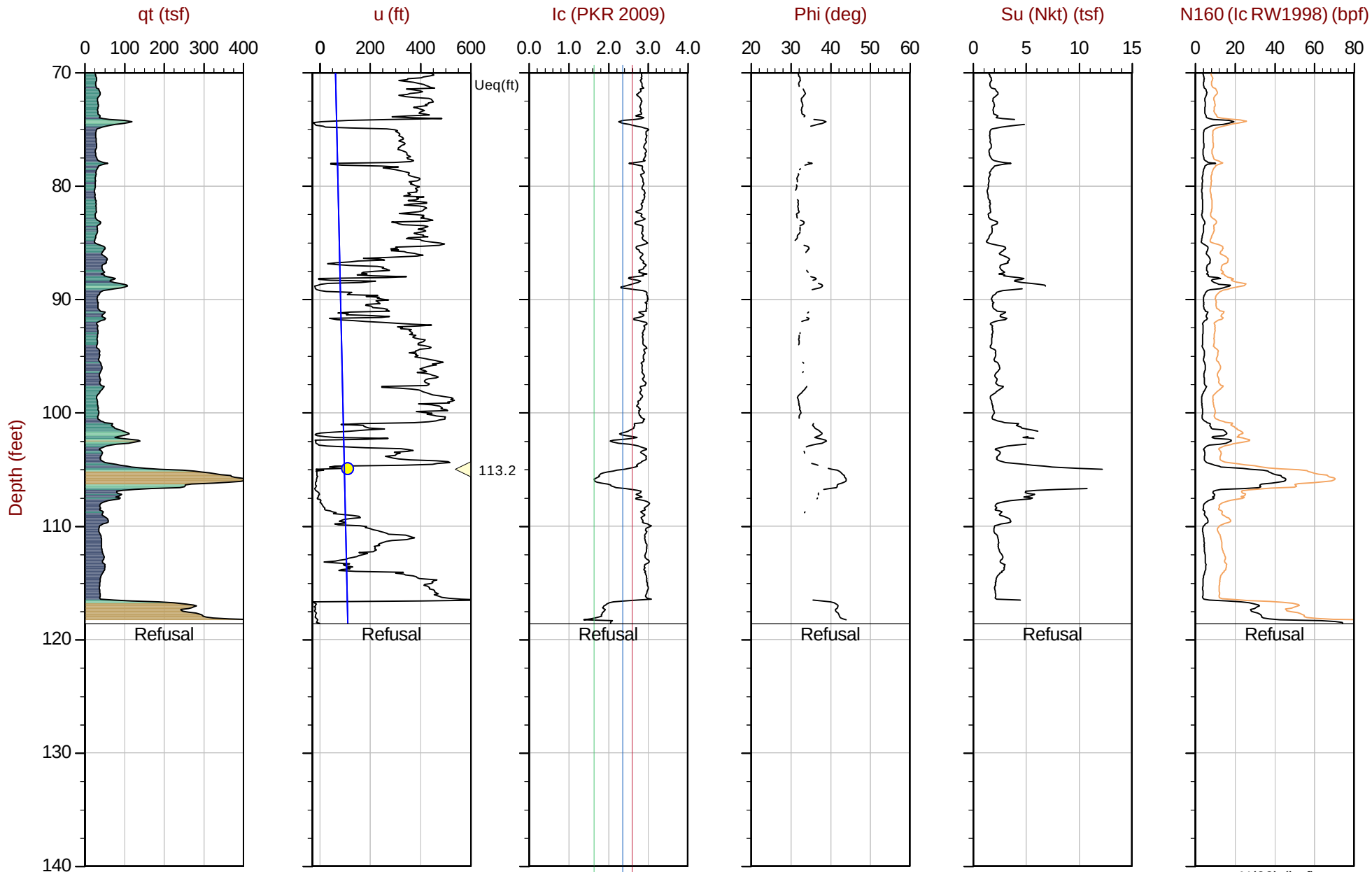
Job No: 20-56-21016

Date: 2020-06-24 11:46

Site: Vantage Potential Campus

Sounding: SCPT-05

Cone: 496:T1500F15U1K



Max Depth: 36.150 m / 118.60 ft

Depth Inc: 0.025 m / 0.082 ft

Avg Int: Every Point

File: 20-56-21016_SP05.COR

Unit Wt: SBTQn(PKR2009)

Su Nkt: 15.0

SBT: Robertson, 2009 and 2010

Coords: UTM 10N N: 4136452m E: 590872m

● Equilibrium Pore Pressure (Ueq)

● Assumed Ueq

◀ Dissipation, Ueq achieved

◀ Dissipation, Ueq not achieved

— Hydrostatic Line

The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.



Murray Engineering

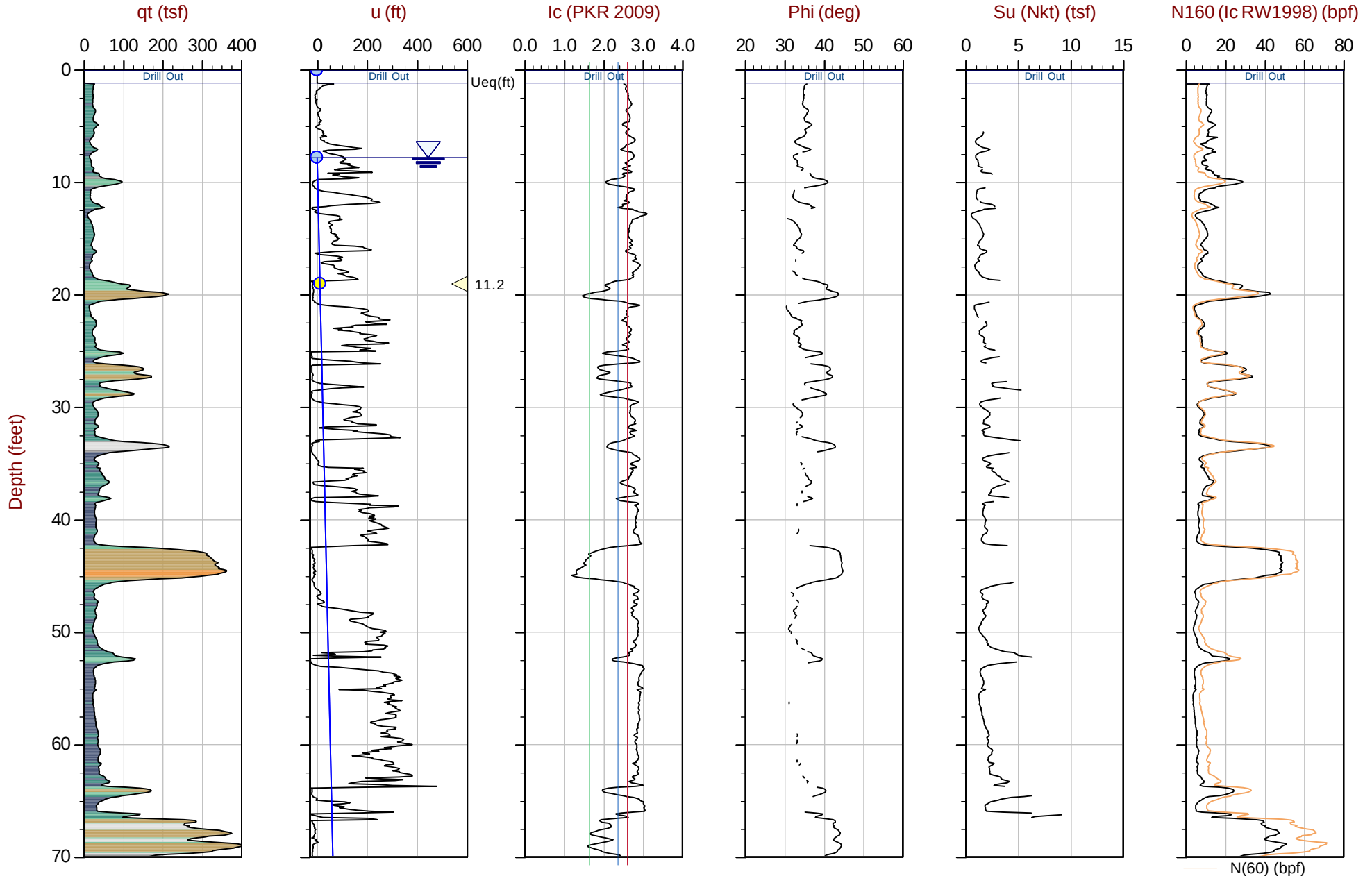
Job No: 20-56-21016

Date: 2020-06-24 13:03

Site: Vantage Potential Campus

Sounding: SCPT-06

Cone: 496:T1500F15U1K



Max Depth: 36.775 m / 120.65 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 20-56-21016_SP06.COR
Unit Wt: SBTQn(PKR2009)
Su Nkt: 15.0

SBT: Robertson, 2009 and 2010
Coords: UTM 10N N: 4136498m E: 590896m

● Equilibrium Pore Pressure (Ueq) ● Assumed Ueq ▲ Dissipation, Ueq achieved ▼ Dissipation, Ueq not achieved — Hydrostatic Line

The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.



Murray Engineering

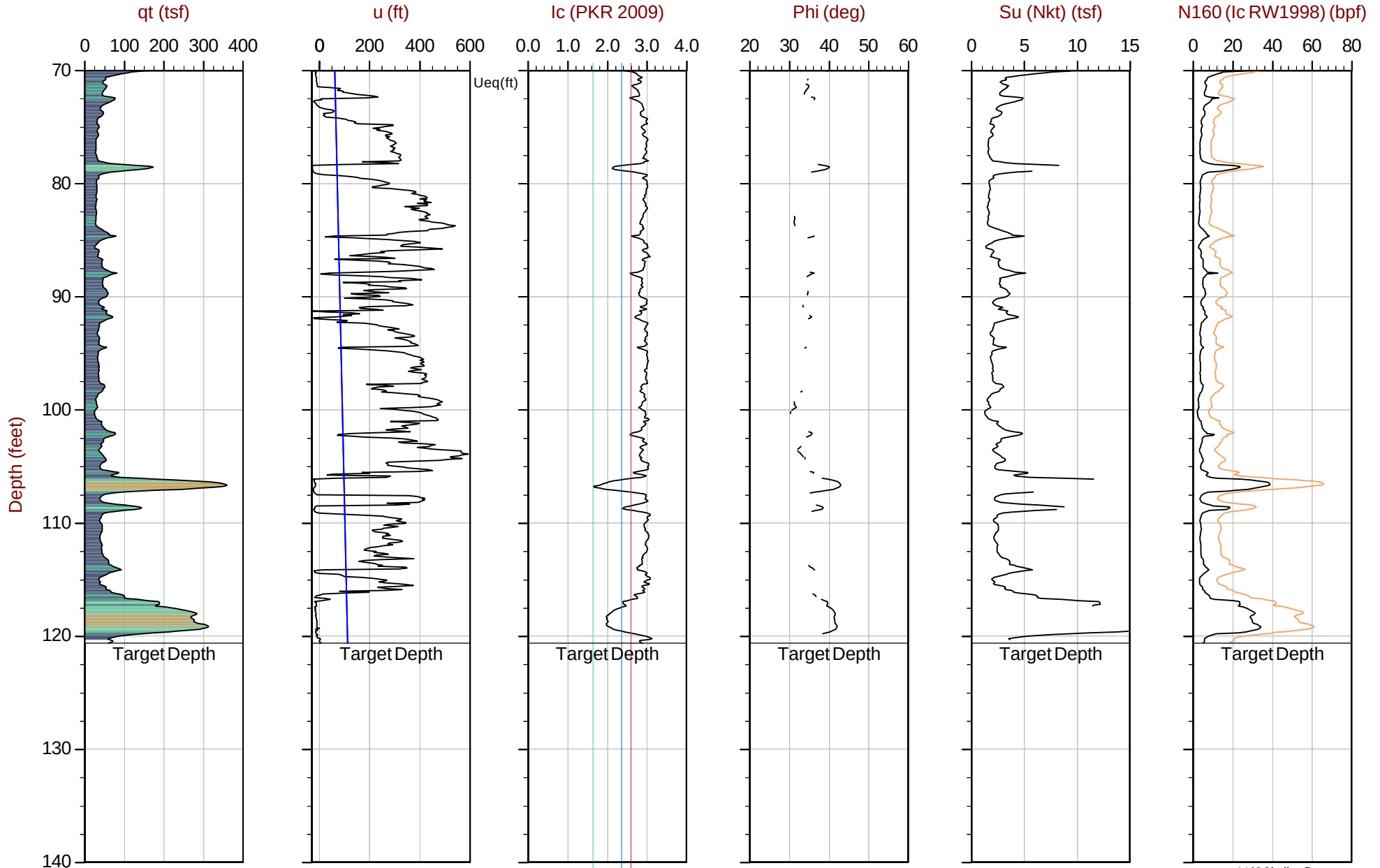
Job No: 20-56-21016

Date: 2020-06-24 13:03

Site: Vantage Potential Campus

Sounding: SCPT-06

Cone: 496:T1500F15U1K



Max Depth: 36.775 m / 120.65 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 20-56-21016_SP06.COR
Unit Wt: SBTQtn(PKR2009)
Su Nkt: 15.0

SBT: Robertson, 2009 and 2010
Coords: UTM 10N N: 4136498m E: 590896m

● Equilibrium Pore Pressure (Ueq) ● Assumed Ueq ▲ Dissipation, Ueq achieved ▼ Dissipation, Ueq not achieved — Hydrostatic Line

The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.



Murray Engineering

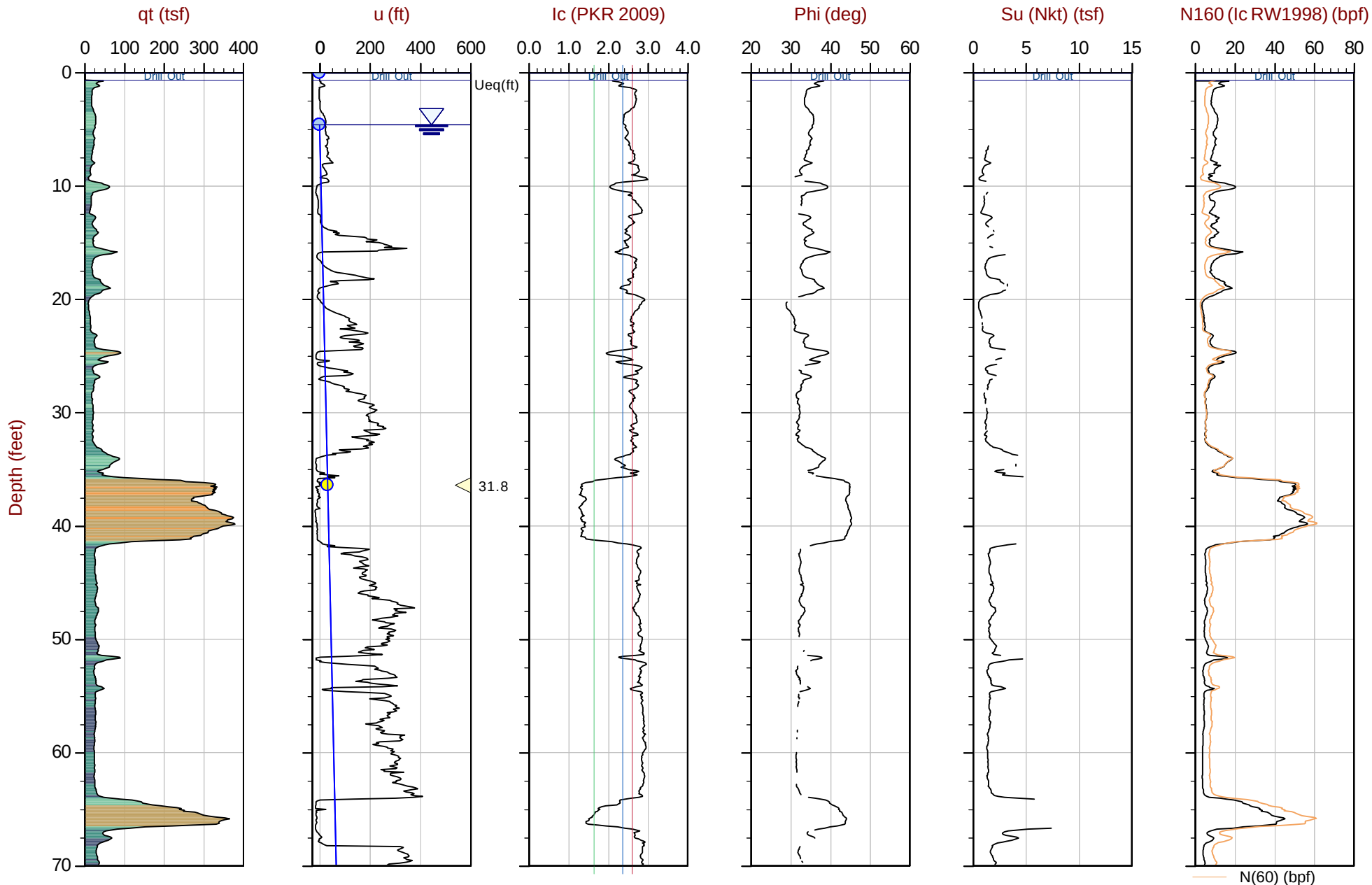
Job No: 20-56-21016

Date: 2020-06-24 13:21

Site: Vantage Potential Campus

Sounding: SCPT-07

Cone: 499:T1500F15U1K



Max Depth: 36.800 m / 120.73 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 20-56-21016_SP07.COR
Unit Wt: SBTQn(PKR2009)
Su Nkt: 15.0

SBT: Robertson, 2009 and 2010
Coords: UTM 10N N: 4136559m E: 590765m

● Equilibrium Pore Pressure (Ueq) ● Assumed Ueq ▲ Dissipation, Ueq achieved ▼ Dissipation, Ueq not achieved — Hydrostatic Line

The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.



Murray Engineering

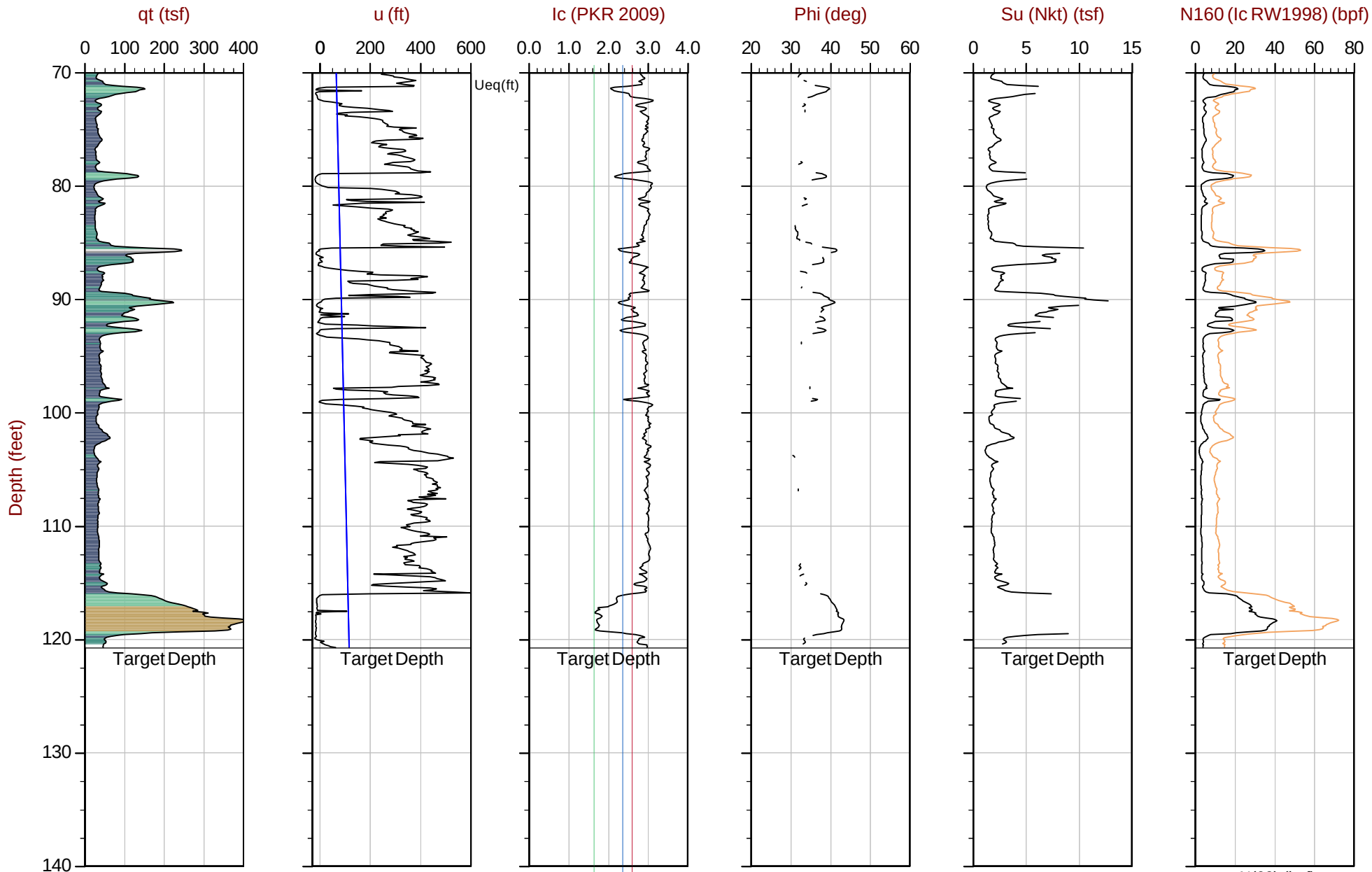
Job No: 20-56-21016

Date: 2020-06-24 13:21

Site: Vantage Potential Campus

Sounding: SCPT-07

Cone: 499:T1500F15U1K



Max Depth: 36.800 m / 120.73 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 20-56-21016_SP07.COR
Unit Wt: SBTQn(PKR2009)
Su Nkt: 15.0

SBT: Robertson, 2009 and 2010
Coords: UTM 10N N: 4136559m E: 590765m

● Equilibrium Pore Pressure (Ueq) ● Assumed Ueq ▲ Dissipation, Ueq achieved ▲ Dissipation, Ueq not achieved — Hydrostatic Line

The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.



Murray Engineering

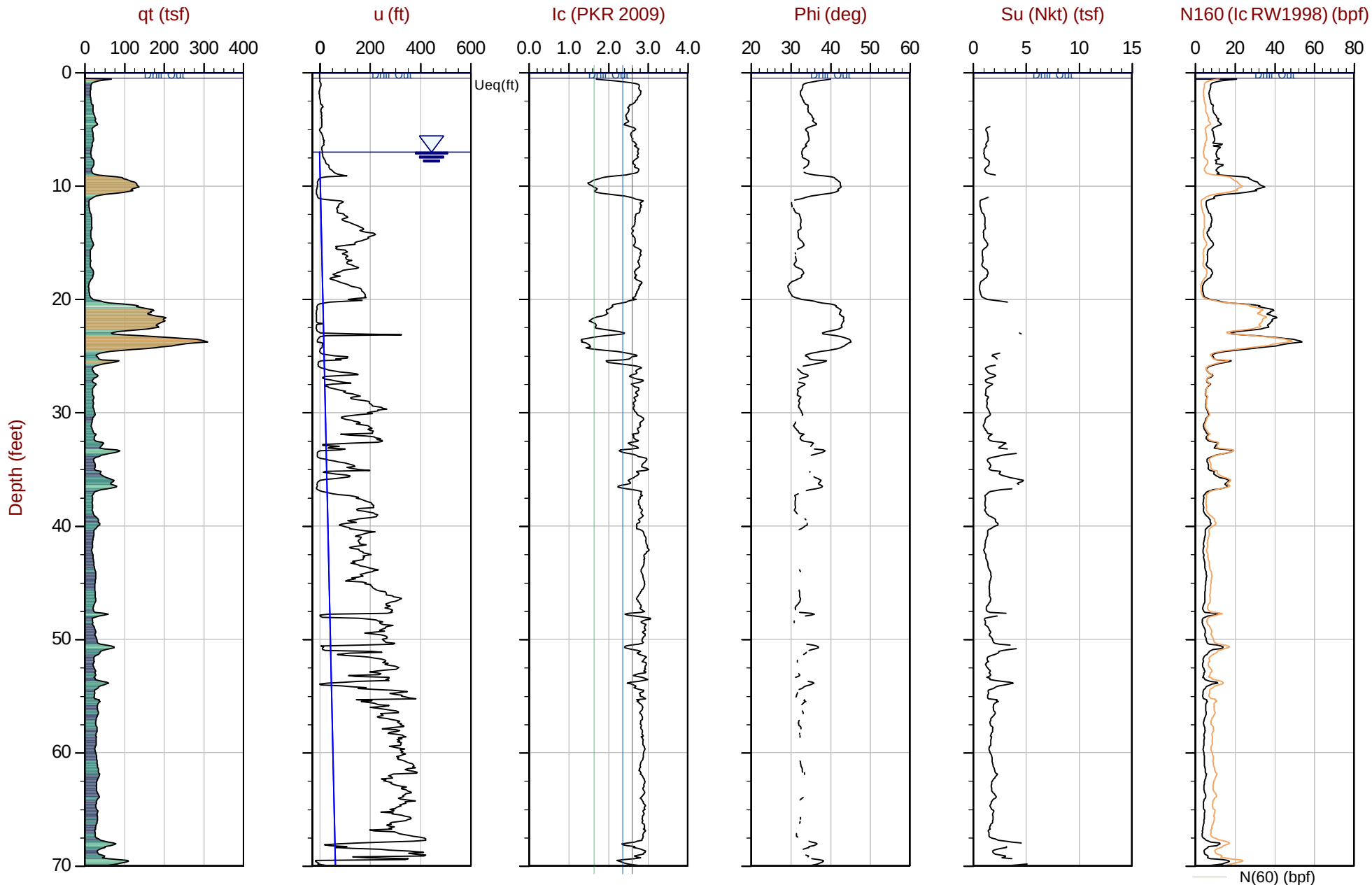
Job No: 20-56-21016

Date: 2020-06-24 11:36

Site: Vantage Potential Campus

Sounding: SCPT-08

Cone: 499:T1500F15U1K



Max Depth: 36.350 m / 119.26 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 20-56-21016_SP08.COR
Unit Wt: SBTQn(PKR2009)
Su Nkt: 15.0

SBT: Robertson, 2009 and 2010
Coords: UTM 10N N: 4136474m E: 590750m

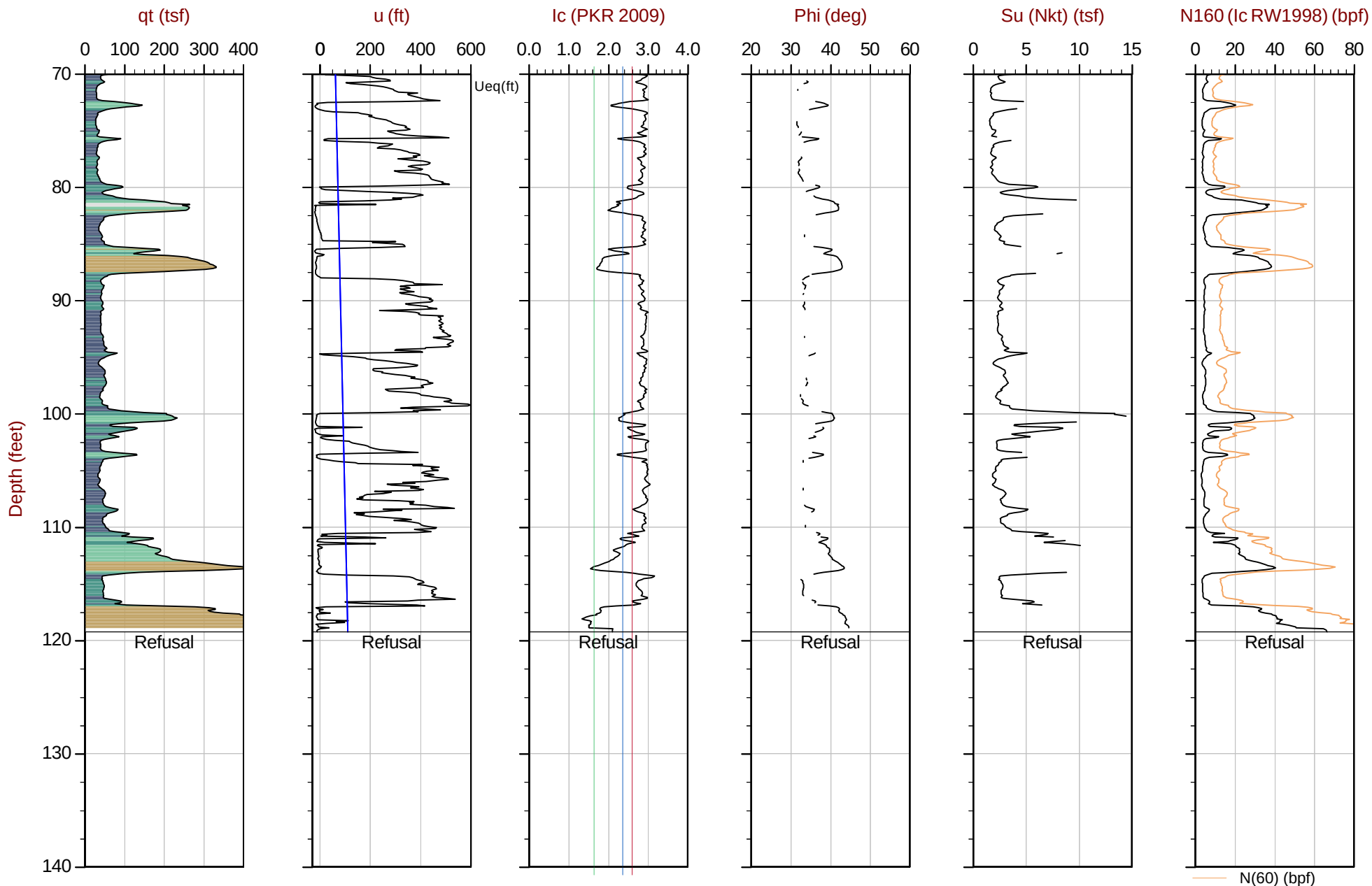
● Equilibrium Pore Pressure (Ueq) ● Assumed Ueq ▲ Dissipation, Ueq achieved ▲ Dissipation, Ueq not achieved — Hydrostatic Line

The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.



Site: Vantage Potential Campus

Cone: 499:T1500F15U1K



SBT: Robertson, 2009 and 2010
Coords: UTM 10N N: 4136474m E: 590750m

● Equilibrium Pore Pressure (Ueq)
 ● Assumed Ueq
 ◀ Dissipation, Ueq achieved
 ◀ Dissipation, Ueq not achieved
 — Hydrostatic Line

The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Soil Behavior Type (SBT) Scatter Plots



Murray Engineers

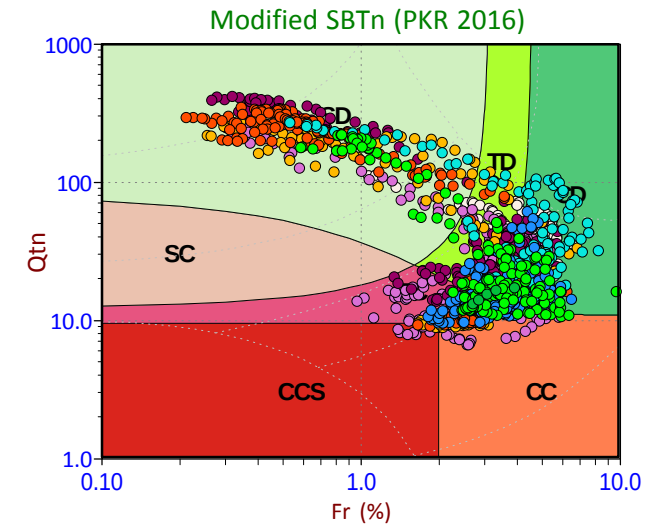
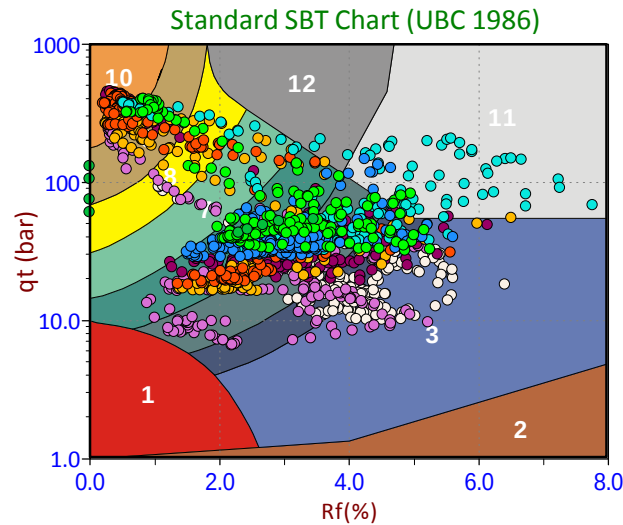
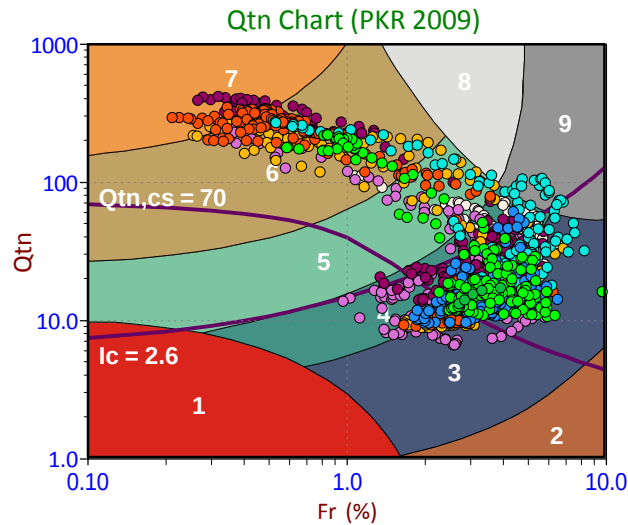
Job No: 20-56-21016

Date: 2020-06-24 08:04

Site: Vantage Potential Campus

Sounding: SCPT-01

Cone: 496:T1500F15U1K



Depth Ranges

- >0.0 to 15.0 ft
- >15.0 to 30.0 ft
- >30.0 to 45.0 ft
- >45.0 to 60.0 ft
- >60.0 to 75.0 ft
- >75.0 to 90.0 ft
- >90.0 to 105.0 ft
- >105.0 to 120.0 ft
- >120.0 to 135.0 ft
- >135.0 to 150.0 ft
- >150.0 ft

Legend

- Sensitive, Fine Grained
- Organic Soils
- Clays
- Silt Mixtures
- Sand Mixtures
- Sands
- Gravelly Sand to Sand
- Stiff Sand to Clayey Sand
- Very Stiff Fine Grained

Legend

- Sensitive Fines
- Organic Soil
- Clay
- Silty Clay
- Clayey Silt
- Silt
- Sandy Silt
- Silty Sand/Sand
- Sand
- Gravelly Sand
- Stiff Fine Grained
- Cemented Sand

Legend

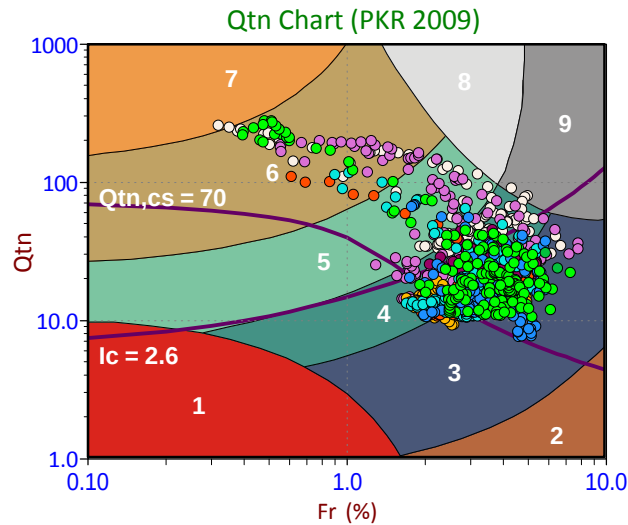
- CCS (Cont. sensitive clay like)
- CC (Cont. clay like)
- TC (Cont. transitional)
- SC (Cont. sand like)
- CD (Dil. clay like)
- TD (Dil. transitional)
- SD (Dil. sand like)



Murray Engineers

Job No: 20-56-21016
Date: 2020-06-24 10:13
Site: Vantage Potential Campus

Sounding: SCPT-02
Cone: 496:T1500F15U1K

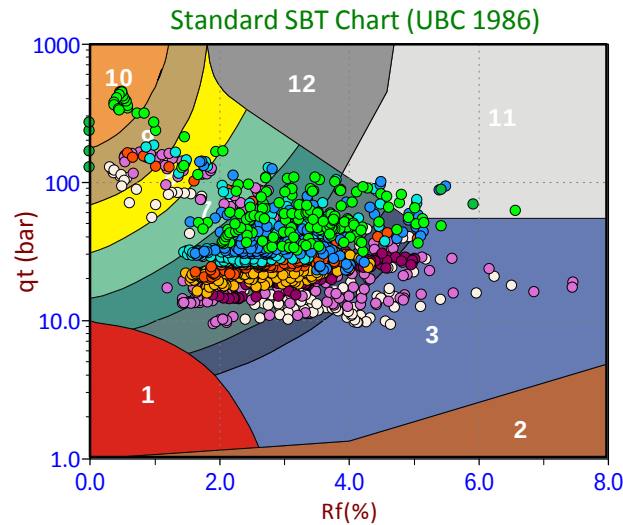


Depth Ranges

- >0.0 to 15.0 ft
- >15.0 to 30.0 ft
- >30.0 to 45.0 ft
- >45.0 to 60.0 ft
- >60.0 to 75.0 ft
- >75.0 to 90.0 ft
- >90.0 to 105.0 ft
- >105.0 to 120.0 ft
- >120.0 to 135.0 ft
- >135.0 to 150.0 ft
- >150.0 ft

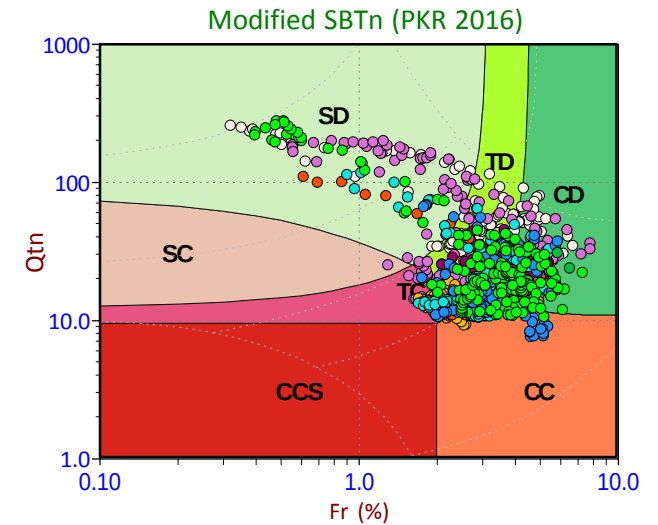
Legend

- Sensitive, Fine Grained
- Organic Soils
- Clays
- Silt Mixtures
- Sand Mixtures
- Sands
- Gravelly Sand to Sand
- Stiff Sand to Clayey Sand
- Very Stiff Fine Grained



Legend

- Sensitive Fines
- Organic Soil
- Clay
- Silty Clay
- Clayey Silt
- Silt
- Sandy Silt
- Silty Sand/Sand
- Sand
- Gravelly Sand
- Stiff Fine Grained
- Cemented Sand



Legend

- CCS (Cont. sensitive clay like)
- CC (Cont. clay like)
- TC (Cont. transitional)
- SC (Cont. sand like)
- CD (Dil. clay like)
- TD (Dil. transitional)
- SD (Dil. sand like)



Murray Engineers

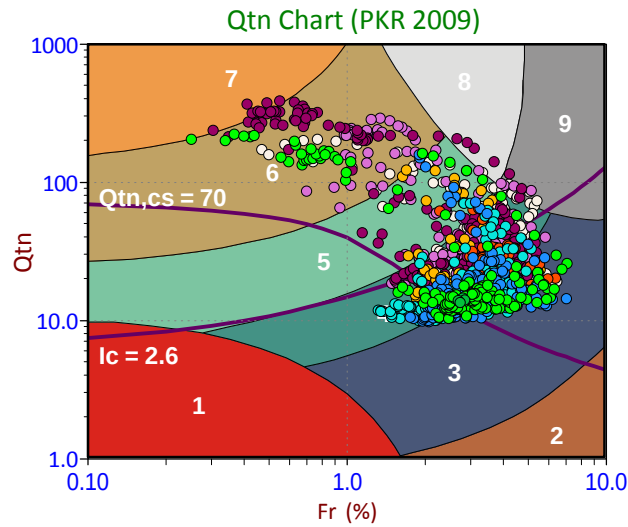
Job No: 20-56-21016

Date: 2020-06-24 10:05

Site: Vantage Potential Campus

Sounding: SCPT-03

Cone: 499:T1500F15U1K

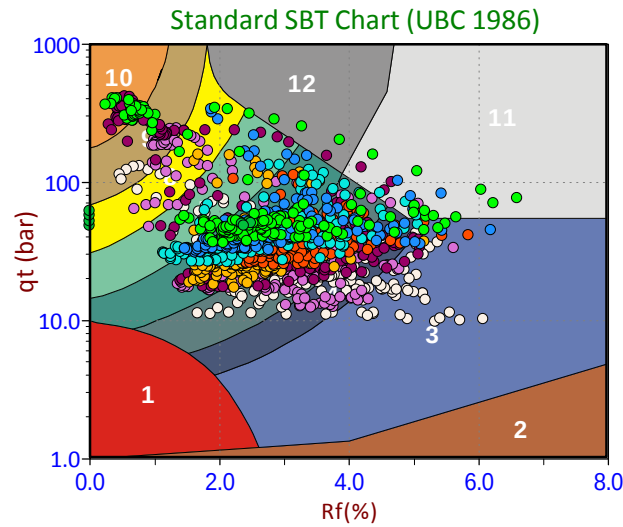


Depth Ranges

- >0.0 to 15.0 ft
- >15.0 to 30.0 ft
- >30.0 to 45.0 ft
- >45.0 to 60.0 ft
- >60.0 to 75.0 ft
- >75.0 to 90.0 ft
- >90.0 to 105.0 ft
- >105.0 to 120.0 ft
- >120.0 to 135.0 ft
- >135.0 to 150.0 ft
- >150.0 ft

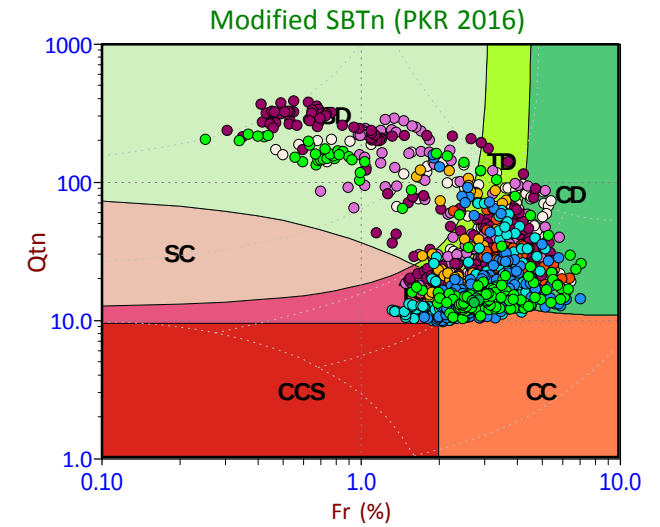
Legend

- Sensitive, Fine Grained
- Organic Soils
- Clays
- Silt Mixtures
- Sand Mixtures
- Sands
- Gravelly Sand to Sand
- Stiff Sand to Clayey Sand
- Very Stiff Fine Grained



Legend

- Sensitive Fines
- Organic Soil
- Clay
- Silty Clay
- Clayey Silt
- Silt
- Sandy Silt
- Silty Sand/Sand
- Sand
- Gravelly Sand
- Stiff Fine Grained
- Cemented Sand



Legend

- CCS (Cont. sensitive clay like)
- CC (Cont. clay like)
- TC (Cont. transitional)
- SC (Cont. sand like)
- CD (Dil. clay like)
- TD (Dil. transitional)
- SD (Dil. sand like)



Murray Engineers

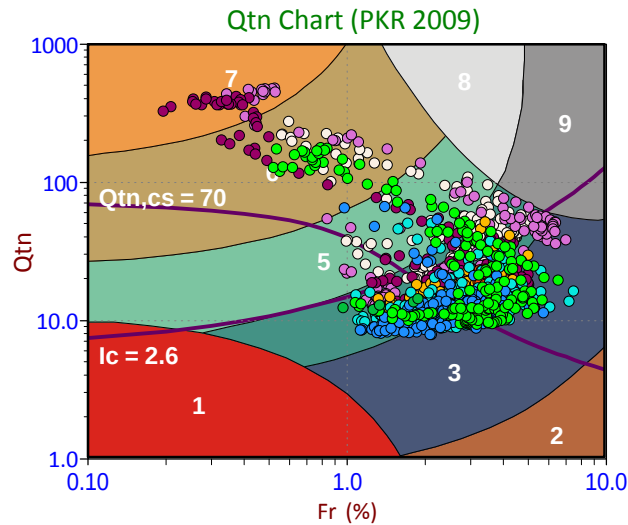
Job No: 20-56-21016

Date: 2020-06-24 08:12

Site: Vantage Potential Campus

Sounding: SCPT-04

Cone: 499:T1500F15U1K

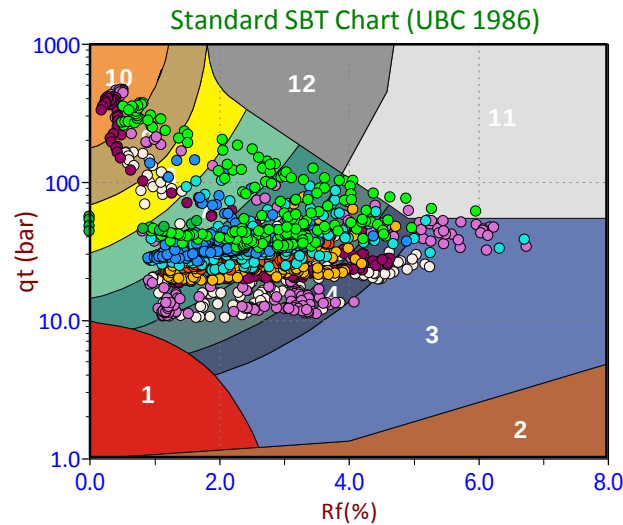


Depth Ranges

- >0.0 to 15.0 ft
- >15.0 to 30.0 ft
- >30.0 to 45.0 ft
- >45.0 to 60.0 ft
- >60.0 to 75.0 ft
- >75.0 to 90.0 ft
- >90.0 to 105.0 ft
- >105.0 to 120.0 ft
- >120.0 to 135.0 ft
- >135.0 to 150.0 ft
- >150.0 ft

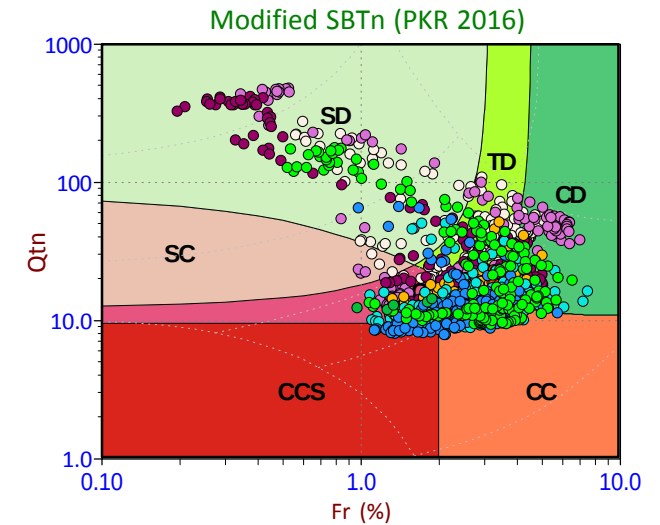
Legend

- Sensitive, Fine Grained
- Organic Soils
- Clays
- Silt Mixtures
- Sand Mixtures
- Sands
- Gravelly Sand to Sand
- Stiff Sand to Clayey Sand
- Very Stiff Fine Grained



Legend

- Sensitive Fines
- Organic Soil
- Clay
- Silty Clay
- Clayey Silt
- Silt
- Sandy Silt
- Silty Sand/Sand
- Sand
- Gravelly Sand
- Stiff Fine Grained
- Cemented Sand



Legend

- CCS (Cont. sensitive clay like)
- CC (Cont. clay like)
- TC (Cont. transitional)
- SC (Cont. sand like)
- CD (Dil. clay like)
- TD (Dil. transitional)
- SD (Dil. sand like)



Murray Engineers

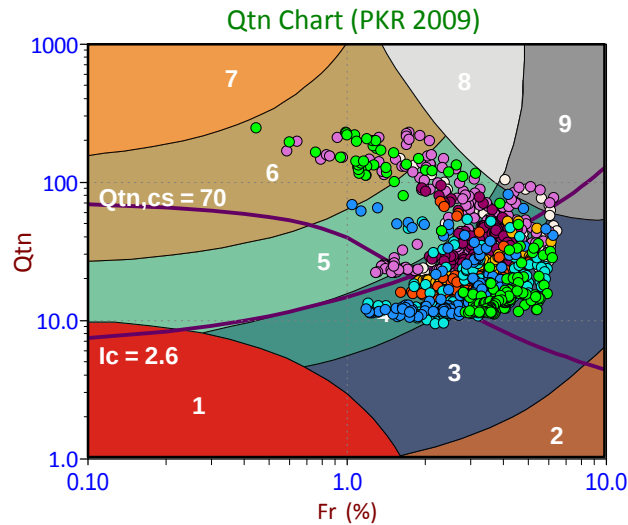
Job No: 20-56-21016

Date: 2020-06-24 11:46

Site: Vantage Potential Campus

Sounding: SCPT-05

Cone: 496:T1500F15U1K

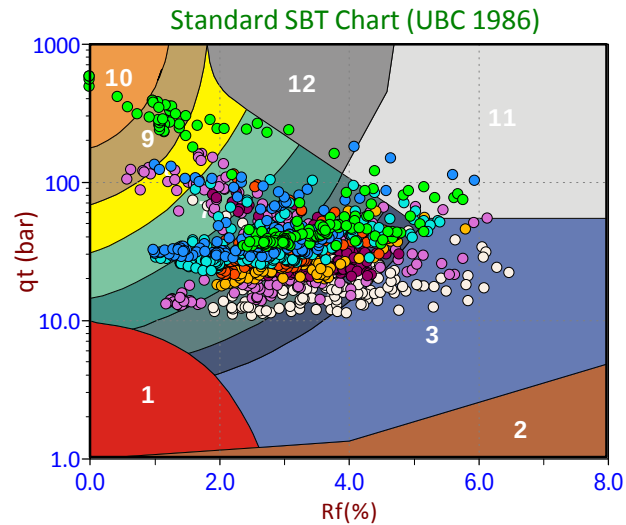


Depth Ranges

- >0.0 to 15.0 ft
- >15.0 to 30.0 ft
- >30.0 to 45.0 ft
- >45.0 to 60.0 ft
- >60.0 to 75.0 ft
- >75.0 to 90.0 ft
- >90.0 to 105.0 ft
- >105.0 to 120.0 ft
- >120.0 to 135.0 ft
- >135.0 to 150.0 ft
- >150.0 ft

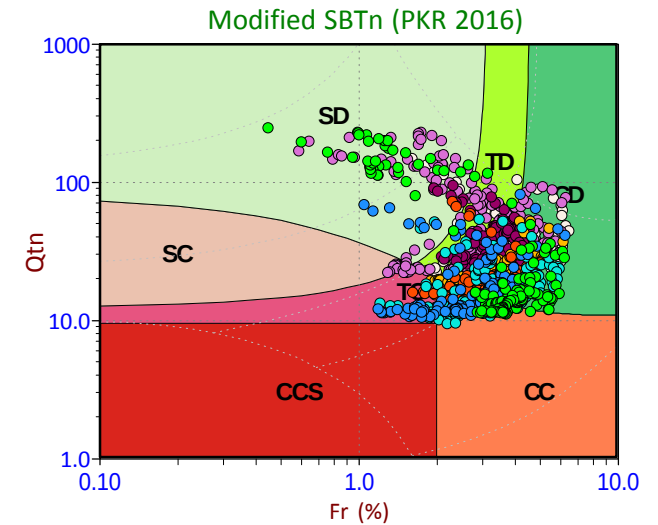
Legend

- Sensitive, Fine Grained
- Organic Soils
- Clays
- Silt Mixtures
- Sand Mixtures
- Sands
- Gravelly Sand to Sand
- Stiff Sand to Clayey Sand
- Very Stiff Fine Grained



Legend

- Sensitive Fines
- Organic Soil
- Clay
- Silty Clay
- Clayey Silt
- Silt
- Sandy Silt
- Silty Sand/Sand
- Sand
- Gravelly Sand
- Stiff Fine Grained
- Cemented Sand



Legend

- CCS (Cont. sensitive clay like)
- CC (Cont. clay like)
- TC (Cont. transitional)
- SC (Cont. sand like)
- CD (Dil. clay like)
- TD (Dil. transitional)
- SD (Dil. sand like)



Murray Engineers

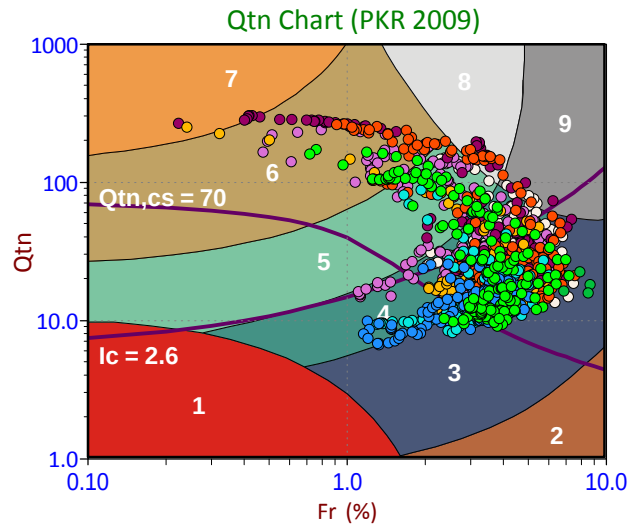
Job No: 20-56-21016

Date: 2020-06-24 13:03

Site: Vantage Potential Campus

Sounding: SCPT-06

Cone: 496:T1500F15U1K

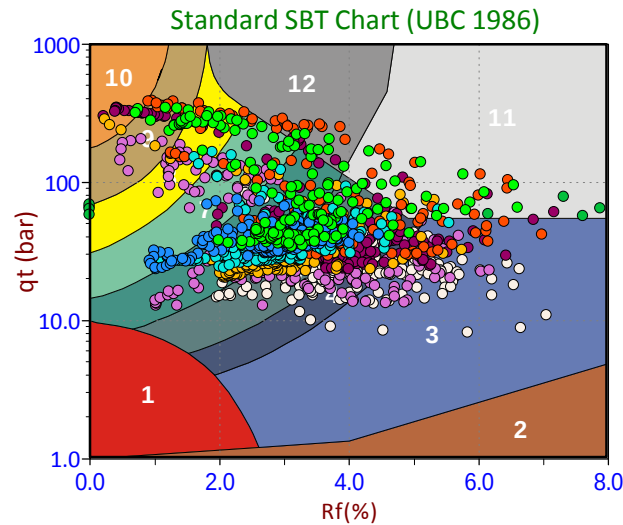


Depth Ranges

- >0.0 to 15.0 ft
- >15.0 to 30.0 ft
- >30.0 to 45.0 ft
- >45.0 to 60.0 ft
- >60.0 to 75.0 ft
- >75.0 to 90.0 ft
- >90.0 to 105.0 ft
- >105.0 to 120.0 ft
- >120.0 to 135.0 ft
- >135.0 to 150.0 ft
- >150.0 ft

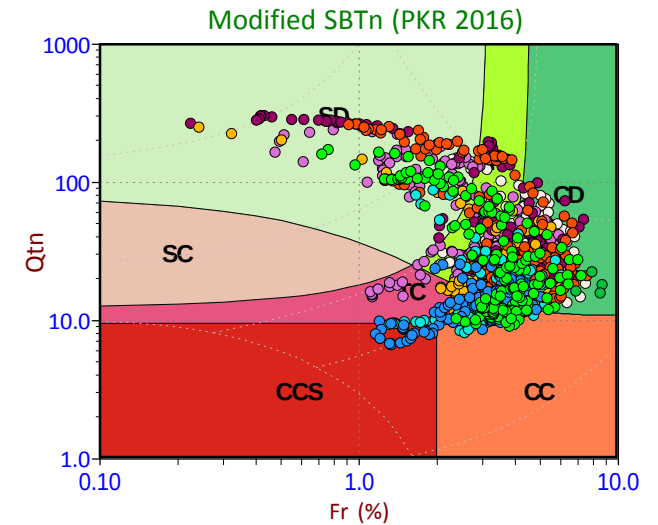
Legend

- Sensitive, Fine Grained
- Organic Soils
- Clays
- Silt Mixtures
- Sand Mixtures
- Sands
- Gravelly Sand to Sand
- Stiff Sand to Clayey Sand
- Very Stiff Fine Grained



Legend

- Sensitive Fines
- Organic Soil
- Clay
- Silty Clay
- Clayey Silt
- Silt
- Sandy Silt
- Silty Sand/Sand
- Sand
- Gravelly Sand
- Stiff Fine Grained
- Cemented Sand



Legend

- CCS (Cont. sensitive clay like)
- CC (Cont. clay like)
- TC (Cont. transitional)
- SC (Cont. sand like)
- CD (Dil. clay like)
- TD (Dil. transitional)
- SD (Dil. sand like)



Murray Engineers

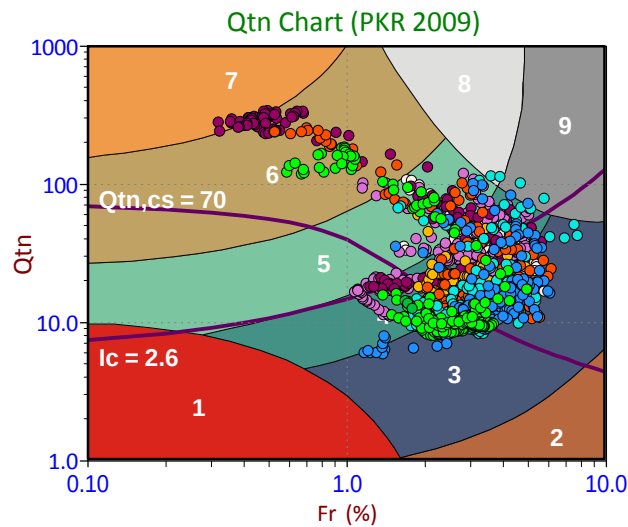
Job No: 20-56-21016

Date: 2020-06-24 13:21

Site: Vantage Potential Campus

Sounding: SCPT-07

Cone: 499:T1500F15U1K

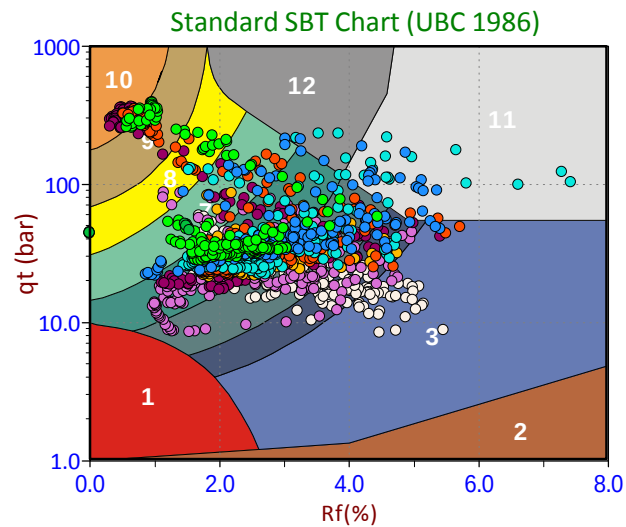


Depth Ranges

- >0.0 to 15.0 ft
- >15.0 to 30.0 ft
- >30.0 to 45.0 ft
- >45.0 to 60.0 ft
- >60.0 to 75.0 ft
- >75.0 to 90.0 ft
- >90.0 to 105.0 ft
- >105.0 to 120.0 ft
- >120.0 to 135.0 ft
- >135.0 to 150.0 ft
- >150.0 ft

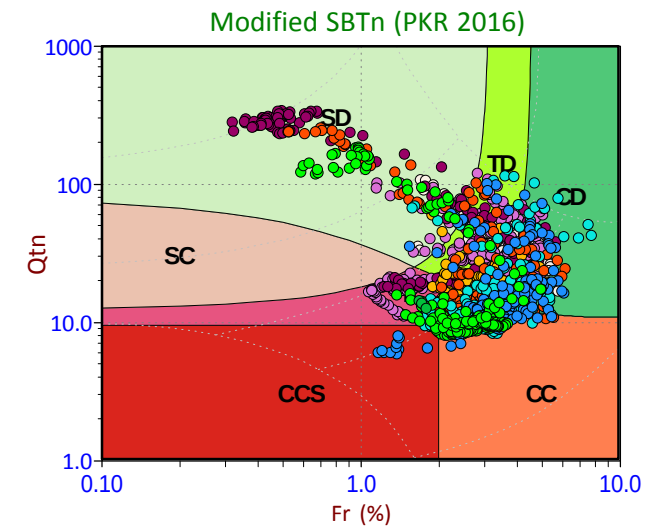
Legend

- Sensitive, Fine Grained
- Organic Soils
- Clays
- Silt Mixtures
- Sand Mixtures
- Sands
- Gravelly Sand to Sand
- Stiff Sand to Clayey Sand
- Very Stiff Fine Grained



Legend

- Sensitive Fines
- Organic Soil
- Clay
- Silty Clay
- Clayey Silt
- Silt
- Sandy Silt
- Silty Sand/Sand
- Sand
- Gravelly Sand
- Stiff Fine Grained
- Cemented Sand



Legend

- CCS (Cont. sensitive clay like)
- CC (Cont. clay like)
- TC (Cont. transitional)
- SC (Cont. sand like)
- CD (Dil. clay like)
- TD (Dil. transitional)
- SD (Dil. sand like)



Murray Engineers

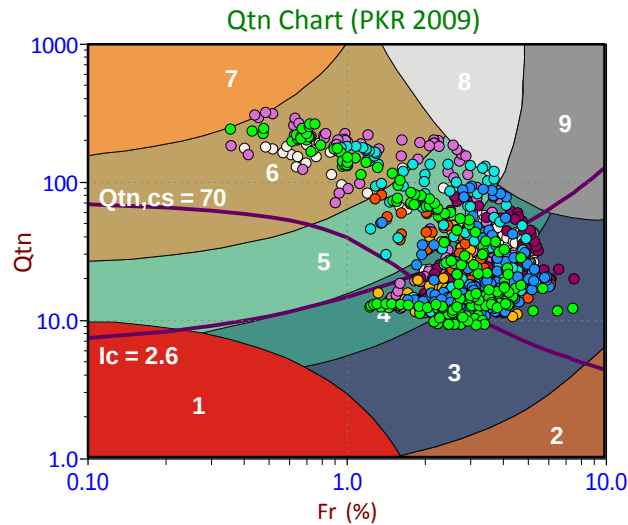
Job No: 20-56-21016

Date: 2020-06-24 11:36

Site: Vantage Potential Campus

Sounding: SCPT-08

Cone: 499:T1500F15U1K

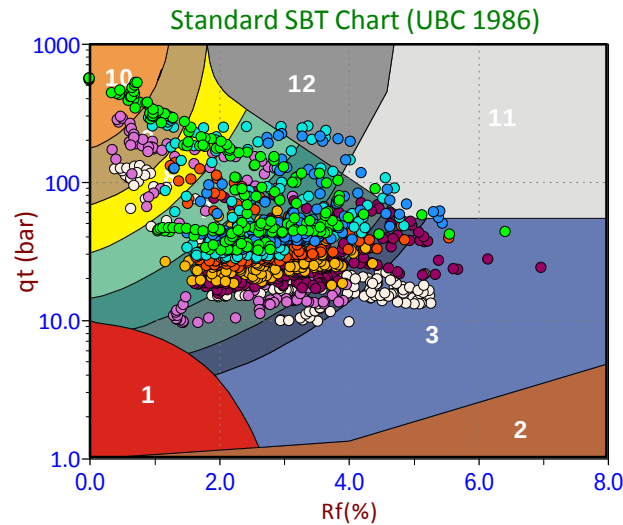


Depth Ranges

- >0.0 to 15.0 ft
- >15.0 to 30.0 ft
- >30.0 to 45.0 ft
- >45.0 to 60.0 ft
- >60.0 to 75.0 ft
- >75.0 to 90.0 ft
- >90.0 to 105.0 ft
- >105.0 to 120.0 ft
- >120.0 to 135.0 ft
- >135.0 to 150.0 ft
- >150.0 ft

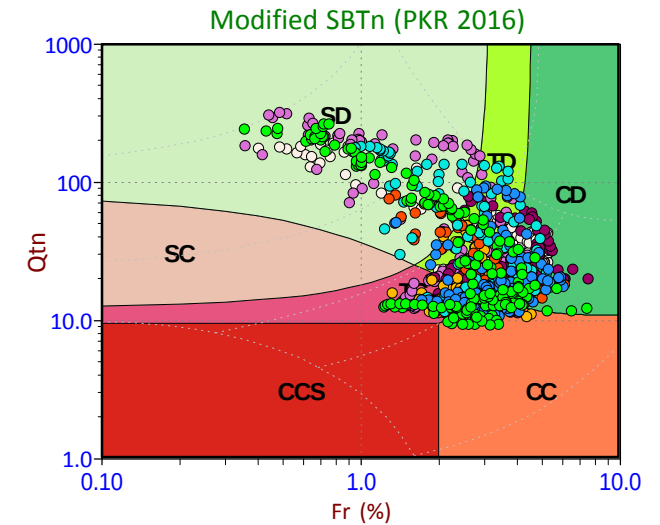
Legend

- Sensitive, Fine Grained
- Organic Soils
- Clays
- Silt Mixtures
- Sand Mixtures
- Sands
- Gravelly Sand to Sand
- Stiff Sand to Clayey Sand
- Very Stiff Fine Grained



Legend

- Sensitive Fines
- Organic Soil
- Clay
- Silty Clay
- Clayey Silt
- Silt
- Sandy Silt
- Silty Sand/Sand
- Sand
- Gravelly Sand
- Stiff Fine Grained
- Cemented Sand



Legend

- CCS (Cont. sensitive clay like)
- CC (Cont. clay like)
- TC (Cont. transitional)
- SC (Cont. sand like)
- CD (Dil. clay like)
- TD (Dil. transitional)
- SD (Dil. sand like)

Seismic Cone Penetration Test Plots



Murray Engineers

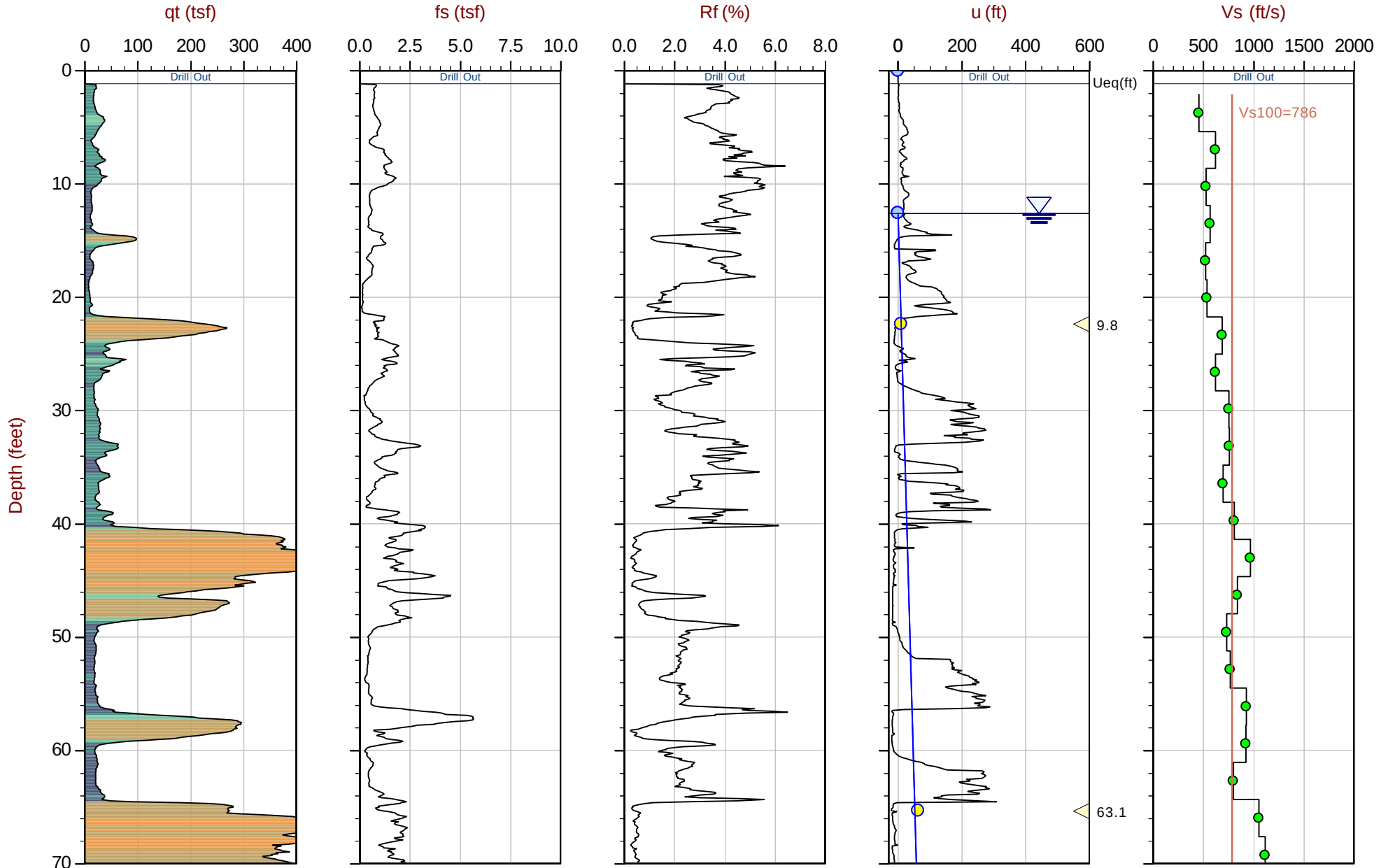
Job No: 20-56-21016

Date: 2020-06-24 08:04

Site: Vantage Potential Campus

Sounding: SCPT-01

Cone: 496:T1500F15U1K



Max Depth: 36.800 m / 120.73 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 20-56-21016_SP01.COR
Unit Wt: SBTQn(PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM 10N N: 4136529m E: 590680m

● Equilibrium Pore Pressure (Ueq) ● Assumed Ueq ▲ Dissipation, Ueq achieved ▼ Dissipation, Ueq not achieved — Hydrostatic Line

The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.



Murray Engineers

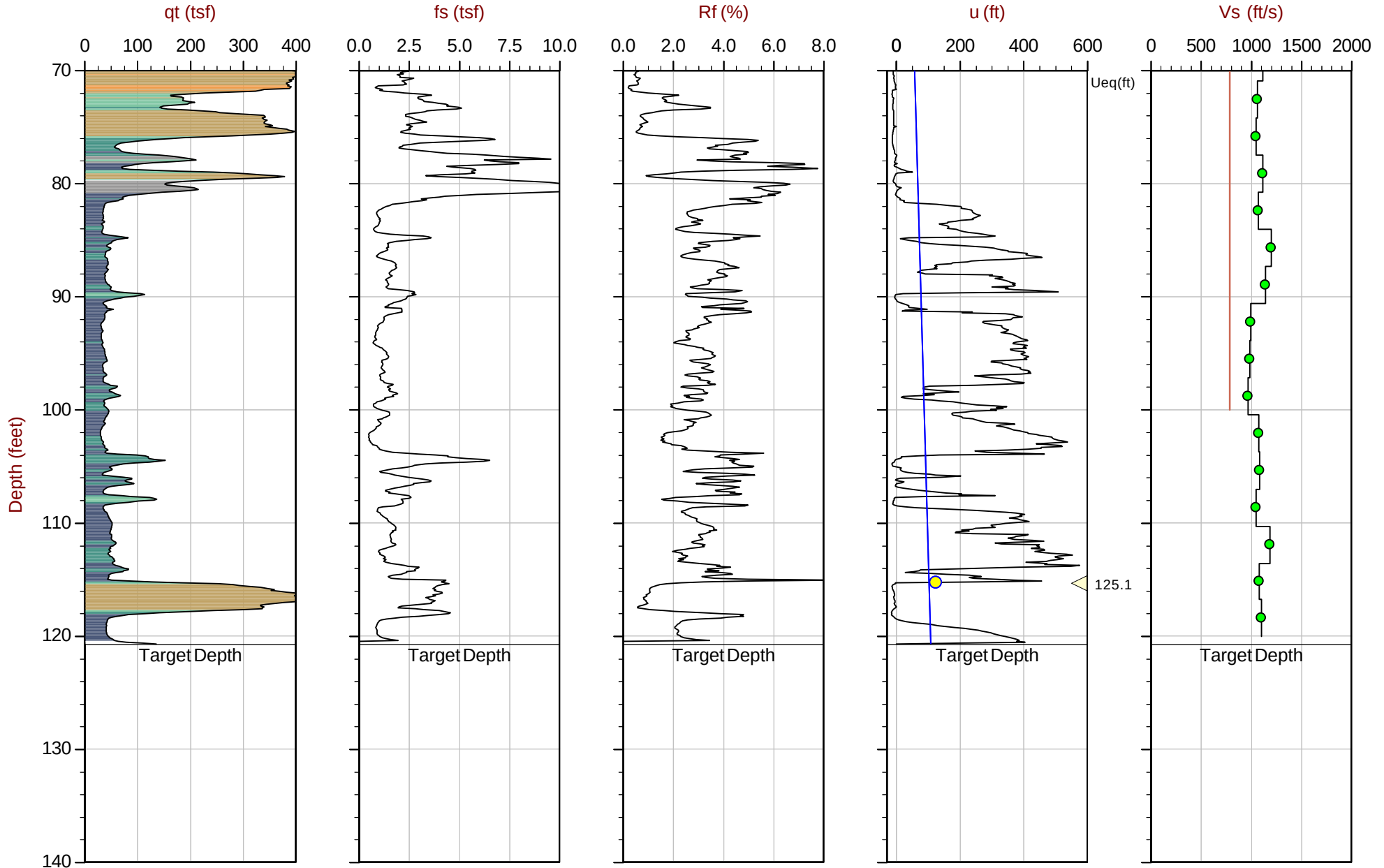
Job No: 20-56-21016

Date: 2020-06-24 08:04

Site: Vantage Potential Campus

Sounding: SCPT-01

Cone: 496:T1500F15U1K



Max Depth: 36.800 m / 120.73 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 20-56-21016_SP01.COR
Unit Wt: SBTQn(PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM 10N N: 4136529m E: 590680m

● Equilibrium Pore Pressure (Ueq) ● Assumed Ueq ▲ Dissipation, Ueq achieved ▼ Dissipation, Ueq not achieved — Hydrostatic Line

The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.



Murray Engineers

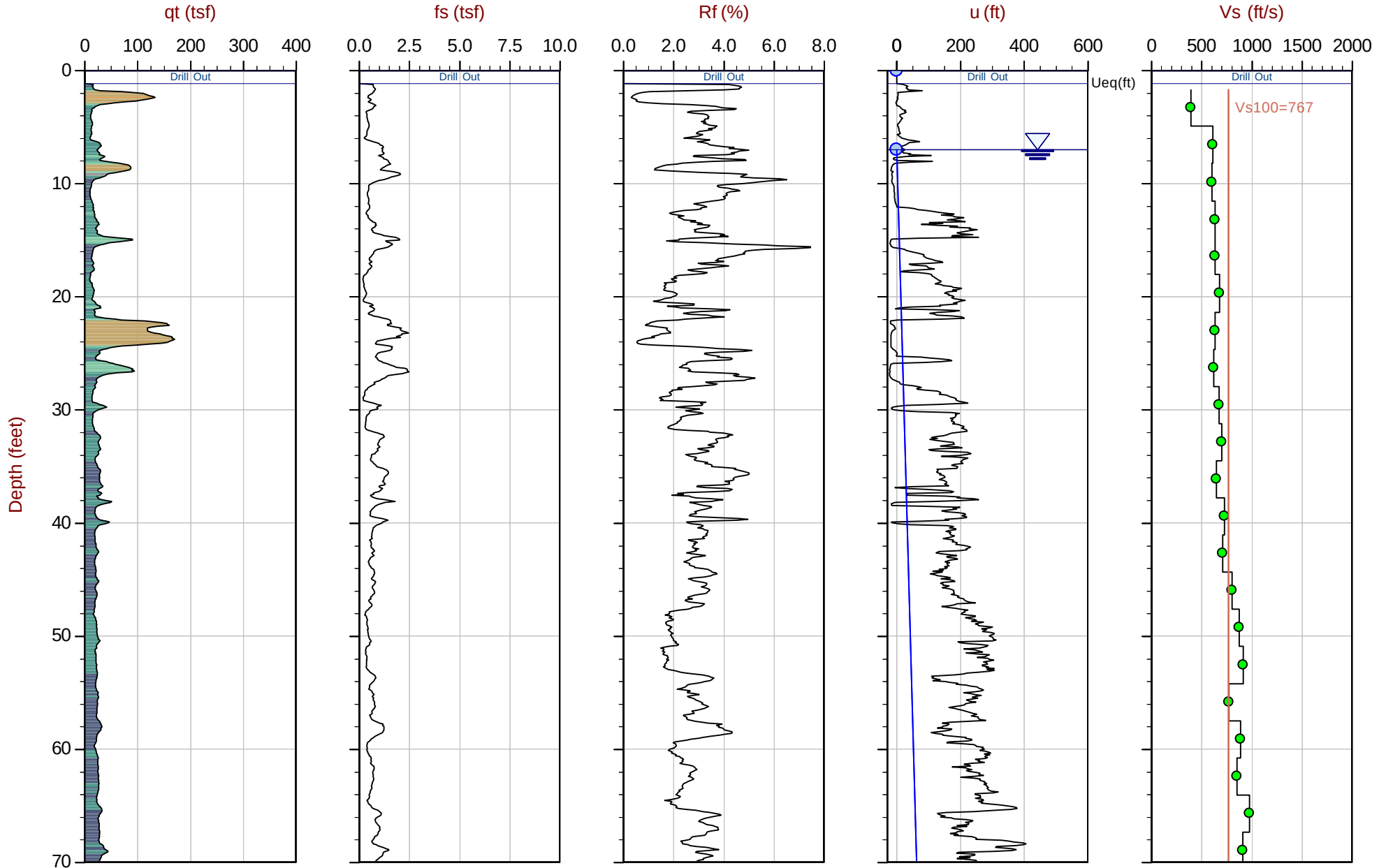
Job No: 20-56-21016

Date: 2020-06-24 10:13

Site: Vantage Potential Campus

Sounding: SCPT-02

Cone: 496:T1500F15U1K



Max Depth: 36.725 m / 120.49 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 20-56-21016_SP02.COR
Unit Wt: SBTQn(PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM 10N N: 4136476m E: 590716m

● Equilibrium Pore Pressure (Ueq) ● Assumed Ueq ▲ Dissipation, Ueq achieved ▼ Dissipation, Ueq not achieved — Hydrostatic Line

The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.



Murray Engineers

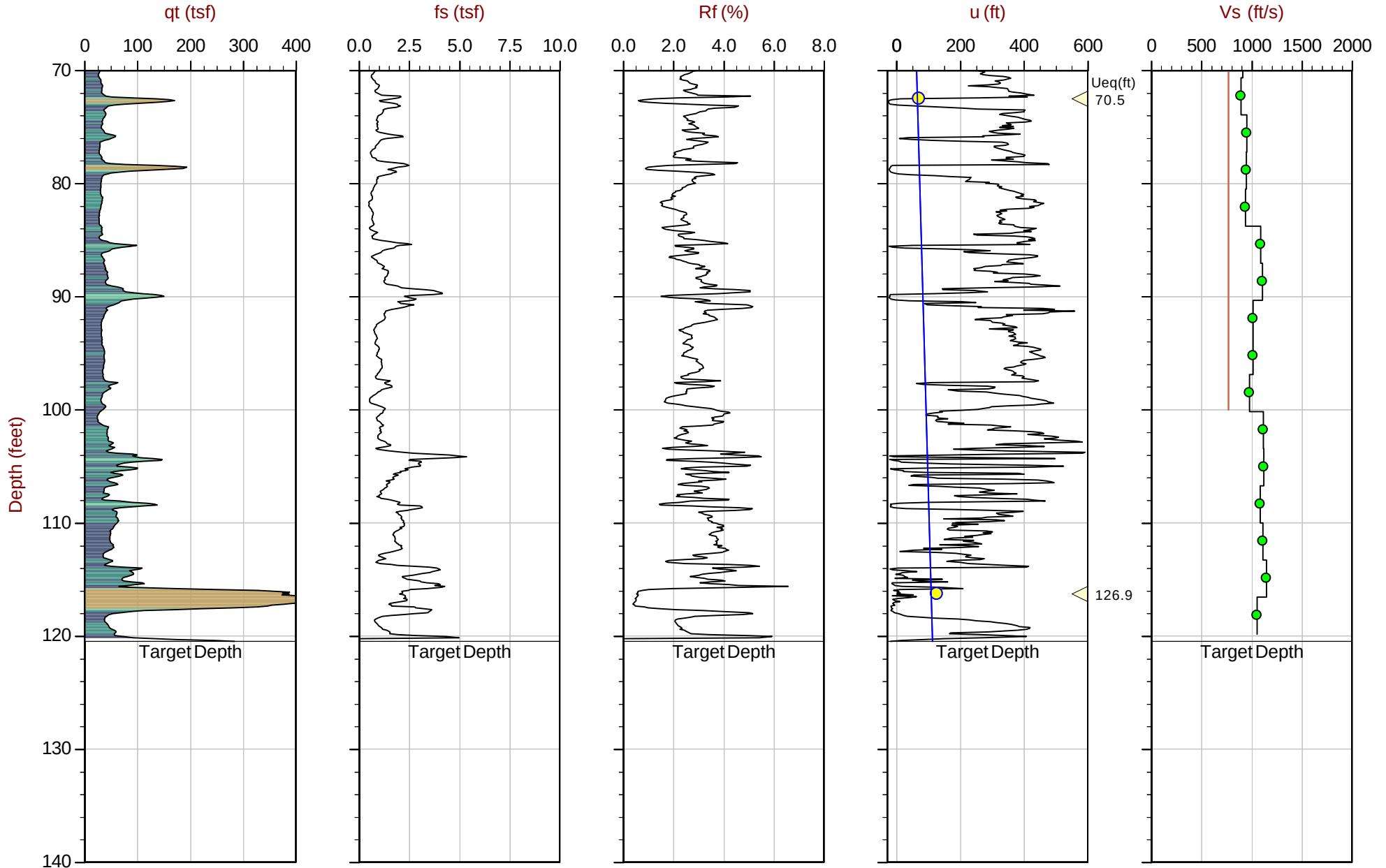
Job No: 20-56-21016

Date: 2020-06-24 10:13

Site: Vantage Potential Campus

Sounding: SCPT-02

Cone: 496:T1500F15U1K



Max Depth: 36.725 m / 120.49 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 20-56-21016_SP02.COR
Unit Wt: SBTQn(PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM 10N N: 4136476m E: 590716m

● Equilibrium Pore Pressure (Ueq) ● Assumed Ueq ▲ Dissipation, Ueq achieved ▼ Dissipation, Ueq not achieved — Hydrostatic Line

The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.



Murray Engineers

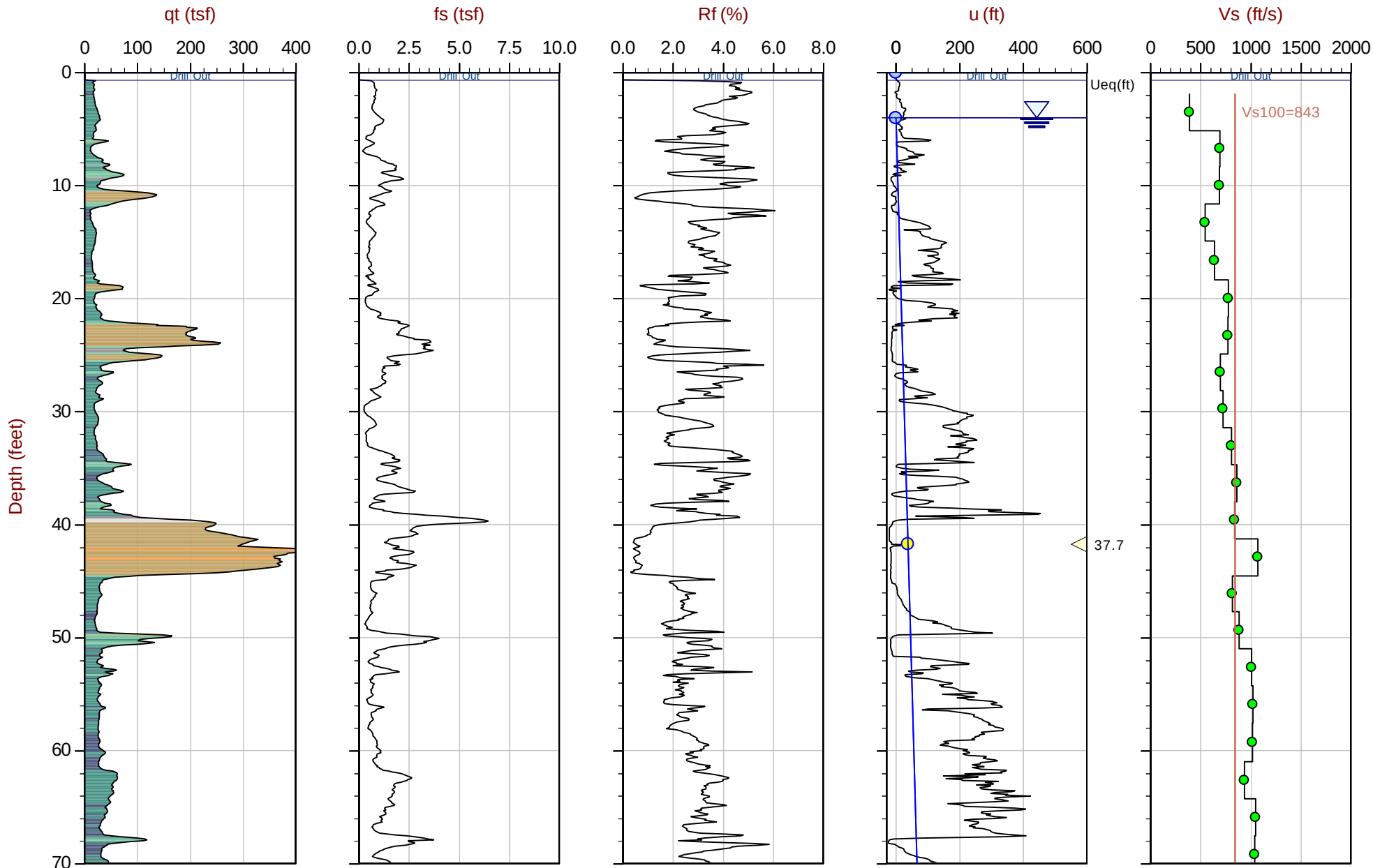
Job No: 20-56-21016

Date: 2020-06-24 10:05

Site: Vantage Potential Campus

Sounding: SCPT-03

Cone: 499:T1500F15U1K



Max Depth: 36.775 m / 120.65 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 20-56-21016_SP03.COR
Unit Wt: SBTQtn(PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM 10N N: 4136443m E: 590799m

● Equilibrium Pore Pressure (Ueq) ● Assumed Ueq ▲ Dissipation, Ueq achieved ▼ Dissipation, Ueq not achieved — Hydrostatic Line

The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.



Murray Engineers

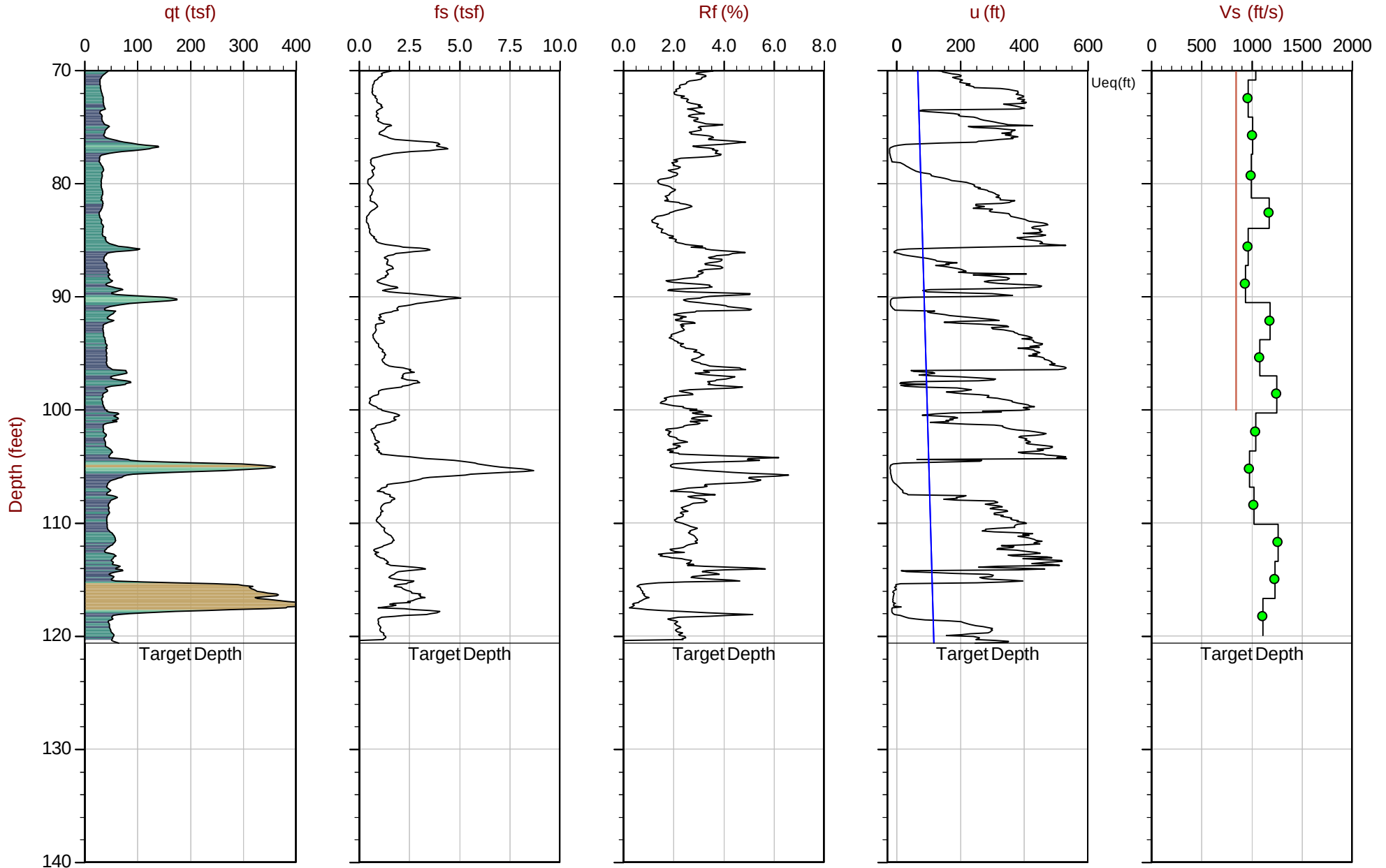
Job No: 20-56-21016

Date: 2020-06-24 10:05

Site: Vantage Potential Campus

Sounding: SCPT-03

Cone: 499:T1500F15U1K



Max Depth: 36.775 m / 120.65 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 20-56-21016_SP03.COR
Unit Wt: SBTQtn(PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM 10N N: 4136443m E: 590799m

● Equilibrium Pore Pressure (Ueq) ● Assumed Ueq ▲ Dissipation, Ueq achieved ▼ Dissipation, Ueq not achieved — Hydrostatic Line

The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.



Murray Engineers

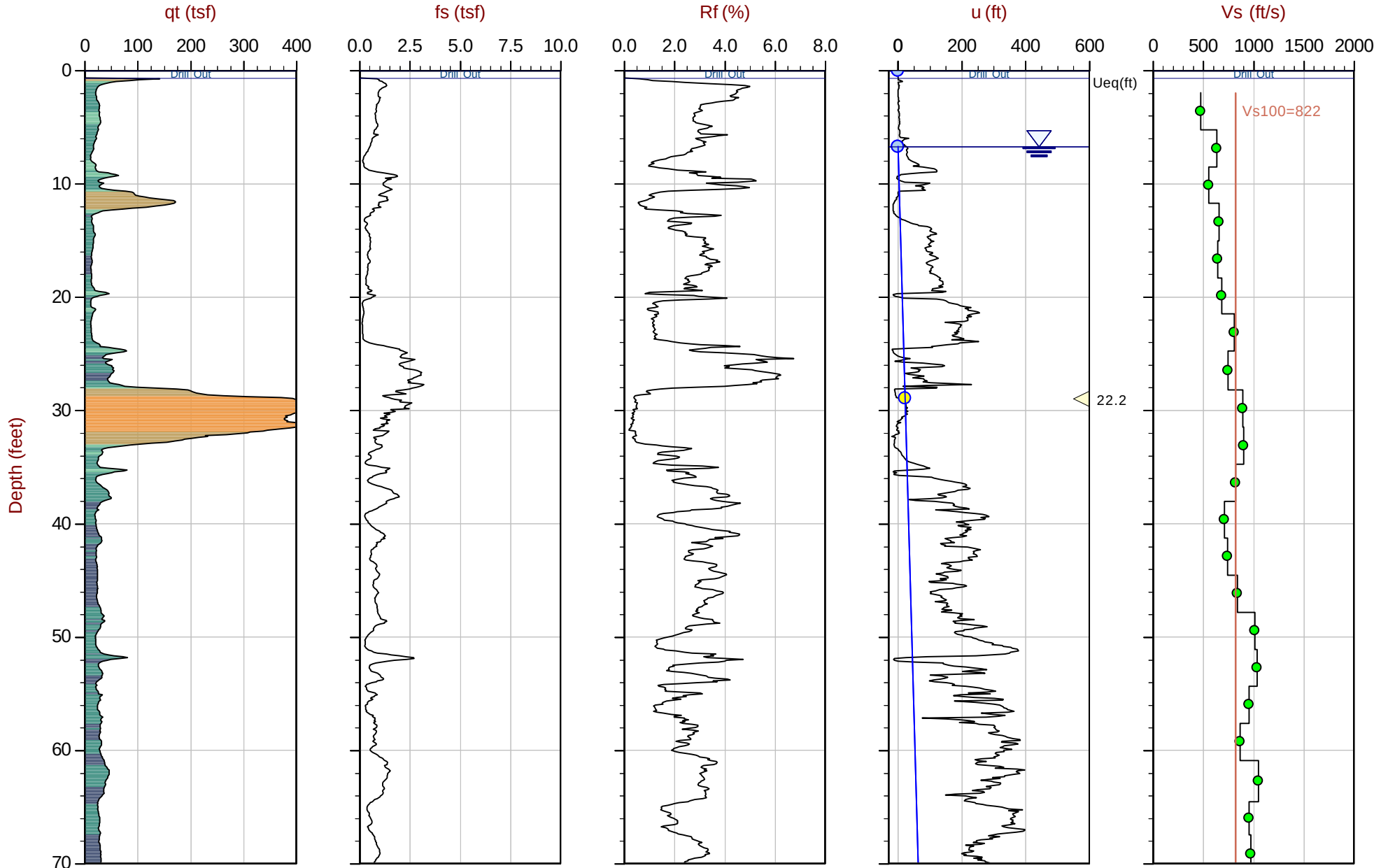
Job No: 20-56-21016

Date: 2020-06-24 08:12

Site: Vantage Potential Campus

Sounding: SCPT-04

Cone: 499:T1500F15U1K



Max Depth: 36.800 m / 120.73 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 20-56-21016_SP04.COR
Unit Wt: SBTQn(PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM 10N N: 4136416m E: 590848m

● Equilibrium Pore Pressure (Ueq) ● Assumed Ueq ▲ Dissipation, Ueq achieved ▼ Dissipation, Ueq not achieved — Hydrostatic Line

The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.



Murray Engineers

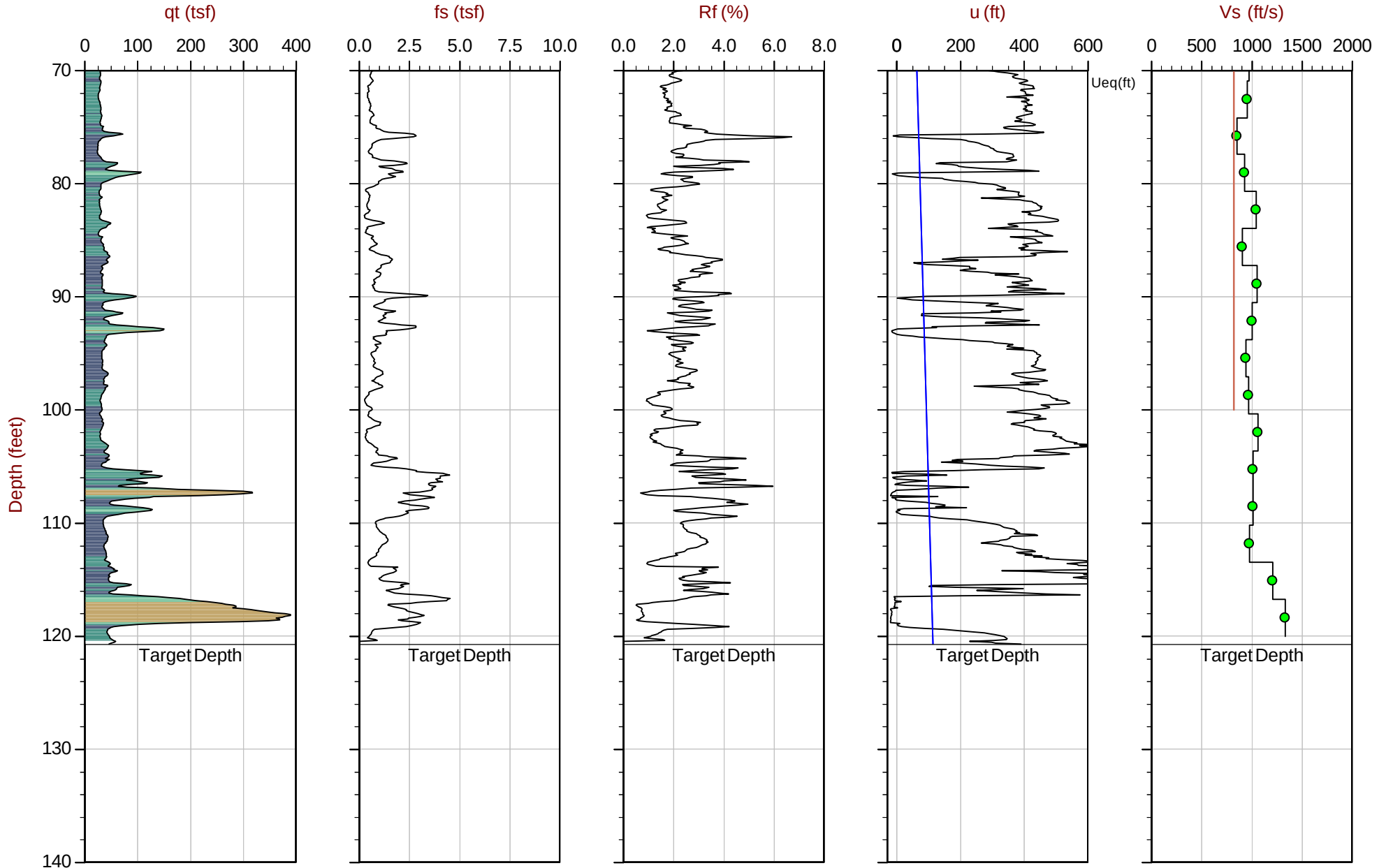
Job No: 20-56-21016

Date: 2020-06-24 08:12

Site: Vantage Potential Campus

Sounding: SCPT-04

Cone: 499:T1500F15U1K



Max Depth: 36.800 m / 120.73 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 20-56-21016_SP04.COR
Unit Wt: SBTQn(PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM 10N N: 4136416m E: 590848m

● Equilibrium Pore Pressure (Ueq) ● Assumed Ueq ▲ Dissipation, Ueq achieved ▼ Dissipation, Ueq not achieved — Hydrostatic Line

The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.



Murray Engineers

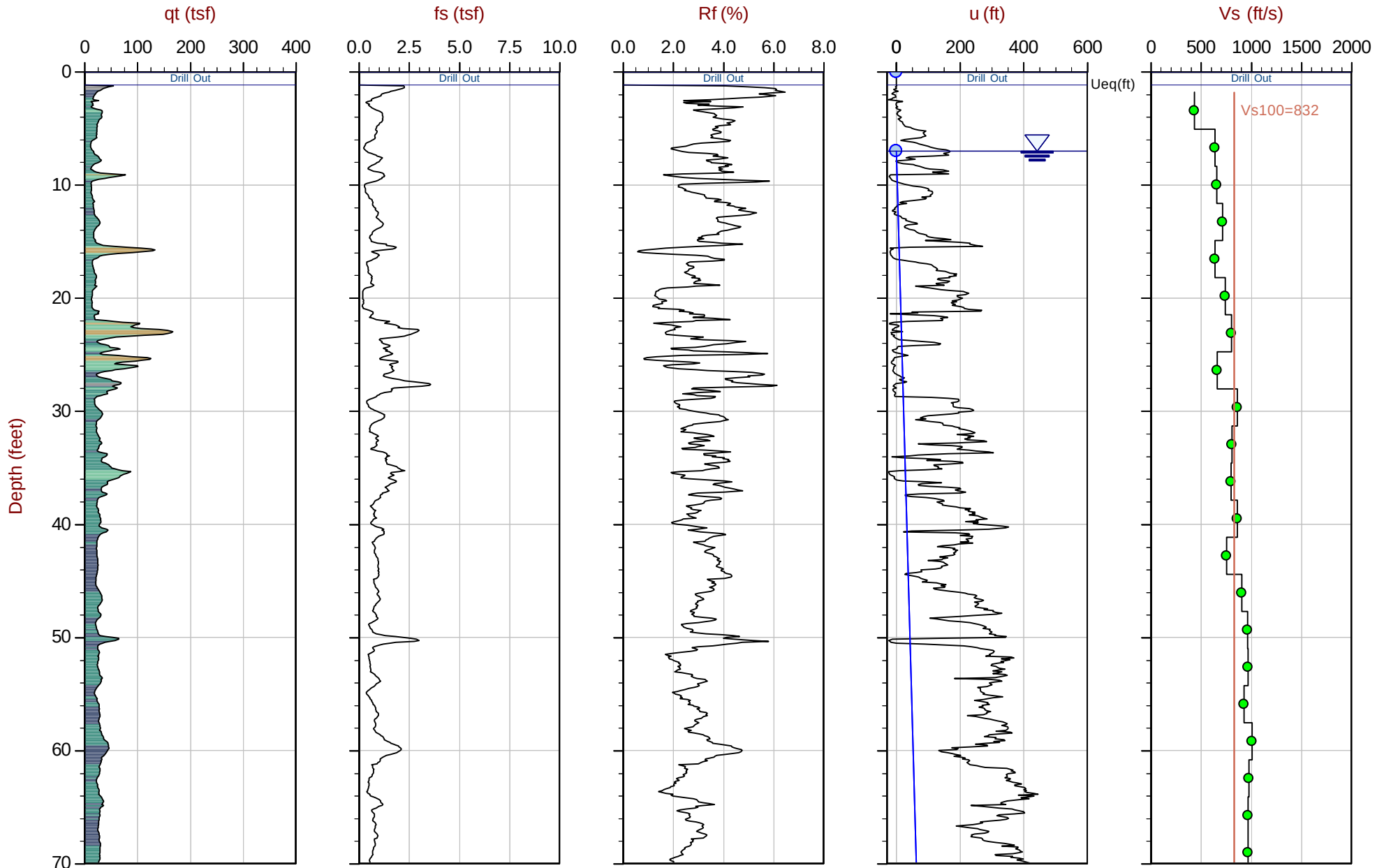
Job No: 20-56-21016

Date: 2020-06-24 11:46

Site: Vantage Potential Campus

Sounding: SCPT-05

Cone: 496:T1500F15U1K



Max Depth: 36.150 m / 118.60 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 20-56-21016_SP05.COR
Unit Wt: SBTQtn(PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM 10N N: 4136452m E: 590872m

● Equilibrium Pore Pressure (Ueq) ● Assumed Ueq ▲ Dissipation, Ueq achieved ▼ Dissipation, Ueq not achieved — Hydrostatic Line

The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.



Murray Engineers

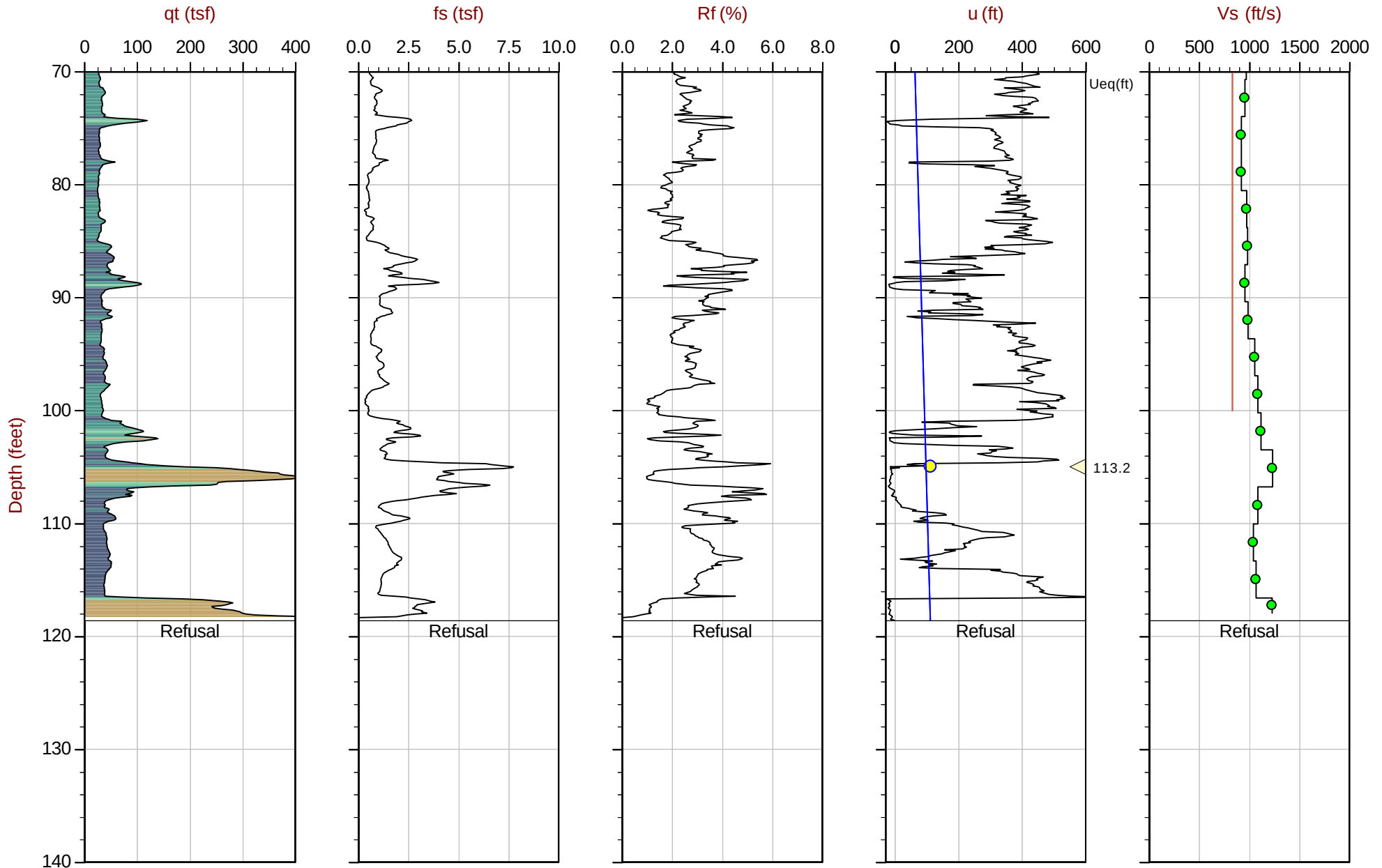
Job No: 20-56-21016

Date: 2020-06-24 11:46

Site: Vantage Potential Campus

Sounding: SCPT-05

Cone: 496:T1500F15U1K



Max Depth: 36.150 m / 118.60 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 20-56-21016_SP05.COR
Unit Wt: SBTQn(PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM 10N N: 4136452m E: 590872m

● Equilibrium Pore Pressure (Ueq) ● Assumed Ueq ▲ Dissipation, Ueq achieved ▼ Dissipation, Ueq not achieved — Hydrostatic Line

The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.



Murray Engineers

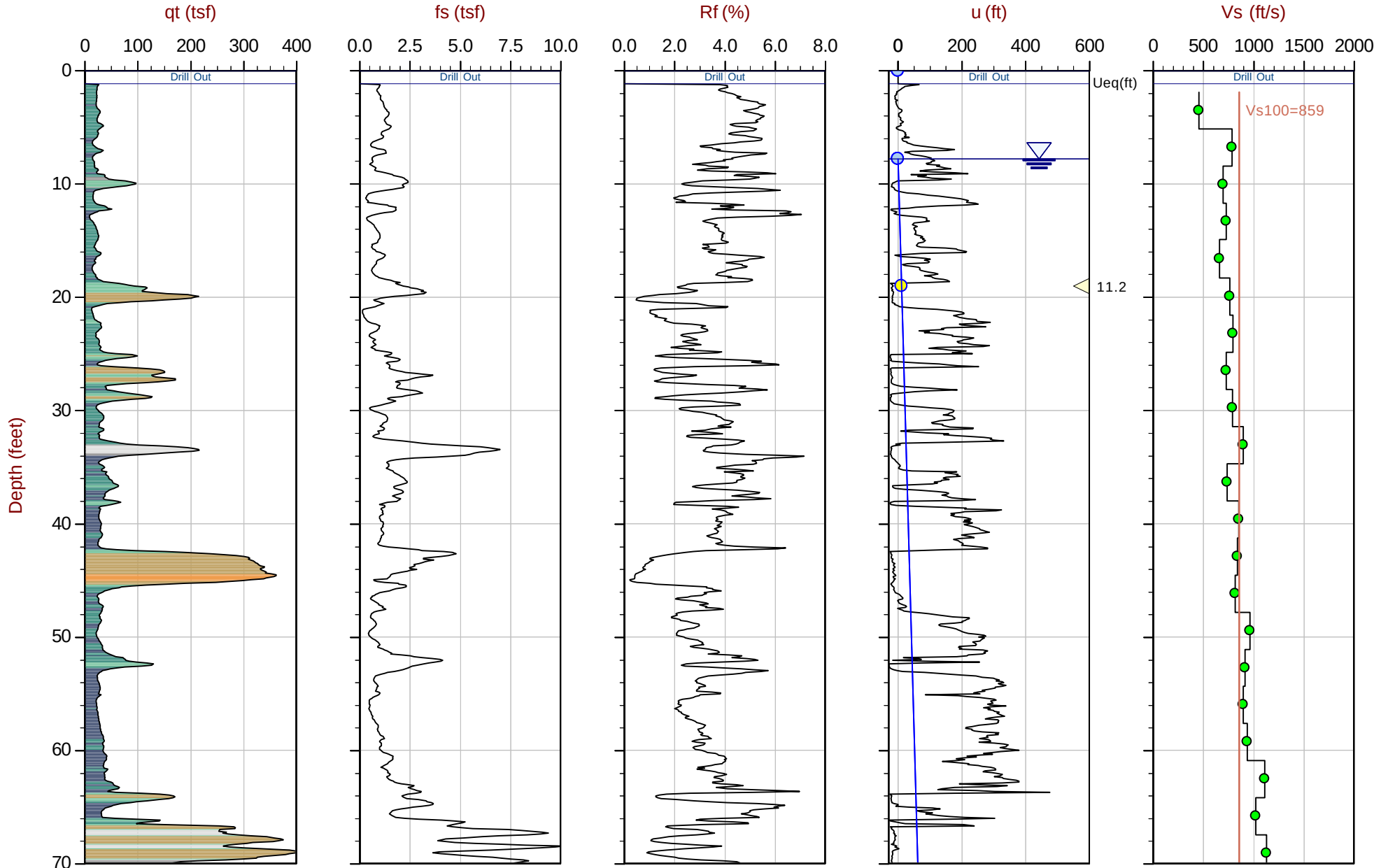
Job No: 20-56-21016

Date: 2020-06-24 13:03

Site: Vantage Potential Campus

Sounding: SCPT-06

Cone: 496:T1500F15U1K



Max Depth: 36.775 m / 120.65 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 20-56-21016_SP06.COR
Unit Wt: SBTQtn(PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM 10N N: 4136498m E: 590896m

● Equilibrium Pore Pressure (Ueq) ● Assumed Ueq ▲ Dissipation, Ueq achieved ▼ Dissipation, Ueq not achieved — Hydrostatic Line

The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.



Murray Engineers

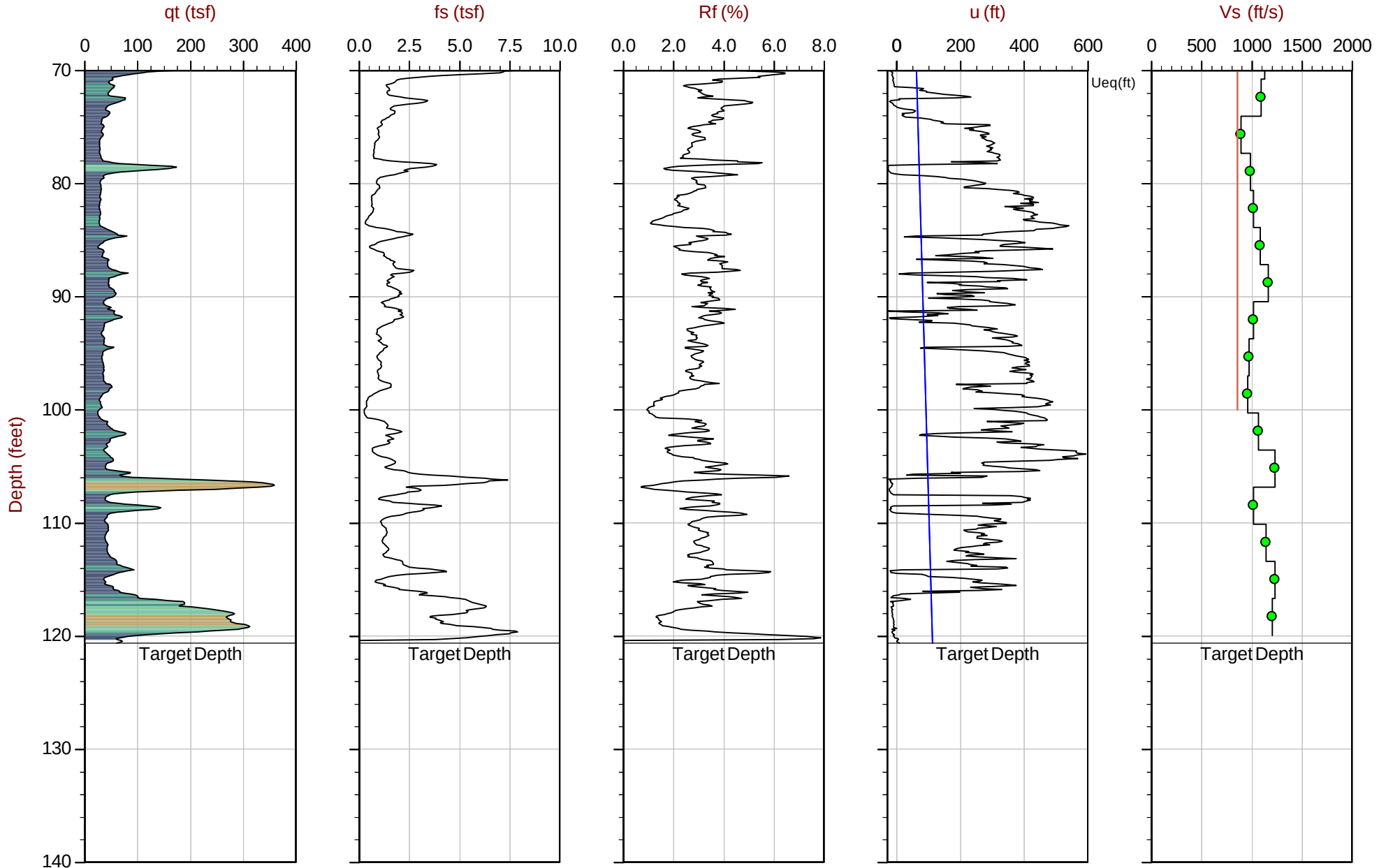
Job No: 20-56-21016

Date: 2020-06-24 13:03

Site: Vantage Potential Campus

Sounding: SCPT-06

Cone: 496:T1500F15U1K



Max Depth: 36.775 m / 120.65 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 20-56-21016_SP06.COR
Unit Wt: SBTQn(PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM 10N N: 4136498m E: 590896m

● Equilibrium Pore Pressure (Ueq) ● Assumed Ueq ▲ Dissipation, Ueq achieved ▼ Dissipation, Ueq not achieved — Hydrostatic Line

The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.



Murray Engineers

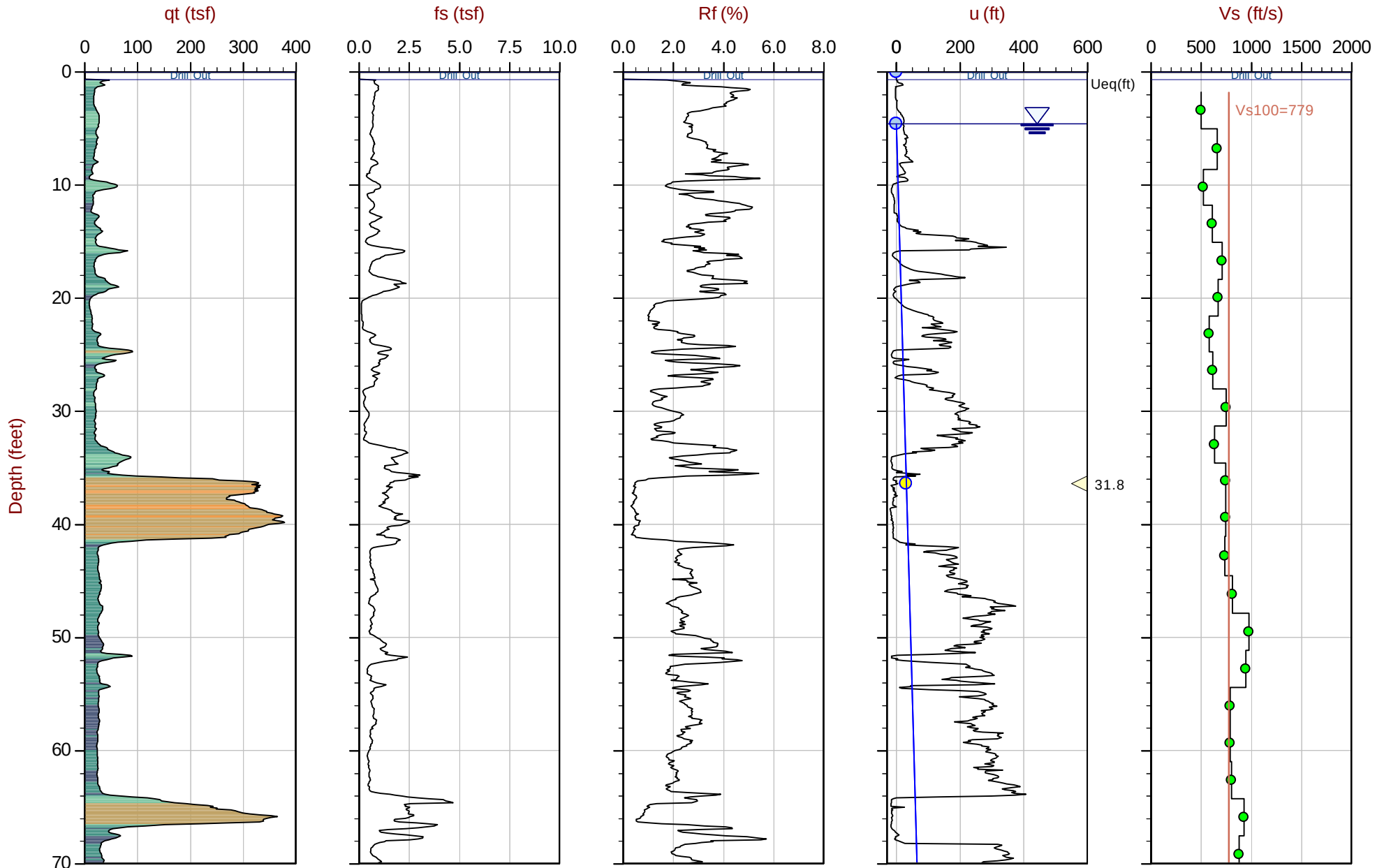
Job No: 20-56-21016

Date: 2020-06-24 13:21

Site: Vantage Potential Campus

Sounding: SCPT-07

Cone: 499:T1500F15U1K



Max Depth: 36.800 m / 120.73 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 20-56-21016_SP07.COR
Unit Wt: SBTQtn(PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM 10N N: 4136559m E: 590765m

● Equilibrium Pore Pressure (Ueq) ● Assumed Ueq ▲ Dissipation, Ueq achieved ▼ Dissipation, Ueq not achieved — Hydrostatic Line

The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.



Murray Engineers

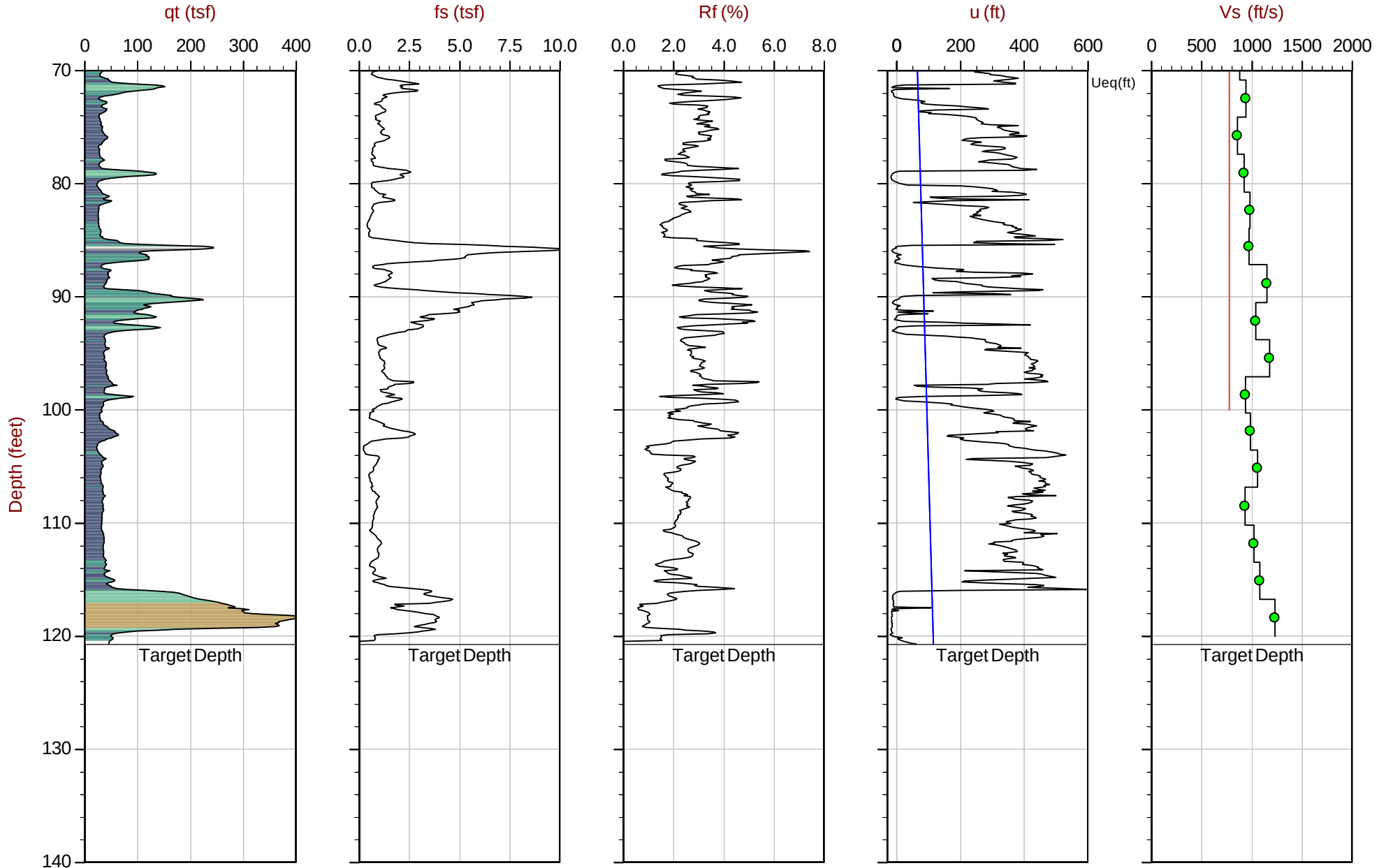
Job No: 20-56-21016

Date: 2020-06-24 13:21

Site: Vantage Potential Campus

Sounding: SCPT-07

Cone: 499:T1500F15U1K



Max Depth: 36.800 m / 120.73 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 20-56-21016_SP07.COR
Unit Wt: SBTQn(PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM 10N N: 4136559m E: 590765m

● Equilibrium Pore Pressure (Ueq) ● Assumed Ueq ▲ Dissipation, Ueq achieved ▼ Dissipation, Ueq not achieved — Hydrostatic Line

The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.



Murray Engineers

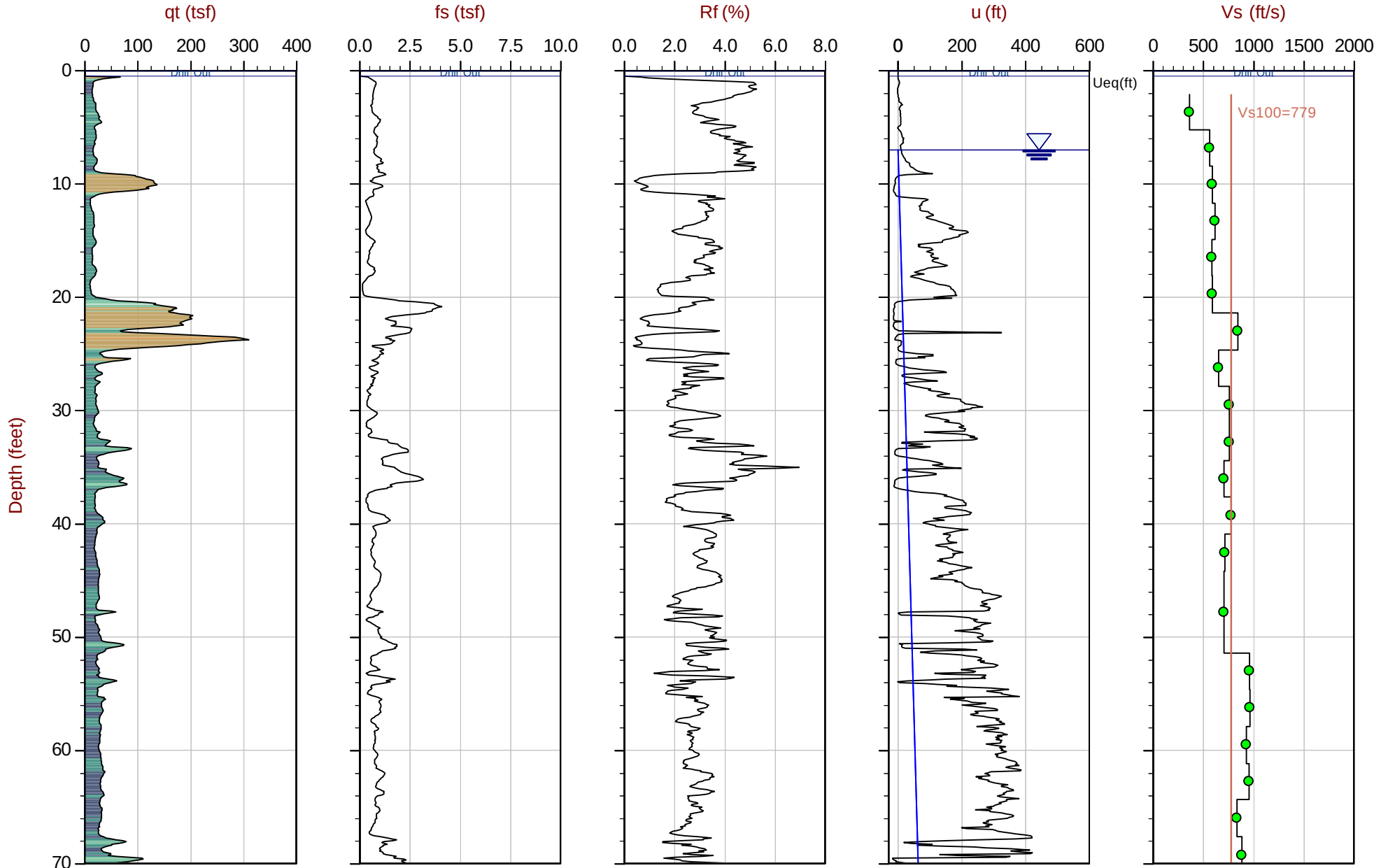
Job No: 20-56-21016

Date: 2020-06-24 11:36

Site: Vantage Potential Campus

Sounding: SCPT-08

Cone: 499:T1500F15U1K



Max Depth: 36.350 m / 119.26 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 20-56-21016_SP08.COR
Unit Wt: SBTQtn(PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM 10N N: 4136474m E: 590750m

● Equilibrium Pore Pressure (Ueq) ● Assumed Ueq ▲ Dissipation, Ueq achieved ▼ Dissipation, Ueq not achieved — Hydrostatic Line

The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.



Murray Engineers

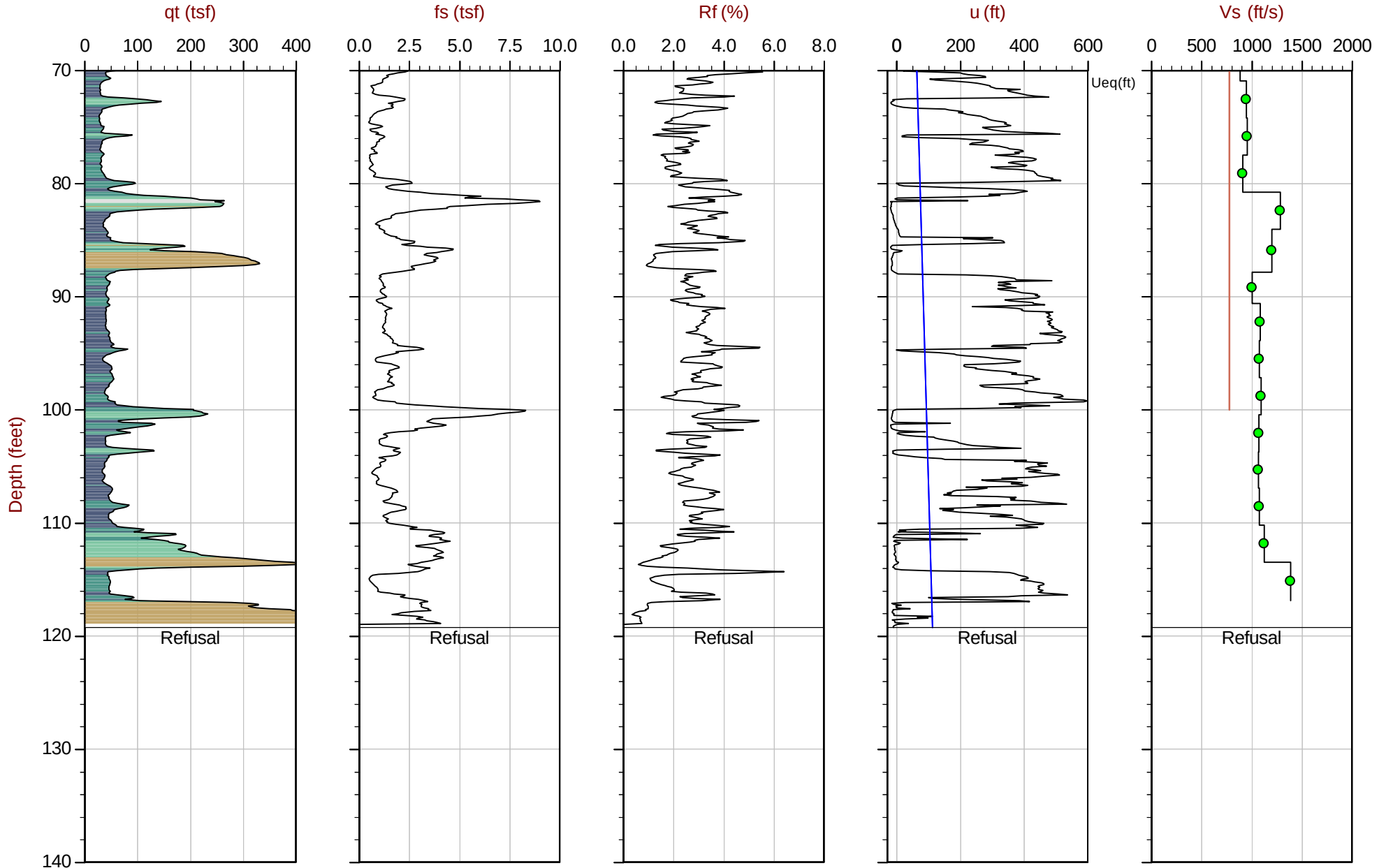
Job No: 20-56-21016

Date: 2020-06-24 11:36

Site: Vantage Potential Campus

Sounding: SCPT-08

Cone: 499:T1500F15U1K



Max Depth: 36.350 m / 119.26 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 20-56-21016_SP08.COR
Unit Wt: SBTQn(PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM 10N N: 4136474m E: 590750m

● Equilibrium Pore Pressure (Ueq) ● Assumed Ueq ▲ Dissipation, Ueq achieved ▼ Dissipation, Ueq not achieved — Hydrostatic Line

The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Seismic Cone Penetration Test Tabular Results



Job No: 20-56-21016
Client: Murray Engineers
Project: Vantage Potential Campus
Sounding ID: SCPT-01
Date: 06:24:20 08:04

Seismic Source: Beam
Seismic Offset (ft): 1.87
Source Depth (ft): 0.00
Geophone Offset (ft): 0.66

SCPTu SHEAR WAVE VELOCITY TEST RESULTS - Vs

Tip Depth (ft)	Geophone Depth (ft)	Ray Path (ft)	Ray Path Difference (ft)	Travel Time Interval (ms)	Interval Velocity (ft/s)
2.79	2.13	2.84			
6.07	5.41	5.73	2.89	6.30	459
9.28	8.63	8.83	3.10	4.99	621
12.57	11.91	12.06	3.23	6.11	529
15.85	15.19	15.31	3.25	5.71	569
19.13	18.47	18.57	3.26	6.22	524
22.41	21.75	21.83	3.27	6.07	539
25.69	25.03	25.10	3.27	4.76	688
28.94	28.28	28.34	3.24	5.20	623
32.22	31.56	31.62	3.27	4.32	758
35.50	34.84	34.89	3.28	4.30	761
38.78	38.12	38.17	3.28	4.69	699
42.06	41.40	41.45	3.28	4.05	810
45.34	44.69	44.72	3.28	3.37	973
48.62	47.97	48.00	3.28	3.89	842
51.90	51.25	51.28	3.28	4.47	734
55.18	54.53	54.56	3.28	4.25	771
58.46	57.81	57.84	3.28	3.52	932
61.75	61.09	61.12	3.28	3.54	926
65.03	64.37	64.40	3.28	4.09	801
68.31	67.65	67.68	3.28	3.10	1057
71.59	70.93	70.96	3.28	2.94	1117
74.87	74.21	74.24	3.28	3.08	1064
78.15	77.49	77.52	3.28	3.12	1050
81.43	80.77	80.80	3.28	2.93	1120
84.71	84.06	84.08	3.28	3.05	1075
87.99	87.34	87.36	3.28	2.72	1204
91.27	90.62	90.64	3.28	2.87	1144
94.55	93.90	93.92	3.28	3.29	997
97.83	97.18	97.20	3.28	3.31	991
101.12	100.46	100.48	3.28	3.37	973



Job No: 20-56-21016
Client: Murray Engineers
Project: Vantage Potential Campus
Sounding ID: SCPT-01
Date: 06:24:20 08:04

Seismic Source: Beam
Seismic Offset (ft): 1.87
Source Depth (ft): 0.00
Geophone Offset (ft): 0.66

SCPT_u SHEAR WAVE VELOCITY TEST RESULTS - V_s

Tip Depth (ft)	Geophone Depth (ft)	Ray Path (ft)	Ray Path Difference (ft)	Travel Time Interval (ms)	Interval Velocity (ft/s)
104.40	103.74	103.76	3.28	3.05	1076
107.71	107.05	107.07	3.31	3.05	1088
110.99	110.34	110.35	3.28	3.12	1052
114.27	113.62	113.63	3.28	2.76	1189
117.45	116.80	116.81	3.18	2.94	1082
120.73	120.08	120.09	3.28	2.97	1105



Job No: 20-56-21016
Client: Murray Engineers
Project: Vantage Potential Campus
Sounding ID: SCPT-02
Date: 06:24:20 10:13

Seismic Source: Beam
Seismic Offset (ft): 1.87
Source Depth (ft): 0.00
Geophone Offset (ft): 0.66

SCPTu SHEAR WAVE VELOCITY TEST RESULTS - Vs

Tip Depth (ft)	Geophone Depth (ft)	Ray Path (ft)	Ray Path Difference (ft)	Travel Time Interval (ms)	Interval Velocity (ft/s)
2.36	1.71	2.53			
5.58	4.92	5.26	2.73	6.92	395
8.86	8.20	8.41	3.15	5.12	615
12.24	11.58	11.73	3.32	5.50	603
15.49	14.83	14.95	3.22	5.07	635
18.70	18.04	18.14	3.20	5.01	638
22.05	21.39	21.47	3.33	4.90	680
25.33	24.67	24.74	3.27	5.16	634
28.61	27.95	28.02	3.27	5.27	621
31.89	31.23	31.29	3.28	4.83	678
35.17	34.51	34.57	3.28	4.66	702
38.45	37.80	37.84	3.28	5.05	648
41.73	41.08	41.12	3.28	4.50	729
45.01	44.36	44.40	3.28	4.60	712
48.29	47.64	47.68	3.28	4.06	807
51.58	50.92	50.95	3.28	3.74	876
54.89	54.23	54.26	3.31	3.62	915
58.17	57.51	57.54	3.28	4.23	776
61.45	60.79	60.82	3.28	3.68	892
64.73	64.07	64.10	3.28	3.84	854
68.01	67.36	67.38	3.28	3.35	980
71.29	70.64	70.66	3.28	3.60	912
74.57	73.92	73.94	3.28	3.67	894
77.85	77.20	77.22	3.28	3.45	951
81.14	80.48	80.50	3.28	3.45	950
84.42	83.76	83.78	3.28	3.49	939
87.70	87.04	87.06	3.28	3.01	1090
90.98	90.32	90.34	3.28	2.96	1110
94.26	93.60	93.62	3.28	3.24	1014
97.54	96.88	96.90	3.28	3.23	1016
100.82	100.16	100.18	3.28	3.34	982



Job No: 20-56-21016
Client: Murray Engineers
Project: Vantage Potential Campus
Sounding ID: SCPT-02
Date: 06:24:20 10:13

Seismic Source: Beam
Seismic Offset (ft): 1.87
Source Depth (ft): 0.00
Geophone Offset (ft): 0.66

SCPT_u SHEAR WAVE VELOCITY TEST RESULTS - V_s

Tip Depth (ft)	Geophone Depth (ft)	Ray Path (ft)	Ray Path Difference (ft)	Travel Time Interval (ms)	Interval Velocity (ft/s)
104.10	103.45	103.46	3.28	2.93	1120
107.38	106.73	106.74	3.28	2.93	1121
110.66	110.01	110.02	3.28	3.02	1086
113.94	113.29	113.30	3.28	2.95	1112
117.22	116.57	116.58	3.28	2.85	1152
120.51	119.85	119.86	3.28	3.11	1054



Job No: 20-56-21016
 Client: Murray Engineers
 Project: Vantage Potential Campus
 Sounding ID: SCPT-03
 Date: 06:24:20 10:05

Seismic Source: Beam
 Seismic Offset (ft): 2.10
 Source Depth (ft): 0.00
 Geophone Offset (ft): 0.66

SCPTu SHEAR WAVE VELOCITY TEST RESULTS - Vs

Tip Depth (ft)	Geophone Depth (ft)	Ray Path (ft)	Ray Path Difference (ft)	Travel Time Interval (ms)	Interval Velocity (ft/s)
2.56	1.90	2.83			
5.81	5.15	5.56	2.73	6.97	391
9.02	8.37	8.63	3.06	4.42	694
12.30	11.65	11.84	3.21	4.64	692
15.58	14.93	15.08	3.24	5.92	547
19.03	18.37	18.49	3.42	5.35	638
22.31	21.65	21.76	3.26	4.18	781
25.59	24.93	25.02	3.27	4.22	775
28.81	28.15	28.23	3.21	4.60	698
32.09	31.43	31.50	3.27	4.51	726
35.37	34.71	34.77	3.27	4.04	811
38.65	37.99	38.05	3.28	3.80	863
41.93	41.27	41.33	3.28	3.90	841
45.21	44.55	44.60	3.28	3.05	1075
48.39	47.74	47.78	3.18	3.87	821
51.67	51.02	51.06	3.28	3.71	885
54.95	54.30	54.34	3.28	3.24	1012
58.24	57.58	57.62	3.28	3.19	1026
61.68	61.02	61.06	3.44	3.38	1019
64.96	64.30	64.34	3.28	3.49	939
68.24	67.59	67.62	3.28	3.12	1050
71.52	70.87	70.90	3.28	3.15	1043
74.80	74.15	74.18	3.28	3.40	964
78.08	77.43	77.46	3.28	3.25	1010
81.96	81.30	81.33	3.87	3.88	998
84.65	83.99	84.02	2.69	2.29	1176
87.93	87.27	87.30	3.28	3.39	968
91.21	90.55	90.58	3.28	3.50	938
94.49	93.83	93.86	3.28	2.77	1185
97.67	97.01	97.04	3.18	2.94	1084
100.95	100.30	100.32	3.28	2.62	1252



Job No: 20-56-21016
Client: Murray Engineers
Project: Vantage Potential Campus
Sounding ID: SCPT-03
Date: 06:24:20 10:05

Seismic Source: Beam
Seismic Offset (ft): 2.10
Source Depth (ft): 0.00
Geophone Offset (ft): 0.66

SCPT_u SHEAR WAVE VELOCITY TEST RESULTS - V_s

Tip Depth (ft)	Geophone Depth (ft)	Ray Path (ft)	Ray Path Difference (ft)	Travel Time Interval (ms)	Interval Velocity (ft/s)
104.33	103.67	103.70	3.38	3.24	1043
107.51	106.86	106.88	3.18	3.26	978
110.79	110.14	110.16	3.28	3.20	1024
114.08	113.42	113.44	3.28	2.59	1267
117.36	116.70	116.72	3.28	2.66	1233
120.64	119.98	120.00	3.28	2.94	1115



Job No: 20-56-21016
 Client: Murray Engineers
 Project: Vantage Potential Campus
 Sounding ID: SCPT-04
 Date: 06:24:20 08:12

Seismic Source: Beam
 Seismic Offset (ft): 2.10
 Source Depth (ft): 0.00
 Geophone Offset (ft): 0.66

SCPTu SHEAR WAVE VELOCITY TEST RESULTS - Vs

Tip Depth (ft)	Geophone Depth (ft)	Ray Path (ft)	Ray Path Difference (ft)	Travel Time Interval (ms)	Interval Velocity (ft/s)
2.62	1.97	2.88			
5.91	5.25	5.65	2.78	5.85	474
9.19	8.53	8.79	3.13	4.92	636
12.37	11.71	11.90	3.11	5.60	557
15.68	15.03	15.17	3.27	4.97	658
18.96	18.31	18.43	3.26	5.05	644
22.15	21.49	21.59	3.16	4.63	684
25.43	24.77	24.86	3.27	4.03	810
28.87	28.22	28.29	3.43	4.60	747
32.15	31.50	31.57	3.27	3.66	895
35.43	34.78	34.84	3.27	3.62	905
38.71	38.06	38.12	3.28	3.98	822
41.93	41.27	41.33	3.21	4.50	713
45.21	44.55	44.60	3.28	4.39	746
48.49	47.83	47.88	3.28	3.90	840
51.77	51.12	51.16	3.28	3.23	1016
55.02	54.36	54.40	3.25	3.12	1040
58.30	57.64	57.68	3.28	3.43	956
61.58	60.93	60.96	3.28	3.78	867
65.22	64.57	64.60	3.64	3.47	1050
68.14	67.49	67.52	2.92	3.05	957
71.59	70.93	70.96	3.44	3.53	974
74.87	74.21	74.24	3.28	3.43	956
78.08	77.43	77.46	3.21	3.76	855
81.36	80.71	80.74	3.28	3.52	933
84.65	83.99	84.02	3.28	3.14	1046
87.93	87.27	87.30	3.28	3.61	910
91.21	90.55	90.58	3.28	3.11	1056
94.49	93.83	93.86	3.28	3.26	1007
97.77	97.11	97.14	3.28	3.48	944
101.05	100.39	100.42	3.28	3.37	972



Job No: 20-56-21016
Client: Murray Engineers
Project: Vantage Potential Campus
Sounding ID: SCPT-04
Date: 06:24:20 08:12

Seismic Source: Beam
Seismic Offset (ft): 2.10
Source Depth (ft): 0.00
Geophone Offset (ft): 0.66

SCPT_u SHEAR WAVE VELOCITY TEST RESULTS - V_s

Tip Depth (ft)	Geophone Depth (ft)	Ray Path (ft)	Ray Path Difference (ft)	Travel Time Interval (ms)	Interval Velocity (ft/s)
104.33	103.67	103.70	3.28	3.09	1063
107.61	106.96	106.98	3.28	3.23	1015
110.89	110.24	110.26	3.28	3.23	1016
114.17	113.52	113.54	3.28	3.35	979
117.45	116.80	116.82	3.28	2.71	1211
120.73	120.08	120.10	3.28	2.45	1339



Job No: 20-56-21016
Client: Murray Engineers
Project: Vantage Potential Campus
Sounding ID: SCPT-05
Date: 06:24:20 11:46

Seismic Source: Beam
Seismic Offset (ft): 1.87
Source Depth (ft): 0.00
Geophone Offset (ft): 0.66

SCPTu SHEAR WAVE VELOCITY TEST RESULTS - Vs

Tip Depth (ft)	Geophone Depth (ft)	Ray Path (ft)	Ray Path Difference (ft)	Travel Time Interval (ms)	Interval Velocity (ft/s)
2.46	1.80	2.60			
5.74	5.09	5.42	2.82	6.45	437
9.02	8.37	8.57	3.15	4.94	639
12.30	11.65	11.80	3.22	4.90	659
15.58	14.93	15.05	3.25	4.54	716
18.87	18.21	18.31	3.26	5.07	643
22.15	21.49	21.57	3.27	4.40	741
25.43	24.77	24.84	3.27	4.05	808
28.71	28.05	28.11	3.27	4.94	663
31.99	31.33	31.39	3.28	3.78	866
35.27	34.61	34.66	3.28	4.05	809
38.55	37.89	37.94	3.28	4.10	800
41.83	41.18	41.22	3.28	3.80	864
45.11	44.46	44.49	3.28	4.32	758
48.39	47.74	47.77	3.28	3.61	910
51.67	51.02	51.05	3.28	3.39	968
54.95	54.30	54.33	3.28	3.38	971
58.24	57.58	57.61	3.28	3.52	933
61.52	60.86	60.89	3.28	3.25	1010
64.80	64.14	64.17	3.28	3.34	981
68.08	67.42	67.45	3.28	3.38	971
71.36	70.70	70.73	3.28	3.37	973
74.64	73.98	74.01	3.28	3.43	956
77.92	77.26	77.29	3.28	3.57	920
81.20	80.55	80.57	3.28	3.56	920
84.48	83.83	83.85	3.28	3.37	974
87.76	87.11	87.13	3.28	3.33	984
91.04	90.39	90.41	3.28	3.42	958
94.32	93.67	93.69	3.28	3.32	987
97.61	96.95	96.97	3.28	3.11	1056
100.89	100.23	100.25	3.28	3.02	1087



Job No: 20-56-21016
Client: Murray Engineers
Project: Vantage Potential Campus
Sounding ID: SCPT-05
Date: 06:24:20 11:46

Seismic Source: Beam
Seismic Offset (ft): 1.87
Source Depth (ft): 0.00
Geophone Offset (ft): 0.66

SCPT_u SHEAR WAVE VELOCITY TEST RESULTS - V_s

Tip Depth (ft)	Geophone Depth (ft)	Ray Path (ft)	Ray Path Difference (ft)	Travel Time Interval (ms)	Interval Velocity (ft/s)
104.17	103.51	103.53	3.28	2.94	1118
107.45	106.79	106.81	3.28	2.66	1235
110.73	110.07	110.09	3.28	3.02	1087
114.01	113.35	113.37	3.28	3.15	1041
117.29	116.63	116.65	3.28	3.06	1071
118.60	117.95	117.96	1.31	1.07	1232



Job No: 20-56-21016
 Client: Murray Engineers
 Project: Vantage Potential Campus
 Sounding ID: SCPT-06
 Date: 06:24:20 13:03

Seismic Source: Beam
 Seismic Offset (ft): 1.87
 Source Depth (ft): 0.00
 Geophone Offset (ft): 0.66

SCPT_u SHEAR WAVE VELOCITY TEST RESULTS - V_s

Tip Depth (ft)	Geophone Depth (ft)	Ray Path (ft)	Ray Path Difference (ft)	Travel Time Interval (ms)	Interval Velocity (ft/s)
2.56	1.90	2.67			
5.81	5.15	5.48	2.81	6.16	457
9.09	8.43	8.64	3.16	4.01	788
12.37	11.71	11.86	3.22	4.61	700
15.58	14.93	15.05	3.19	4.36	731
18.96	18.31	18.40	3.36	5.06	664
22.24	21.59	21.67	3.27	4.26	767
25.53	24.87	24.94	3.27	4.10	798
28.81	28.15	28.21	3.27	4.48	731
32.09	31.43	31.49	3.28	4.14	790
35.37	34.71	34.76	3.28	3.64	899
38.65	37.99	38.04	3.28	4.44	738
41.93	41.27	41.32	3.28	3.84	853
45.21	44.55	44.59	3.28	3.89	842
48.49	47.83	47.87	3.28	3.99	821
51.77	51.12	51.15	3.28	3.39	966
55.02	54.36	54.40	3.25	3.54	916
58.30	57.64	57.67	3.28	3.64	900
61.58	60.93	60.95	3.28	3.50	939
64.86	64.21	64.23	3.28	2.95	1114
68.14	67.49	67.51	3.28	3.20	1027
71.42	70.77	70.79	3.28	2.90	1133
74.71	74.05	74.07	3.28	2.99	1095
77.99	77.33	77.35	3.28	3.67	895
81.27	80.61	80.63	3.28	3.31	990
84.55	83.89	83.91	3.28	3.21	1021
87.83	87.17	87.19	3.28	3.01	1089
91.11	90.45	90.47	3.28	2.81	1167
94.39	93.73	93.75	3.28	3.21	1021
97.67	97.01	97.03	3.28	3.36	975
100.95	100.30	100.31	3.28	3.41	961



Job No: 20-56-21016
Client: Murray Engineers
Project: Vantage Potential Campus
Sounding ID: SCPT-06
Date: 06:24:20 13:03

Seismic Source: Beam
Seismic Offset (ft): 1.87
Source Depth (ft): 0.00
Geophone Offset (ft): 0.66

SCPT_u SHEAR WAVE VELOCITY TEST RESULTS - V_s

Tip Depth (ft)	Geophone Depth (ft)	Ray Path (ft)	Ray Path Difference (ft)	Travel Time Interval (ms)	Interval Velocity (ft/s)
104.23	103.58	103.59	3.28	3.06	1071
107.51	106.86	106.87	3.28	2.66	1233
110.79	110.14	110.15	3.28	3.21	1021
114.08	113.42	113.43	3.28	2.86	1146
117.36	116.70	116.71	3.28	2.66	1233
120.64	119.98	120.00	3.28	2.71	1210



Job No: 20-56-21016
Client: Murray Engineers
Project: Vantage Potential Campus
Sounding ID: SCPT-07
Date: 06:24:20 13:21

Seismic Source: Beam
Seismic Offset (ft): 2.10
Source Depth (ft): 0.00
Geophone Offset (ft): 0.66

SCPTu SHEAR WAVE VELOCITY TEST RESULTS - Vs

Tip Depth (ft)	Geophone Depth (ft)	Ray Path (ft)	Ray Path Difference (ft)	Travel Time Interval (ms)	Interval Velocity (ft/s)
2.46	1.80	2.77			
5.68	5.02	5.44	2.67	5.33	502
9.28	8.63	8.88	3.44	5.17	665
12.47	11.81	12.00	3.12	5.95	524
15.75	15.09	15.24	3.24	5.28	614
19.03	18.37	18.49	3.26	4.58	711
22.24	21.59	21.69	3.20	4.75	673
25.43	24.77	24.86	3.17	5.42	585
28.71	28.05	28.13	3.27	5.28	620
31.99	31.33	31.40	3.27	4.34	754
35.27	34.61	34.68	3.28	5.13	638
38.45	37.80	37.85	3.18	4.24	750
41.73	41.08	41.13	3.28	4.39	747
45.21	44.55	44.60	3.47	4.69	740
48.56	47.90	47.95	3.34	4.10	815
51.84	51.18	51.22	3.28	3.34	981
55.12	54.46	54.50	3.28	3.46	948
58.40	57.74	57.78	3.28	4.14	792
61.68	61.02	61.06	3.28	4.14	792
64.96	64.30	64.34	3.28	4.06	808
68.24	67.59	67.62	3.28	3.52	931
71.52	70.87	70.90	3.28	3.71	883
74.80	74.15	74.18	3.28	3.48	943
78.08	77.43	77.46	3.28	3.82	858
81.43	80.77	80.80	3.35	3.61	927
84.65	83.99	84.02	3.21	3.27	984
87.83	87.17	87.20	3.18	3.27	975
91.21	90.55	90.58	3.38	2.93	1152
94.49	93.83	93.86	3.28	3.15	1042
97.77	97.11	97.14	3.28	2.77	1183
100.95	100.30	100.32	3.18	3.39	939



Job No: 20-56-21016
Client: Murray Engineers
Project: Vantage Potential Campus
Sounding ID: SCPT-07
Date: 06:24:20 13:21

Seismic Source: Beam
Seismic Offset (ft): 2.10
Source Depth (ft): 0.00
Geophone Offset (ft): 0.66

SCPT_u SHEAR WAVE VELOCITY TEST RESULTS - V_s

Tip Depth (ft)	Geophone Depth (ft)	Ray Path (ft)	Ray Path Difference (ft)	Travel Time Interval (ms)	Interval Velocity (ft/s)
104.23	103.58	103.60	3.28	3.32	990
107.51	106.86	106.88	3.28	3.09	1062
110.89	110.24	110.26	3.38	3.61	935
114.17	113.52	113.54	3.28	3.21	1023
117.45	116.80	116.82	3.28	3.03	1083
120.73	120.08	120.10	3.28	2.65	1237



Job No: 20-56-21016
Client: Murray Engineers
Project: Vantage Potential Campus
Sounding ID: SCPT-08
Date: 06:24:20 11:36

Seismic Source: Beam
Seismic Offset (ft): 2.10
Source Depth (ft): 0.00
Geophone Offset (ft): 0.66

SCPTu SHEAR WAVE VELOCITY TEST RESULTS - Vs

Tip Depth (ft)	Geophone Depth (ft)	Ray Path (ft)	Ray Path Difference (ft)	Travel Time Interval (ms)	Interval Velocity (ft/s)
2.79	2.13	2.99			
5.91	5.25	5.65	2.66	7.34	362
9.09	8.43	8.69	3.04	5.39	563
12.37	11.71	11.90	3.21	5.41	593
15.58	14.93	15.08	3.18	5.15	617
18.77	18.11	18.23	3.16	5.40	585
22.05	21.39	21.49	3.26	5.53	591
25.33	24.67	24.76	3.27	3.86	846
28.54	27.89	27.97	3.21	4.89	656
31.82	31.17	31.24	3.27	4.29	763
35.10	34.45	34.51	3.27	4.31	759
38.32	37.66	37.72	3.21	4.52	710
41.60	40.95	41.00	3.28	4.22	777
44.88	44.23	44.28	3.28	4.57	718
52.10	51.44	51.49	7.21	10.18	709
55.28	54.63	54.67	3.18	3.31	962
58.56	57.91	57.95	3.28	3.39	967
61.84	61.19	61.22	3.28	3.53	929
65.03	64.37	64.40	3.18	3.33	956
68.31	67.65	67.68	3.28	3.92	838
71.59	70.93	70.96	3.28	3.70	886
74.87	74.21	74.24	3.28	3.45	950
78.15	77.49	77.52	3.28	3.43	957
81.43	80.77	80.80	3.28	3.59	914
84.71	84.06	84.08	3.28	2.54	1289
88.52	87.86	87.89	3.81	3.16	1205
91.27	90.62	90.64	2.75	2.73	1008
94.55	93.90	93.92	3.28	3.01	1089
97.83	97.18	97.20	3.28	3.04	1078
101.12	100.46	100.48	3.28	3.00	1094
104.40	103.74	103.76	3.28	3.06	1072



Job No: 20-56-21016
Client: Murray Engineers
Project: Vantage Potential Campus
Sounding ID: SCPT-08
Date: 06:24:20 11:36

Seismic Source: Beam
Seismic Offset (ft): 2.10
Source Depth (ft): 0.00
Geophone Offset (ft): 0.66

SCPT_u SHEAR WAVE VELOCITY TEST RESULTS - V_s

Tip Depth (ft)	Geophone Depth (ft)	Ray Path (ft)	Ray Path Difference (ft)	Travel Time Interval (ms)	Interval Velocity (ft/s)
107.61	106.96	106.98	3.22	3.01	1070
110.89	110.24	110.26	3.28	3.04	1078
114.17	113.52	113.54	3.28	2.91	1128
117.55	116.90	116.92	3.38	2.43	1390

Seismic Cone Penetration Test Shear Wave (V_s) Traces





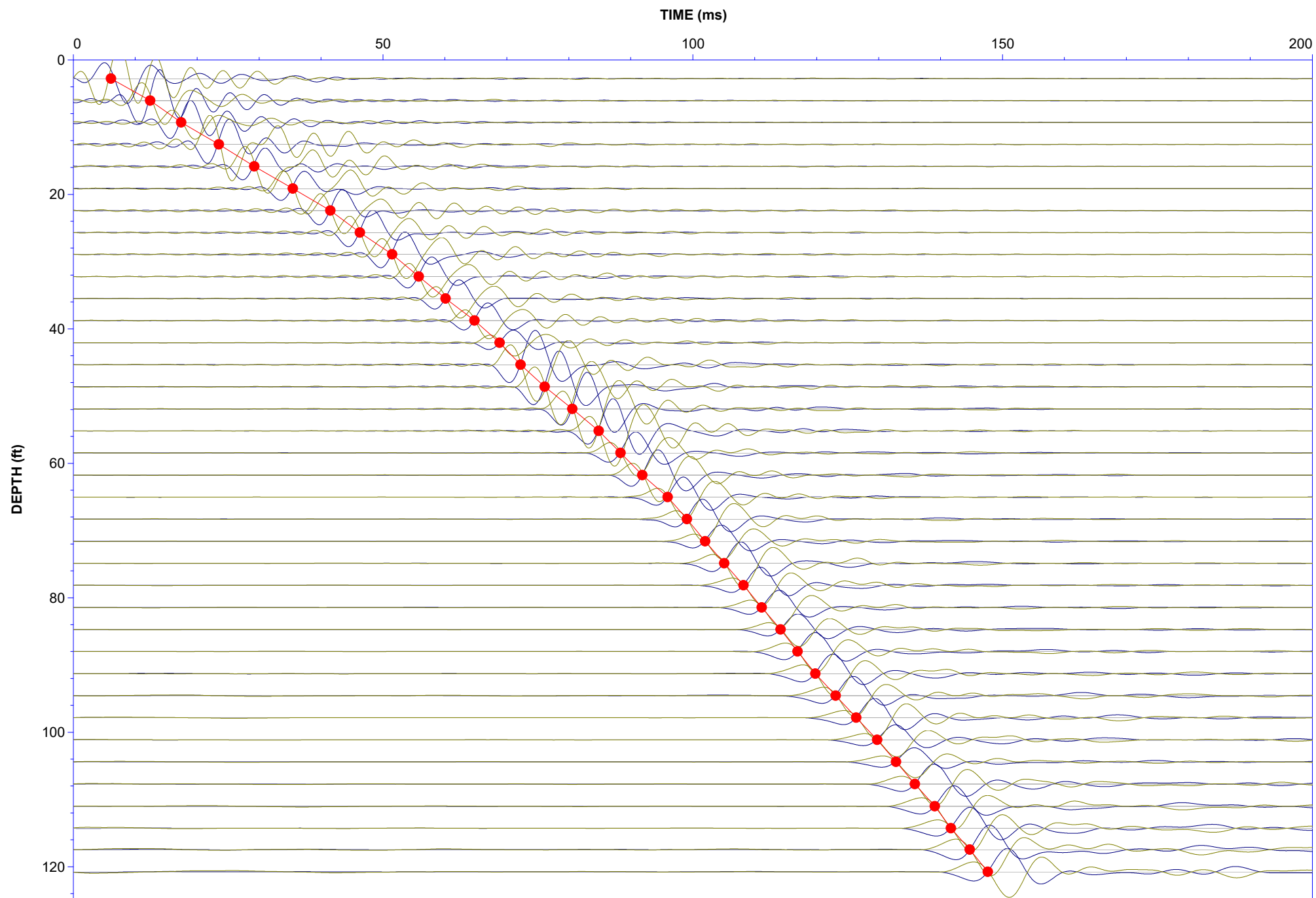
Job No: 20-56-21016
Date: 06:24:20 08:04

Client: Murray Engineers
Cone: 496:T1500F15U1K

Project Title: Vantage Potential Campus

Filter: BP 0-200 Hz

Hole: SCPT-01





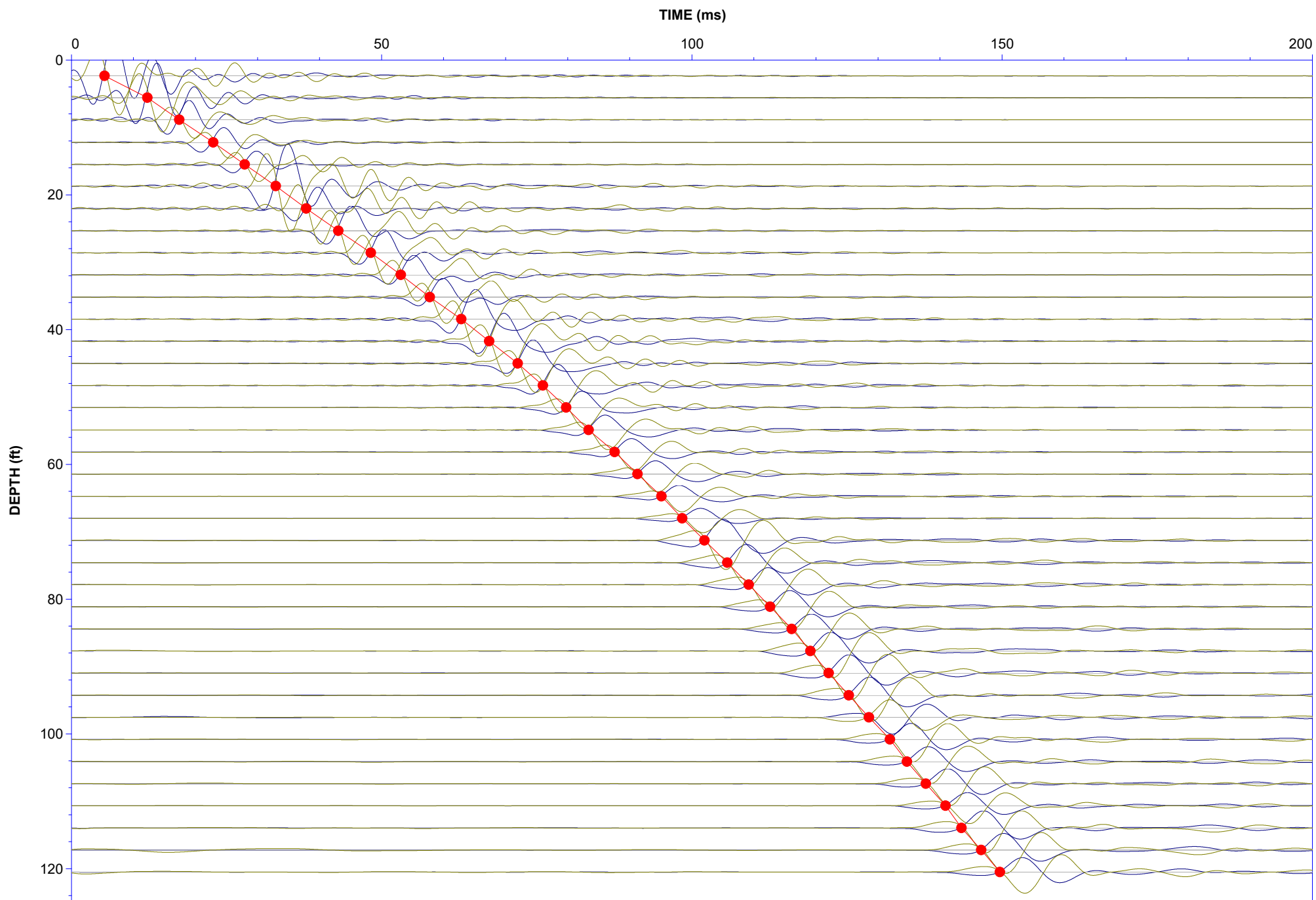
Job No: 20-56-21016
Date: 06:24:20 10:13

Client: Murray Engineers
Cone: 496:T1500F15U1K

Project Title: Vantage Potential Campus

Filter: BP 0-200 Hz

Hole: SCPT-02





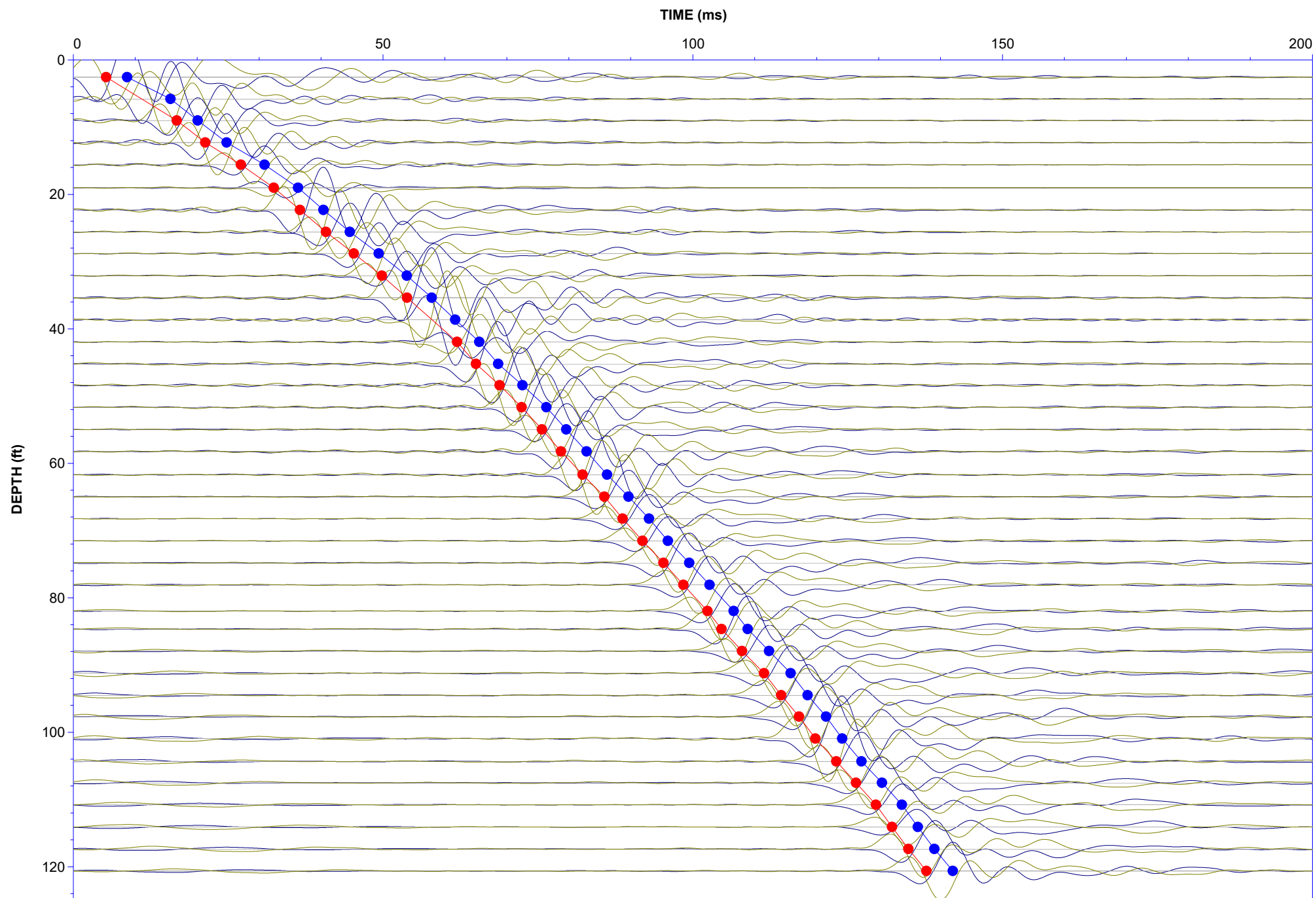
Job No: 20-56-21016
Date: 06:24:20 10:05

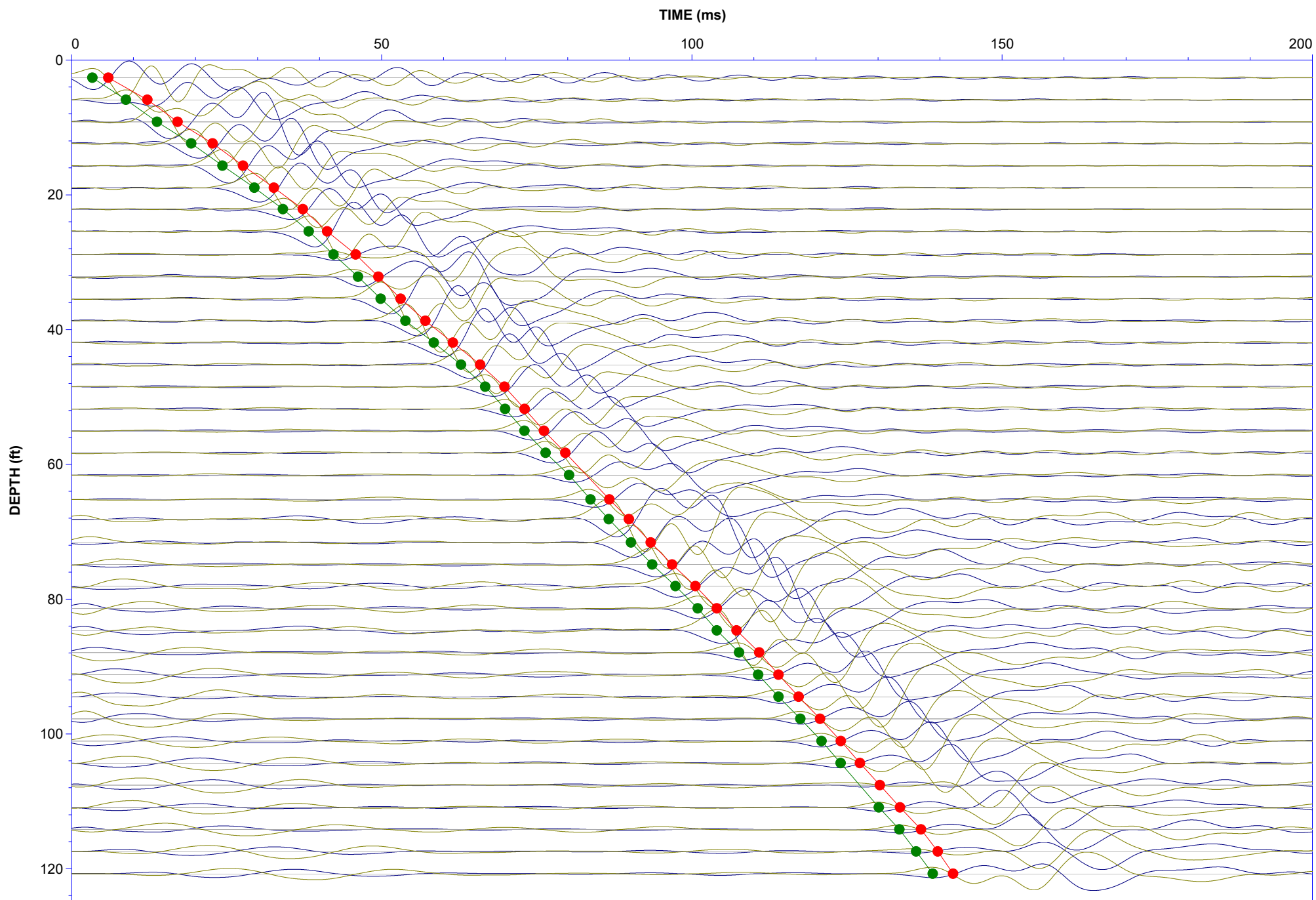
Client: Murray Engineers
Cone: 499:T1500F15U1K

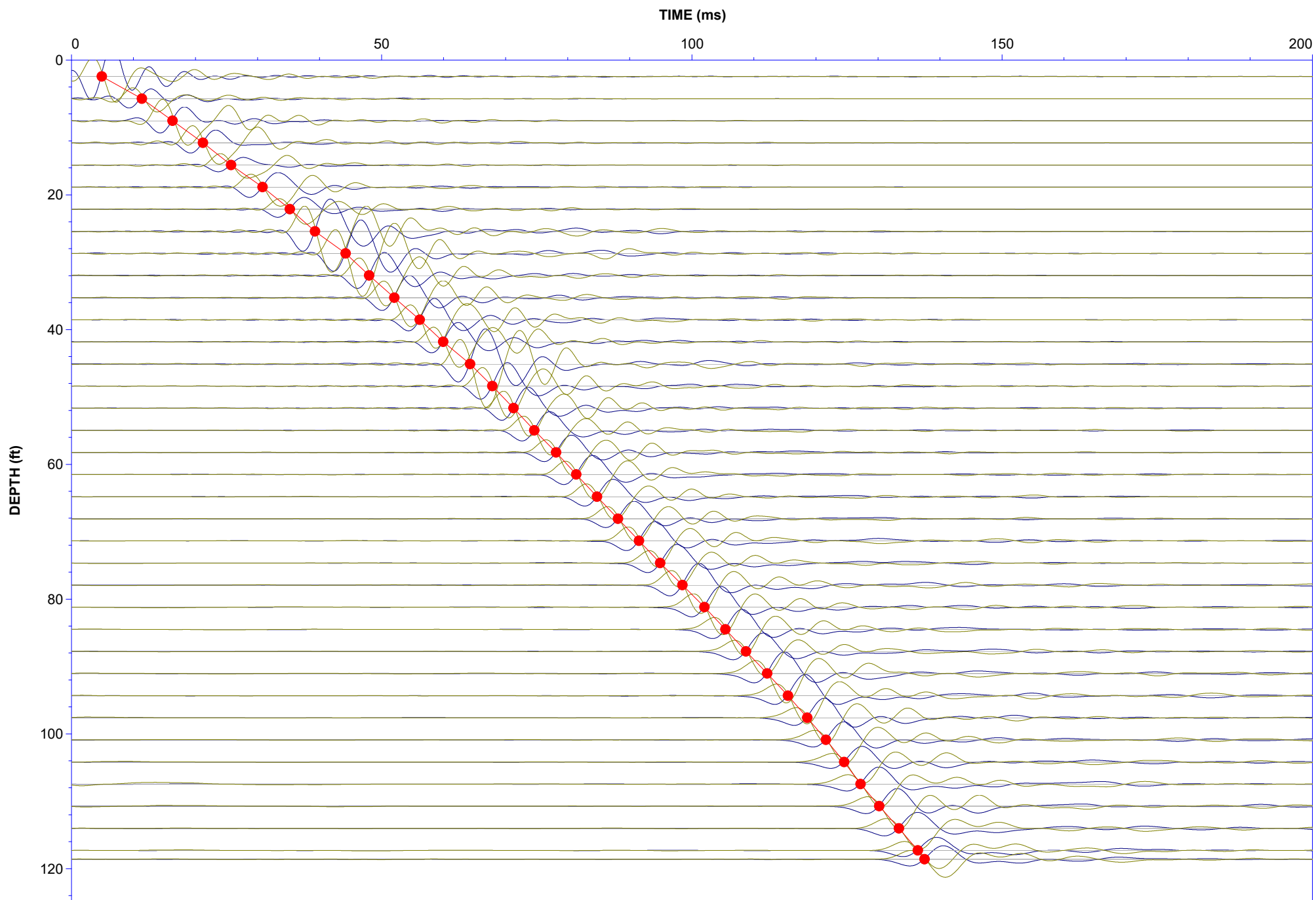
Project Title: Vantage Potential Campus

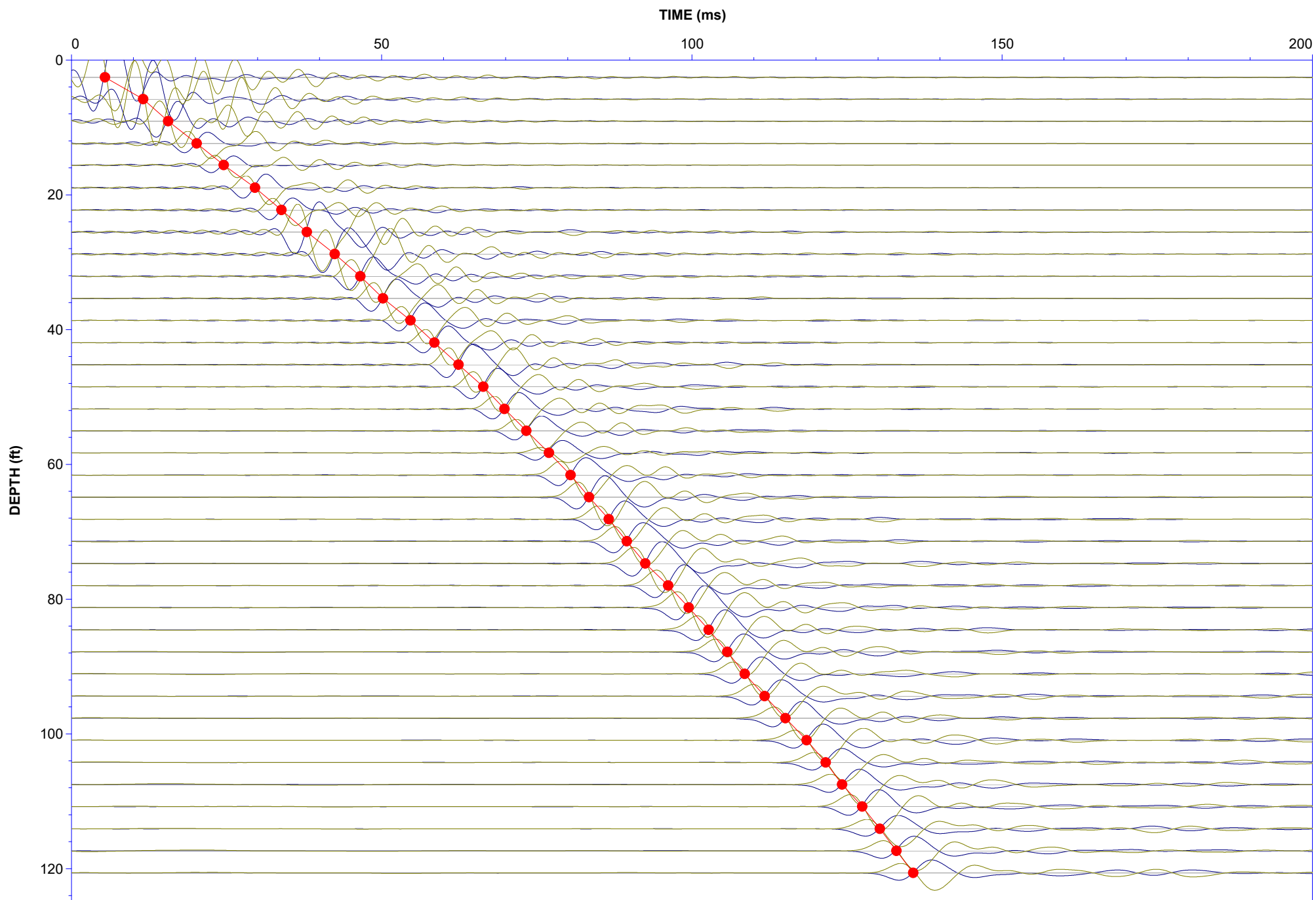
Filter: BP 0-150 Hz

Hole: SCPT-03











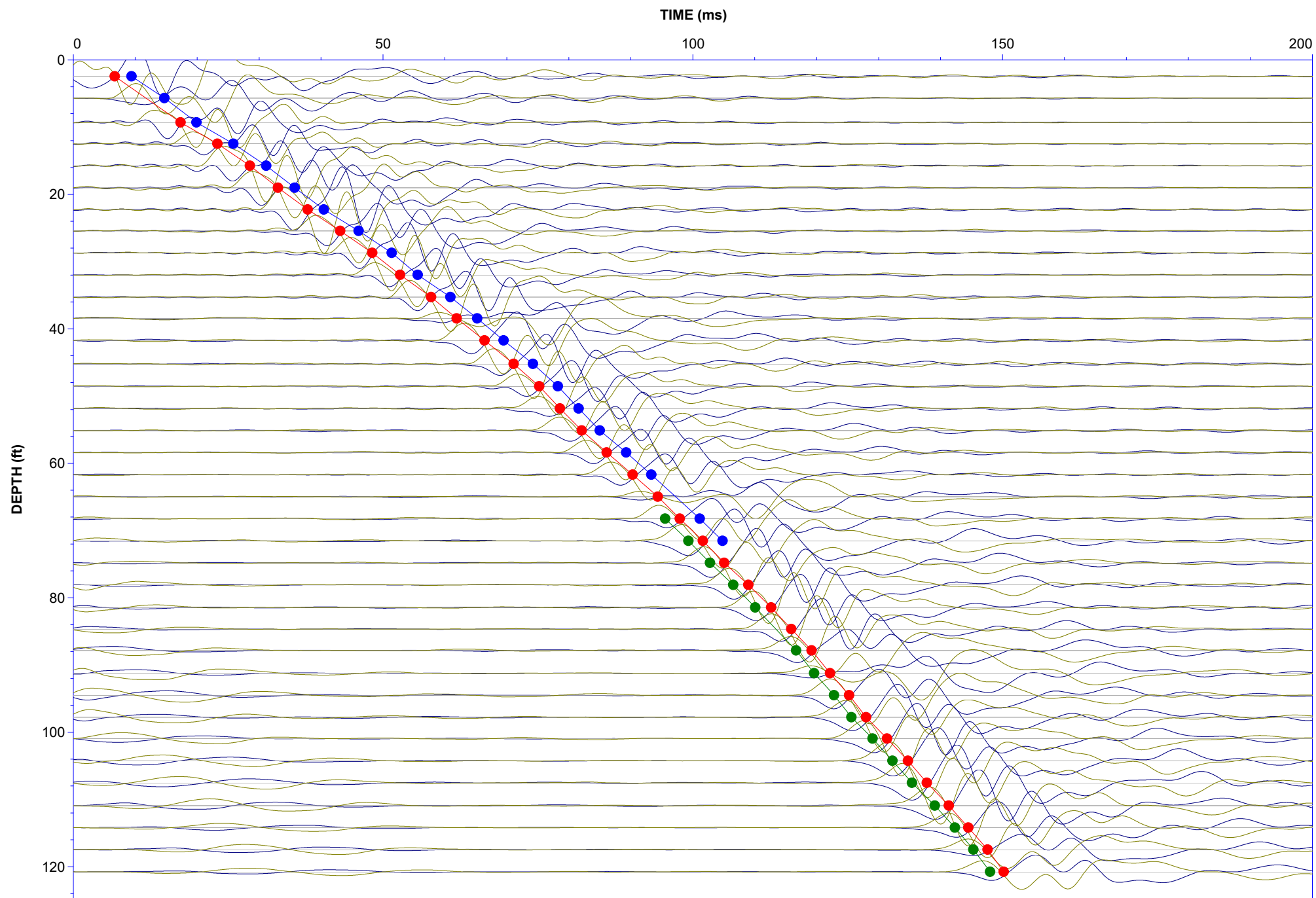
Job No: 20-56-21016
Date: 06:24:20 13:21

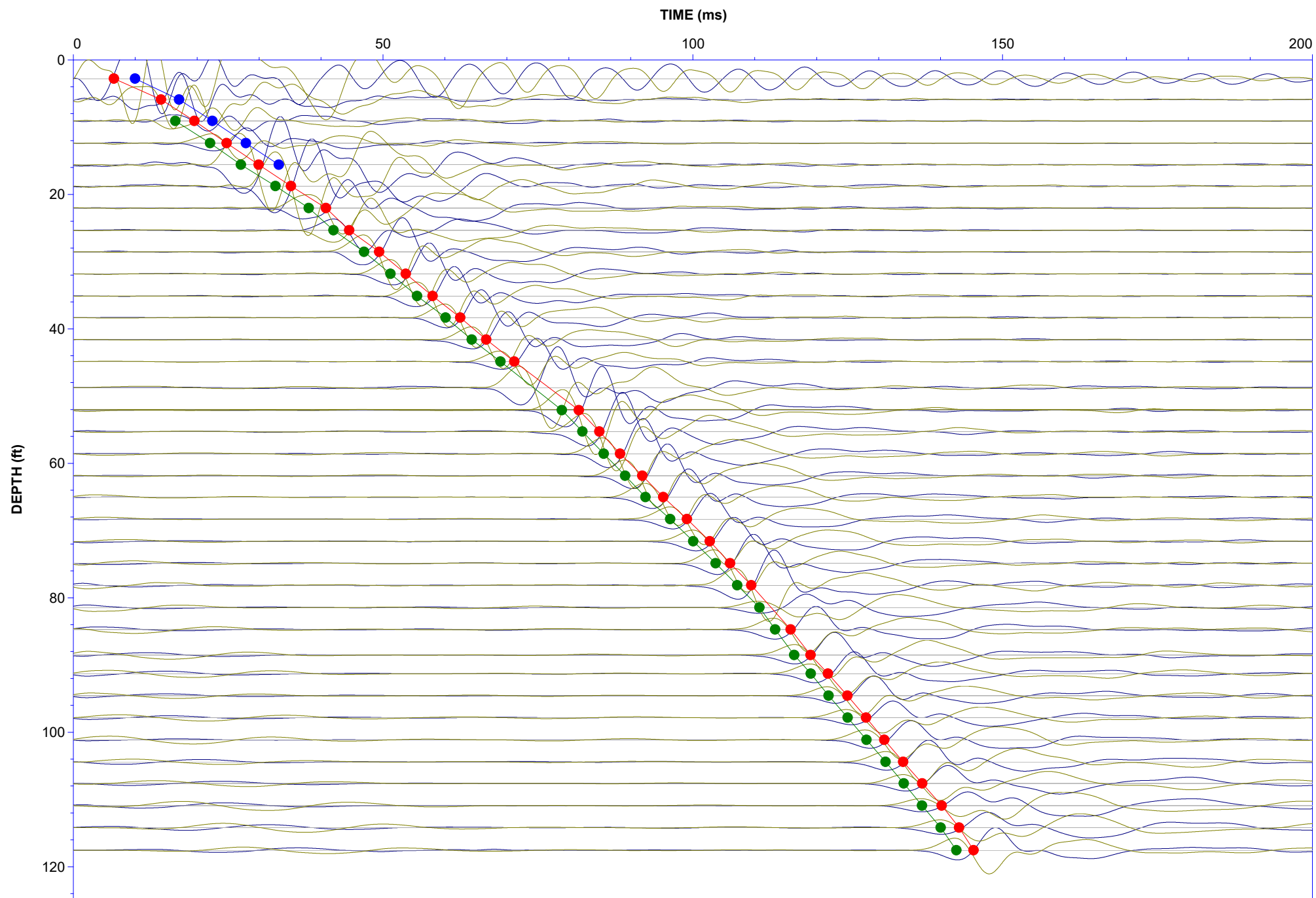
Client: Murray Engineers
Cone: 499:T1500F15U1K

Project Title: Vantage Potential Campus

Filter: BP 0-200 Hz

Hole: SCPT-07





Pore Pressure Dissipation Summary and Pore Pressure Dissipation Plots



Job No: 20-56-21016
Client: Murray Engineers
Project: Vantage Potential Campus
Start Date: 24-Jun-2020
End Date: 24-Jun-2020

CPT_u PORE PRESSURE DISSIPATION SUMMARY

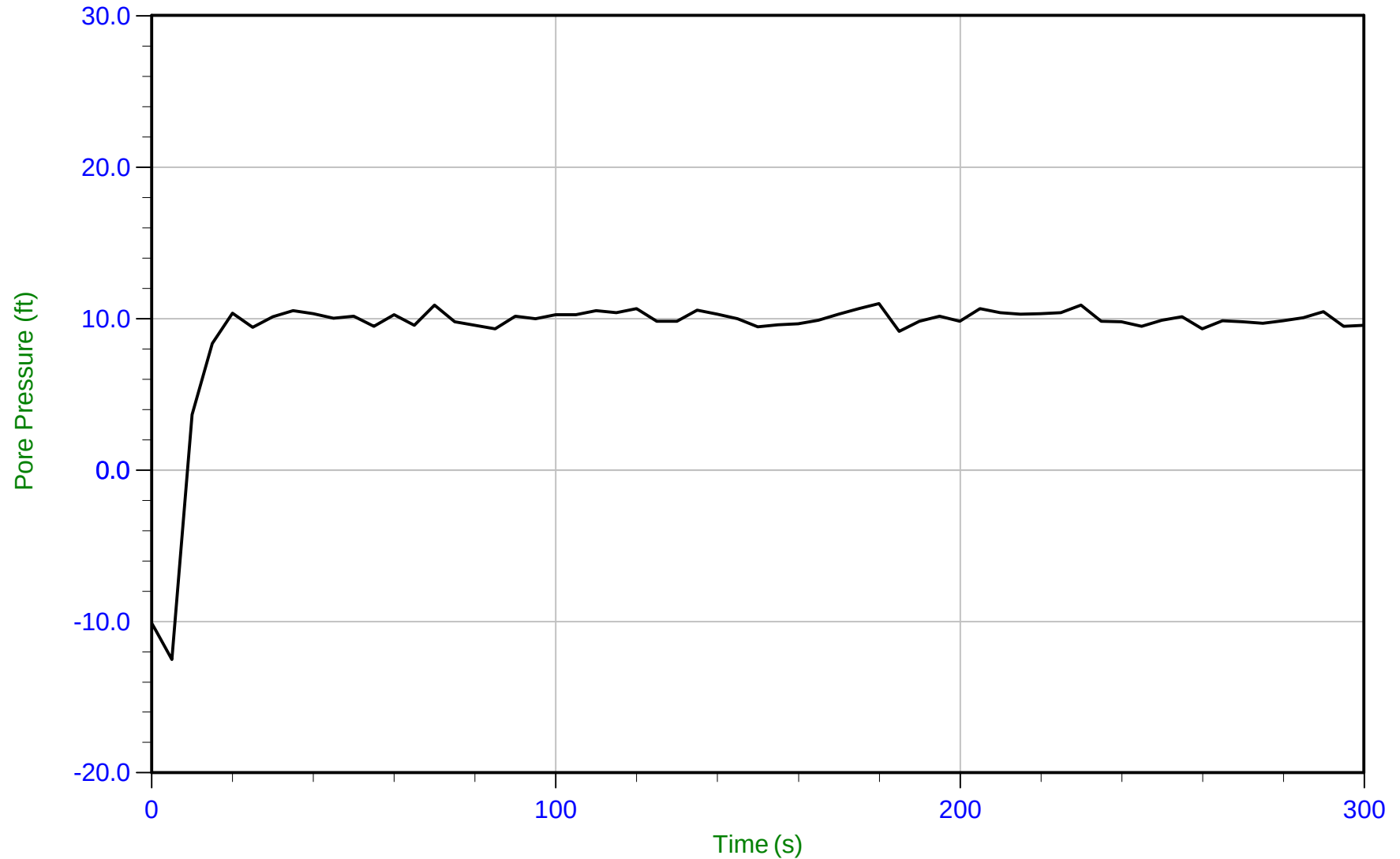
Sounding ID	File Name	Cone Area (cm ²)	Duration (s)	Test Depth (ft)	Estimated Equilibrium Pore Pressure U _{eq} (ft)	Calculated Phreatic Surface (ft)
SCPT-01	20-56-21016_SP01	15	300	22.39	9.8	12.6
SCPT-01	20-56-21016_SP01	15	370	65.37	63.2	2.2
SCPT-01	20-56-21016_SP01	15	740	115.32	125.2	-9.8
SCPT-02	20-56-21016_SP02	15	325	72.51	70.6	1.9
SCPT-02	20-56-21016_SP02	15	320	116.30	127.0	-10.7
SCPT-03	20-56-21016_SP03	15	300	41.75	37.7	4.0
SCPT-04	20-56-21016_SP04	15	350	28.95	22.2	6.7
SCPT-05	20-56-21016_SP05	15	250	104.99	113.3	-8.3
SCPT-06	20-56-21016_SP06	15	365	19.03	11.2	7.8
SCPT-07	20-56-21016_SP07	15	335	36.42	31.8	4.6



Murray Engineers

Job No: 20-56-21016
Date: 06/24/2020 08:04
Site: Vantage Potential Campus

Sounding: SCPT-01
Cone: 496:T1500F15U1K Area=15 cm²



Trace Summary:

Filename: 20-56-21016_SP01.PPF
Depth: 6.825 m / 22.391 ft
Duration: 300.0 s

u Min: -12.5 ft
u Max: 11.0 ft
u Final: 9.5 ft

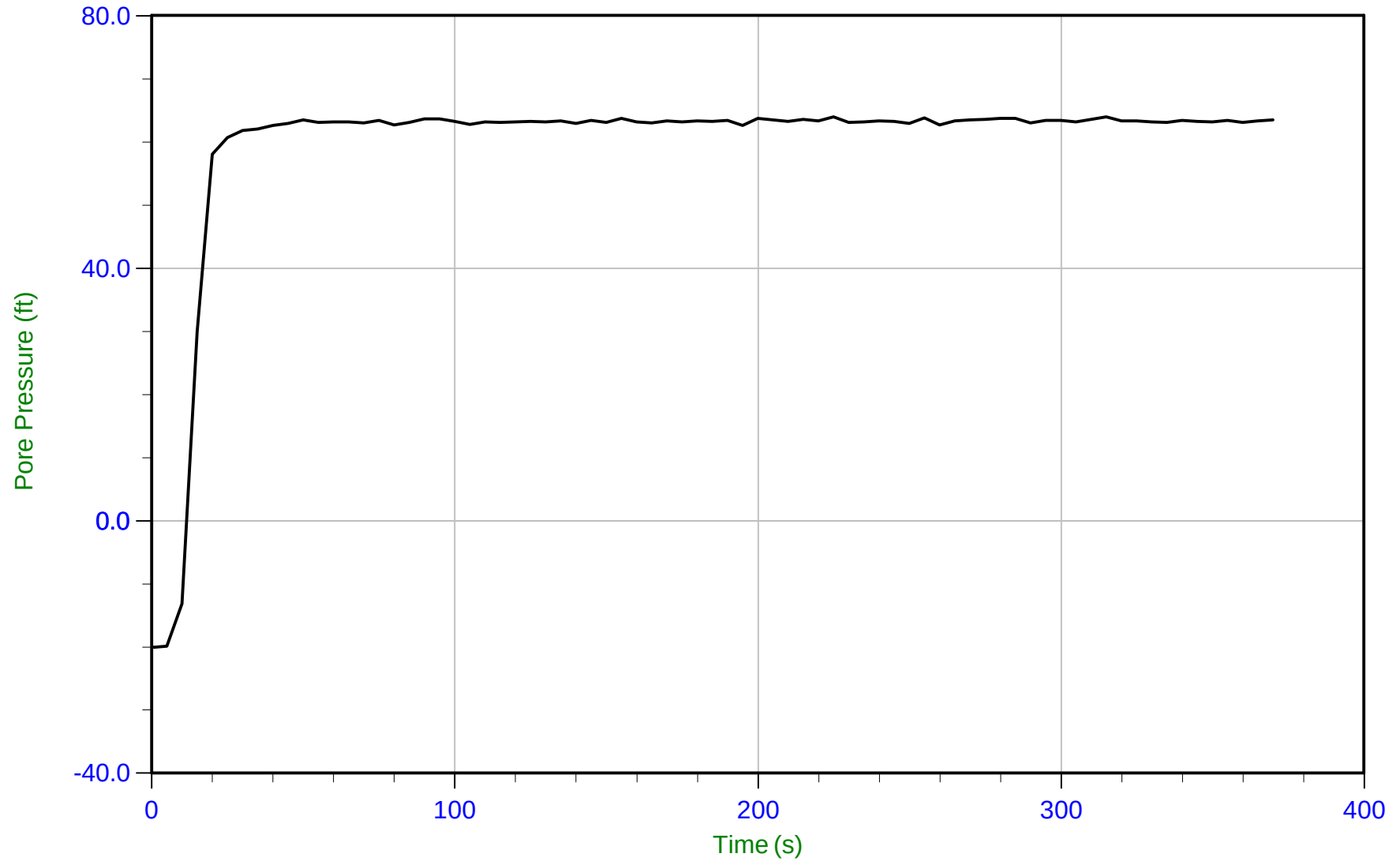
WT: 3.838 m / 12.593 ft
Ueq: 9.8 ft



Murray Engineers

Job No: 20-56-21016
Date: 06/24/2020 08:04
Site: Vantage Potential Campus

Sounding: SCPT-01
Cone: 496:T1500F15U1K Area=15 cm²



Trace Summary:

Filename: 20-56-21016_SP01.PPF
Depth: 19.925 m / 65.370 ft
Duration: 370.0 s

u Min: -20.0 ft
u Max: 64.0 ft
u Final: 63.5 ft

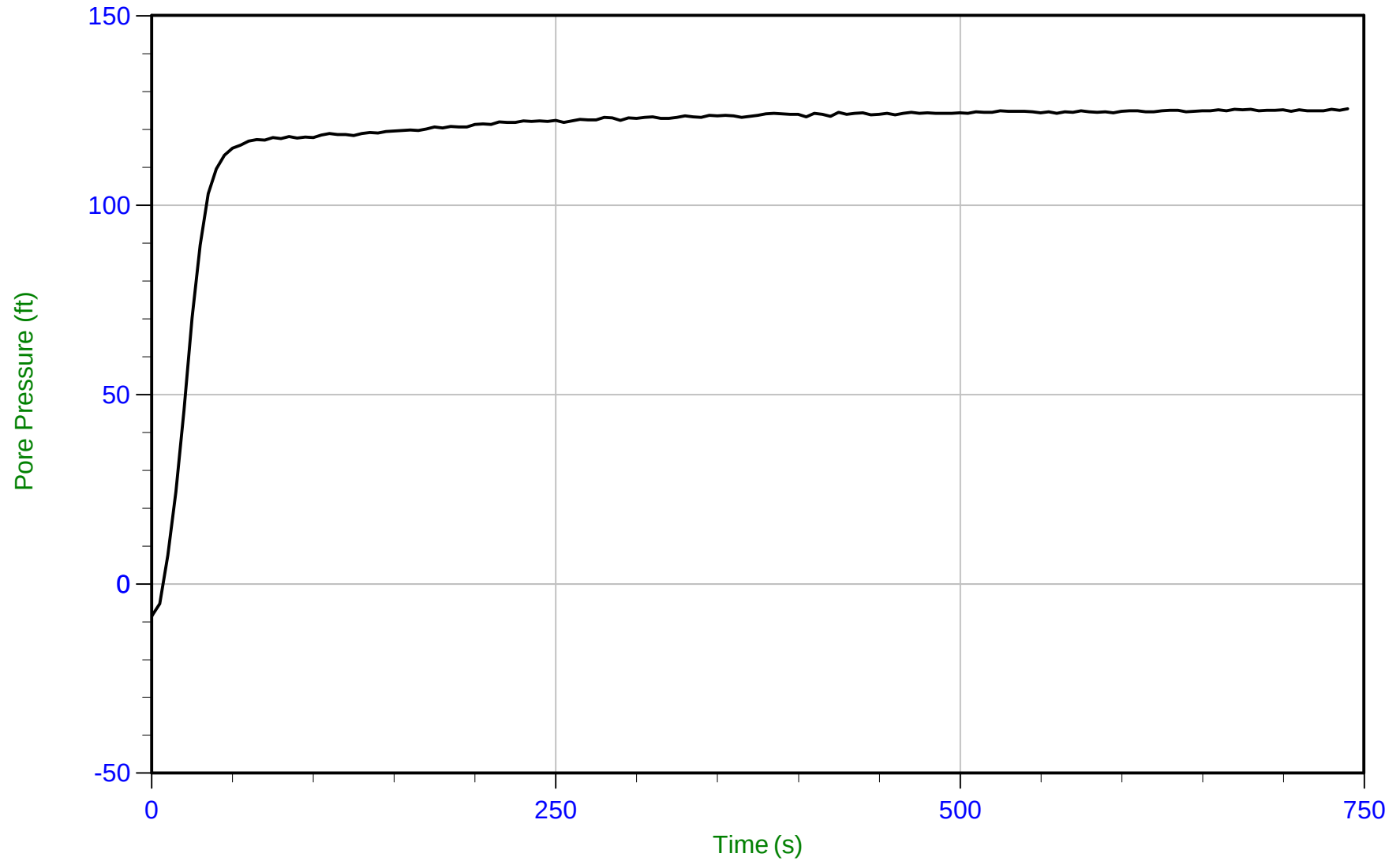
WT: 0.666 m / 2.186 ft
Ueq: 63.2 ft



Murray Engineers

Job No: 20-56-21016
Date: 06/24/2020 08:04
Site: Vantage Potential Campus

Sounding: SCPT-01
Cone: 496:T1500F15U1K Area=15 cm²



Trace Summary:

Filename: 20-56-21016_SP01.PPF
Depth: 35.150 m / 115.320 ft
Duration: 740.0 s

u Min: -8.6 ft
u Max: 125.4 ft
u Final: 125.4 ft

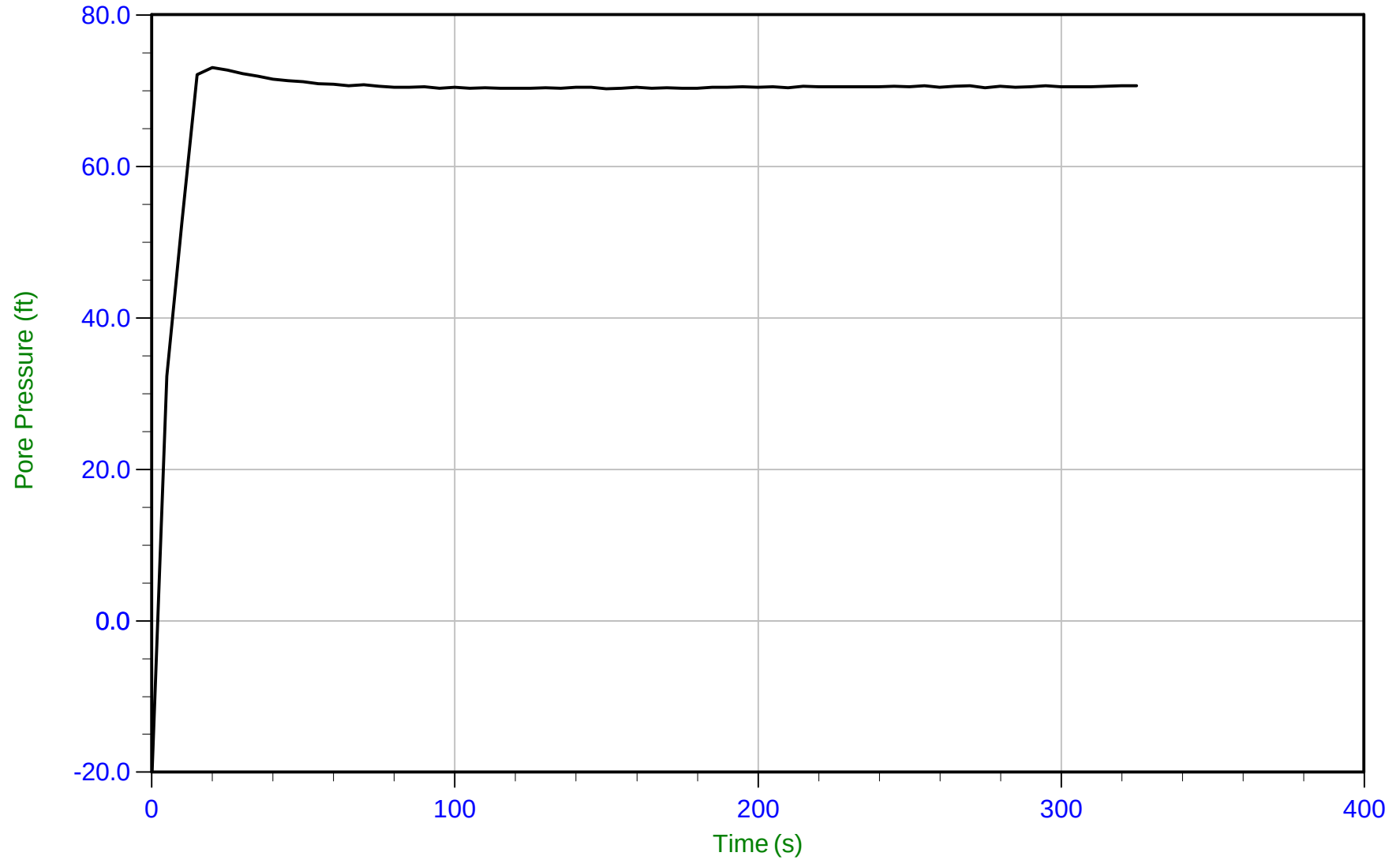
WT: -2.999 m / -9.838 ft
Ueq: 125.2 ft



Murray Engineers

Job No: 20-56-21016
Date: 06/24/2020 10:13
Site: Vantage Potential Campus

Sounding: SCPT-02
Cone: 496:T1500F15U1K Area=15 cm²



Trace Summary:

Filename: 20-56-21016_SP02.PPF
Depth: 22.100 m / 72.506 ft
Duration: 325.0 s

u Min: -21.6 ft
u Max: 73.0 ft
u Final: 70.7 ft

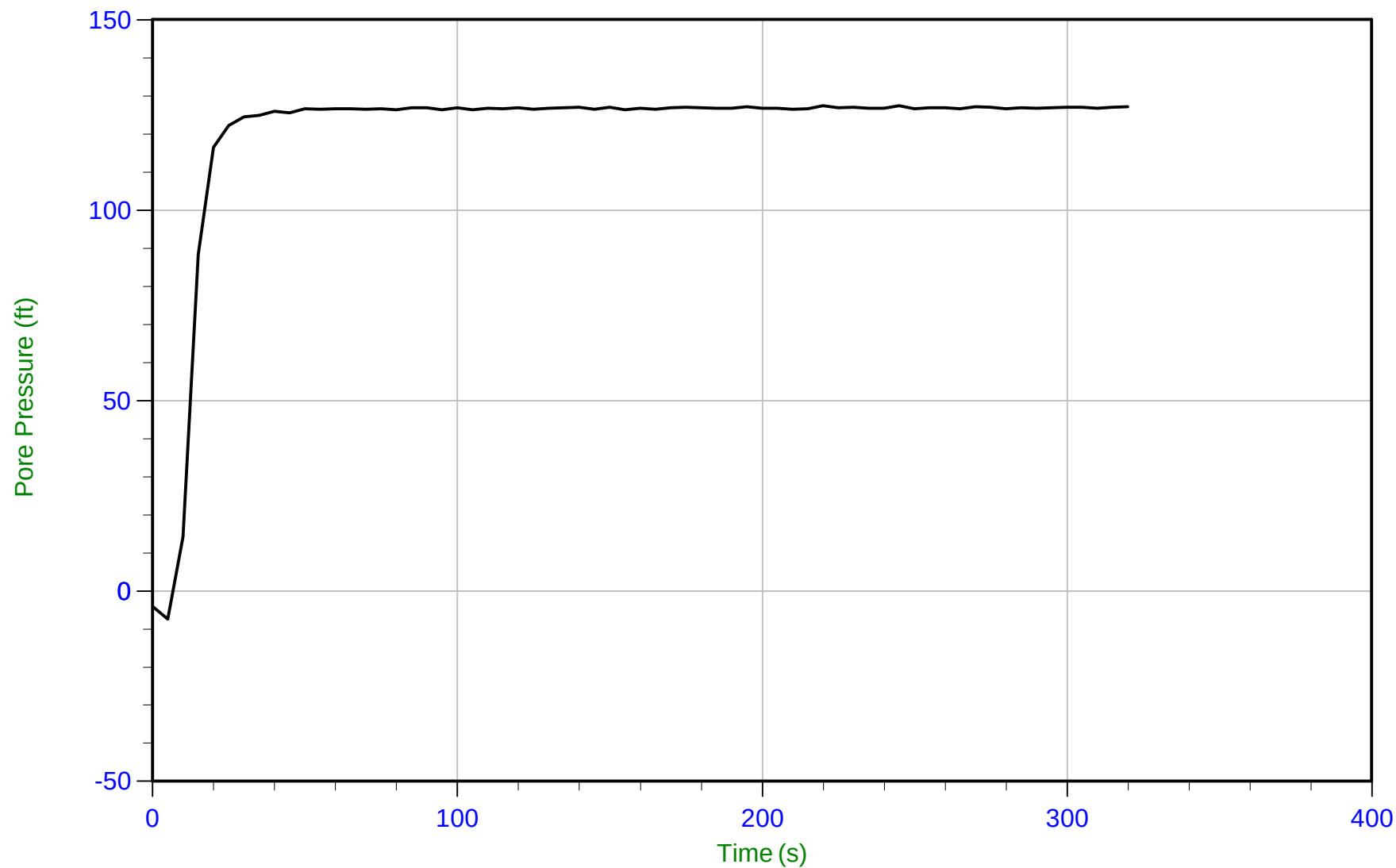
WT: 0.589 m / 1.933 ft
Ueq: 70.6 ft



Murray Engineers

Job No: 20-56-21016
Date: 06/24/2020 10:13
Site: Vantage Potential Campus

Sounding: SCPT-02
Cone: 496:T1500F15U1K Area=15 cm²



Trace Summary:

Filename: 20-56-21016_SP02.PPF
Depth: 35.450 m / 116.304 ft
Duration: 320.0 s

u Min: -7.4 ft
u Max: 127.4 ft
u Final: 127.1 ft

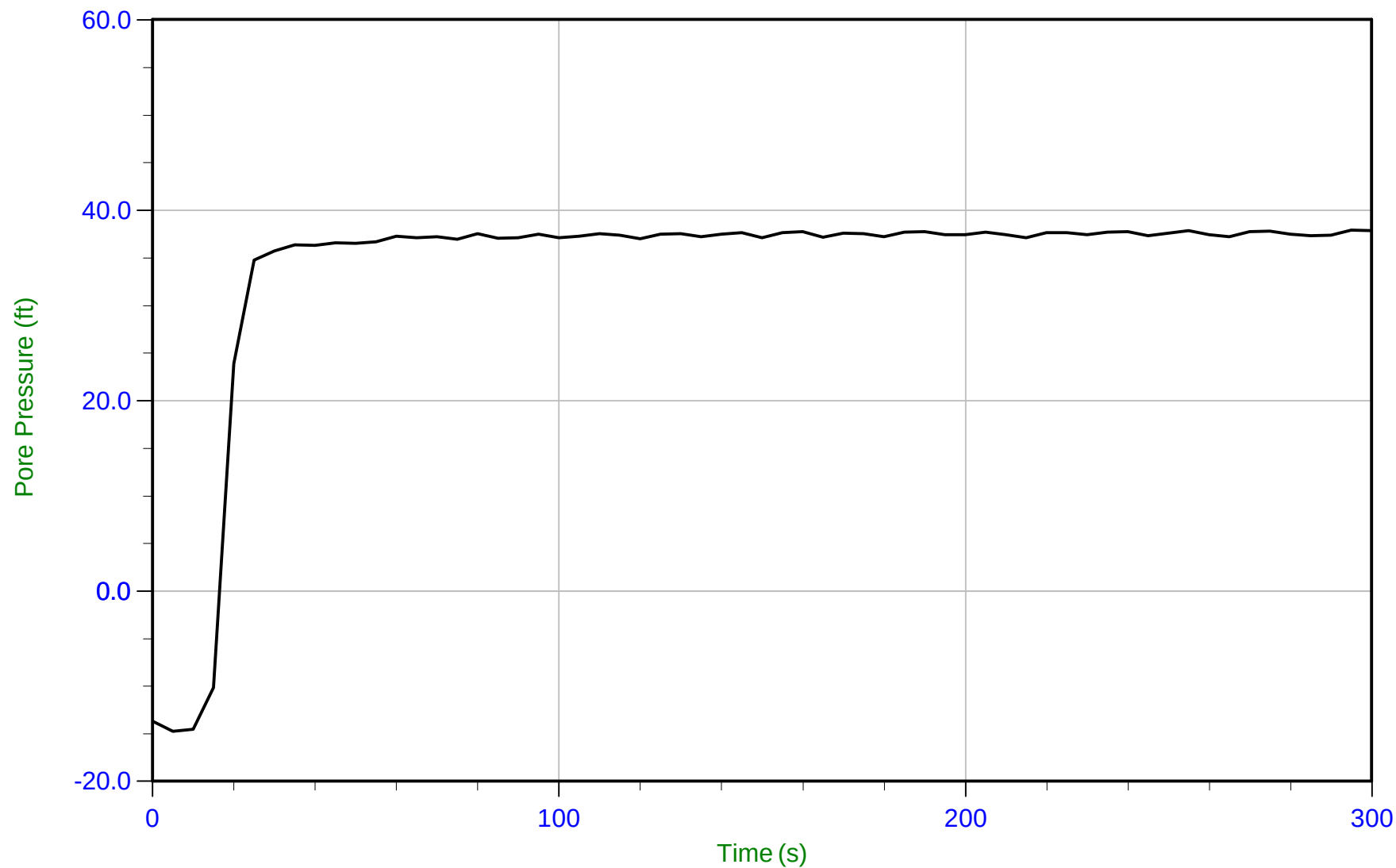
WT: -3.249 m / -10.658 ft
Ueq: 127.0 ft



Murray Engineers

Job No: 20-56-21016
Date: 06/24/2020 10:05
Site: Vantage Potential Campus

Sounding: SCPT-03
Cone: 499:T1500F15U1K Area=15 cm²



Trace Summary:

Filename: 20-56-21016_SP03.PPF
Depth: 12.725 m / 41.748 ft
Duration: 300.0 s

u Min: -14.7 ft
u Max: 37.9 ft
u Final: 37.8 ft

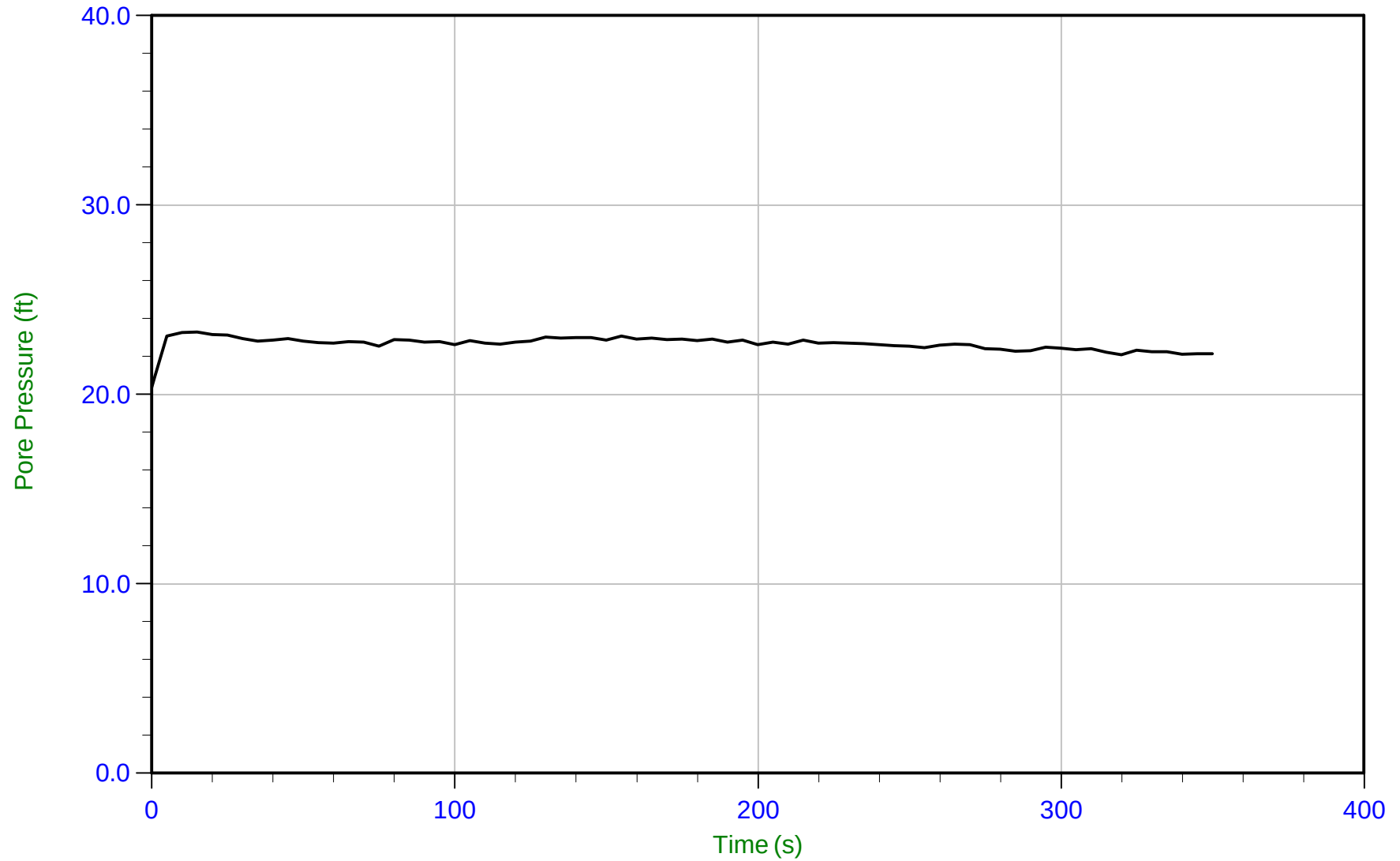
WT: 1.232 m / 4.042 ft
Ueq: 37.7 ft



Murray Engineers

Job No: 20-56-21016
Date: 06/24/2020 08:12
Site: Vantage Potential Campus

Sounding: SCPT-04
Cone: 499:T1500F15U1K Area=15 cm²



Trace Summary:

Filename: 20-56-21016_SP04.PPF
Depth: 8.825 m / 28.953 ft
Duration: 350.0 s

u Min: 20.4 ft
u Max: 23.3 ft
u Final: 22.2 ft

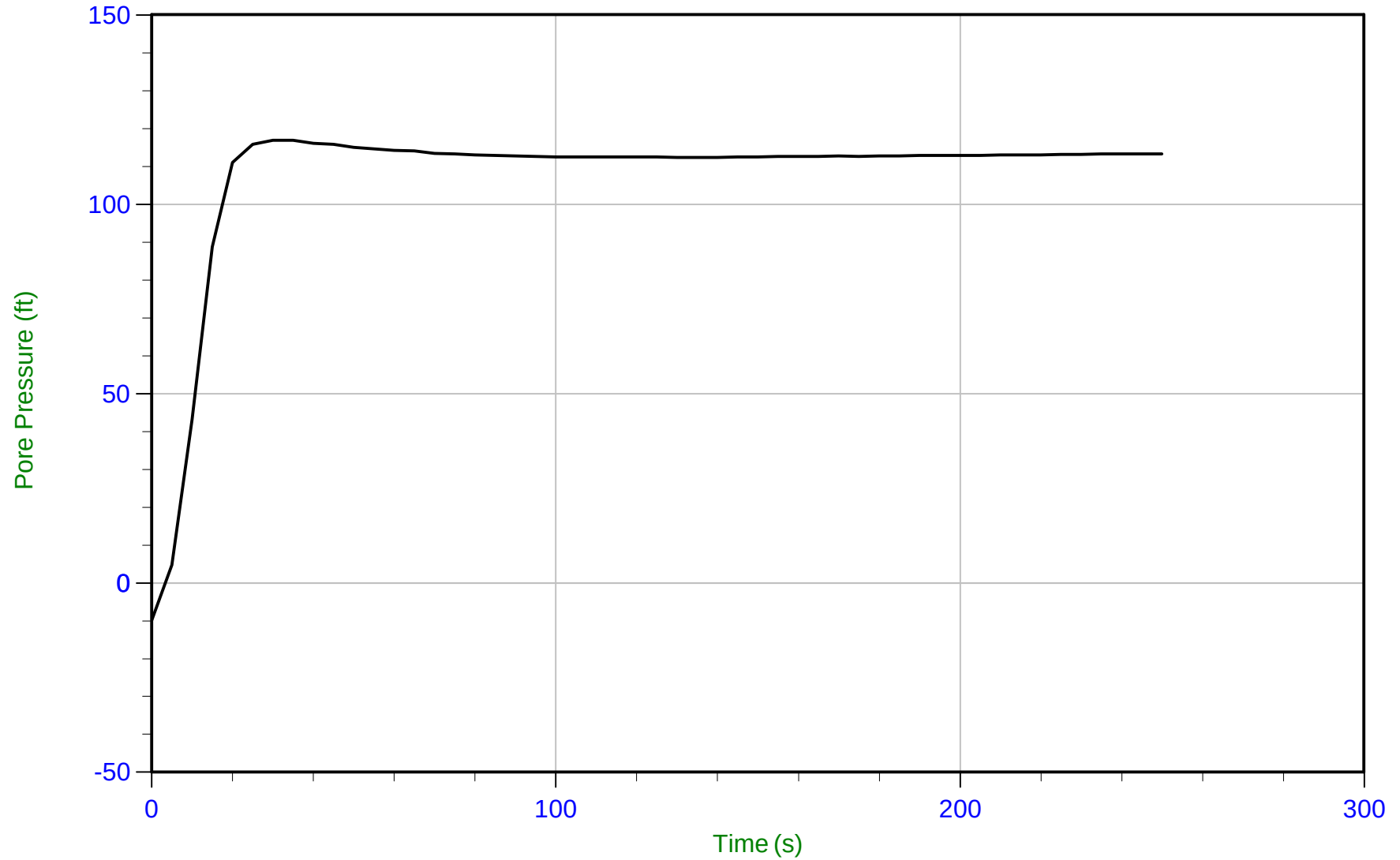
WT: 2.050 m / 6.724 ft
Ueq: 22.2 ft



Murray Engineers

Job No: 20-56-21016
Date: 06/24/2020 11:46
Site: Vantage Potential Campus

Sounding: SCPT-05
Cone: 496:T1500F15U1K Area=15 cm²



Trace Summary:

Filename: 20-56-21016_SP05.PPF
Depth: 32.000 m / 104.986 ft
Duration: 250.0 s

u Min: -9.9 ft
u Max: 116.9 ft
u Final: 113.3 ft

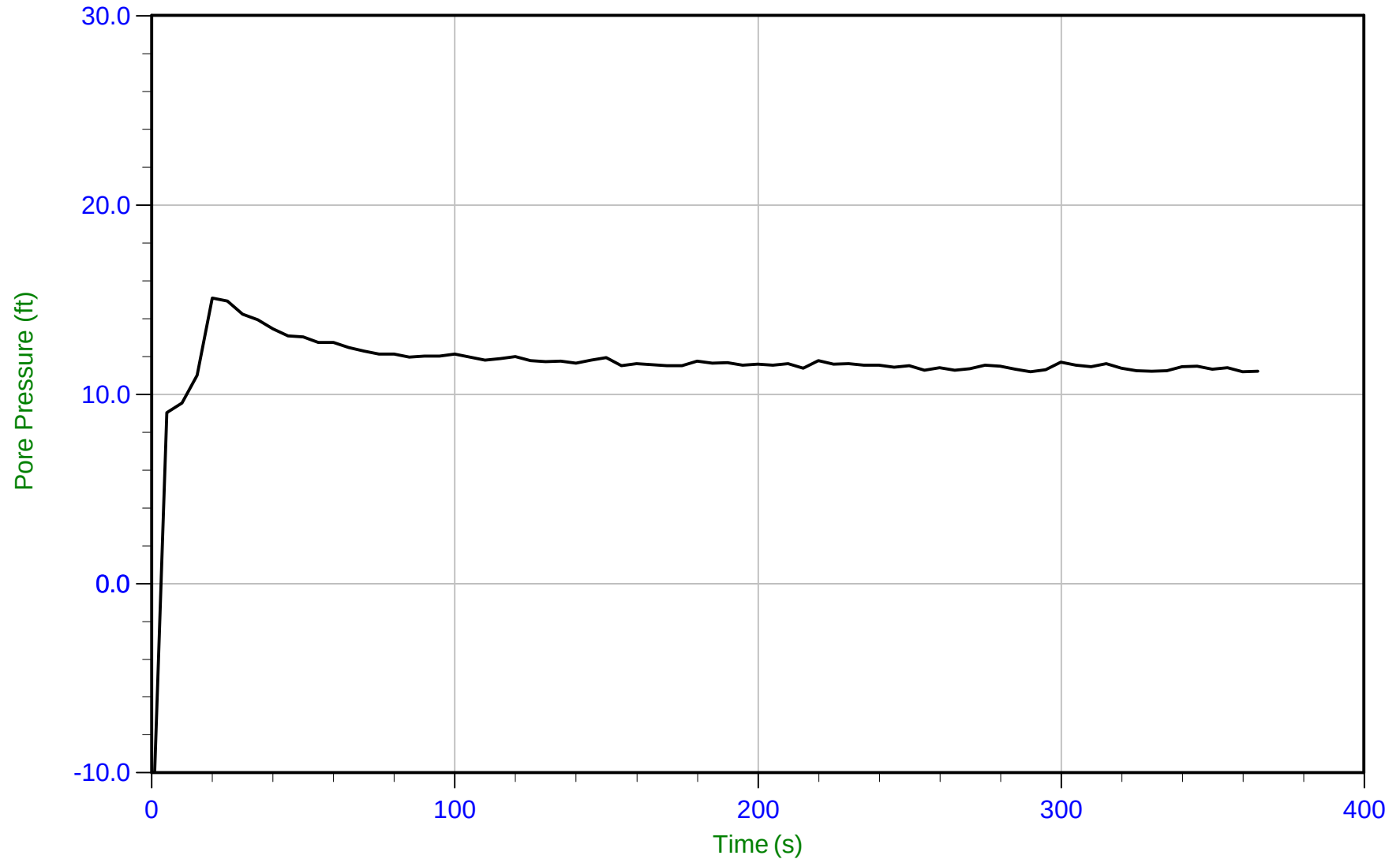
WT: -2.531 m / -8.304 ft
Ueq: 113.3 ft



Murray Engineers

Job No: 20-56-21016
Date: 06/24/2020 13:03
Site: Vantage Potential Campus

Sounding: SCPT-06
Cone: 496:T1500F15U1K Area=15 cm²



Trace Summary:

Filename: 20-56-21016_SP06.PPF
Depth: 5.800 m / 19.029 ft
Duration: 365.0 s

u Min: -14.6 ft
u Max: 15.1 ft
u Final: 11.2 ft

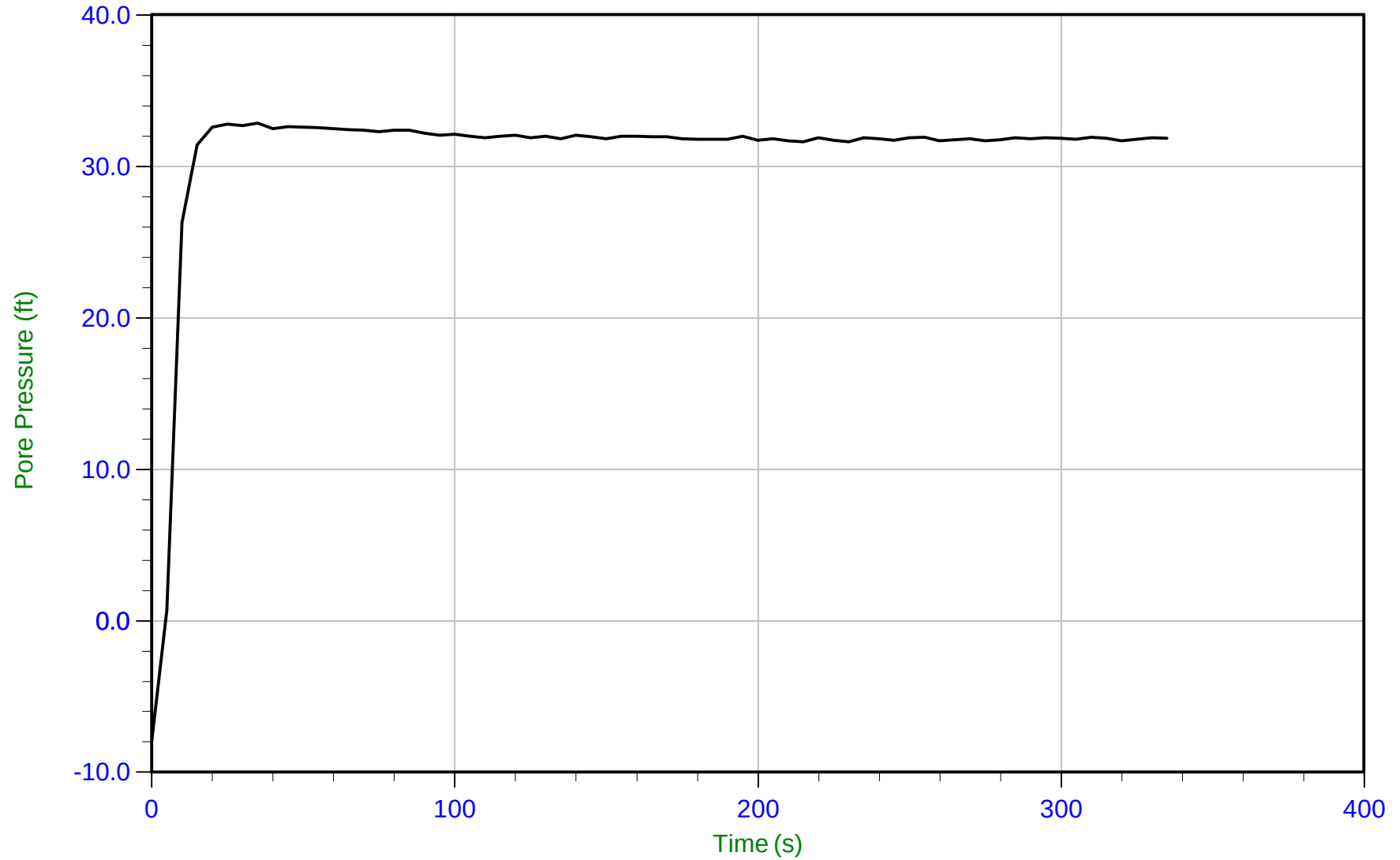
WT: 2.377 m / 7.797 ft
Ueq: 11.2 ft



Murray Engineers

Job No: 20-56-21016
Date: 06/24/2020 13:21
Site: Vantage Potential Campus

Sounding: SCPT-07
Cone: 499:T1500F15U1K Area=15 cm²



Trace Summary:

Filename: 20-56-21016_SP07.PPF
Depth: 11.100 m / 36.417 ft
Duration: 335.0 s

u Min: -8.0 ft
u Max: 32.8 ft
u Final: 31.9 ft

WT: 1.399 m / 4.591 ft
Ueq: 31.8 ft