Appendix D-2

Fault Rupture Hazard Assessment

Kimley»Horn

FAULT RUPTURE HAZARD INVESTIGATION
PROPOSED MULTIFAMILY RESIDENTIAL DEVELOPMENT
1515 WALNUT GROVE AVENUE
ROSEMEAD, LOS ANGELES COUNTY, CALIFORNIA

Prepared for

LEWIS MANAGEMENT CORPORATION
1156 NORTH MOUNTAIN AVENUE
UPLAND, CALIFORNIA 91786

Prepared by

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Project No. 14030.001

Revised September 27, 2024

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Leighton Consulting, Inc.

Revised September 27, 2024

Project No. 14030.001

Lewis Management Corporation
1156 North Mountain Avenue
Upland, California 91786

Attention: Mr. Glen Crosby, Vice President Regional Planned Communities

Subject: Fault Rupture Hazard Investigation
Proposed Residential Development
1515 Walnut Grove Avenue
Rosemead, Los Angeles County, California

Per our July 12, 2023 and July 26, 2023 (Revised March 12, 2024) proposals, authorized on January 19, 2024 and March 21, 2024; Leighton Consulting, Inc. (Leighton) presents the results of our fault hazard investigation of the Alhambra Wash / East Montebello Fault for the subject project in support of the proposed residential development, located at 1515 Walnut Grove Avenue in the City of Rosemead, California.

California law (*Alquist-Priolo Earthquake Fault Zoning Act, Chapter 7.5, Div. 2, California Public Resources Code* (AP Act) prohibit the location of developments and structures for human occupancy (2,000 person-hours per year) across the trace of active faults making the acquired information from these studies crucial to planning and construction of new developments. Locating active faults is normally done early in the planning process so building constraints (*setback* or *no build zones*) can be established. Alternative approaches to development planning are permitted under the AP Act and can include green belts, parkways, roads and parking lots.

The fault classification criteria adopted by the California Geological Survey, formerly the California Division of Mines and Geology, defines Earthquake Fault Zones (CGS, 2018) along Holocene-active or pre-Holocene faults. In general, CGS defines a Holocene-active fault is one that has had surface displacement within Holocene time (11,700 years). A pre-Holocene fault whose recency of past movement is older than 11,700 years is not considered active per State of California current definition.

Review of the *Earthquake Zones of Required Investigation for the El Monte Quadrangle* indicate this site **is** located within a currently designated overlapping *Earthquake Fault and Liquefaction Zone* (CGS, 2017). Herein we address only the Earthquake Fault Zone as mitigation methods differ for each zone, i.e. AP Act only allows avoidance while the

Seismic Hazard Mapping Act allows mitigation through geotechnical engineering design. Liquefaction related analysis is provided under separate cover (Leighton, 2024). However, based on the findings and interpretations from our subsurface explorations, no Holocene-active faults are present within the limits of our exploration at the site because the deeper sediments exposed are older than the 11,700 years and are not impacted by fault activity. Therefore, we conclude that the faults as previously mapped through the site are shown to be overlain by undeformed pre-Holocene age sediments, and as such pose no significant planning constraints under the AP Act. A minor exception exists in the northeastern and southwestern site corners, which, were not cleared beyond the limits of the investigation due to utility conflicts. As a result, a no build zone of 15 feet in a trend N46°W are recommended in these areas unless subsequent investigations are performed and yield similar results, see Plate 1, *Exploration Map*.

Specific recommendations for site grading, foundations, and other geotechnical aspects of the project are presented under separate cover (Leighton, 2024).

We appreciate this opportunity to be of service. If you have any questions regarding this report or if we can be of further service, please call us at your convenience at **(+1 949-250-1421**, directly at the phone extensions or e-mail addresses listed below:

Respectfully submitted,

LEIGHTON CONSULTING, INC.





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1.0 INTRODUCTION

1.1 Executive Summary

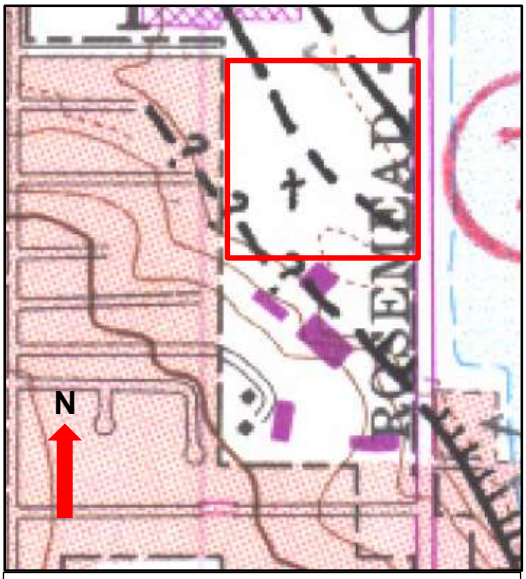


Figure 4b in FER-222-Fault locations based on aerial photo interpretation, tonal and vegetation lineaments; El Monte Quadrangle, red box denotes location at 1515 Walnut Grove Avenue

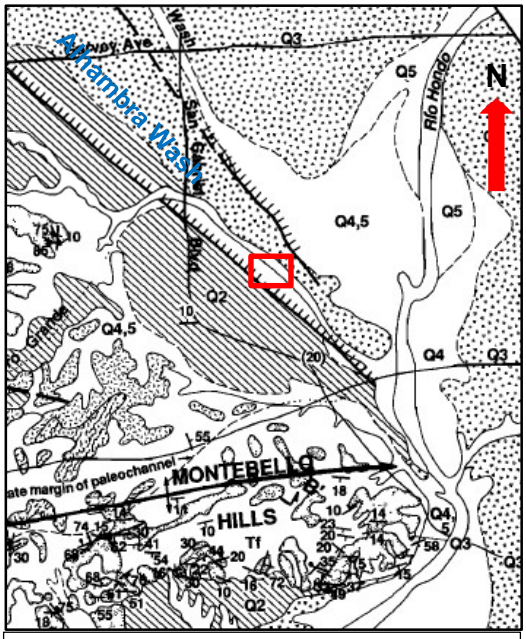


Plate 1, Bullard and Lettis (1993) red box denotes location at 1515 Walnut Grove Avenue. Tick marks on escarpment denote down. See Figure 5 in this report for larger view.

This report presents the results of our fault hazard investigation for the mapped faults shown on Figure 4b in FER-222 (Treiman, J.A., 1991), adjacent image, located at 1515 Walnut Grove Avenue, Rosemead, California, see Figure 1A, *Site Location Map*. The "*Alhambra Wash Fault*" has been mapped at the northeast margin of the Montebello Hills and has been interpreted as a steeply northeast dipping fault forming the eastern boundary of the Montebello Oil Field (CDOG, 1961) and referred to by name in FER 222 (Treiman, 1991). This fault has been mapped by Bullard and Lettis (1993) postulating it as the extension of the Whittier Fault noting this concept on Figure 12 in their report (Bullard and Lettis, 1993). This feature is also referred to by the United States Geological Survey (2017) as the "*East Montebello Fault"*. The fault has been mapped in different locations (±45 feet) by each geologist (*see References*) but they all show features interpreted as fault related trending roughly N39°W to N47°W through the site (Plate 1).

Fault investigations have been performed by others (SCEC Study, Gath *et al.,* 1994*;* Ehlig, 1999; Hushmand and Associates, 2002, and PML, 2008) on properties north of this site to determine if lineaments and topographic irregularities are caused by active faulting or erosional processes along one or more strands of the Alhambra Wash fault. As a result of interpretations made by consultants during the course of the investigations (specifically Hushmand and

Associates, 2002), setbacks from strands interpreted to be Holocene active were recommended and established on properties north of this site where faults were observed in the fault trenches. These setbacks did not extend to the southern boundary (northern property line of this site). State law requires a special fault hazard investigation to ensure that projects with habitable structures are not constructed across the surface trace of Holocene active faults.

Our fault investigation was oriented in transects roughly perpendicular, or as near to perpendicular as feasible based on site constraints, to the trend of the mapped faults (Plate 1) to screen the entire site using continuous core borings (CCB-1 through CCB-6), Cone Penetrometer Test (CPT-1 through CPT-49) soundings, cross section interpretations (Transects 1, 2 and 2A) coupled with excavating and logging four (4) fault trenches FT-1 through FT-4 (Plate 1) ranging in depth from approximately 15 to 25 feet deep. The borings and CPTs were plotted onto cross sections (transects) and sedimentary layers were correlated from probe to probe. Supplemental borings (CCB-7 and CCB-8) were drilled to attempt to refine key correlation questions. Where there were correlation inconsistencies remaining, a fault was interpreted and trench excavated or additional core borings added, except for the northeast and southwest corners, the transects were adequate to refute the presence of a Holocene-active fault.

Those locations where faults could still be interpreted were then trenched to attempt to expose the fault and/or the stratigraphic anomaly and thereby understand the cause of the anomaly. The trenches (FT-1 through FT-4) excavated for this study were cumulatively 367 feet long and up to 25 feet deep, ramped on one end and benched so as to not require shoring, with the exception of FT-1, which was shored with hydraulic trench shoring for safety.

If the sediments were not offset by a fault across the trench, then it could be concluded that the fault(s) was inactive or not present and would pose no constraints to the future development plans. However, if sediments were displaced across a fault(s), we would then trace the fault upwards through the overlying sediments and surface soil horizons and attempt to make a determination as to the age of the most recent faulting event. If it could be demonstrated that the most recent event was older than the State of California-defined 11,700 years, the fault could be concluded as inactive (pre-Holocene). If the fault was determined to be younger than 11,700 years (Holocene active), it would then pose a planning constraint, and more focused trenches or borings would be required to precisely locate the fault(s) across the site and define appropriate setback zones.

Our investigation has shown that none of the previously mapped FER-222 faults were interpreted in the transects or encountered in the trenches. The stratigraphy of the trenches (FT-1 through FT-4) demonstrated that the FER-222 Figure 4b (Treiman, 1991) faults mapped through the site did not affect sediments in the trench to a depth of 25 feet in the trenches and deeper as correlated across the transects in the CPT's and CCB's. Instead, the anomalies have been interpreted to be the result of channel cutting and filling by the fluvial systems, and while it might have been originally controlled by an underlying fault in the geologic past, none of the exposed sediments were themselves deformed by fault offset to the full depth of the trenches, which takes us back in time to the Pleistocene.

Mapping and geomorphic interpretation combined with C^{14} radiocarbon dating of the sediment exposures suggests Holocene to late Pleistocene incision and scour occurred in older terrace material primarily from regional flood events on the Rio Hondo and San Gabriel Rivers, Alhambra Wash and the southeasterly flowing stream emanating from the Portero Grande Valley located along the northeast margin of the Montebello Hills Fold. Deposition occurred as these flood events waned in velocity accentuated by northwest to southeast trending flows from the Alhambra Wash interpreted to account for the variation in ages from early Holocene to late Pleistocene age packages as exposed in the trenches.

Lateral continuity of sediment packages below the erosional escarpment (unconformity) observed and interpreted in the Quaternary deposits onsite fit this erosion model. Therefore, the Alhambra Wash Fault (AWF), although expressed locally in the topography of the Montebello Hills, and as previously mapped through the site, are shown to be overlain by undeformed pre-Holocene (Pleistocene) sediments at this site. Therefore, based on this interpretation, supported by the data, tectonic origin is not the only possible interpretation for formation of lineaments observed in aerial images (FER-222) or for formation of topographic scarps in the Alhambra Wash study area and, as such, pose no significant development planning constraints under the Alquist-Priolo Earthquake Fault Zoning Act.

1.2 Site Description and Proposed Development

The site is currently occupied by a 4-story office building on the east and an associated parking lot on the west. Drive aisles on the property are present to the north, south and east. Walnut Grove Avenue is present to the east, residential development to west, commercial office development to the north, and a private university campus to the south. Review of historical aerial imagery indicates the

site was vacant in 1948. A small creek drained east-west across the center of the property, believed to have originated in the Portero Grande Valley, a gap in the Montebello Hills to the west of the site. Between 1948 and 1980 the site remained mostly vacant, although several small structures appear present in the north portion of the site. Per the Los Angeles County Assessor online portal (https://portal.assessor.lacounty.gov/mapsearch), by 1983 the existing office building had been constructed.

Based on review of the plan *Rosemead Concept Site Plan Lewis Management Corporation Rosemead, California*, prepared by Woodley Architectural Group Inc., dated November 23, 2023, Scale 1"=40', we understand the 9.28-acre site is planned (subject to change) for 178 3-story residential units with garages all at grade. Access to the development will be provided along the east side at two locations fronting Walnut Grove Avenue. Ancillary improvements to include drainage, utility infrastructure, hardscape, landscape, drive aisles and uncovered parking areas.

1.3 Project Scope and Purpose

This report presents the results of our fault hazard investigation for the mapped faults in FER-222 (Treiman, J.A., 1991) located at 1515 Walnut Grove Avenue, Rosemead, California (site). The fault locations as shown on Figure 4b in FER-22 were reportedly based on tonal and vegetation lineaments from aerial photo review, the contacts of which are dashed where the author is unclear (less defined) to their location and as such the faults may not be present where mapped. More specifically, this study falls entirely within the 7.5 Minute Series El Monte Quadrangle focused in a low-lying area of relatively flat, gently north-dipping fluvial and alluvial terrain bordered by the Montebello Hills on the west and south, see Figure 1B, *Regional Physiographic and Fault Map* for a broader view of the tectonic framework of the southern California region in relation to the site vicinity.

The purpose of this investigation was to evaluate the risk of surface fault rupture from the Alhambra Wash-East Montebello Fault (AWEMF) as mapped across the site planned for residential development. The AWEMF is considered by others to be an extension of the Whittier Fault system (Wright, 1987) and its connection is concealed below thick accumulations of fluvial sediments. However, the City of Rosemead identifies and simplifies this local segment as a single fault strand on Figure 5.2 and a segmented *en échelon* strand on Figure 5.3 in the Public Safety Element (January, 2022) querying its existence to the southeast below sediments of the Rio Hondo River floodplain. According to interpretations made by the

California Division of Oil and Gas (1961) this fault as mapped along the Alhambra Wash is coincident with the northeast margin of the Montebello Hills (prior to human-made fill placement) and may be the same as the steeply northeast dipping fault that forms the eastern boundary of the East Montebello Oil Field. For purposes of this report, given the previous work in this area and the City of Rosemead's Public Safety Element, it is appropriate to refer to the fault as the Alhambra Wash-East Montebello Fault, shortened herein as the Alhambra Wash fault (AWF).

Whittier Fault: The Whittier Fault is a prominent structural feature of the Los Angeles Basin occurring along a northwest trending zone of sub parallel *en échelon* north dipping fault structures. The right lateral strike slip Whitter fault, from the split near the Santa Ana River at the Riverside/Orange County line has been mapped locally for about 19 miles (32 km) along the southwest margin of the Puente Hills. Further northwest, across the Whittier Narrows adjacent the north slope of the Montebello Hills the fault is termed the East Montebello fault (USGS, 2017), see Figure 2, *Regional Geologic Map* for site location and surrounding geologic faulted terrain. Prior California Division of Mines and Geology evaluations of the Whitter Fault provided in Fault Evaluation Report (FER) 41, dated December 12, 1977 (Smith, D., 1977) were supplemented by the California Division of Mines and Geology in Fault Evaluation Report (Hart, E.W., April 20, 1979), which, in 1980 resulted in establishment of an AP Zone in Orange County due in part to age dating and fault trenching in the Prado Dam area by Leighton and Associates. Work in FER-222 (Treiman, 1991) resulted in an AP Zone being established at this site, see Figure 3, *Alquist-Priolo Earthquake Fault Zone.*

This fault investigation consisted of continuous core borings (CCB-1 through CCB-8), Cone Penetrometer Test (CPT-1 through CPT-49) soundings, cross section interpretations coupled with excavating and logging four (4) fault trenches FT-1 through FT-4 (Plate 1) ranging in depth from approximately 15 to 25 feet deep. The trenches were ramped at one end and benched, so as to not require shoring, with the exception of FT-1 (shored for safety). At the conclusion of our trenching for each segment, the City geologist visited the trench exposures on three separate occasions, see Plate 2, *Cross Sections for Transects T1, T2 and T2A*. Upon completion of the study and City review, the fault trenches were backfilled and compacted and the study area restored to about pre-study conditions. Three phases of investigations were completed to develop conclusions about the general fault environment and fault activity around the site.

The scope of this geotechnical exploration was based on discussions with the city reviewer Mrs. Tania Gonzalez, our onsite meeting on June 22, 2023, review of the geologic and geotechnical documents (*References*), and our experience. The scope of work was conducted in three (3) phases with interpretation and presentation of data at the end of each phase to the city reviewer.

The main elements of our investigation included the following tasks:

- ***Background Review*** – Reviewing existing geologic maps, Fault Evaluation Reports and Utility Maps to determine the previously mapped or inferred boundaries between terrace deposits, uplifted bedrock of the Montebello Hills and fluvial sediments, inferred fault locations and onsite utility location. Documents reviewed in preparation of this report are listed in the *References* at the end of text. The inferred fault locations from FER-222 compiled by the United States Geological Survey (USGS, 2017) are shown overlying 1938 aerial imagery, and on Plate 1, *Exploration Map* and Figure 4, *1938 Orthomosaic and Alquist Priolo Fault Zones.* Aerial photo review has been done by others in the past and interpretations by past consultants of tonal or vegetation lineaments and linear terraces resulted in fault traces being dashed on maps. Reinterpretation of lineaments or suspect fault traces in aerial imagery was not performed for this study; rather, we use aerial imagery to present the locations of inferred faults to supplement illustrations in this report.

- **Health and Safety Workplan:** Prepared a site workplan, health and safety plan, and confined space plan for delineation of scheduled drilling/trenching activities at the site. The workplan included a proposed excavation plan showing our proposed drilling and excavations outlining in detail how the project would be conducted and who will work where. The health and safety plan described a specific chain of command identifying lines of authority, responsibility, and communication as it pertains to the health and safety functions at the site in compliance with *29 CFR 1910.120.* The confined space plan complied with the requirements of OSHA's Confined Space Standard, 29 CFR 1910.146 with respect to activities conducted in confined spaces, i.e. trenches.

- **Phase 1 – Cone Penetrometer Testing and MASW Survey:** The initial phase of investigation was performed in February of 2024, and consisted of forty-nine (49) cone penetrometer test soundings (CPTs; designated CPT-1 through CPT-49) over three transects to depths ranging from approximately 38 to 50 feet below ground surface (bgs). The purpose of CPT exploration was to obtain

a continuous profile of subsurface soils across multiple transects at the site in order to correlate individual soil layers (Plate 2). CPT logs are included in Appendix A, *Cone Penetrometer Test Logs and Report.* Overlapping coverage afforded by these three transects are shown on Plate 1.

- **Phase 2 – Continuous Core Borings:** Continuous core borings were strategically placed with the goal of evaluating potential anomalies identified between CPT locations. As part of this phase of fault hazard assessment, we advanced eight (8) continuous core borings (CCB-1 through CCB-8) to depths of approximately 50 feet bgs. Core borings and photographs of each core are included in Appendix B, *Continuous Core Boring Logs and Photographs.* Core borings were integrated into the cross sections as shown on Plate 2. Details of orientation, length and coverage from CPT's and CCB's are shown in Table below.

Transect and Length (feet)	Orientation	Cone Penetrometer Test Soundings (CPT's)	Continuous Core Borings (CCB's)
Transect 1; 465 feet	N35°E	CPT's 1 to 23	CCB's 1 through 4
Transect 2, 390 feet	N84°E	CPT's 24-40	CCB's 5 through 8
Transect 2A; 205 feet	N84°E	CPT's 41-49	CPT's only

- **Phase 3:** ***Exploratory Fault Trenching*** - Leighton directed the excavation of four (4) northeast-oriented exploratory fault trenches (FT-1 through FT-4), using a track-mounted excavator and 36-inch wide bucket. The trenches spanned the areas of subsurface anomalies interpreted during earlier phases of this study (Plate 1). The fault trench logs and photo mosaic produced as part of this investigation are presented on Plates 3A through 3D, *Logs and Photo Mosaics of Fault Trenches.* Fault trenches are integrated into the interpreted subsurface profiles presented on Plate 2.

- ***Radiocarbon Age Dating***– Leighton collected and submitted for dating by Beta Analytic two charcoal samples obtained from the continuous core borings CCB-3 and CCB-6. The results are presented in Appendix C, *Radiocarbon Dating Analysis Report*.

- ***City of Rosemead Review*** – A City of Rosemead geologist visited the site upon the completion of cleaning and logging of each trench.

- ***Trench Backfilling*** – After completion of logging by Leighton geologists and review by the City of Rosemead, the trench was backfilled with previously excavated soils placed in loose lifts and compacted to a minimum of 90% relative compaction as determined by proctor testing. Observation and field evaluation of the backfill placement and compaction was provided during this investigation. The trenches were completed at the surface with compacted miscellaneous base to provide a temporary surface suitable for vehicle traffic and to prevent soil runoff into on-site drainage systems. The field density test results are included in Appendix D, *Field Density Test Results*.

- ***Report Preparation*** - Preparation of this report presenting a summary of our findings, conclusions and recommendation. The report is signed by California licensed Certified Engineering Geologist (CEG) and Professional Geologist (PG) who were actively involved in the trench siting, excavation, review and reconnaissance with the City of Rosemead geologist. All observations were documented and plotted on Plates 2 through 3A-3E, and radiocarbon age is presented in Appendix C.

2.0 FIELD METHODOLOGY

2.1 Cone Penetrometer Testing

Evaluation of stratigraphy using Cone Penetrometer Testing (CPT) as a means of identifying major faults is a common practice and an accepted method by the California Geological Survey (CGS, 2018). The major application of the CPT is for soil profiling and classification. Typically, the cone resistance, (q_t) is high in sands and low in clays, and the friction ratio ($R_f=f_s/q_t$) is low in sands and high in clays. CPT classification charts provide a guide to the mechanical characteristic of the soil behavior type (SBT). Since both the penetration resistance and sleeve friction increase with depth due to the increase in effective overburden stress, the CPT data requires normalization (performed for this study) for overburden stress for very shallow or very deep soundings.

This phase of investigation (Phase 1) was performed in February of 2024, and consisted of advancing forty-nine (49) cone penetrometer test soundings (CPTs; designated CPT-1 through CPT-49) to depths ranging from approximately 38 to 50 feet below ground surface (bgs). The CPTs were located along three transects (T1, T2 and T2A). The first transect (T1) is oriented N35°E, roughly perpendicular to the average strike of the three mapped splays of the AWF system (average strike N43°W). Transects T2 and T2A were situated along the northern property line, are oriented N84°E, and overlap by approximately 70 feet (between CPT-37 to CPT-40 in T2, and CPT-49 to CPT-43 in T2A). The CPT locations and number designations are shown on attached Plate 1, *Exploration Location Map*. CPT profile logs and report are attached in Appendix A. Our interpretation of subsurface geology from these three transects are provided on Plate 2. Initially, the surface profile was generated using ZipLevel™ and direct measurement from each exploration in tenths of a foot. To reduce any error manually introduced in the field and provide a more accurate alignment profile and boring location, aerial photographs and high-precision GPS control points were used to create a detailed ground surface elevation model. Initially, the elevation model was generated from aerial imagery of the site. The GPS control points were surveyed using a Trimble GeoExplorer 7X device, with 48 points collected to align and enhance the accuracy of the drone-based elevation model. The resulting model achieved an accuracy of better than 10mm (or 1/2 inch), verified through post-processing with Trimble Pathfinder Office software (version 5.9).

2.2 MASW

During Phase 1 of this study, we performed a geophysical survey to evaluate seismic site class and to develop a shear wave velocity profile within the subsurface materials. This scope of work consisted of conducting five (5) seismic shear wave surveys utilizing Multi-Channel Analysis of Surface Waves (MASW) methods. The MASW survey generates surface waves utilizing a hammer and plate (shot), and processed data is used to create a two-dimensional color gradient model indicating variations in shear wave velocities that can be correlated to subsurface stratigraphy. It was intended that these transects would be helpful to the identification (or absence) of possible fault locations. Due to multiple concerns with the quality of MASW data collected and the product presented, it is our professional opinion that the results of the MASW surveys could not be relied upon for their intended purpose of fault screening and were therefore not considered in our interpretations during this investigation nor presented in this study.

2.3 Continuous Core Borings

Continuous core borings were strategically placed with the goal of evaluating potential anomalies identified between CPT locations. As part of this phase of fault hazard assessment (Phase 2), we advanced eight (8) continuous core borings (CCB-1 through CCB-8) to depths of approximately 50 feet bgs between February 14 and March 18, 2024. The continuous core borings were located adjacent to CPTs, on either side of the zones identified as having potential stratigraphic anomalies along transect T1 (CCB-1 through CCB-4) and the western end of transect T2 (CCB-5 through CCB-8).

The subcontracted driller used a hollow stem auger system equipped with a 5-foot long, 3-inch wide, continuous core barrel to collect cores samples. Core recovery was generally good in all holes and recovery in most intervals exceeded 90%, except where noted on the logs. Core runs were hand scraped to remove the rind of disturbed material then logged by a professional geologist. Continuous core samples were stored in boxes for further review and photo documentation (Appendix B). Correlation was performed by laying out the recovered cores side by side, where they were convenient to the City Geologist to review, and where correlation from core to core was based on grain size, color, texture, buried argillic horizons and the thickness of the stratigraphic units or soil horizons. Thin laminations and fining upward sequences were used as distinctive markers that aided our correlation of units from core boring to core boring. Photos of the core borings are included in Appendix B, *Continuous Core Boring Logs and Core Photographs.* The boring locations are shown on Plate 1, *Exploration Location Map.*

2.4 Exploratory Fault Trenching

During Phase 3 of this investigation, conducted from March 25 to May 20, 2024, Leighton directed the excavation of four (4) northeast-oriented exploratory fault trenches (FT-1 through FT-4), using a track-mounted excavator and 36-inch wide bucket. The trenches spanned the areas of subsurface anomalies interpreted during earlier phases of this study, and were oriented roughly perpendicular to the three fault splays mapped through the site FER-222 (Treiman, J.A., 1991). The USGS Fault and Fold Database (Bryant, W.A., 2017) compiled the work of Treiman (1991), however the location of those FER-222 faults differs slightly from compiled USGS 2017 locations when georeferenced onto our Plate 1. *For purposes of this report we show all fault locations, however it should not be construed that five separate fault strands have been mapped on this site.* The trenches were stepped/benched in 5-foot vertical intervals and tailings were temporarily stockpiled adjacent to the trenches.

Trench FT-1 was excavated to a total length of approximately 40 feet, a width of 30 feet, and approximately 13 feet in depth. The trench sidewalls were laid back at approximately 1.5:1 from top-of-trench to approximately 8 feet in depth on the north, east and west, with a vertical south wall, and shoring in lower segment in order to provide safe working conditions. Trench FT-2 was approximately 107 feet long, 50 feet wide, and between 20 and 23 feet deep; FT3 and FT-4 were connected via a curvilinear junction for a total excavated length of 230 feet, a width of approximately 50 feet, and a total depth of 19.5 feet at FT-3, deepening to 25 feet at the northeastern end of FT-4.

A team of geologists prepared the west trench walls of each trench for logging and photographic documentation by removing excavator smear and gouge marks, using various trowels, shovels and other hand-held digging tools. A system of linear stations (Sta.) were painted along the walls, using a series of string lines. The geologists prepared a detailed log of each trench at a scale of 1-inch equals 5 feet. The logs and paired trench mosaics are presented on attached Plates 3A through 3D, *Trench Log FT-1* through *Trench Log FT-4*. The approximate trench locations are shown on Plate 1, *Exploration Location Map*. Subsurface interpretations from site specific data are presented on Plate 2, *Cross Sections for Transects T1, T2 and T2A* with the trenches inserted into the section for reference and to aid in interpretation of stratigraphy.

3.0 GEOLOGIC FINDINGS

3.1 Background Review

1994, A Paleoseismic Investigation at the Northern Terminus of the Whittier Fault in the Whittier Narrows Area, Rosemead, California, Technical Report to the Southern California Earthquake Center*;* Gath, E.M., Gonzalez, T., Drumm, P.L., and Buchiarelli, P., dated May 18, 1994: The purpose of this report was to *investigate the structural kinematics of the Whittier Narrows fault system through three-dimensional fault trenching of a prominent topographic escarpment* first identified as a possible fault scarp by Bullard and Lettis (1993). The site is located immediately north of 1515 Walnut Grove Avenue bound by Walnut Grove Avenue, Rush Street and Delta Street in the city of Rosemead. The eleven (11) trench study was unable to resolve physical relationships between the subsurface East Montebello Fault/Whittier Extension fault of Wright (1991) modeled as oblique right lateral fault and the escarpment features investigated by Treiman (1991). Although a fault interpretation was preferred due to observations from fault trenches T-1, T-2 and T-3 of this study, it is reported that *tectonic origin is not the only possible interpretation for the formation of small topographic scarps in the Alhambra Wash study area. Scarps could have been created by fluvial erosion, subsidence fissuring due to groundwater withdrawal, terrace tread (flat surface of former floodplain) erosion, liquefaction induced lateral spreading and channel bank landsliding*; all valid interpretations.

Soil Ages: Age control for this study was reportedly based on soil stratigraphic analysis of soil profiles described in the field and comparison of those soil descriptions with published soil chronosequences from the Los Angels Basin. These soils were then *correlated with colluvial and alluvial sequences interpreted from the trenches in an effort to recreate the late Pleistocene to Holocene geomorphic history and faulting at the site*. Interpretations suggest the oldest surface was incised and the resultant channel filled prior to deposition and development of soils that characterized the second surface. Ages of the first surface were estimated at *1-2ka with an overthickened A horizon, a process reported as common to the Los Angels Basin where it is subject to flooding. The second surface was identified as a colluvial soil with moderately developed horizons suggesting late Pleistocene, or about 20 to 30ka. The oldest surface was identified as a silty sand to sand with scattered channels occurring within 1 to 2 meters of the surface, impacted less by soil forming processes*. It was noted in some areas of this site that the *20 to 30ka colluvial unit overlies alluvial pebbly*

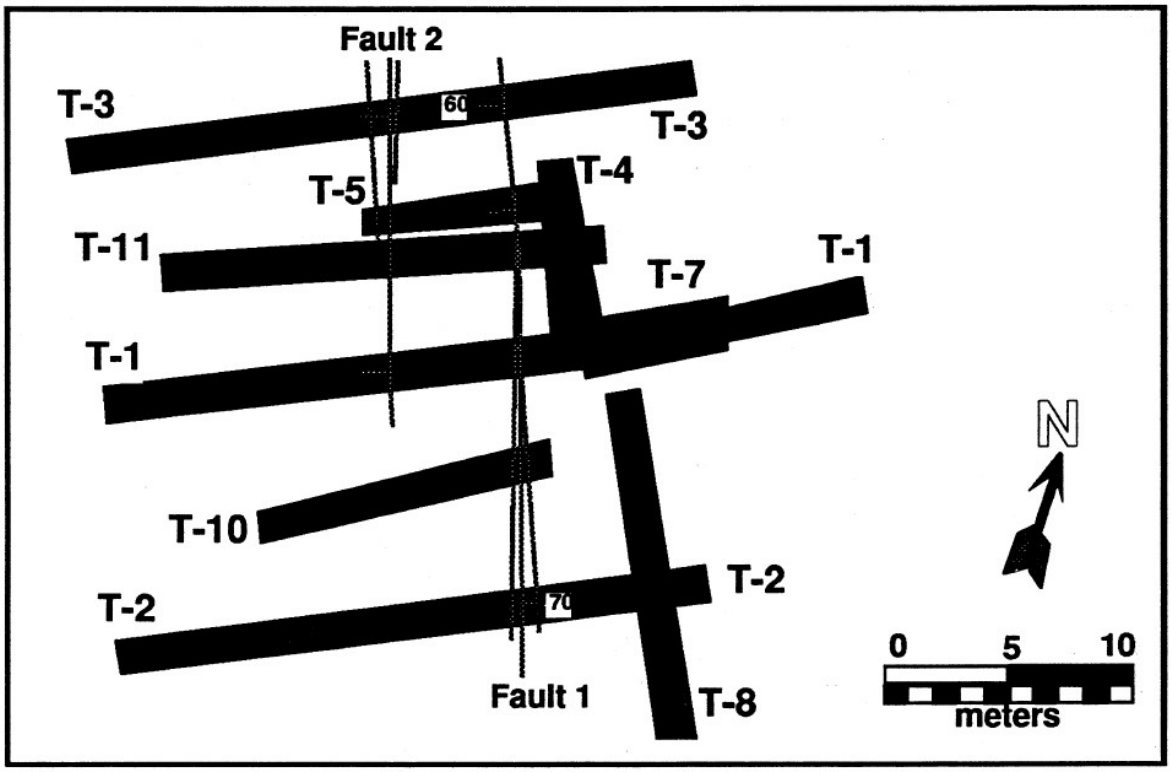


Figure 9 in Gath et al, 1994: Trench location map showing locations of two fault zones. Trenches T-6 and T-9 were located 175 to 70 meters southeast of this figure along the trend of Fault 1.

channel deposits trending N9° to 27°W inset into the oldest geomorphic surface, which were estimated to be deposited between 30 to 45ka. It was reported these pebbly gravel channel deposits are considerably coarser than the underlying and overlying sediments, arguing that there was a significant change in either base level or climate, *postulating that a major period of strath down cutting occurred about 40ka. This downcutting was then followed with a period of backfilling between 30 to 40ka and that these channel features were deposited in a low energy environment flowing along scarps made by fault offsets*. It was reported *that multiple surface displacing earthquakes occurred with up to 1-meter displacements around 35,000 years ago with up to two events occurring in the last 4 to 5 ka*.

***Other Interpretations**:* Trench excavations with exception of T-6 and T-9 reveal laterally offset and *truncated beds concluding that erosion by Alhambra Wash alone is not a viable model to account for the origin of all scarps in the area*. However, in trenches T-6 (70 meters long, 5 meters deep) and T-9 (30 meters long, 5 meters deep), which are closest to the northern property line of 1515 Walnut

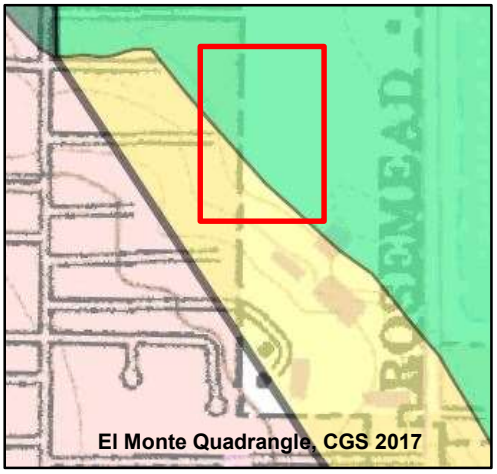
Grove Avenue, permit different interpretations. **Trench T-9** *is coincident with a scarp and alluvial units are down dropped on either side with channel erosion into the scarp above and west of the fault logged at Station 16 in the trench with no displacement of the A Horizon above the fault.* **Trench T-6***, south of T-9 by 100 meters and closest to the property line, exposes alluvial sediments incised into the terrace sediments with no evidence of faulting observed*. *As mapped by Treiman (1991) the AWF should have been exposed in T-6 at Sation 25*. However, no evidence of a fault was observed in the trench. Channeling in the wash is a logical argument as to the formation of lineaments observed by Treiman in aerial images reviewed in support of FER-222. Based on logging of T-6 Fault 1 does not continue to the southern property line.

Treiman 1991 in Gath* et al*: Mapping of the faults in the immediate area suggest the structure consists of a right and left stepping zone of small discontinuous down to the east fault. Treiman did map a dying out fault trace 60 meters west of T-6 just into the 1994 study site property, however his apparent fault was not included in the AP Zone covering the site.

1999, AP Special Study GO-5 Parcel City of Rosemead, California, dated November 1999: This report was prepared by the Southern California Edison Company Geotechnical Group summarizing the findings of geologic studies prepared by Dr. P.L. Ehlig presented in October of 1999. In general, the Ehlig work included excavation and logging of over 2,000 linear feet of 15- to 25-foot-deep fault trenches, logging and mapping, surveying of the trenches for location accuracy and preparation of trench logs, maps and reports. Key findings summarized in this report was the AWF was observed in mostly all trenches with exception of most northerly and easterly trenches 1A and 8. In remaining trenches, 1B through 6, it was noted the location of the fault was an east dipping feature with dip varying between 54-88 degrees striking N20°W. Features were described as a series of *en échelon* breaks in a zone no wider than 40 feet, more commonly the features were a few feet apart. Toward the south the offsets along interpreted faults were measured in terms of inches with magnitude of features diminishing towards the south. Dr. Ehlig discussed the origin of these features suggesting they are *liquefaction related associated with strong ground shaking from tectonic faulting underlying the area*. Restricted use zones were established approximately 100 feet wide intended to prevent structure for human habitation being constructed.

1999, Alquist Priolo Special Study of the Alhambra Wash Fault Southern California Edison GO-5 Parcel City of Rosemead, Ehlig, P.L., Bishop, K., McKeown, J., dated October 18,1999: The main findings of this report were summarized above. Holocene active faults were reported as exposed in a 50-foot wide zone in a northwest transect across the parcel. A 100-foot wide restricted use area (RUA) covering an area of 2 acres was recommended. Ehlig reported that *although the AP Zone was established for this area he believed strongly the observed and interpreted faults are of deep seated tectonic origin, and that there is a strong possibility that the faults were caused by liquefaction during major earthquakes and extend no more than 50 feet in depth*. Ehlig reported that Holocene active or lack of faulting were not observed in his trench T1-A. Trench 7 as observed and documented *contained numerous sharply defined overlapping beds, none of which were faulted*. *Two tiny faults offset beds about two inches (east side down) near the bottom of the trench but terminated below the middle of the trench and did not cut through Holocene sediments and were considered inactive (pre-Holocene)*. Trench 8 exposed well developed bedding in the bottom and none of the stratigraphy was offset by faults (no faults observed) and no setbacks were recommended for this observation in Trench T7 and T8.

Plausible Origins: Treiman (1991), in Ehlig (1999) interpreted the AWF as of deep-seated tectonic origin, considering it a continuation of the Whittier fault although there is no proof they are connected. Ehlig offered an alternate interpretation that the observed faults and scarps formed during liquefaction of water-bearing sediments at shallow depth. The State recognized this and included the project site in the western edge of the Seismic Hazard Zone for liquefaction as shown by green shading on the inset image (approximate site boundary noted as red line), yellow shading is the AP zone. Ehlig states that *faults formed by either process may form similar rupture surfaces, and distinguishing between the two plausible origins is important. One requires structural set back and the other can be mitigated through sound geotechnical engineering practices*. Ehilg noted this site contains shallow water and potentially liquefiable sediments, further stating *the fault has proper direction and sense of slip (right slip with east side down) to be the west side of a lateral spread caused by liquefaction within a backfilled channel*



of Alhambra Wash. Ehilg's professional opinion suggested the *alignment of Alhambra Wash was controlled by straight line incision between the Whittier Narrows and the channel source at Millard Canyon with the Alhambra Wash Fault likely originating by liquefation of latest Pleistocene and Holocene backfill in a former channel of Alhambra Wash*.

2002, Surface Fault Rupture Investigation Southern California Edison Property GO-5 Parcel, City of Rosemead, Los Angeles County, California, by Hushmand and Associates (HA) Inc., dated October 2002: The intent of this report was to investigate the now Wal Mart site for traces of Holocene active faulting related to the Alhambra Wash Fault. Scope of work consisted of review of past studies (*References*), aerial photographs, maps etc. and excavation of four (4) trenches benched to depths of 15 to 25 feet. HA concluded the *site is underlain by nearly horizontal to slightly easterly dipping strata of Quaternary age. Zones of cracking and fractures extended northwesterly across the western half to third of the site interpreted to be related to the Alhambra Wash fault occurring in a zone of highly variable en échelon fractures. The geometry of these features was noted to range from vertical with normal down to the east to low angle inclination with reverse separation*. HA noted the strike of the feature is not linear or continuous and fractures occurred at short distance in different locations. In concert with review of prior studies HA suggested the features are discontinuous, highly fragmented, noting the feature, considered by HA to be of fault origin, was not

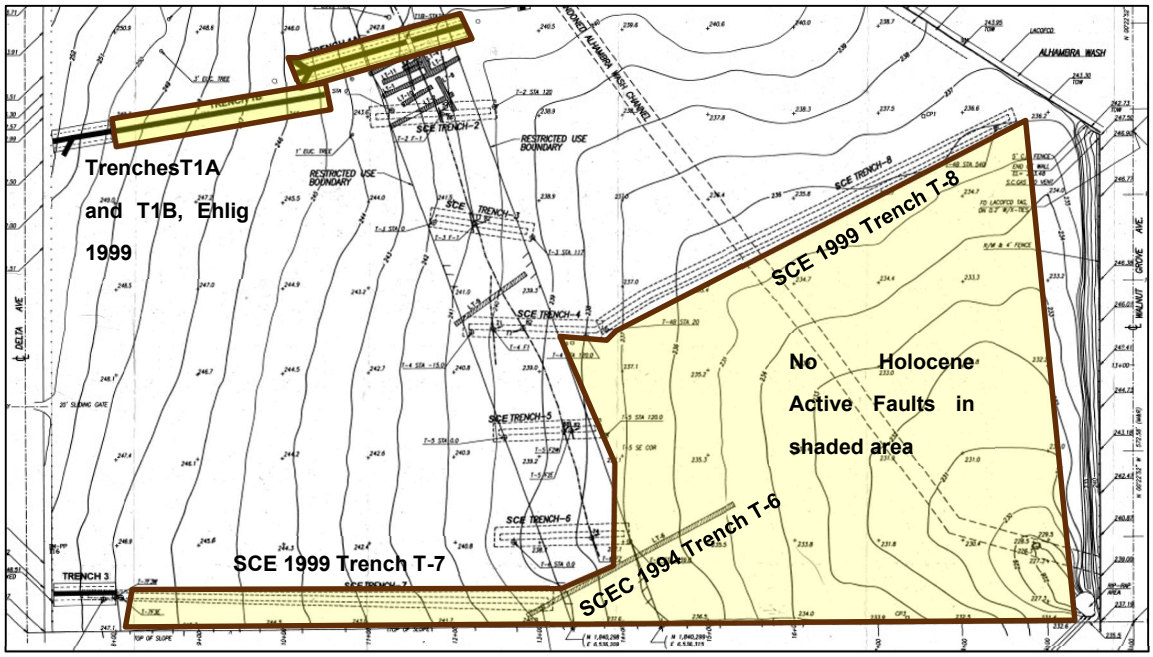
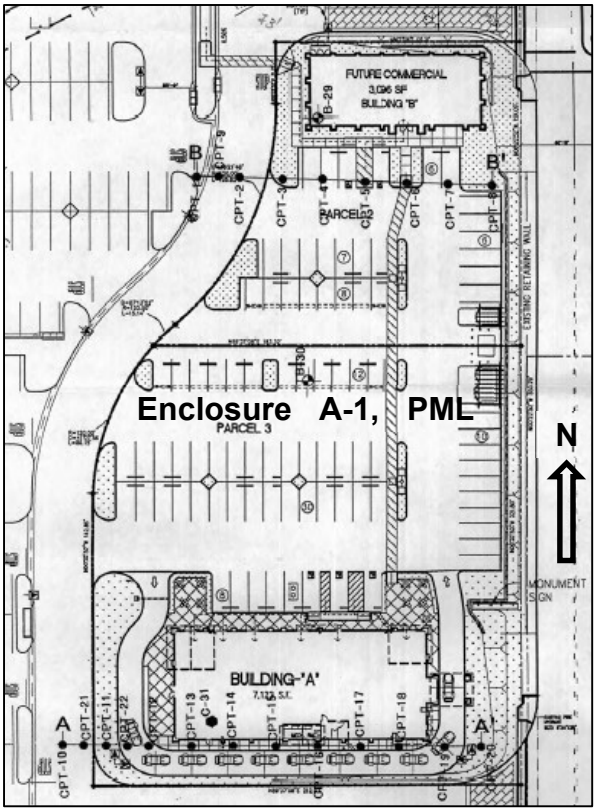


Plate 1 Site Topography Showing Faults and Building Restriction Zone, HA, 2002, modified to show zone of no Holocene active faulting

encountered in trenches along the northern or southern boundaries as evidenced by no Holocene active faults observed in trench T-6 (SCEC, 1994) and Ehlig, trenches T-7 and T-8 (1999) and HA trench 1A as shown above (PML, 2008 study not shown).

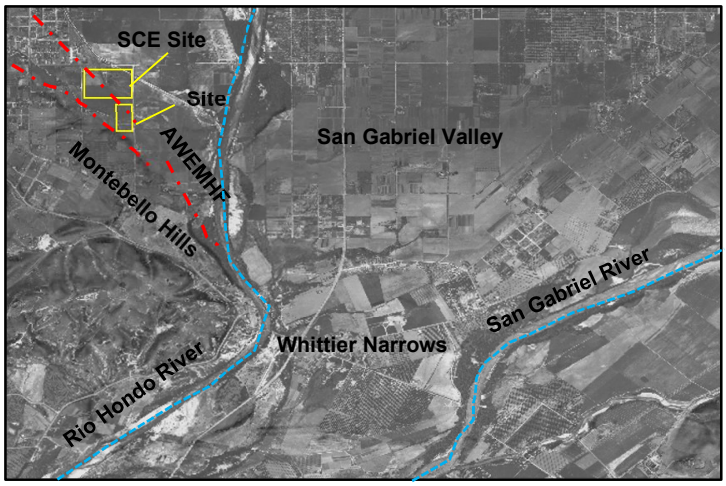
2008, Limited Fault Exploration Report Buildings A and B 1717 Walnut Grove Avenue, Rosemead, California, by Pacific Materials Laboratory (PML) Inc., dated August 27, 2008: The reported purpose of this project was to *evaluate the presence or absence of faulting of the Alhambra Wash Fault through advancement of twenty two (22) CPT's and review of existing literature for a relatively small portion of a 23 acre master parcel recently developed as a Walmart Center*. The PML site, *Enclosure A-1 in PML* (2008) is located approximately 456 feet north of the northern property line for 1515 Walnut Grove Avenue. More specifically the PML site is cited at the southwest corner of Rush Street and Walnut Grove Avenue in the city of Rosemead, California. It was reported the *onsite limits of the Alhambra Wash fault were well documented on this parcel in prior studies (References) west of the proposed buildings A and B, therefore the PML study was conducted within the eastern side of the subject parcel to evaluate presence of Holocene active faults*. Cross section A-A' in thieir study was constructed from susbsurface interpetations and, based on intepreted CPT data statigrahic correlations, aerial photo review, review of prior studies, PML concluded no evidence of faulting or lienaments were observed near Buildings A and B.



3.2 Geologic Setting

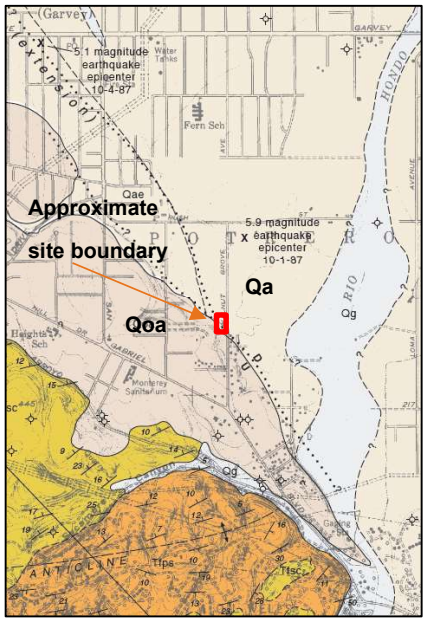
The proposed development lies within the western portion of the San Gabriel Valley, an east-trending, sediment-filled structural trough adjacent to the southern flank of the San Gabriel Mountains. The area is a transition zone from the east west trending Transverse Ranges geological province to the northwesterly

trending Peninsular Ranges province, both of which merge locally at the Puente, Repetto and San Jose Hills. The San Gabriel Valley is an almost enclosed basin with a very gentle slope that directs drainage from the Rio Hondo and San Gabriel Rivers southerly to Whittier Narrows, the lowest elevation between the Puente and Montebello Hills where surface waters escape to the Coastal Plain.



Regional Index Map to the site, based on 1938 aerial imagery, showing the approximate mapped fault location (red dashes), the Walmart Property (larger yellow box) where the Alhambra Wash fault was first investigated, and the Subject Property (smaller yellow box), location for this investigation. Fault trace is approximate (USGS, 2017)

The Montebello Hills lie at the southern boundary of the site and are generally characterized as an east-west band of low hills within the Montebello Oil Field. The Montebello and Puente Hills are separated by the Whittier Narrows, a structurally controlled gap through which the Rio Hondo and San Gabriel rivers empty onto the Coastal Plain. Published geologic maps indicate the site is underlain by Quaternary age young alluvial fan deposits (Qa) across the majority of the site, and Quaternary age old alluvial fan deposits (Qoa) in the far southwestern corner of the site. These deposits typically consist of varying amounts of silt, sand, and gravel (Dibblee, 1999, *Geologic Map of the El Monte and Baldwin Park Quadrangles Los Angels County, California*, Map No. DF-69. Epicenters for the Mw 5.1 and Mw 5.9 Whittier Narrows earthquake of October 1 and 4, 1987 are shown on the inset image above.



Dibblee, 1999 Map No DF-69

3.2.1 Geologic Structure

The tectonic regime of Miocene extensional system in southern California and the site area was very different from the compressional regime active today. Major changes relate to a transition of the North American tectonic plate boundary from subduction to a translational style of motion. This change resulted in formation of the San Andreas Fault system. Since middle- to late-Miocene time over the past 16 million years, the site area was subjected to first extensional and then compressional forces (Bjorklund, 2003). The north-south oriented extensional forces were active between 14 and 8 million years ago producing large depositional grabens and local volcanism. Miocene and older rocks were uplifted along the Whittier Fault by as much as 4.5 kilometers since cessation of extension at about 7 to 8 million years ago and the onset of north south crustal compression associated with the San Andreas transform fault system, which, produced about 50 kilometers of shortening across the Los Angeles Basin (Bjorkland, 2003).

In the mid to late Miocene under the extensional regime, the Proto-Whittier Fault began development as a normal fault with a right lateral component. Over the past 8 million years during the Plio-Pleistocene in this area of the Los Angeles Basin, the stress regime changed and the overall motion changed to that of convergence allowing the right lateral strike slip faults of the Peninsular Ranges (San Andreas, Newport Inglewood, San Jacinto Whittier-Elsinore) and the east-west trending left lateral oblique slip faults of the Western Transverse ranges (Santa Monica, Hollywood, Raymond and Sierra Madre) and related faults to mature.

Whittier Fault: The Whittier fault is the northwestward extension of the Elsinore fault. The Whittier fault is considered a strike-slip fault along most of its length with a component of vertical thrust, is approximately 40 km (25 miles) long, and extends from the Whittier Narrows section of the San Gabriel River southeastward to the Santa Ana River, where it is concealed beneath the alluvium. The Whittier fault separates the Puente Hills on the north from the alluvial floodplain of the Rio Hondo and San Gabriel Rivers on the south.

Alhambra Wash East Montebello Hills Fault: At the northwestern edge of the Puente Hills in the El Monte Quadrangle, possible extensions of the Whittier fault beyond the Puente Hills were suggested by California

Department of Water Resources (1966) as an *unnamed fault along Alhambra Wash*. California Division of Oil and Gas (1961) recognized a *steeply dipping fault that forms the eastern boundary of the Montebello Hills along Alhambra Wash*, in which, Treiman (1991) suggested *this feature is the Alhambra Wash Fault further concluding the relationship between terrace-like linear features in the eastern Montebello Hills are attributed to faulting* (Treiman, 1991). Treiman references the work of Wright (1987) who concluded that *the Whittier fault almost certainly extends northwest beneath the Whittier Narrows to connect with the East Montebello Fault*. Davis, Namson and Yerkes (1989) suggest the Whitter Fault *dies at the narrows or bends abruptly to the north*. The northeast side of the Alhambra Wash Fault is down whereas the northeast side of the Whitter Fault is up, therefore making the connection from the northern end of the Whitter Fault to the Alhambra Wash Fault unlikely and ruling out several of the hypothesis of these earlier geologists. In the SCEC study (Gath *et al,*1994) the Alhambra Wash Fault was interpreted to be an *extensional right step between the west end of the Whittier Fault and the Elysian Park Anticline considering the fault to be the equivalent to a releasing bend in the San Andreas system of faults*. According to Davis *et al* (1989) (in Ehlig 1999) the problem with this is the *subsurface contours of the earliest Pliocene have opposite sense of displacement*. This leaves open other valid interpretations for formation of topographic escarpments, faulting, or lack thereof on this site.

3.3 Local Geologic Units and Subsurface Conditions

Presented below are brief descriptions of the geologic units encountered in the exploratory excavations completed at the site by Leighton. Detailed descriptions of the geologic units are presented on the exploration logs in Appendices A and B, and on the fault trench logs FT-1 through FT-4 presented in Plates 3A through 3D. Plate 3E provides an explanation of identified units in Fault Trenches 3 and 4. The locations of the subsurface explorations are shown on Plate 1 and a subsurface profile based on data obtained and interpreted from the borings and CPTs is shown on Plate *2.*

As encountered within our exploratory borings and from fault trench logging, in general, the site is underlain at the surface by undocumented artificial fill deposits. Below the fill we interpret alluvial fan deposits of Quaternary age ranging from Holocene to late Pleistocene mudflows and fluvial deposits further defined as overbank or floodplain to main channel deposits of coarse sands and gravels.

Undocumented Artificial Fill (Map Symbol: Afu; Fault Trench Designation: Units 1 and 2): The artificial fill forms a mantle ranging from 6 to 7 feet thick on average thickening to approximately 14 feet locally at northeast end of Fault Trench FT-2 (Plate 3B). This material is characterized as dark grey to black (possibly organic-rich), moist Sandy Clay (CL) and Clayey Sand (SC), abundant fine to coarse gravels, various manmade debris (wood, asphalt, brick), material varies by lift. The blackened color staining is likely related to organics in the fill. The fill may be absent or thicker in unexplored areas of the property and under the building footprint. Most fill appears locally derived from onsite material. However, in Fault Trench FT-2 a small deposit of historical fill was mapped, interpreted to be derived from the 1938 flood.

Quaternary Young Alluvial Fan Deposits (Map Symbol: Qyf; Fault Trench Designation: Units 3 through 6): The Holocene age alluvial fan deposits encountered directly beneath the artificial fill generally consist of brown, grayish brown, and reddish-brown sandy clay with gravel, locally channelized with sand and primarily meta-granitic gravels (San Gabriel origins). These deposits are not identified in the southwestern region of the site (FT-1 and FT-2) as they fill in and buttress a paleo slope defined by the erosional surface (unconformity) identified in fault Trench FT-3 between CPT-11 and CPT-13, a surface which likely developed during buildup of Wisconsin Stage glaciers about 20,000 years ago when the San Gabriel River was much deeper than present day channel consequently leading to incision of side channels including the Alhambra Wash.

Quaternary Old Alluvial Fan Deposits (Map Symbol: Qof; Fault Trench Designation: Units 7 through 11): The Pleistocene alluvial fan deposits encountered directly beneath the artificial fill at the southwestern end of the site, and beneath younger alluvial deposits at the northern end of the site, generally consist of reddish brown and greenish grey sandy clay with variable gravel, greenish grey to orangish brown sands and sands with gravel, and clay with variable contents of sand and organic material.

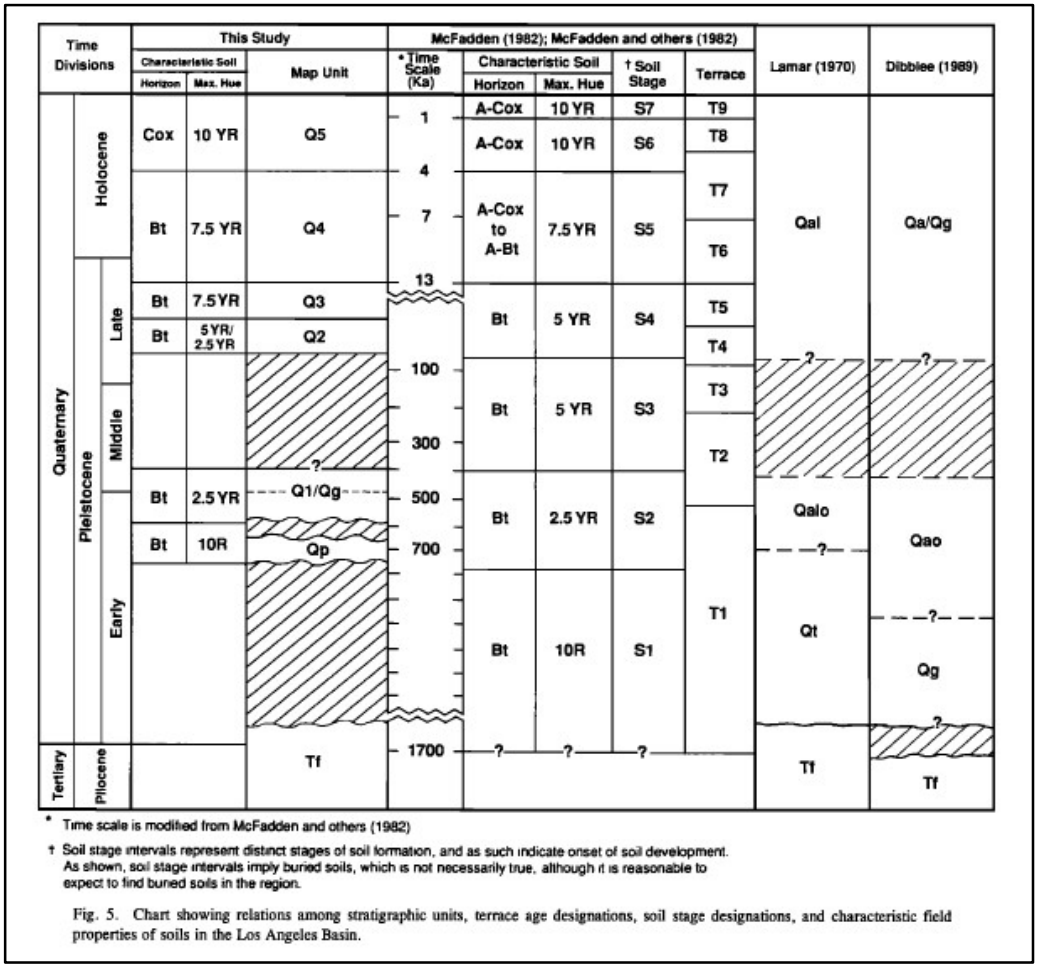
The stratigraphy of the subsurface soils encountered in each soil boring is presented on the exploration logs (Appendices A and B) and on Plates 3A through 3D, *Fault Trench Logs FT-1 through FT-4*. Subsurface stratigraphy across the site, interpreted from the boring and CPT data are shown on Plate 2.

3.4 Fault Activity Defined

Fault age criteria by the California Geological Survey (CGS, 2018) defines a Holocene-active fault is one that has ruptured during Holocene time (the last 11,700 years). A fault that has not ruptured within the last 11,700 years does not meet the criteria of Holocene-active fault and is termed pre-Holocene (Pleistocene). Needed, therefore, are exposures of geologic materials at least 11,700 years old (Holocene). If these materials are tectonically displaced, then the causative fault is deemed to be active. Currently, the only allowable mitigation is setback for habitable structures, the widths of which vary depending on fault geometry and complexity. The only known active fault within the City (**Figure 5-3, Rosemead General Plan 2021**) is the Alhambra Wash fault (zoned as an Alquist-Priolo Earthquake Fault Zone (APEFZ), the precise location of which is unknown.

3.4.1 Stratigraphic Age Estimates

Soil profile descriptions were obtained from all of the trenches and some of the borings. Those descriptions and Munsell coloring are provided on the boring logs in Appendix B and on Plates 3A through 3D. Radiocarbon dating of charcoal samples collected from CCB-3 and CCB-6 is provided in Appendix C. This combined with allostratigraphc units Q1 through Q5 inset into the Pliocene gravels of the Fernando Formation (Bullard and Lettis, 1993) allow for correlation of units encountered in fault trenches to provide a basis for reliable age estimates of materials onsite. The correlation and time divisions for the mapped terrace units Q1 through Q5 are shown below in *Table 1, Figure 5 of Bullard and Lettis Quaternary Fold Deformation*.



* Time scale is modified from McFadden and others (1982)

† Soil stage intervals represent distinct stages of soil formation, and as such indicate onset of soil development. As shown, soil stage intervals imply buried soils, which is not necessarily true, although it is reasonable to expect to find buried soils in the region.

Fig. 5. Chart showing relations among stratigraphic units, terrace age designations, soil stage designations, and characteristic field properties of soils in the Los Angeles Basin.

Onsite Observations: A topographic step occurs across the southwestern and northeastern corners of the property. Geomorphic mapping has shown this to be a terrace riser separating Bullard and Lettis' (1993) Q3 from Q4/5. In the SCEC study, (Gath *et. al*, 1994) showed this riser north of the site to be, at least partially, a fault scarp inferred to represent a Holocene rupture farther to the north of this site. These scarps are generally coincident with the A-P zoned fault of Treiman (1991). The Q3 surface of Bullard and Lettis exhibits a moderately developed Pleistocene-age soil (Bt horizon 7.5YR hues) that is not present on the lower and younger Q4/5 surface. Borings CCB1 & CCB2, and fault trenches FT-1 & FT-2, both show a remnant portion of this Q-3 soil underneath the modern development fill, including evidence for ripping of the removal bottom, prior to the placement of compacted fill. If the topographic step had been formed by down-to-the-east vertical fault displacement, then the Q3 Pleistocene-age soil should have been preserved under the younger Q4/5 Holocene deposits. However, no trace of the near surface Q3 soil is observed in borings CCB3 through

CCB8, leading to an alternative plausible interpretation that in the latest Pleistocene the step was created solely by erosional incision into the Q3 surface, thereby removing the weathered near surface materials of Q3 subsequently filled by the Q4/Q5 material. If this erosional interpretation is correct, as Ehlig (1999) and others (*References*) have offered as plausible, there should be continuity of the Q3 sediments from CCB-2 to CCB-3 beneath the depth of the erosion. This is what was observed at approximately 33 feet in depth in CCB-1 and 35 feet in CCB-2, noted as Sedimentary Package F. There is strong red brown to dark yellow brown oxidation banding of a silt to very fine sand unit that correlates over to CCB-3 at approximately 35 feet. In CCB-3, the Sedimentary Package F unit exhibits similar iron oxide banding compared to the same unit in CCB-2, which we interpret as resulting from soil formation processes. This silt/fine sand layer is also mapped continuously across to CCB-4 through to CCB-8. Lying above Sedimentary Package F in CCB-3 (and others) are at least two A-horizon soils, forming on post-incision flood deposits, one of which was radiocarbon dated to 12,705 to - 12,590 cal BP. Therefore we conclude that the incision into Q3 occurred during the last glacial maximum (20-25 ka), and that this erosional surface is not offset by faulting. Stratigraphy mapped in detail in our trenches correlates to previous investigations that described and identified key stratigraphic terraces (Bullard and Lettis, 1993, SCEC 1994; SCE 1999). We relied on those observations, lack of faulting observed in our trenches and those of others along the northern site boundary to assign Pleistocene age to the Q3 terrace materials interpreted as encountered in trenches FT-1 and FT-2. These interpretations of relative age were supplemented with radiocarbon dating C^{14} to provide the age of material above the unconformity interpreted which we used to define the approximate Holocene boundary (Plate 2). Beta Analytic analyzed the samples and their results are in Appendix C. The sample collected from boring CCB-3 at 20.5 feet yielded a result of 12,705 to 12,590ka cal BP at 20.5 ft. The pre-Holocene age at 20.5 feet thus was the minimum target depth needed for the trenches.

The second radiocarbon age date we obtained from the cores is from CCB-6 at a depth of 45.9 feet, returning an age of 16,928 to 15,945 cal BP. In a telephone call after sample processing, Beta Analytic expressed concern over the small size of the residual sample. They reported the sample required compositing multiple micro samples to get enough for even a small datable sample concerns us as to it accuracy. As such, based on that

conversation, we have chosen not to use that second sample in our analysis for several factors. First, the depth is over twice as deep as the 12 ka± age in CCB-3 at 20.5 feet, implying a considerable rate of backfill. This rapid backfill is contrary to the degree of oxidation and pedogenesis of the sediments that comprise that backfill, and which certainly required more than 3,474 years. Second, the erosional unconformity expressed across all of the borings from CCB-3 to CCB-8 is characterized by a well-defined A-horizon from which radiocarbon age was obtained. This geomorphic surface lies 25 feet above the charcoal sample in CCB-6 that was dated at 16,298 to 15,945 cal BP. So, even if the date is accurate, which we and Beta Analytic doubt, the dated geomorphic surface from CCB-3 defines the Holocene-Pleistocene boundary, and its unfaulted continuity confirms the lack of a Holocene active fault hazard across the property.

We have also utilized correlations between the soils encountered at this site and regional mapping of terrace deposits (Bullard and Lettis, 1993) of known ages in the site vicinity to estimate the stratigraphic ages of site soils. The Montebello Hills is comprised of late Pliocene to earliest Pleistocene age Fernando Formation surrounded by five Quaternary age terraces mapped by Bullard and Lettis (1993) and Dibblee (1989, 1999). To correlate our sediment age of the terrace materials in FT-1 and a portion of FT-2, we rely on regional stratigraphy and terrace mapping from earlier geologists. When the 1515 Walnut Grove Ave site boundary is overlaid on those maps two quaternary age units are mapped at this site, a late Pleistocene Q3 unit and an undifferentiated Q4/Q5 unit consisting of young alluvial sediments of the Alhambra Wash and Rio Hondo drainages, see Figure 5, *Map of the Quaternary Geology of the City Terrace, Montebello Park and Montebello Hills Area*. A channel emerging from the Protero Grande Valley in the Montebello Hills is mapped transecting this site, paralleling Q3 of Bullard and Lettis (1993). This narrow stream system is likely in part responsible for incision of the older alluvial surfaces as during low stands of sea level, rapid downcutting of the San Gabriel River would have caused fan channels to be captured and directed southeastward toward the Whittier Narrows gap. Through fault trenching and correlation of sediment packages in the core borings, we interpret this relation between the terrace deposits as an erosional unconformity consistent with southeastward flowing channels captured during low stands incising into the underlying stratigraphy. Within the Q4/Q5 package we rely on C^{14} sample from CCB-3 (Appendix C) to define the Holocene-Pleistocene boundary.

4.0 OBSERVATIONS AND DISCUSSION

4.1 Cone Penetrometer Testing

Forty-nine (49) CPTs were sited along three (3) transects, T1, T2 and T2A, which are shown on Plate 2. The sedimentary layers gently slope northeastward, which is consistent with the local sedimentary environment and pre-development site topography. The interpreted stratigraphic marker beds form continuous near-horizontal layers along the CPT traverses with apparent minor thickness variations interpreted as normal to the depositional/erosional processes during channel excavation (low stand). Variations in lateral continuity occur as an unconformity in the upper 20 to 30 feet as shown on Plate 2 as expected during low stand sea level excavation and Holocene age (rise in sea levels) backfilling. Below the unconformity we interpret lateral continuity between core borings ruling out Holocene active faulting at this site.

Within the upper approximately 20 feet of transect T1, multiple continuous sediment packages, which are roughly parallel and dipping gently (1-2°) toward the northeast, can be correlated via interpreted CPT data spanning CPT-1 to CPT-11. Below 20 feet bgs, an unbroken sequence of sediments can be correlated between CPT-1 and CPT-15; however, beds along the northern slope of the Montebello Hills between CPT-1 and CPT-4 are markedly steeper-dipping (4-6°), whereas sediments between CPT-4 and CPT-15 are subparallel to the beds above. A sequence of subparallel, gently dipping (1-2°) sediments is interpreted spanning CPT-12 to CPT-23, from approximately 8 feet bgs at CPT-12, to 28 feet bgs at CPT-23 the top of which is defined by the top of Unit A and includes Units A and B, as well as the units between them (see Plate 2). Overall, the sediments dip gently northeastward; however, the dip angle in the upper 10 to 12 feet steepens from 1° to 3° between CPT-15 and CPT-17, and the dip direction in the upper approximately 18 feet reverses between CPT-17 and CPT-21 to a gently southwest dipping package before flattening again from CPT-21 to CPT-23. Whereas these beds are dipping approximately the same degree and direction as sediments correlated between CPT-1 and CPT-11, they cannot be correlated between CPT-11 and CPT-12.

In transect T2, multiple unbroken laterally continuous sediment packages can be correlated between CPT-24 and CPT-40 to a depth of approximately 37 feet bgs at CPT-24, and approximately 45 feet bgs from CPT-26 to CPT-CPT-35. Overall, bedding dips gently eastward approximately 1-2°. Channelization is interpreted to

approximately 14 feet bgs between CPT- 32 and CPT-33, and to approximately 15 to 17 feet bgs between CPT-36 and CPT-40.

Transect T2A overlaps transect T2 by approximately 75 feet (the section between CPT-37 to CPT-40 in T2 overlaps with section between CPT-49 and CPT-41 to CPT-43 in T2A). In transect T2A, multiple unbroken continuous and overlapping sediment packages can be correlated between CPT-49 (western end of transect) and CPT-48 (eastern end of transect) to a depth of approximately 26 feet (west) to 33 feet (east) bgs, and approximately 43 feet (west) to 50 feet (east) bgs from CPT-49 to CPT-47. Overall, bedding dips gently eastward approximately 1-2°. Channelization is interpreted to approximately 18 feet bgs at CPT-49, and to approximately 15 to 21 feet bgs between CPT-42 and CPT-46.

4.2 Continuous Core Borings

Eight continuous core borings (CCB-1 through CCB-8) were sited in pairs along transect T1 and T2 where uncertainties or anomalies existed in our initial CPT data interpretations (see Plate 1). The borings were advanced to 50 feet bgs. Along transect T1, borings CCB-1 and CCB-2 were placed on either side of CPT-2 and CPT-3 to address the change in slope angle of sediments in this area. Borings CCB-3 and CCB-4 were placed on either side of CPT-16 and CPT-18 to address the changes in slope angle and correlation uncertainties that had initially been identified between sediments in this area. Along transect T2, borings CCB-5 through CCB-8 were placed on either side of CPTs-26, -28 and -29 to address correlation uncertainties between sediments in this area.

Distinct marker beds, fining upward sequences and paleosols were encountered in the borings. Of primary importance were the sediment packages at depth below the unconformity that could be identified from one boring to the next, (Plate 2).

In transect T1, several traceable paleosols and marker beds (Soil Horizons A, B, and C; and sedimentary packages F and G) document unbroken stratigraphy between CCB-3 and CCB-4. As discussed in section 4.1.1 and illustrated on Transect T1 (see Plate 2), soils in the upper 20 to 30 feet could not be correlated across the transect between approximately CPT-11, CPT-12, and CPT-13 via CPT data alone. The paleosols (soil horizons) identified CCB-3 (A, B and C) in that zone were not present in CCB-2. However, two distinct marker beds below this unconformity, a silt bed (Sedimentary Package F) at approximately 35 to 38 feet bgs (from southwest to northeast) and a fine sand (Sedimentary Package G) at approximately 42 to 44 feet bgs (from southwest to northeast), were identified in

CCB-2, CCB-3, and CCB-4. The connection of these beds across the transect shows that they are very shallowly dipping, and that their dip is consistent with the dips of the sedimentary packages interpreted from the CPT data. This suggests that the stratigraphy is unbroken by faulting across this span, and that the lateral differences in soils above these horizons can be explained by an erosional unconformable surface between CPT-11 and CPT-12, and between CPT-12 and CPT-13, an observation that became evident after trenching.

The traceable paleosols and marker beds identified in CCB-3 and CCB-4 (Soil Horizons A, B, and C, and Sedimentary Packages F and G) are also continuous across CCB-5 through CCB-8; the presence of these paleosols and sedimentary packages document unbroken stratigraphy across the western portion of transect T2. Connecting these paleosols and marker beds between the core borings in transects T1 and T2 shows that they are dipping gently toward the northeast, roughly parallel to the contacts interpreted from our CPT analysis.

Furthermore, sediments immediately below Soil Horizon C in core borings CCB-3 through CCB-8 are interpreted to be the same soils as encountered at that stratigraphic level in CCB-1 and CCB-2, except that they are oxidized in CCB-3 through CCB-8. This observation further supports our interpretation that an erosional unconformity exposed these soils to a near-surface environment at CCB-3 through -8, whereas they remained deeply buried at CCB-1 and -2.

4.3 Fault Trench FT-1

Fault Trench FT-1 was 40 feet long, and 14 to 17 feet deep (Plate 3A); it was excavated in the southwest corner of the site, spanning CPT-1, CCB-1 and CPT-2 (Plate 1). The southernmost fault splay mapped across the site by Treiman (FER-222, 1991) intersects the northern end of FT-1. The fault as mapped by USGS lies outside FT-1 to the north. We show both locations, although it is important to note that these USGS faults should be the same as AP Zone faults. Differences in fault locations could be due to errors in georeferencing during compilation and/or differences in the scales of the original maps. Irrespective of these differences no faults were observed in trenches or interpreted in between trenches from the boring and CPT data.

Trench FT-1 exposed a zone of artificial fill (Unit 1) that was approximately 2.5 feet thick from Station (Sta.) 0-10 to 0-05, thickening northeastward along an approximately 45° slope to its deepest point at Sta. 0+04 to a depth of approximately 8.9 feet, and remaining relatively flat to the end of the trench at Sta.

0+40. The artificial fill was underlain by Pleistocene alluvial deposits interpreted to be between 30,000 and 50,000 years old, based upon correlations to the Bt Horizon (7.5YR) Q3 terrace of Bullard and Lettis (1993) and the degree of soil development observed in Units 8 and 9 (FT-1 and FT-2, Plates 3A and 3B). Pleistocene soils consisted of a brown sandy gravelly clay (Unit 8; interpreted to be a mudflow/debris flow deposit) overlying a yellowish brown silty clay (Unit 9; interpreted to be an overbank deposit). The contact between the two units, confirmed through direct measurement from string lines placed in each trench at the same elevation (control using the Zip Level™), is unbroken across the length of the trench, dipping northeastward approximately 6-7° between 0-10 and 0+00, then shallowing to 2-4° from 0+00 to the end of the trench (Plate 3A). Many vertical features (up to 12-inches long or more) filled with yellowish brown silt to very fine sand were present within the mudflow/debris flow unit, predominately near the base of the unit. These features did not cross into the overbank deposit unit below, and the contact between the two units was unbroken across the length of the trench (see Plate 3A). No elevation differences along this contact measured in the west, south and east walls were noted. We therefore conclude that these features are not indicative of faulting rather they are more likely root casts or soil desiccation cracks subsequently filled with fine sand.

4.4 Fault Trench FT-2

Fault Trench FT-2 was 107 feet long, and 20 to 23 feet deep (Plate 3B); it was excavated in the southern-central corner of the site, approximately 70 feet northeast of trench FT-1, roughly spanning the area where CPT-5 through CPT-10 were emplaced (Plate 1). The fault as mapped by USGS lies outside FT-2 to the southwest.

Trench FT-2 exposed a zone of artificial fill (Unit 1) with a slight undulatory base and variable thickness generally ranging from approximately 5.5 to 6.5 feet thick, with the thickest zone at approximately Sta. 0+69 at 7.4 feet thick, and thinnest at approximately Sta. 0+88 with a thickness of 4.7 feet. The artificial fill was underlain by Pleistocene alluvial deposits interpreted to be between 30,000 and 50,000 years old (Table 1, Figure 5, Q3 of Bullard and Lettis, 1993). Pleistocene soil below the fill consisted of yellowish brown to brown sandy, gravelly clay mudflow/debris flow deposits (Units 7 and 8) overlying a yellowish to olive brown silty clay overbank deposit (Unit 9). The overbank unit was found to overlie a package of oxidized dark yellowish brown cross-bedded and channelized sands and fine gravels (Unit 10), which had incised into an olive brown fat clay interpreted to be an overbank/wetland deposit (Unit 11).

All the earth units observed, documented and logged in trench FT-2 are laterally continuous, and the contacts between the units are relatively horizontal and unbroken across the length of the trench (Plate 3B). Furthermore, we interpret that the lower Unit 8 (and possibly upper) Unit 7 mudflow/debris flow unit and the overbank deposit it overlies are the same soil packages as those exposed in FT-1 (Units 8 and 9). In a 3-D model produced via the computer program Blender (Figure 6) and shown in Transect T-1 (Plate 2), the contact between units 8 and 9 in FT-1, when extrapolated to the northeast along the same dip angle, correlates with our initial contacts in FT-2, supporting this hypothesis and further supporting our interpretation based on CPT data that Holocene-active faults are not present between trenches FT-1 and FT-2 to the depths explored.

4.5 Fault Trenches FT-3 and FT-4

Fault Trenches FT-3 and FT-4 (hereafter referred to as FT-3/FT-4) were combined into a single excavation via a curvilinear junction for a total length of 230 feet, and total depth of 17 to 25.5 feet (Plates 3C and 3E). FT-3/FT-4 was excavated along the northern end of transect T1 (Plate 1), roughly spanning the area between CPT-13 and CPT-22, and CCB-3 and CCB-4. The central fault trace interpreted across the site (Treiman, 1991), if it were present would intersect FT-3/FT-4 at approximately Sta. 1+30.

Trench FT-3/FT-4 exposed artificial fill (Unit 1) on the order of approximately 5 to 7 feet thick across the majority of the trench, thickened to approximately 8 to 9 feet from 1+16 to 1+63, and wedge of fill thickening northeastward from approximately Sta. 1+98 to 2+30, which is 14 feet thick at the end of the trench. The artificial fill was underlain by a series of nested and dissected Holocene age fluvial and high-energy debris flow deposits (Units 2 and 3), at least one portion of which is likely as young as 86 years old (Unit 2; remnant of the 1938 flood). This interpretation is based upon its coincidence with the location of the 1938 surface channel identified in aerial photographs, as well as abundant human-made debris contained within the channel thalweg that appears to have originated from the 1930's. At approximately Sta. 0+16, a crack is present below the thalweg of a narrow channel. The crack is filled with sediment derived from the channel, with fine to coarse gravel and sand at the top, fining downward to finer sand, and ultimately silt, as the crack thins with depth. A coarse oblate gravel lodged at the top of the crack was situated with its flat faces essentially parallel with the ground surface and its long dimension roughly in line with the trend of the trench. Had the crack below the channel been the result of faulting, the gravel should have been rotated out of this position in the direction of shear, which we did not observe. The crack was also

found to terminate within the silty clay unit below the channel and did not extend to the bottom of the trench. The gravel- and sand-filled crack is therefore interpreted to be a desiccation crack in the surface of the silty clay unit below the channel that was filled during channel deposition.

Below the younger Holocene high-energy fluvial and debris flow deposits were older Holocene silty clay units with sand and gravel (Units 4 and 5), interpreted to be a series of mudflow deposits. Both units are relatively flat and extend unbroken across the length of trenches FT-3/FT-4. We observed the base of Unit 5 is marked by a sharp increase in sand and gravel at the base which is responsible for the scour incisions into underlying Unit 6.

Underlying the mudflow units from Sta. 0+15 to 0+63 is an olive brown, gleyed and oxidized sandy silt to very fine silty sand, with thin, dark brown organic rich layers, likely thin A soil horizons, and thin thalweg lenses, suggesting a lower energy fluvial environment. From approximately 0+63 to 0+73, thin sand and pebble beds interfinger with gleyed sandy clay (southern end of Unit 6) where deposition of this unit over tens to hundreds of years with depositional gaps allowed for weak soil formation. Northward, Unit 6 becomes very dark greyish brown to very dark greyish black, sand content decreases sharply, and organic content increases. From Sta. 1+02 to Sta. 1+25 Unit 6 remains a relatively constant thickness where it begins to thin towards the end of the trench. Unit 6 thins forms a cap over clayey silt deposits interpreted to represent the overbank depositional environment associated with the fluvial system at the southern end of the trench exposure. Soil cracks truncated above and below this unit likely represent formation when the soils were softer and wetter and closer to the natural ground surface as they were not observed in the overlying unit suggesting they were in place prior to erosion of the top of Unit 6 during Unit 5 emplacement.

We interpret the fluvial-overbank system as contemporaneous with the Unit 10 fluvial deposits exposed in trench FT-2, and have thus designated these deposits in FT-3/FT-4 as Unit 10. The clay unit above (Unit 6) is interpreted to have been deposited in a wetland or bog environment, quite possibly deposited from the southeast flowing stream emanating from within the Montebello Hills. The top of the wetland/bog deposit is correlated with the dated charcoal sample collected at 20.5 feet bgs in CCB-3, from Soil Horizon C, which yielded a calibrated radiocarbon age of 12,705 to 12,590 cal BP, representing the approximate boundary between the Holocene and Pleistocene. Unit 10 must be at least 30,000 years old, or older, based upon its stratigraphic correlation with soils in FT-2. Therefore, we interpret the erosional unconformity identified in core borings CCB-

3 through CCB-8 exists between Unit 10 and Units 5 (Sta. 0+15 to 0+61) and 6 (Sta. 0+61 to 2+12) in FT-3/FT-4. The Unit 6 Pleistocene wetland deposit is laterally continuous and unbroken from Sta. 0+63 to the northeast end of the trench. The base of Unit 6, where it is exposed (Sta. 1+02 to 2+12), appears very similar to the material from Unit 10, but with significantly elevated clay content, and the contact between the two units is gradational. The base of Unit 6 is therefore interpreted to be a soil that formed directly on the surface of Unit 10 during its exposure at the ground surface, at the onset of the wetland depositional regime. The contact between Unit 6 and Unit 10 was observed to deepen eastward, extending to near the bottom of trench in the eastern trench sidewall within this span. From the north toward the south, from approximately 1+17 to 0+73, Unit 6 thickens to the bottom of the trench before rising abruptly between approximately Sta. 0+73 to 0+60 at the contact with Unit 10. At that contact, thin sand and pebble beds extend from Unit 10 and interfinger with dark greenish grey, gleyed sandy clay in the thickened region of Unit 6; we interpret this contact to represent the Pleistocene wetland margin against an erosional slope surface cut into older Pleistocene soils, where sandy material from Unit 10 was periodically reworked an eroded into the wetland or bog, the deepest portion, thickening to the north, of which may have filled a former thalweg at the base of the slope.

4.6 Summary

The CPT, boring, and trench exposures collectively show progressive conformable alluvial deposition interfingered with mudflows, channelization and floodplain or overbank deposition, followed by episodic periods of non-deposition, surface stability, surface desiccations, and weak soil development. Nothing individually or collectively in the interpreted data indicates Holocene active faulting, and indeed demonstrably precludes it. This is consistent with lack of Holocene active faulting in the southern region of the northern property as interpreted by others (Ehlig, 1999, Gath et al, 1994, PML, 2008, Hushmand and Associates, 2002).

The faults observed by Gath *et al*. (1994) and subsequently by others at the Walmart site might actually be pre-Holocene in age. This is permissible because those studies did not have any radiocarbon age control, but merely assumed that the channel was a post-glacial maximum incision feature, and the subsequent channel-filling alluvium was Holocene. The fault locations across the site from the north were based on southerly projections assuming the same strike as previously mapped to generally range from N47°W to N20°W, some of which were long projections. It is permissible, indeed likely, that the faults do not maintain a straight-line trend as they are most likely segmented *en échelon* north-

northeasterly splays from a north-northwesterly main fault that is interpreted to form the Montebello Hills eastern front. As such, they may not project through the site but may tie into the main fault interpreted southwest of the site where the principle topographic escarpment is mapped. Alternatively, the vegetation and tonal lineation's observed by Treiman (1991), specifically on this site are not fault related but erosional features from incision in Alhambra Wash.

5.0 CONCLUSIONS

Presented below is a summary of findings and conclusions based upon the results of our evaluation of the project site. Our findings and geologic analysis, which included incorporation of findings and plausible interpretations of offsite data, indicated that the transects T1, T2 and T2A are all demonstrably clear of Holocene active faulting. No Holocene active faults were encountered in the trenches or interpreted within the transects. The cross-sections (Plate 2) compile the mapped fault locations (FER-222) and mapped geologic data from this study on the cross-section plane. We conclude the following:

- This site **is** located within a currently designated Alquist-Priolo Special Studies Zone established in 1991 and presented on the El Monte Quadrangle Zones of Required Investigation for faulting and liquefaction (CGS, revision 2017).

- The faults as previously inferred through the site in FER-222 (Treiman,1991), even if present at depth below our study, are clearly shown to be overlain by undeformed pre-Holocene age sediments, and as such pose no development planning constraints under the Alquist-Priolo Earthquake Fault Zoning Act.

- Trenching by others, T-6 and T-9 in the Gath *et al* (SCEC, 1994) study and Trenches T-7 and T-8 in the Ehlig (GO-5 Parcel,1999) and Cross Section A-A' in the PML (2008) study did not reveal, document or observe any *Holocene-active* faults in trenches or from CPT interpretation. The overlapping coverage afforded by these prior studies bracket the north end of the 1515 Walnut Grove Ave site and beyond and support our conclusions, that within the limits of the exploration the 1515 Walnut Grove Avenue site is not affected by Holocene active faulting.

- Prior to man-made development, aerial photographs (Figure 4) indicate the Whittier Narrows was subject to regional flooding as the rivers meandered back and forth across the floodplain, overflowing their banks and depositing sand and gravel across the flooded areas. Trench sediments in FT-3/FT-4 suggest the area was also poorly drained and partly marshy or intermittently saturated from streams flowing southeasterly from Montebello Hills and captured by Alhambra Wash. During the record high precipitation of 1938, flood debris was deposited at this site.

- The Alhambra Wash fault is mapped as extending northwesterly through the site and is subparallel to the larger escarpment forming the northeast edge of the Montebello Hills. As described by Bullard and Lettis (1993) the escarpment progressively gets lower in height and abruptness towards Interstate 10 freeway located to the north.

CGS (1991, rev. 2017) includes this southern part of the escarpment into the Alhambra Wash Earthquake Fault Zone.

- Pleistocene soil extends unbroken across the study area. Review of all readily available data, referenced in this document, suggest there may be a fault near the southern portion of the site marking the approximate northeastern boundary of the Montebello Hills, just beyond the limits of the excavations, possibly offsite.
- No build zones are considered for this site in the northeast and southwest site corners, where utility conflicts have limited the extent of exploration (Plate 1).

Based on the results of this study, it is our opinion that the subject site is free of Holocene-active faults per the current State definition and no setbacks are required. However, due to utility conflicts in the field, the extreme southwest and northeast corners of the site could not be evaluated during this exploration. Because these areas cannot be confirmed as free of Holocene active faulting, 15-foot-wide no build zones from the limits of exploration should be included in the plans (see Plate 1). These zones may be allowable for construction should additional exploration(s) or excavation during construction show these areas are free of Holocene active faulting.

6.0 LIMITATIONS

Our subject fault hazard rupture investigation was performed in general accordance with the current geologic standard-of-practice for fault rupture hazard investigations and California Geologic Survey (CGS) requirements. This report was necessarily based in part upon data obtained from a limited number of observances, and limited information on historical events and observations. Such information is necessarily incomplete. The nature of many sites is such that differing characteristics can be experienced within small distances and under various climatic conditions. Changes in subsurface conditions can and do occur over time. This report is intended to present known geologic and fault data represented in the referenced reports and as a result of this study. This report is subject to review by the City of Rosemead and therefore the conclusions, which represent our professional opinion contained herein should only be relied upon after approval by the City of Rosemead.

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FIGURES



Project: 14030.001	Eng/Geol: JEH/JAR
Scale: 1 " = 2,000 '	Date: September 2024

Reference: © 2024 Microsoft Corporation © 2024 Maxar ©CNES (2024) Distribution Airbus

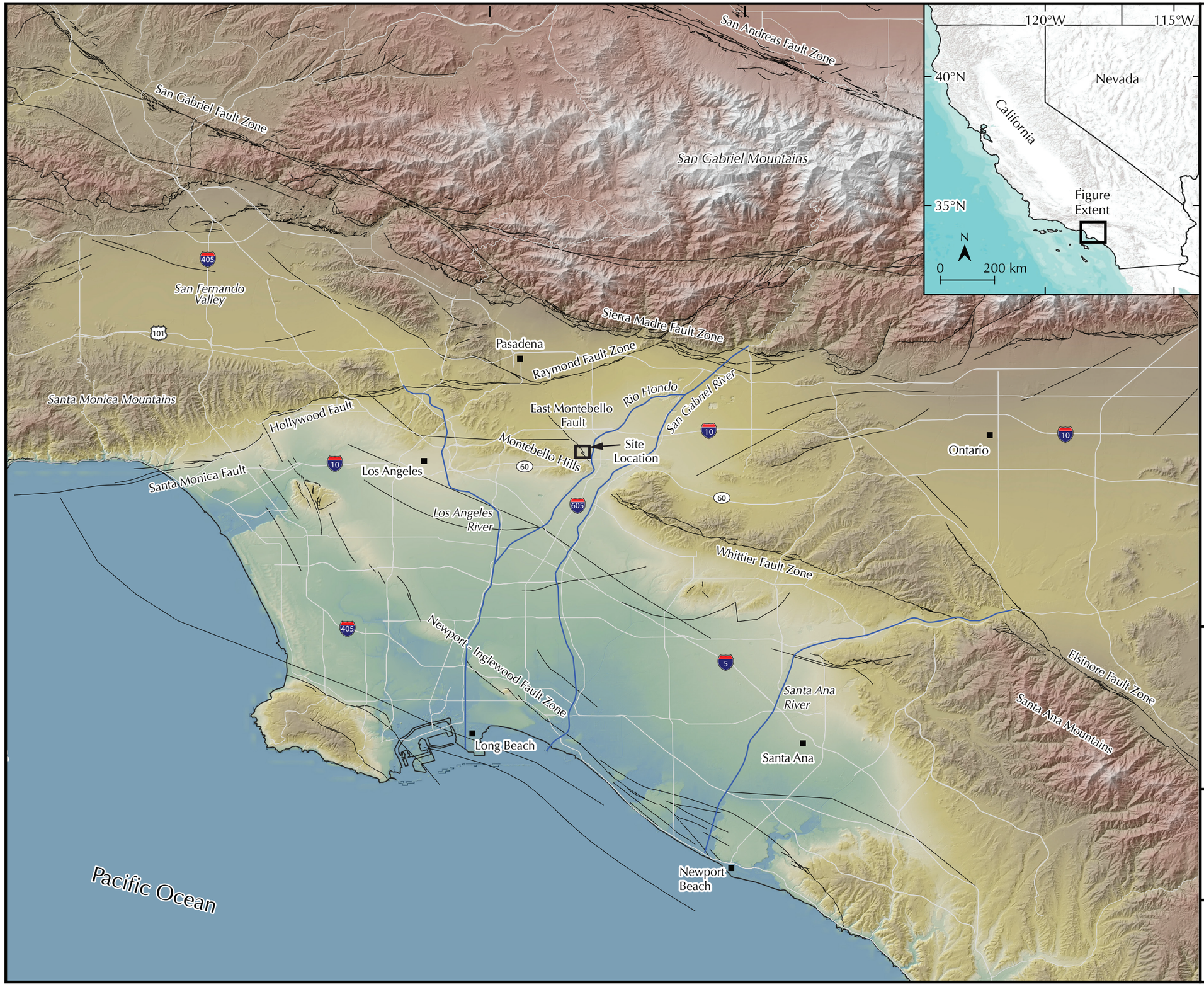
SITE LOCATION MAP

1515 Walnut Grove Avenue
Rosemead, California

FIGURE 1A

Leighton

Map Saved as J:\Drafting\14030\001\Maps\14030-001_F01_SLM_2024-06-07.mxd on 6/6/2024 4:36:27 PM Author: KVM (btran)



EXPLANATION

- Site Location
- Geologic Fault from USGS fault database (2021)
- Rivers
- Major Roads
- Cities

Elevation in meters

- 2,000 - 3,000
- 1,000 - 2,000
- 400 - 1,000
- 130 - 400
- 70 - 130
- 15 - 70
- 0 - 15

N

10 0 10 km

10 0 10 mi

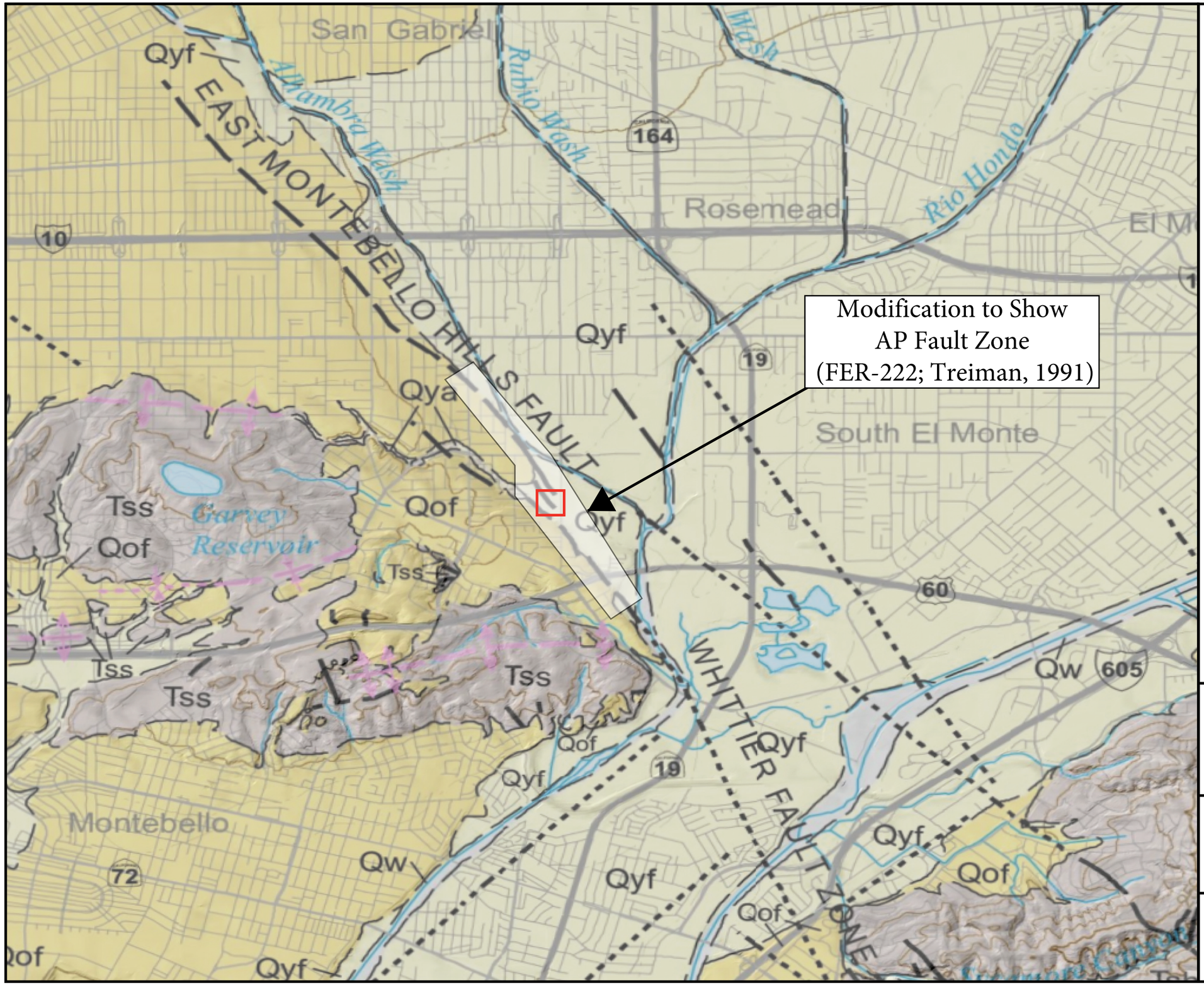
Basemap Source: ESRI 30 m DEM Hillshade
Projection: WGS84

Regional Physiographic and Fault Map

Leighton

Project Number: 14030.001
Date: September 2024

Figure 1B



EXPLANATION

Site Location

Alquist-Priolo Earthquake Fault Zone

Geologic Units

Qw **Alluvial Wash Deposits** - unconsolidated sandy and gravelly sediment deposited in recently active channels of streams and rivers; may contain loose to moderately loose sand and silty sand

Qyf **Young Alluvial Fan Deposits** - unconsolidated to slightly consolidated, undisected to slightly disected boulder, cobble, sand, and silt deposits issued from a confined valley or canyon

Qya **Young Alluvial Valley Deposits** - unconsolidated to slightly consolidated, undisected to slightly disected boulder, cobble, sand, and gravel along stream valleys and alluvial flats of larger rivers

Qof **Old Alluvial Fan Deposits** - slightly to moderately consolidated, moderately disected boulder, cobble, gravel, sand, and silt deposits issued from a confined valley or canyon

Tss **Coarse-grained Tertiary Age Formations** - primarily sandstones and comglomerates

Symbols

Fault (location is approximate)

Fault (location is inferred)

N

1km 1km

1mi 0 1mi

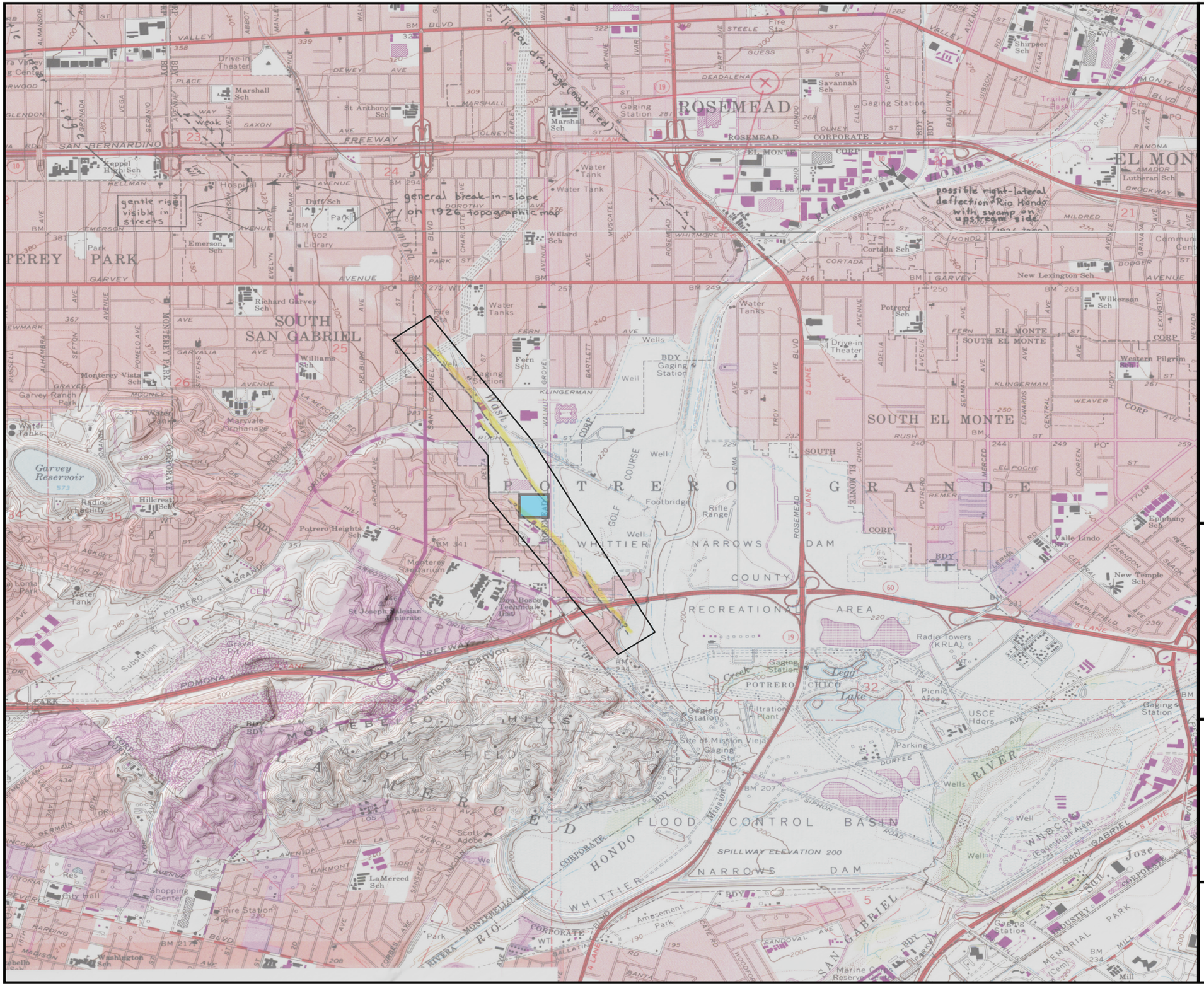
Projection : WGS84

Regional Geologic Map (Bedrossian et al., 2012)

Leighton

Project Number: 14030.001
Date: September 2024

Figure 2



EXPLANATION

Site Location

Alquist-Priolo Earthquake Fault Zone

Faults based on FER-222 (Treiman, 1991)

N

0 0.25 0.5 mi

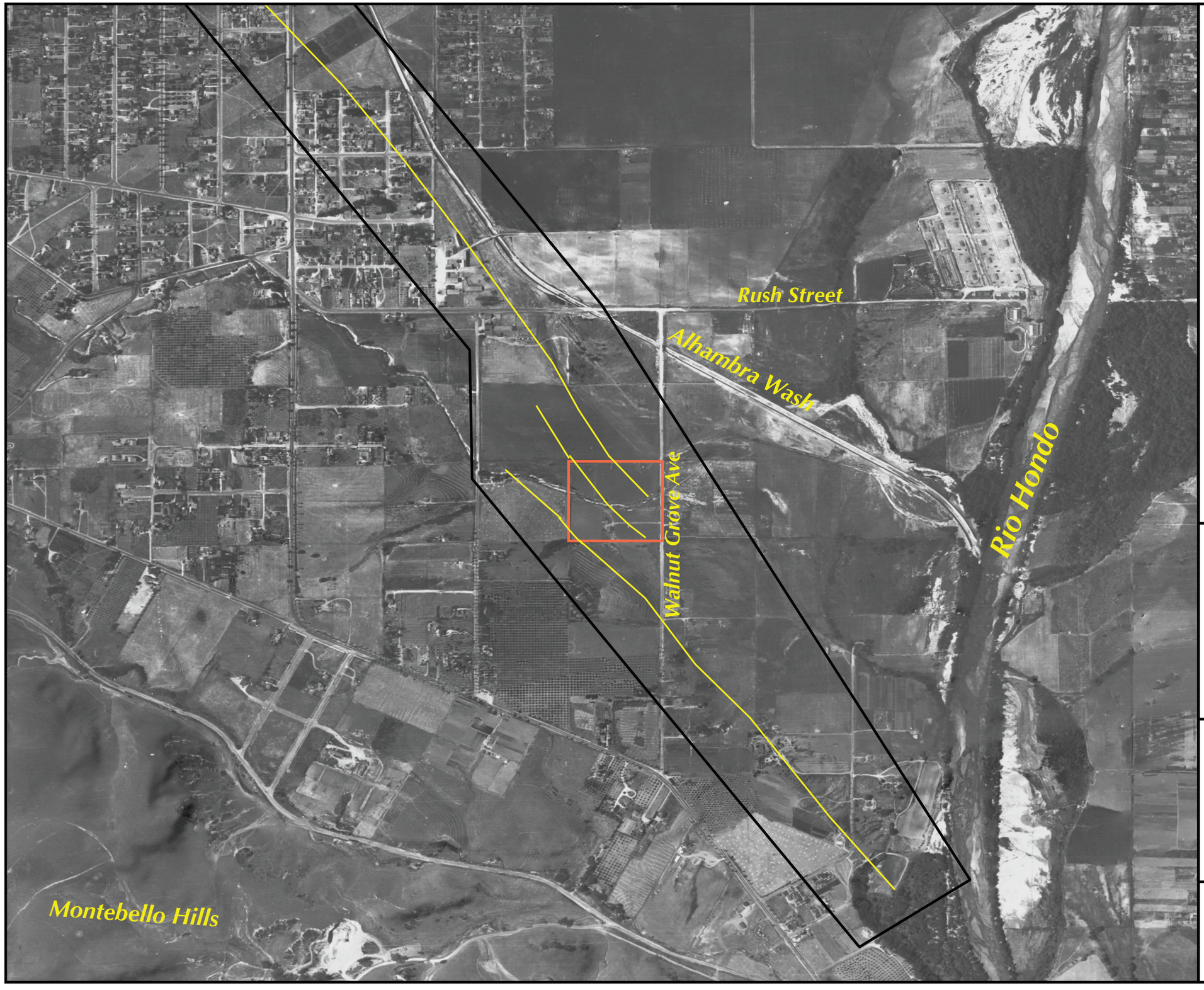
Projection : WGS84

Alquist-Priolo Earthquake Fault Zone Map

Leighton

Project Number: 14030.001
Date: September 2024

Figure 3



EXPLANATION

Site Location

Alquist-Priolo Earthquake Fault Zone

Faults based on Fault Evaluation Report 222 (Treiman, 1991)

Aerial Photos: AXJ-58-87; 58-88 (dated 01/03/38) from Fairchild collection now hosted at UC Santa Barbara

0 1,000 2,000 ft

N

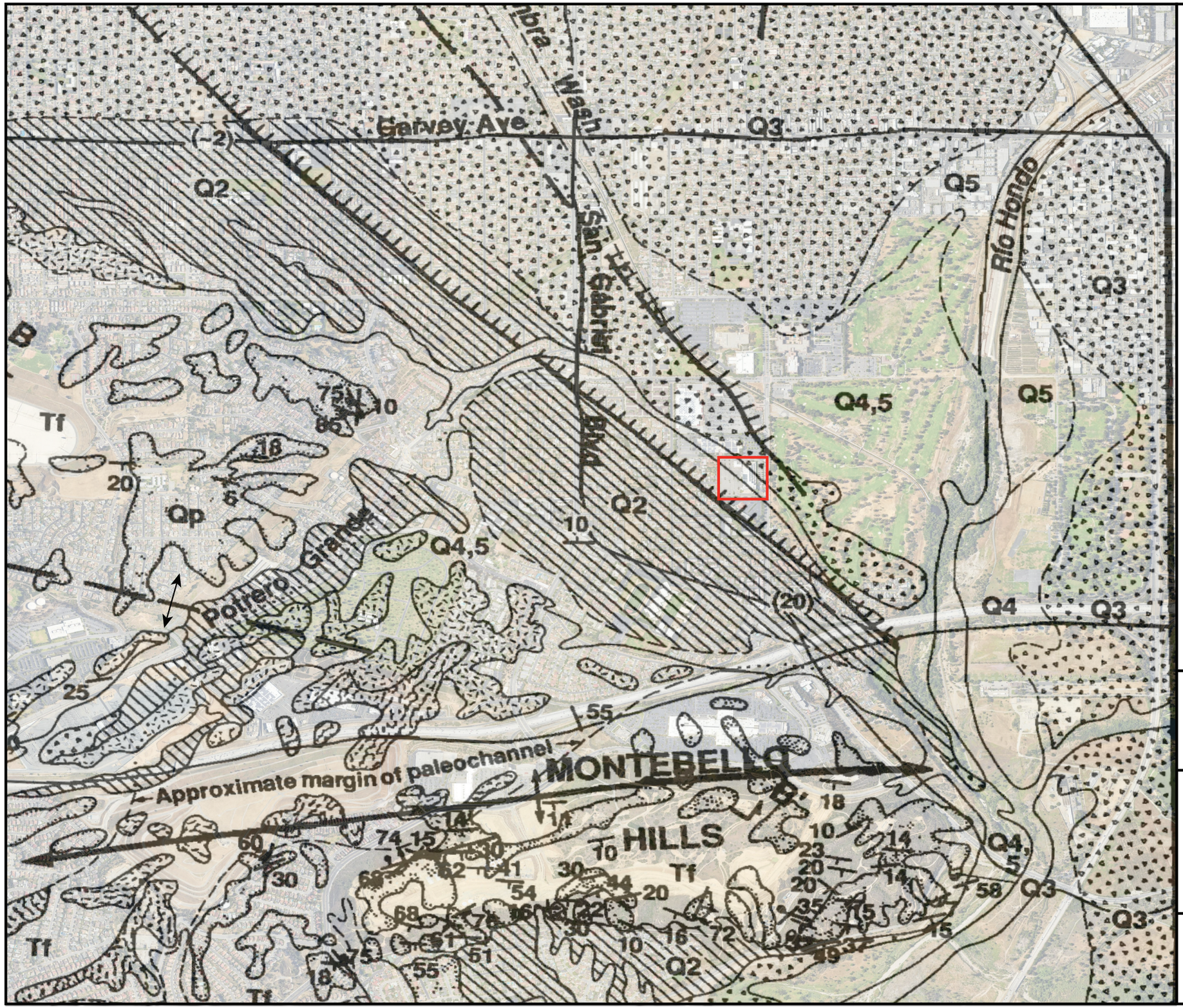
Projection : WGS84

1938 Orthomosaic and Alquist-Priolo Earthquake Faults and Zones

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Figure 4



EXPLANATION

Site Location

Geologic Units

Q5 - Terrace, alluvial fans, and geomorphic surface
Late Holocene

Q4,5 - Terrace, alluvial fans, and geomorphic surface
Latest Pleistocene to Holocene

Q3 - Terrace and geomorphic surface
Late Pleistocene

Q2 - Terrace and geomorphic surface
Late Pleistocene

Qp - Piedmont gravel
Eary Pleistocene

Tf - Fernando Formation
Pliocene

Symbols

Bedrock fold axis

Quaternary fold axis location constrained by terrace deformation

Escarpment; ticks on downside

Strike and dip of bedding

Background Map: GoogleEarth (2024)

N

1,000 0 1,000 feet

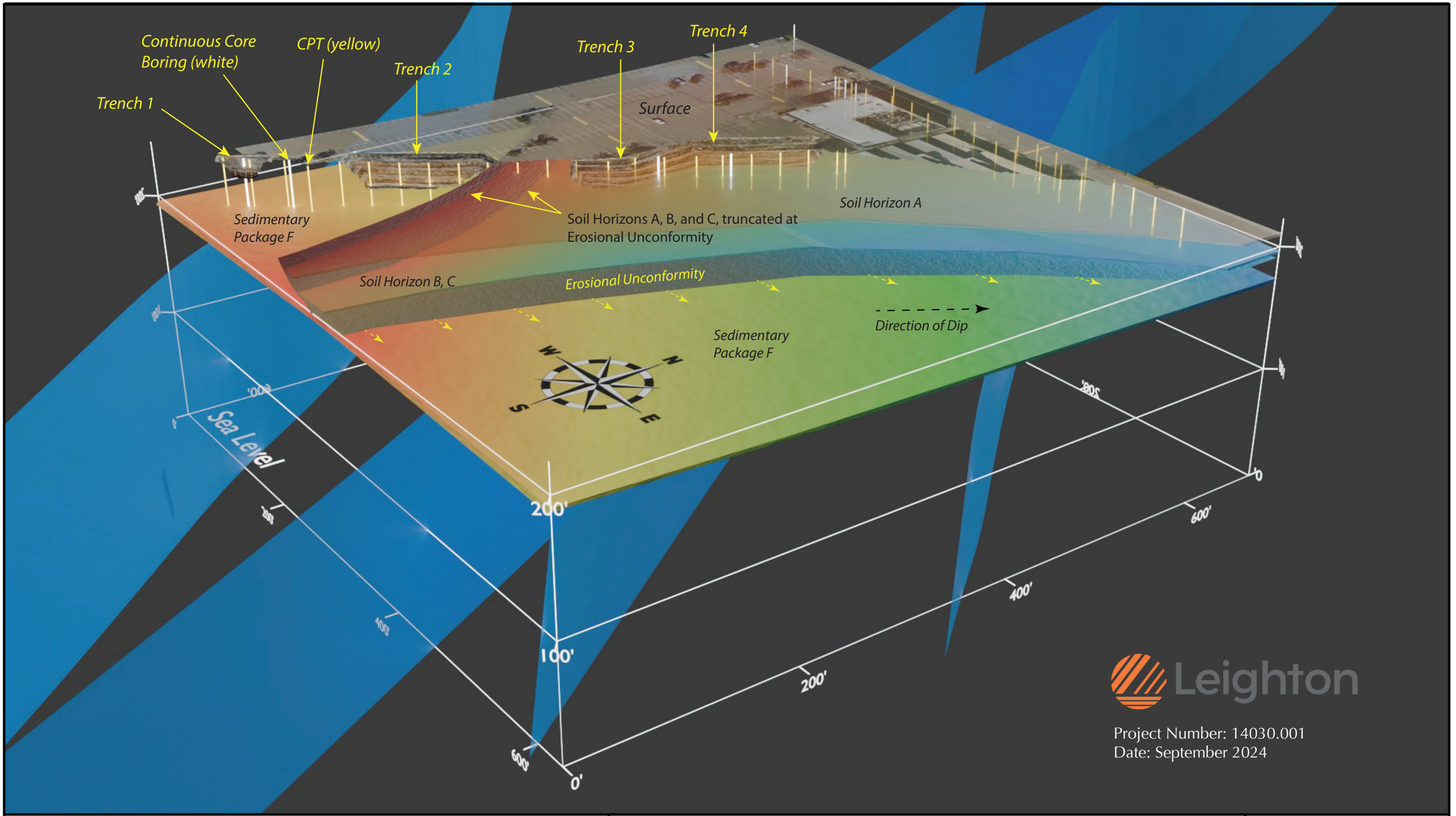
Projection : WGS84

Map of the Quaternary Geology of the City Terrace, Monterey Park, and Montebello Hills Area of the Northeastern Los Angeles Basin (Bullard and Lettis, 1993)

Leighton

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Date: September 2024

Figure 5



EXPLANATION

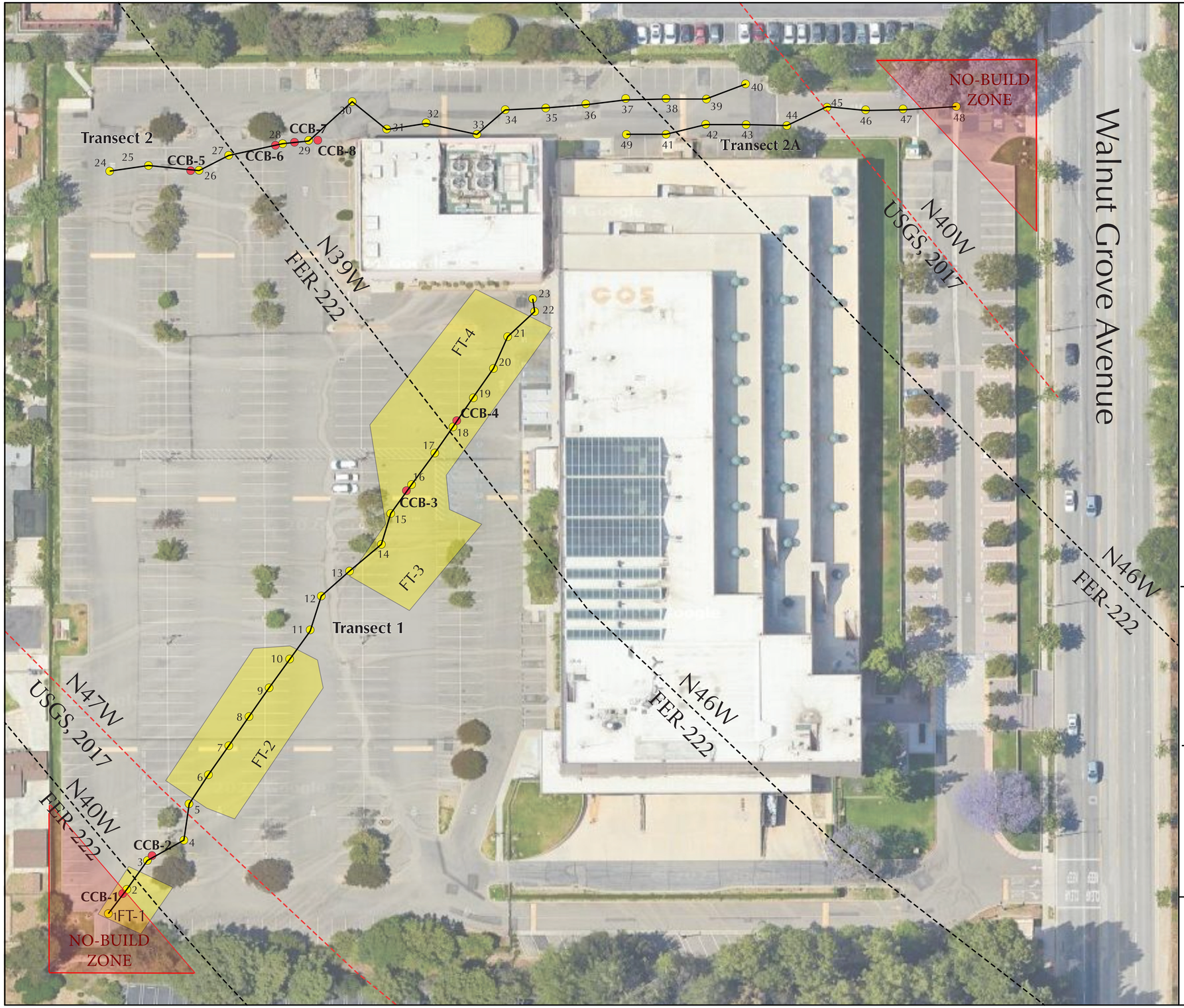
Modeled Alquist-Priolo fault trends and depths for illustration purposes only

- Soil horizons and erosional unconformity were modeled in Blender and are truncated to the east for illustration purposes.

3-Dimensional Geological Model of 1515 Walnut Grove Ave, Rosemead, CA, 91770

Figure 6

PLATES



EXPLANATION

CPT 49 — Cone Penetration Test (CPT) Location

CCB-8 — Continuous Core Boring (CCB) Location

FT-4 — Fault Trench (FT-1 through FT-4)

No-Build Zone (Building within these areas could occur if the findings of additional future studies show there is no fault hazard therein)

Fault Traces

Lineations in FER-222 (Treiman, J.A., 1991)

USGS Fault Database (Bryant, W.A., 2017)

Basemap Source: Google Earth (2024)

0 50 100 feet

N

1 inch = 30 feet

Projection: UTM Zone 11N

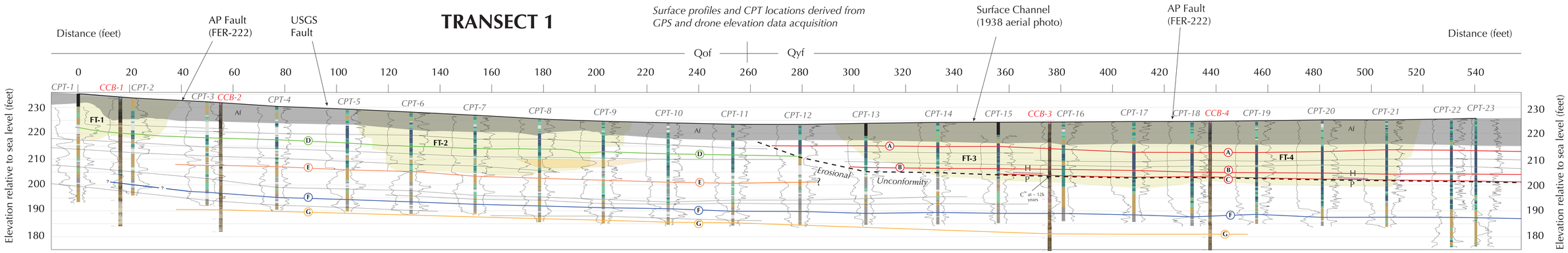
Exploration Map showing Locations of Geologic Trenches, Continuous Borings, Cone Penetration Test, and Previously Mapped Geological Faults

Leighton

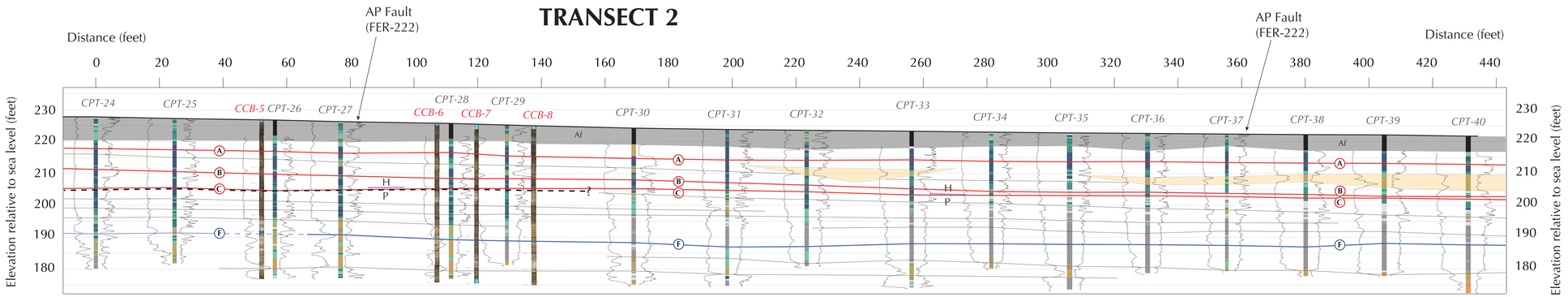
Project Number: 14030.001
Date: September 2024

PLATE 1

TRANSECT 1



TRANSECT 2



Scale: 1 inch = 10 feet

Cross-Sections for Transects T1, T2, and T2A
1515 Walnut Grove Ave
Rosemead, CA 91770

EXPLANATION

CPT derived soil behavior type (SBT) (after Kehoe Testing and Engineering)

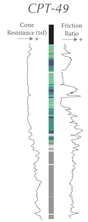
- No Data (5ft hand auger)
- Very dense/ Stiff Soil
- Very dense/ Stiff Soil
- Clay
- Clay and Silty Clay
- Silty Sand
- Sand & Silty Sand
- Sand

Data Interpretation

- FT-4 — Trench locations (projected)
- Af — Artificial fill (derived from boring and trench data and interpreted along matching CPT data)

- CPT data correlation
- A, B, C — Top of soil horizons A, B, and C identified and correlated across CCB-3 - CCB-8 and CPT data
- D — Top of sedimentary package D identified in FT-1, FT-2, CCB-1 and CCB-2, and correlated across CPT data
- E — Top of sedimentary package E identified in CCB-2 - CCB-3 and correlated across CPT data
- F — Top of sedimentary package F identified and correlated across CCB-2 - CCB-8 and CPT data (Dashed where absent)
- G — Top of fine sand horizon G identified and correlated across CCB-2 - CCB-4 and CPT data
- Erosional unconformity
- H/P — Holocene to Pleistocene Boundary
- Channel
- C^{14} — Depth of sample collected for radiocarbon dating

Cone Penetration Testing



Continuous Core Boring

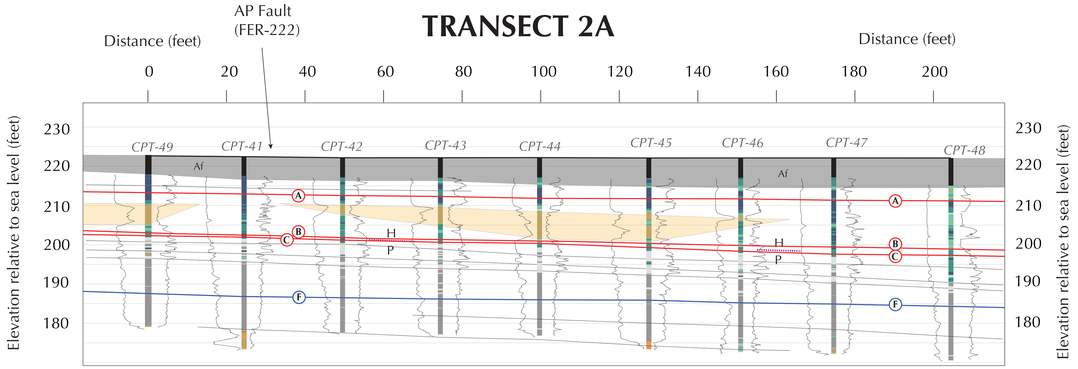


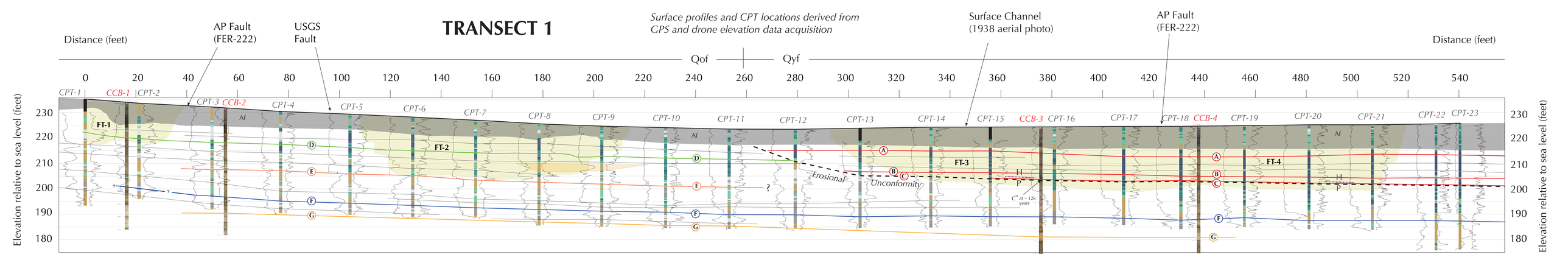
Leighton

Project Number: 14030.001
Date: September 2024

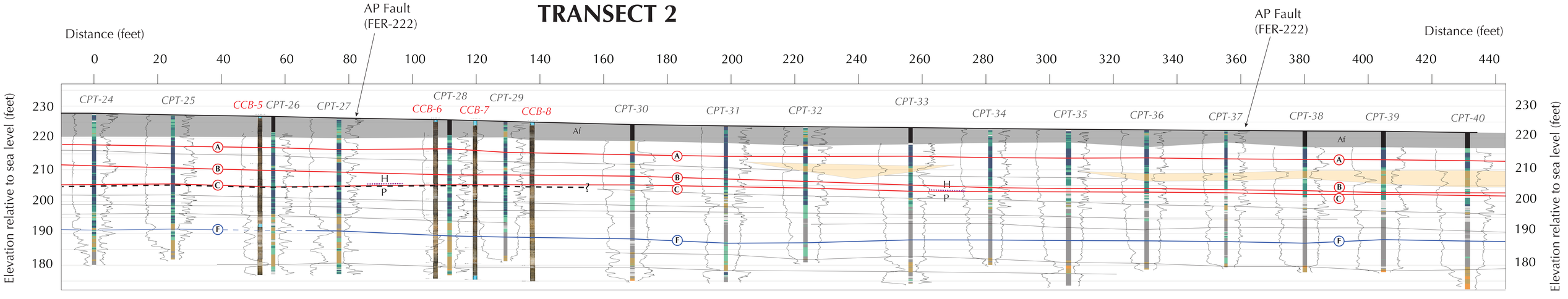
PLATE 2

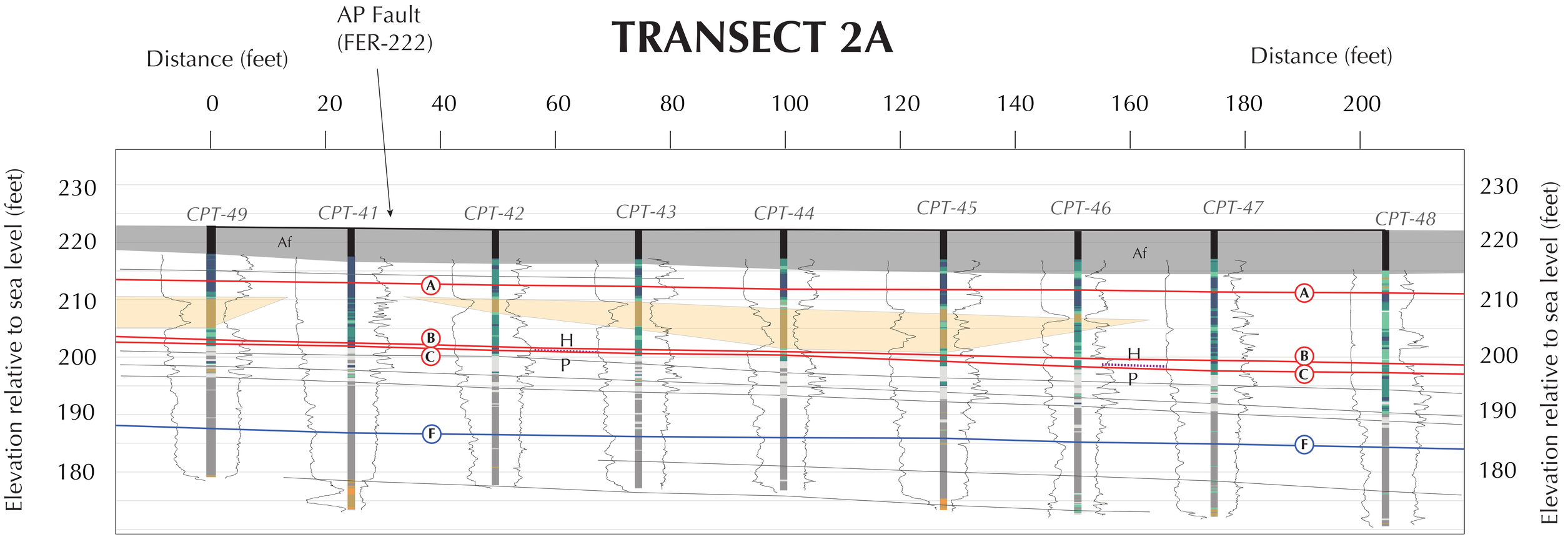
TRANSECT 2A

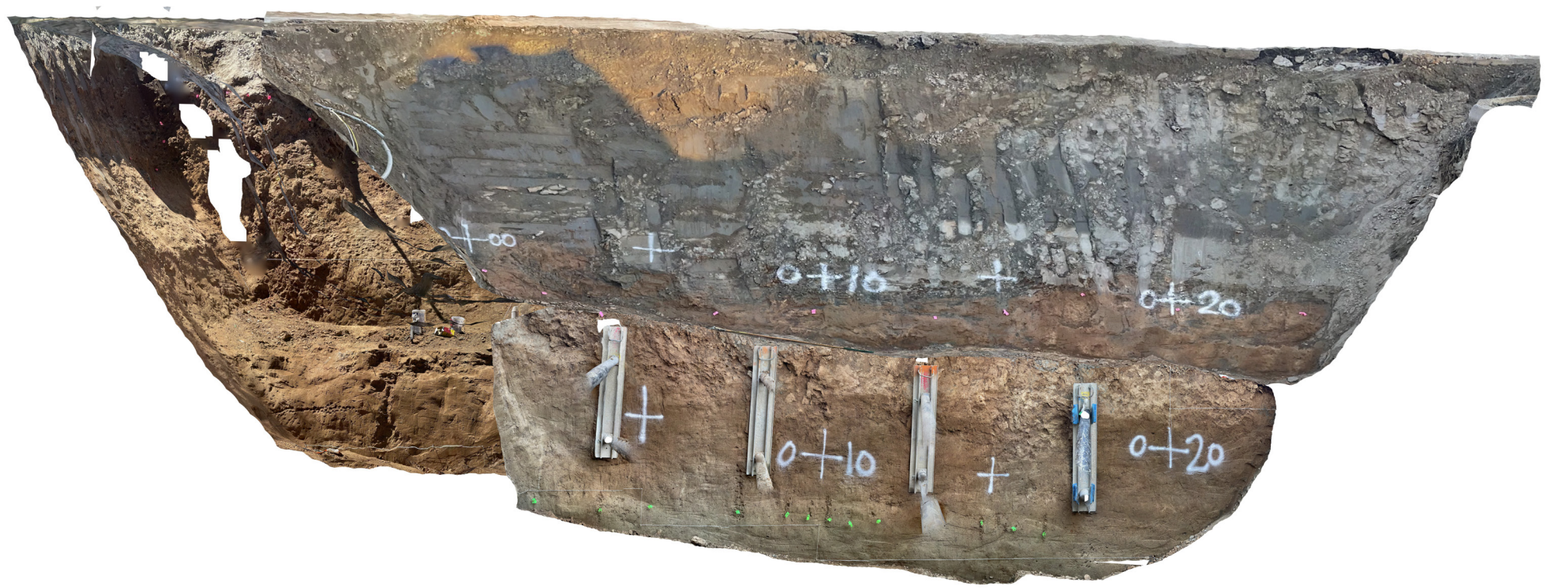



TRANSECT 1
Surface profiles and CPT locations derived from GPS and drone elevation data acquisition
Distance (feet)
AP Fault (FER-222)
USGS Fault
Surface Channel (1938 aerial photo)
AP Fault (FER-222)
Distance (feet)
Qof
Qyf
0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460 480 500 520 540
CPT-1 CCB-1 CPT-2 CPT-3 CCB-2 CPT-4 CPT-5 CPT-6 CPT-7 CPT-8 CPT-9 CPT-10 CPT-11 CPT-12 CPT-13 CPT-14 CPT-15 CCB-3 CPT-16 CPT-17 CPT-18 CCB-4 CPT-19 CPT-20 CPT-21 CPT-22 CPT-23
Elevation relative to sea level (feet)
230 220 210 200 190 180
Af
FT-1
FT-2
FT-3
FT-4
D E F G
A B C
H
P
?
Erosional Unconformity
C^14 at ~ 12k years
Elevation relative to sea level (feet)
230 220 210 200 190 180

TRANSECT 2

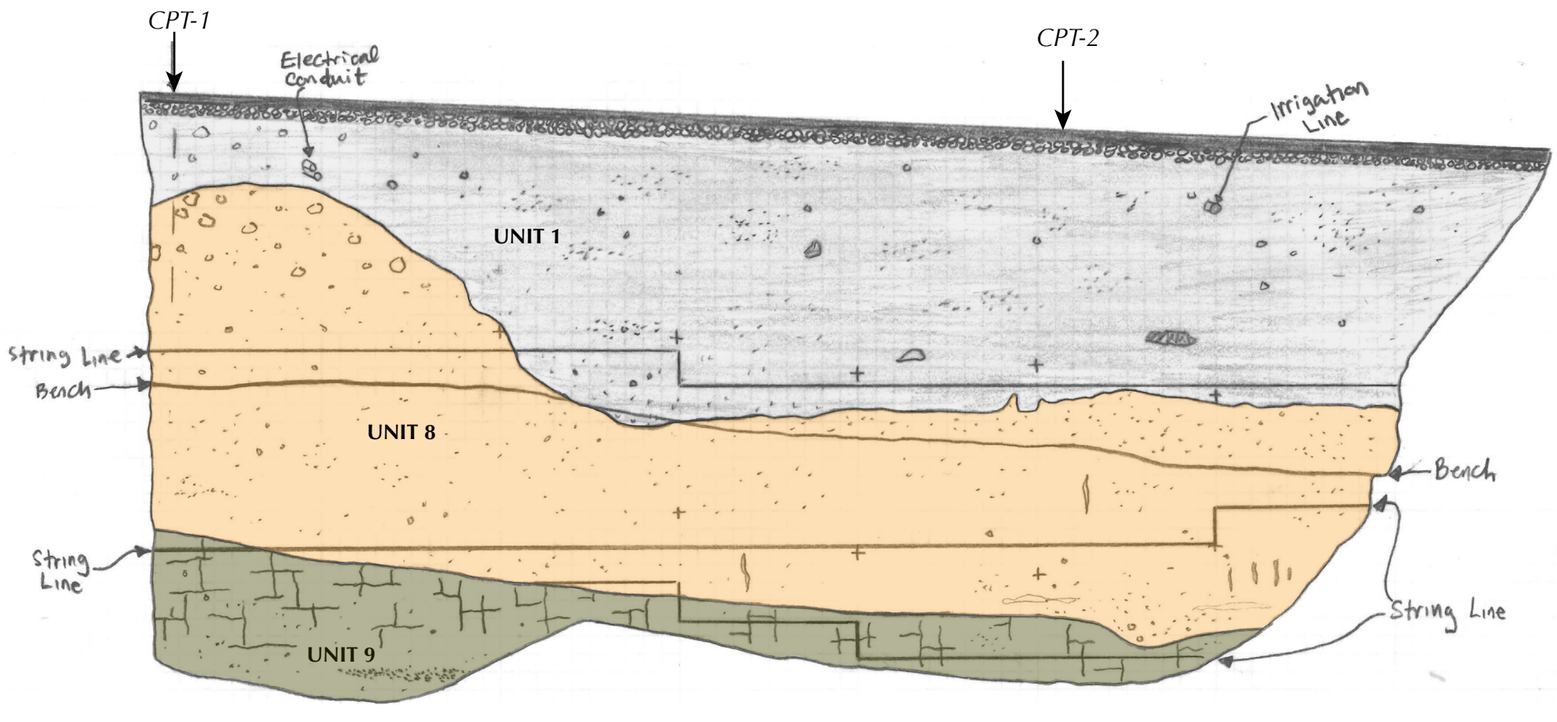

Distance (feet)
0
20
40
60
80
100
120
140
160
180
200
220
240
260
280
300
320
340
360
380
400
420
440
AP Fault
(FER-222)
AP Fault
(FER-222)
Distance (feet)
Elevation relative to sea level (feet)
230
220
210
200
190
180
CPT-24
CPT-25
CCB-5
CPT-26
CPT-27
CPT-28
CCB-6
CCB-7
CPT-29
CCB-8
CPT-30
CPT-31
CPT-32
CPT-33
CPT-34
CPT-35
CPT-36
CPT-37
CPT-38
CPT-39
CPT-40
Af
A
B
C
F
H
P
?


TRANSECT 2A
AP Fault
(FER-222)
Distance (feet)
0
20
40
60
80
100
120
140
160
180
200
Distance (feet)
Elevation relative to sea level (feet)
230
220
210
200
190
180
CPT-49
CPT-41
CPT-42
CPT-43
CPT-44
CPT-45
CPT-46
CPT-47
CPT-48
Af
Af
A
B
C
F
H
P
H
P



Scale in feet

-20 -5 0 5 10 15 20 25



EXPLANATION

UNIT 1: *Afu:* Dark grey to black (moist) Sandy CLAY & Clayey SAND, abundant fine to coarse gravels, various manmade debris (wood, asphalt, brick), material varies by lift.

UNIT 8: *Debris Flow/Mudflow:* Silty CLAY to Sandy CLAY with gravel, yellowish brown (10YR 5/4 dry, 10YR 4/4 moist) to brown (7.5 YR 4/4 dry, 7.5YR 4/3 moist), fine sand, fine subrounded granitic/metagranitic gravels, scattered coarse gravels, overall massive, chaotic assemblage, translocated clay forming clay films and bridging grains, significant decrease in gravel and sand content and size with depth. Many vertical features (up to 12-inches+ long) filled with yellow (2YR 7/6) silt to very fine sand, potential root casts.

UNIT 9: *Overbank Deposit:* Silty CLAY with sand, yellowish brown (10YR 5/4 dry, 10YR 4/3 moist), blocky structure, well-developed soil, clay films on ped faces, significant organic content, desiccation cracks when dry. Sandier region near base between 0+65 and 0+75. Top of Unit correlates with sedimentary package D (see Appendix B; Plate 2)

***Note:** The photomosaic combines two separate mosaics, with the lower portion added upon deepening of the trench. The trench was further deepened at a later time, which is not shown in the photomosaic, but is included in the geologic log.

Photomosaic (Top) and Geologic Log (Bottom) of Westwall of Trench 1

Leighton

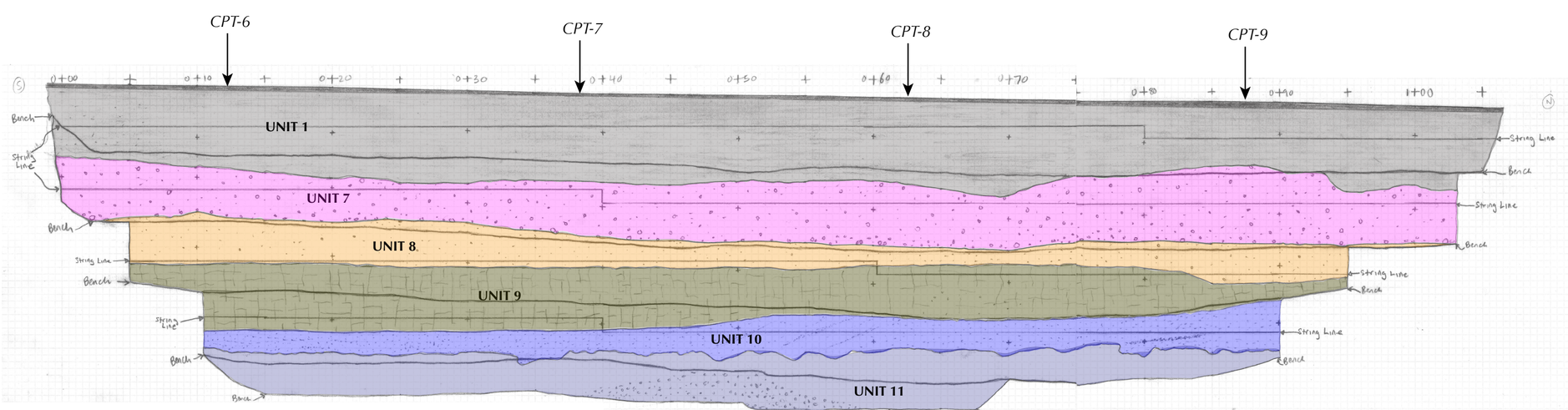
Project Number: 14030.001
Date: September 2024

PLATE 3A



Scale in feet

0 10 20 30 40 50 60 70 80 90 100



EXPLANATION

UNIT 1: *Afu:* Dark grey to black (moist) Sandy CLAY & Clayey SAND, abundant fine to coarse gravels, various manmade debris (wood, asphalt, brick), material varies by lift.

UNIT 7: *Debris flow/Mudflow:* Sandy CLAY with gravel, yellowish brown to brown (10YR 5/4 dry, 7.5YR 4/3 moist), sand content increases with depth, gravel content and size increase with depth, overall massive, chaotic assemblage, clay films, translocated clay bridging grains.

UNIT 8: *Debris Flow/Mudflow:* Sandy CLAY, sharp decrease in sand and gravel content compared to unit above, yellowish brown (10YR 5/4 dry, 10YR 3/4 moist), scattered fine subrounded gravels. Clay films on parting surfaces, translocated clay bridging grains.

UNIT 9: *Overbank Deposits:* Silty CLAY with sand, light yellowish to olive brown (2.5Y 6/4 dry, 2.5Y 5/4 moist), blocky structure, well-developed soil, clay films on pediment faces, significant organic content, desiccation cracks when dry. Sandier region near base between 0+65 and 0+75.

UNIT 10: *Channel Deposits:* Laminated to thinly bedded SAND, dark yellowish brown (10YR 4/6 dry, 10YR 3/6 moist), predominantly fine sand, cross bedded, scattered fine gravels. Thin thalweg lenses of fine to coarse sand, some with fine subrounded gravels. Heavy iron oxide staining, translocated clay, few black-stained beds, appear charred. Erosional contact below, heavily iron oxide stained.

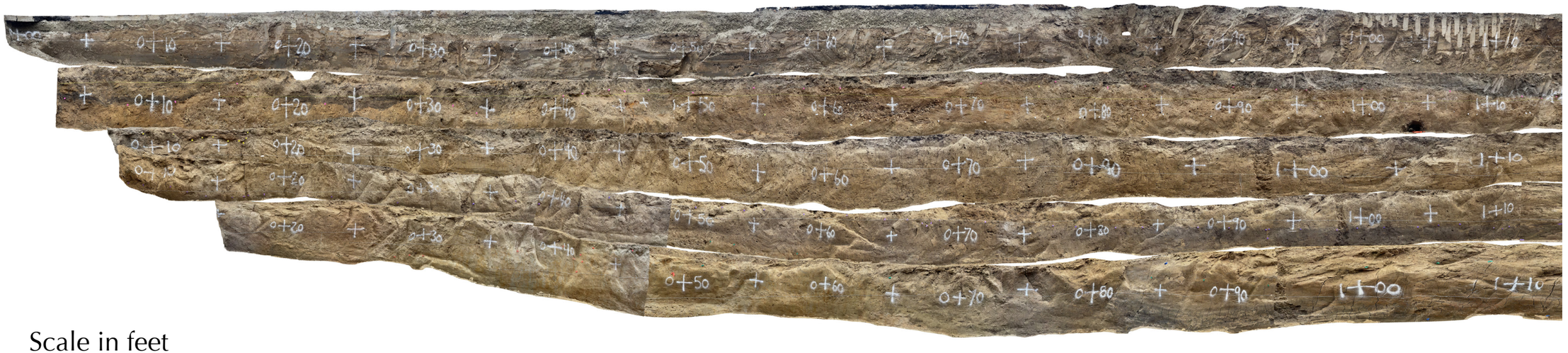
UNIT 11: *Overbank/Wetland Deposits:* CLAY, light yellowish brown to olive brown (2.5Y 6/3 dry, 2.5Y 4/4 moist), abundant FeO stringers and stained ped faces, high plasticity, desiccation cracks when dry. Heavily oxidized channel lens at approximately 0+40 to 0+65.

Photomosaic (Top) and Geologic Log (Bottom) of Westwall of Trench 2

Leighton

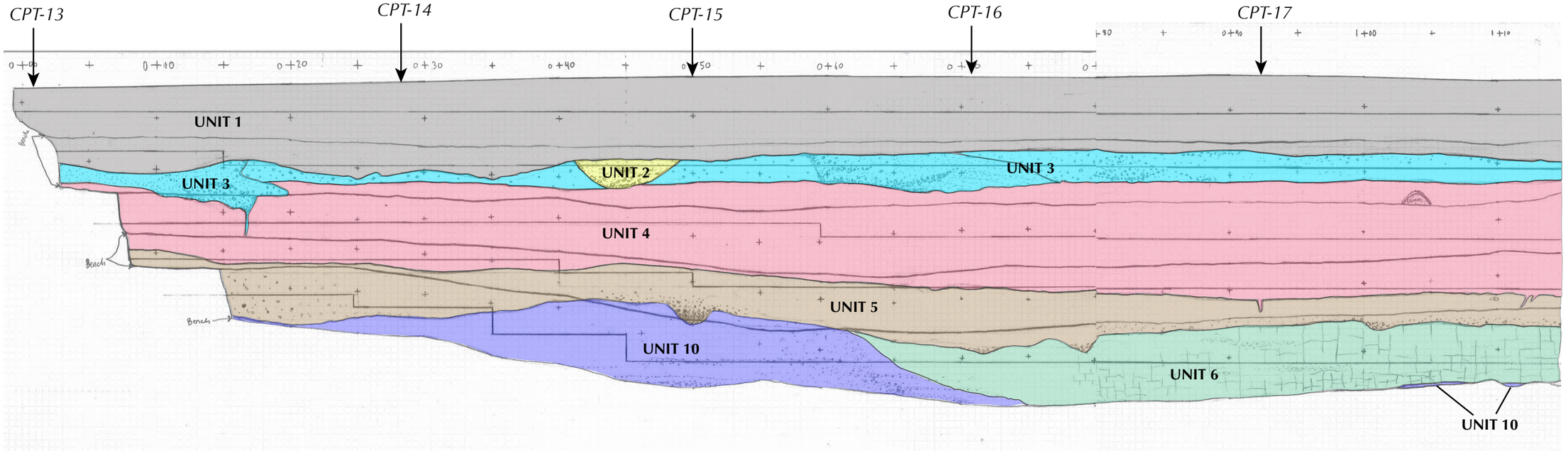
Project Number: 14030.001
Date: July 2024

PLATE 3B



Scale in feet

0 10 20 30 40 50 60 70 80 90 100 110



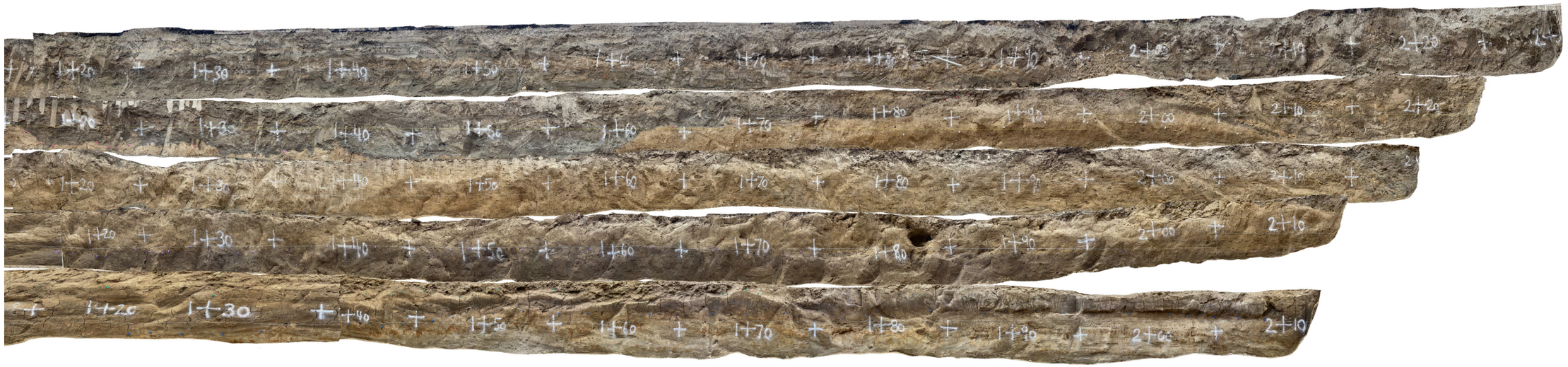
See Plate 3E for Explanation of Units

Photomosaic (Top) and Geologic Log (Bottom) of Westwall of Trench 3-4 (0-110 feet)

Leighton

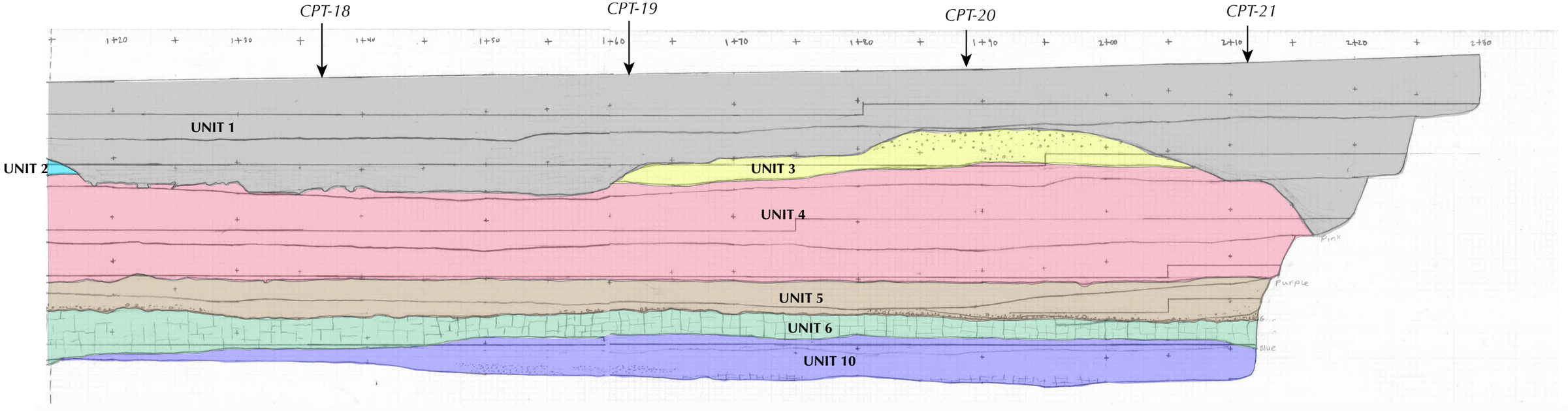
Project Number: 14030.001
Date: September 2024

PLATE 3C



Scale in feet

120 130 140 150 160 170 180 190 200 210 220 230



See Plate 3E for Explanation of Units

Photomosaic (Top) and Geologic Log (Bottom) of Westwall of Trench 3-4 (110-220 feet)

Leighton

Project Number: 14030.001
Date: September 2024

PLATE 3D

UNIT 1: *Afu:* Sandy Clay and Clayey Sand, dark grey to black (moist), abundant fine to coarse gravels, scattered human-made debris (wood, asphalt, tar blebs, metal fragments, brick), material varies by lift, deeper sections benched.

UNIT 2: *Channel (1938 Flood Deposit or Recent Holocene Stream):* Channel with nested gravels, bedded sands, and human-made debris (wood, charcoal, metal, glass includ-ing broken Clorox bottle with stamp ca. 1930's), Silty Clayey Sand with Gravel, fine to coarse sand, subangular to subrounded granitic/metagranitic clasts, heavy iron-oxide stains and rust rinds encasing metal debris, erosive contact below.

UNIT 3: *Nested Channels and High-Energy Overbank/Debrisflow Deposits:* Starting at Sta. 0+00, Silty Sand, medium brown dark yellowish brown (10YR 4/4 dry, 10YR 3/4 moist), poorly graded, massive, scattered gravels, predominantly fine sand, scattered medium and coarse sand. Northward laterally interfingers with coarser, thinly bedded to laminated sands, then to thalweg with nested gravels (subrounded, granitic/metagranitic), with dark brown (10YR 3/3) clay film coatings on gravels in the coarsest sections. Northward, unit grades to overall more "muddy" deposits: Clayey Silty Sand with Gravel, brown (10YR 5/3), with basal gravels, some fining upward, others chaotic, with generally fine gravels, some coarse gravels, subangular to subrounded. Larger channel from approximately Sta. 0+60 to 0+75, coarse nested gravels and cobbles at South, grades laterally to the North to cross-bedded sands, with heavy FeO stained pockets. Grades laterally to (or is overtopped by) debris flow with fine to coarse sand and fine to coarse gravels, grading finer to the North.

- Subunit: At approximately Sta. 0+16, a channel has crack below the thalweg that is filled with fine to coarse gravel and sand at top, dark yellowish brown (10YR 3/4). Gravel and sand in crack continue into bench, crack becomes thin and filled with silt.

UNIT 4: *Mudflow:* Light yellowish brown (2.5Y 6/4 dry, 2.5Y 4/4 moist) Silty Clay with Sand, significant decrease in sand and gravel content and size from unit above. Silt and sand content increases with depth, gravel content and size increase with depth, high porosity toward top of the unit, overall massive, chaotic assemblage, fine rootlets, some gleyed root traces, some soil development (predominantly translocated clay bridging grains and blocky structure near the top of unit), minor charcoal, some areas of basal gravels in scours and thinly bedded sands approximately 0+65 to 0+80, black coatings on gravels in this channel zone, possible burnt sediment.

UNIT 5: *Mudflow:* Sharp increase in clay content compared to unit above, dark brown (10YR 4/3 dry, 10YR 3/3 moist) Silty CLAY with Sand and Gravel, introduction of fine manganese-oxide spotting, some FeO staining, weak soil development, scattered fine gravels, sharp increase in sand and gravel content at base, erosive contact with closely-packed sands and fine gravels.

UNIT 6: *Bog/Wetland Deposits:* Beginning at the north end, very dark gray to black (10YR 3/1 dry, 10YR 2/1 moist) Fat Clay, scattered sand and fine gravel, abundant Manganese-oxide spotting and strong soil development (coarse blocky structure, well-developed clay films on ped faces), significant organic content, deep desiccation cracks when dry, thickens southward, introduction of thin lenses of silt and fine grey sand. Continuing southward, upper clay becomes siltier, many thin silt and sand laminations and lenses; deeper clay grades to very dark grayish brown (10YR 4/2 dry, 10YR 3/2 moist), with increased organic content. Southward increase in sand, introduction of fine gravels. At 0+63 to 0+73 is a relatively steep angular contact between the bog/wetland unit and Unit 10; distal end of Unit 6 contains thin pebble and sand laminations apparently eroded into the unit from Unit 10. Margin area is gleyed.

UNIT 10: *Older Fluvial Deposits (south) + Older Overbank Deposits (north):* Starting at south end (Sta. 0+15 to 0+63), Sandy SILT to very fine Silty SAND, olive brown (2.5Y 5/6 dry, 2.5Y 4/4 moist) with oxidation patches/gleying throughout, few thin, dark brown (7.5YR 3/3) soil horizons, predominantly very fine to fine sand, scattered fine gravels, grading overall coarser with depth. Thin thalweg lenses of fine to coarse sand, some with fine subrounded gravels. Sandy material from this unit appears reworked near margin with Unit 6. North of thickened portion of Unit 6 (Sta. 1+02 to 2+12) Clayey Silt to Silty Clay, similar color (2.5Y 6/3 dry, 2.5 5/4 moist) and oxidation styles as fluvial deposits at the southern end of the trench. Clay filtering into top of unit from Unit 6 clay above, some very fine sand, scattered medium to coarse sand, channel lens at approximately 1+47 to 1+55 and 1+57 to 1+70 with fine to coarse sand and fine gravels. Very heavy MnO and FeO oxidation (thick nodules) near contact with Unit 6 clay. Sand and fine gravel content increases to the north end of the trench, heavy oxidation zone broadens, becomes darker and Silty and Clayey at base from 1+70 to end.

Explanation of Identified Units in Fault Trench 3-4

PLATE 3E

Leighton

Project Number: 14030.001
Date: September 2024

APPENDIX A

Cone Penetrometer Test Logs and Report

SUMMARY

OF

CONE PENETRATION TEST DATA

Project:

Lewis Rosemead Fault Investigation
1515 Walnut Grove Avenue
Rosemead, CA
January 29 – February 2, 2024

Prepared for:

Mr. Joe Roe
Leighton Consulting
2600 Michelson Drive, Ste 400
Irvine, CA 92612
Office (800) 253-4567 / Fax (949) 250-1114

Prepared by:

KEHOE TESTING & ENGINEERING
5415 Industrial Drive
Huntington Beach, CA 92649-1518
Office (714) 901-7270 / Fax (714) 901-7289
www.kehoetesting.com

TABLE OF CONTENTS

1. **INTRODUCTION**
2. **SUMMARY OF FIELD WORK**
3. **FIELD EQUIPMENT & PROCEDURES**
4. **CONE PENETRATION TEST DATA & INTERPRETATION**

APPENDIX

- CPT Plots
- CPT Classification/Soil Behavior Chart
- Summary of Shear Wave Velocities
- Pore Pressure Dissipation Graphs
- CPT Data Files (sent via email)

SUMMARY
OF
CONE PENETRATION TEST DATA

1. INTRODUCTION

This report presents the results of a Cone Penetration Test (CPT) program carried out for the Lewis Rosemead Fault Investigation project located at 1515 Walnut Grove in Rosemead, California. The work was performed by Kehoe Testing & Engineering (KTE) on January 29 – February 2, 2024. The scope of work was performed as directed by Leighton Consulting personnel.

2. SUMMARY OF FIELD WORK

The fieldwork consisted of performing CPT soundings at 49 locations to determine the soil lithology. A summary is provided in **TABLE 2.1**.

LOCATION	DEPTH OF CPT (ft)	COMMENTS/NOTES:
CPT-1	42	Refusal
CPT-2	40	Refusal
CPT-3	41	Refusal
CPT-4	40	Refusal
CPT-5	40	Refusal
CPT-6	40	Refusal
CPT-7	39	Refusal
CPT-8	40	Refusal
CPT-9	40	Refusal
CPT-10	39	Refusal
CPT-11	38	Refusal
CPT-12	39	Refusal
CPT-13	39	Refusal
CPT-14	40	Refusal
CPT-15	39	Refusal
CPT-16	39	Refusal
CPT-17	39	Refusal
CPT-18	41	Refusal
CPT-19	40	Refusal
CPT-20	41	Refusal
CPT-21	43	Refusal

LOCATION	DEPTH OF CPT (ft)	COMMENTS/NOTES:
CPT-22	50	
CPT-23	50	
CPT-24	47	Refusal
CPT-25	46	Refusal
CPT-26	50	
CPT-27	50	
CPT-28	50	
CPT-29	44	Refusal
CPT-30	50	
CPT-31	50	
CPT-32	43	Refusal
CPT-33	50	
CPT-34	43	Refusal
CPT-35	50	
CPT-36	44	Refusal
CPT-37	44	Refusal
CPT-38	44	Refusal
CPT-39	45	Refusal
CPT-40	50	
CPT-41	50	
CPT-42	45	Refusal
CPT-43	45	Refusal
CPT-44	46	Refusal
CPT-45	49	Refusal
CPT-46	50	
CPT-47	50	
CPT-48	50	
CPT-49	44	Refusal

TABLE 2.1 - Summary of CPT Soundings

3. FIELD EQUIPMENT & PROCEDURES

The CPT soundings were carried out by **KTE** using an integrated electronic cone system manufactured by Vertek. The CPT soundings were performed in accordance with ASTM standards (D5778). The cone penetrometers were pushed using a 30-ton CPT rig. The cone used during the program was a 15 cm^2 cone with a cone net area ratio of 0.83. The following parameters were recorded at approximately 2.5 cm depth intervals:

- Cone Resistance (qc)
- Sleeve Friction (fs)
- Dynamic Pore Pressure (u)
- Inclination
- Penetration Speed
- Pore Pressure Dissipation (at selected depths)

At location CPT-10, shear wave measurements were obtained at various depths. The shear wave is generated using an air-actuated hammer, which is located inside the front jack of the CPT rig. The cone has a triaxial geophone, which recorded the shear wave signal generated by the air hammer.

The above parameters were recorded and viewed in real time using a laptop computer. Data is stored at the KTE office for up to 2 years for future analysis and reference. A complete set of baseline readings was taken prior to each sounding to determine temperature shifts and any zero load offsets. Monitoring base line readings ensures that the cone electronics are operating properly.

4. CONE PENETRATION TEST DATA & INTERPRETATION

The Cone Penetration Test data is presented in graphical form in the attached Appendix. These plots were generated using the CPeT-IT program. Penetration depths are referenced to ground surface. The soil behavior type on the CPT plots is derived from the attached CPT SBT plot (Robertson, "Interpretation of Cone Penetration Test…", 2009) and presents major soil lithologic changes. The stratigraphic interpretation is based on relationships between cone resistance (qc), sleeve friction (fs), and penetration pore pressure (u). The friction ratio (Rf), which is sleeve friction divided by cone resistance, is a calculated parameter that is used along with cone resistance to infer soil behavior type. Generally, cohesive soils (clays) have high friction ratios, low cone resistance and generate excess pore water pressures. Cohesionless soils (sands) have lower friction ratios, high cone bearing and generate little (or negative) excess pore water pressures.

The CPT data files have also been provided. These files can be imported in CPeT-IT (software by GeoLogismiki) and other programs to calculate various geotechnical parameters.

It should be noted that it is not always possible to clearly identify a soil type based on qc, fs and u. In these situations, experience, judgement and an assessment of the pore pressure data should be used to infer the soil behavior type.

If you have any questions regarding this information, please do not hesitate to call our office at (714) 901-7270.

Sincerely,

KEHOE TESTING & ENGINEERING



Steven P. Kehoe
President

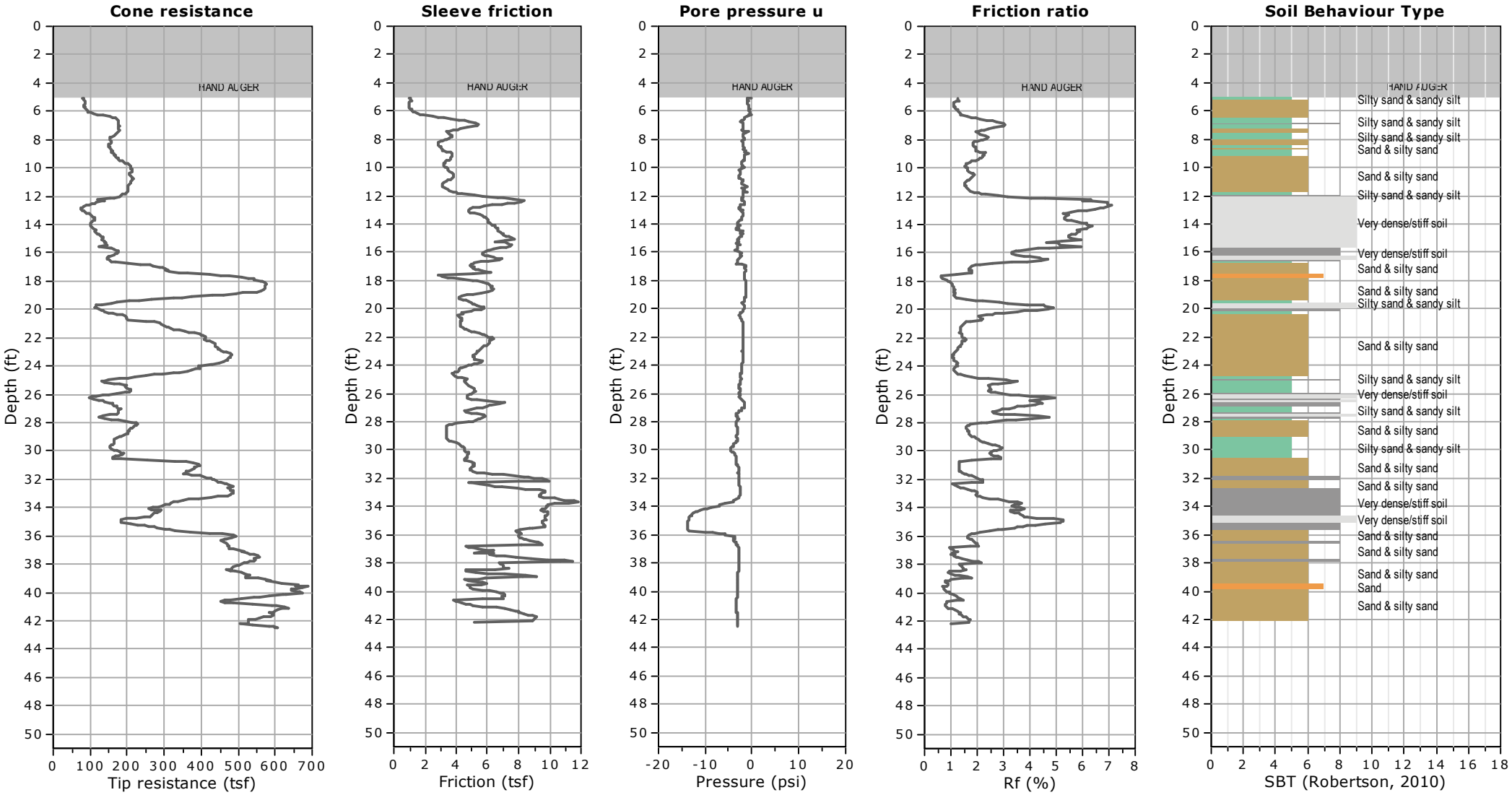
02/08/24-aga-5515

APPENDIX

Kehoe Testing and Engineering
714-901-7270
steve@kehoetesting.com
www.kehoetesting.com

Project: **Leighton Consulting / Lewis Rosemead Fault Investigation**
Location: **1515 Walnut Grove Ave, Rosemead, CA**

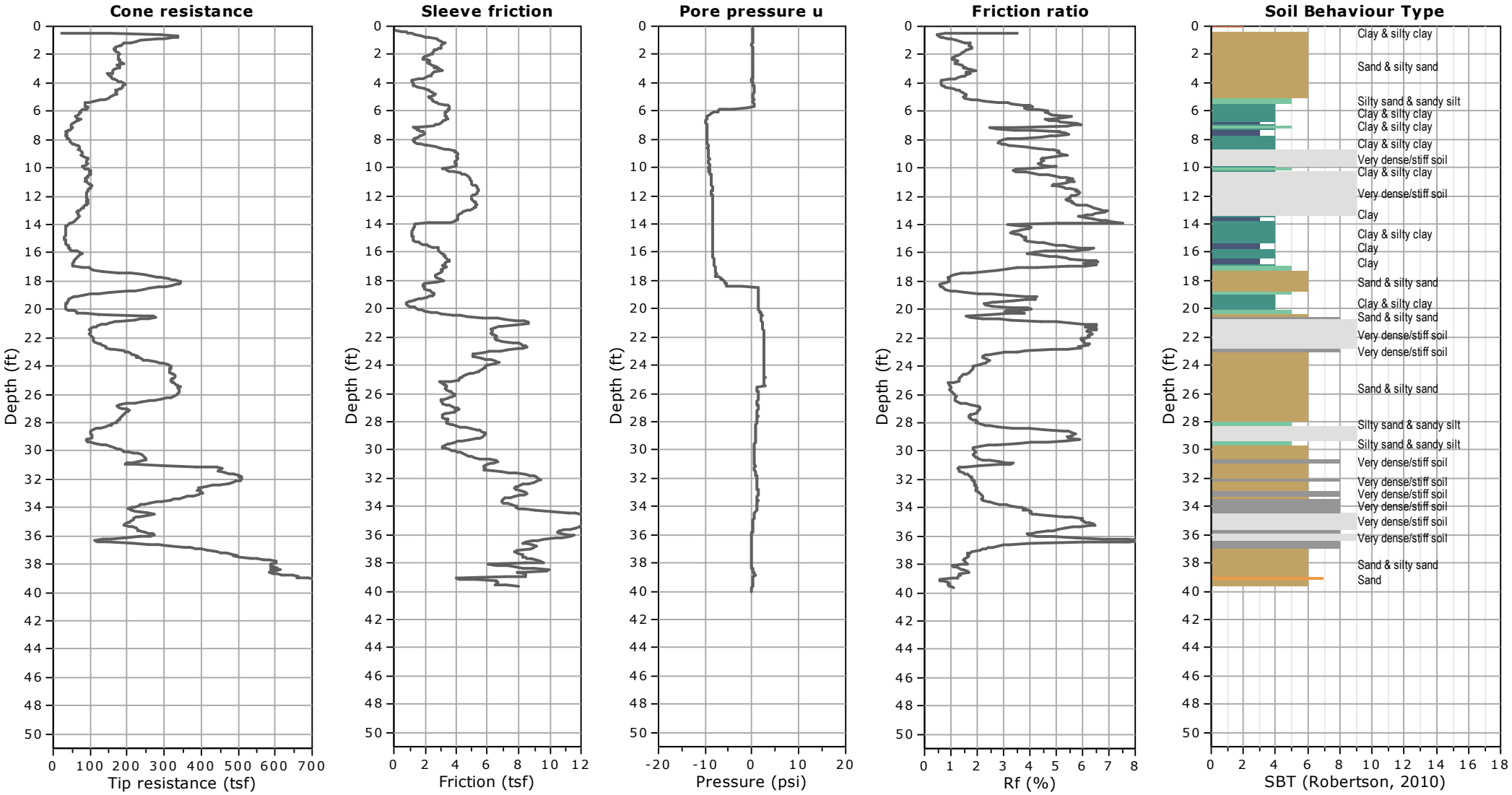
CPT-1
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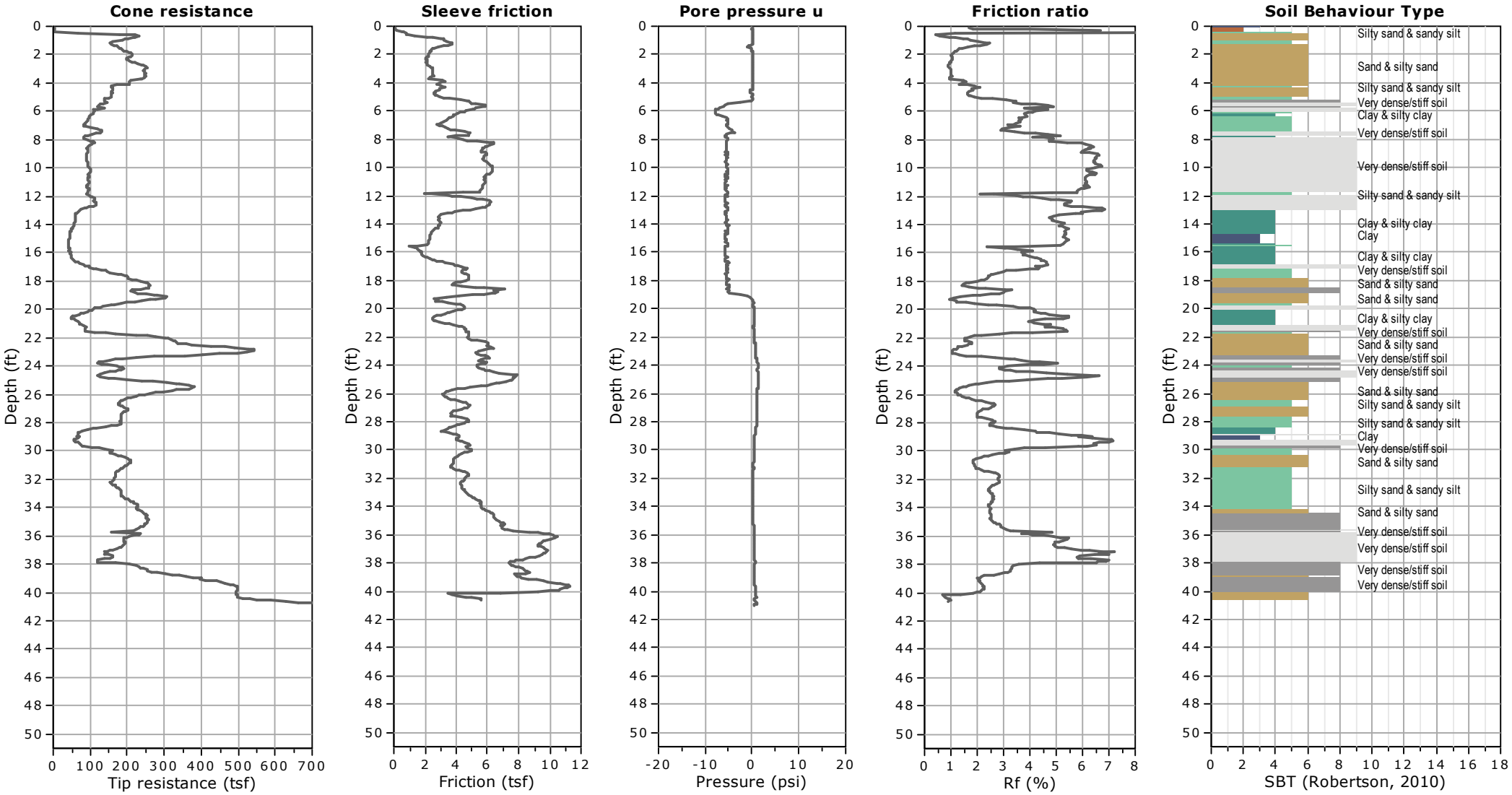
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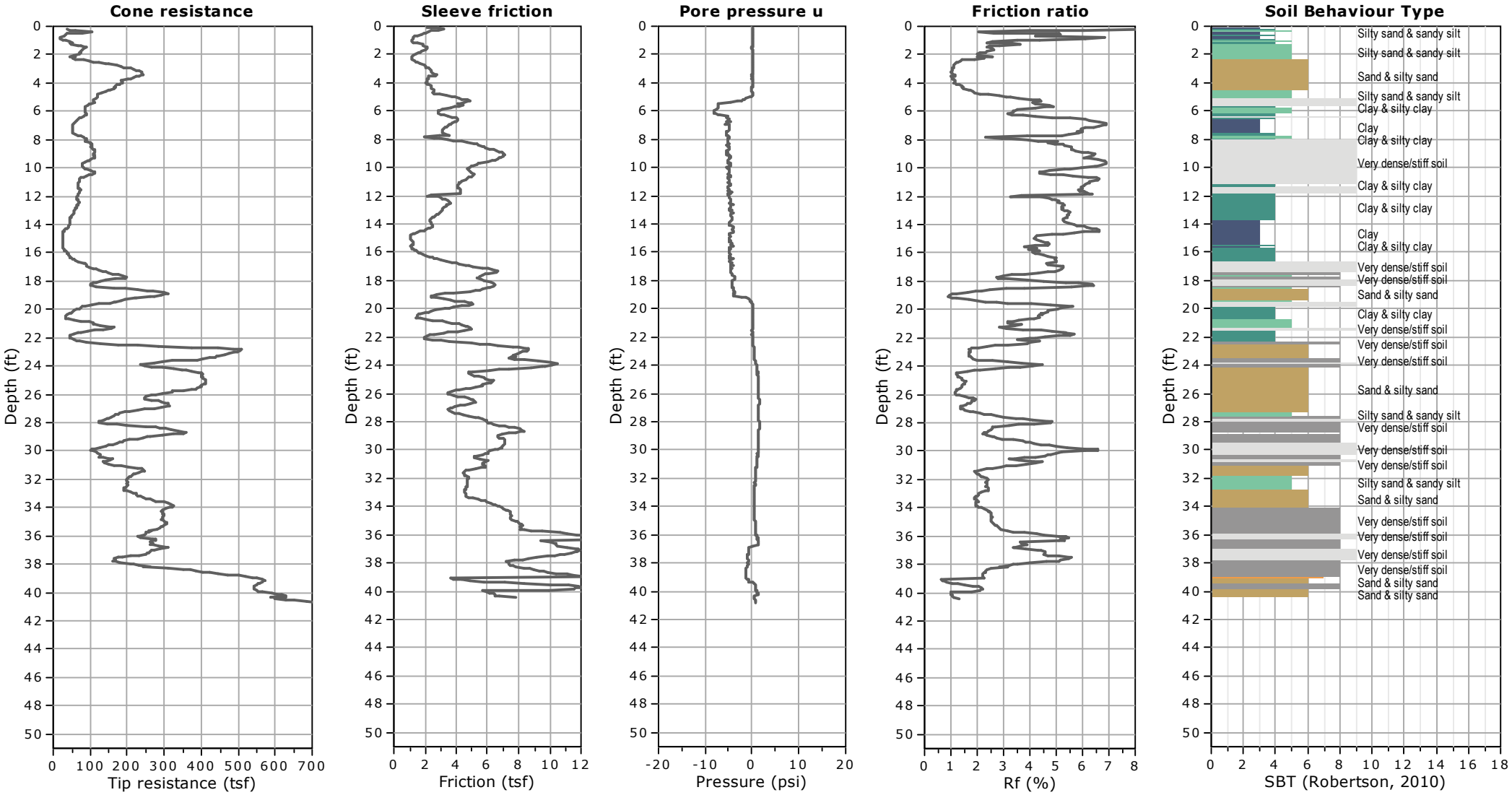
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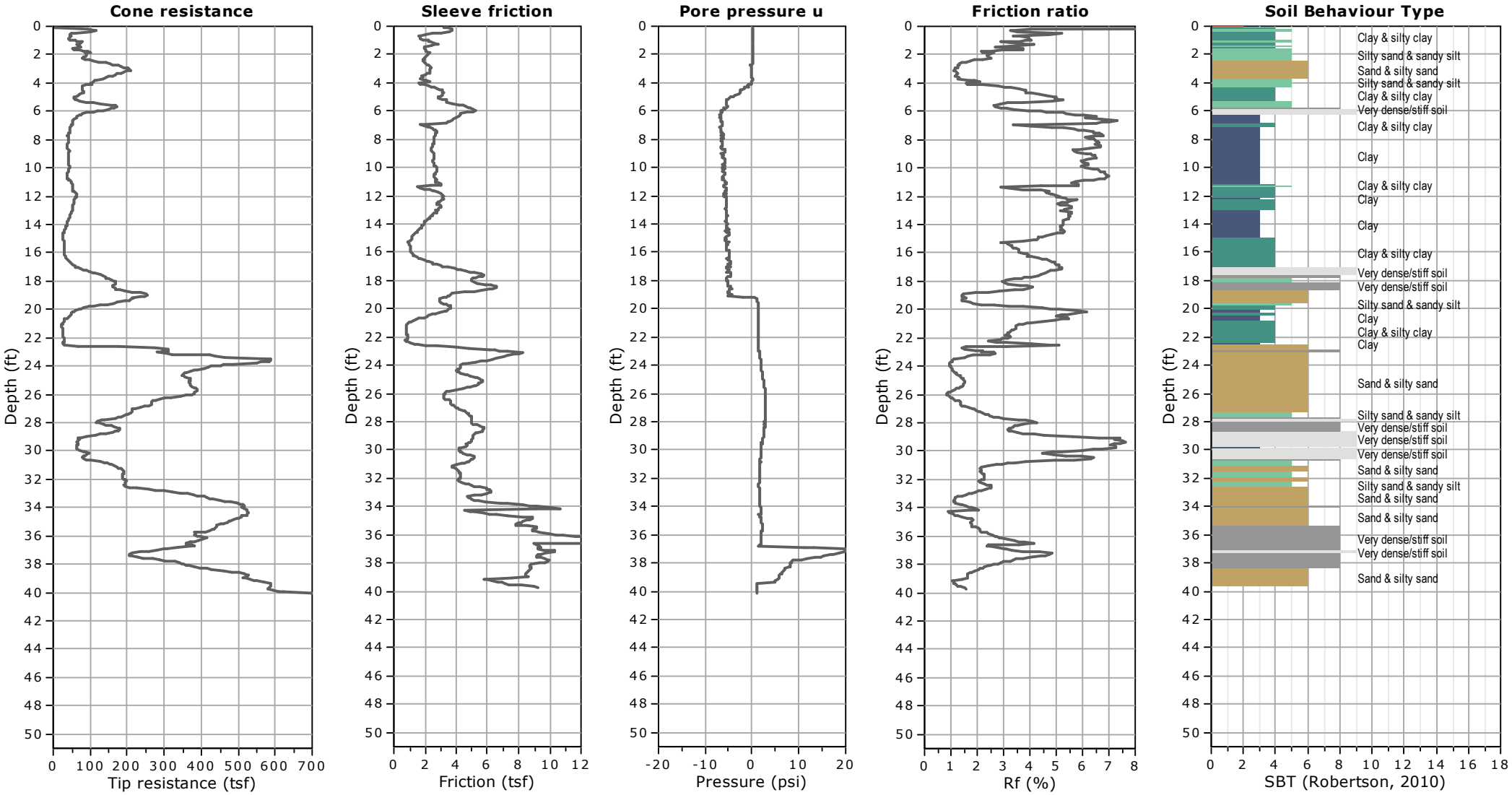
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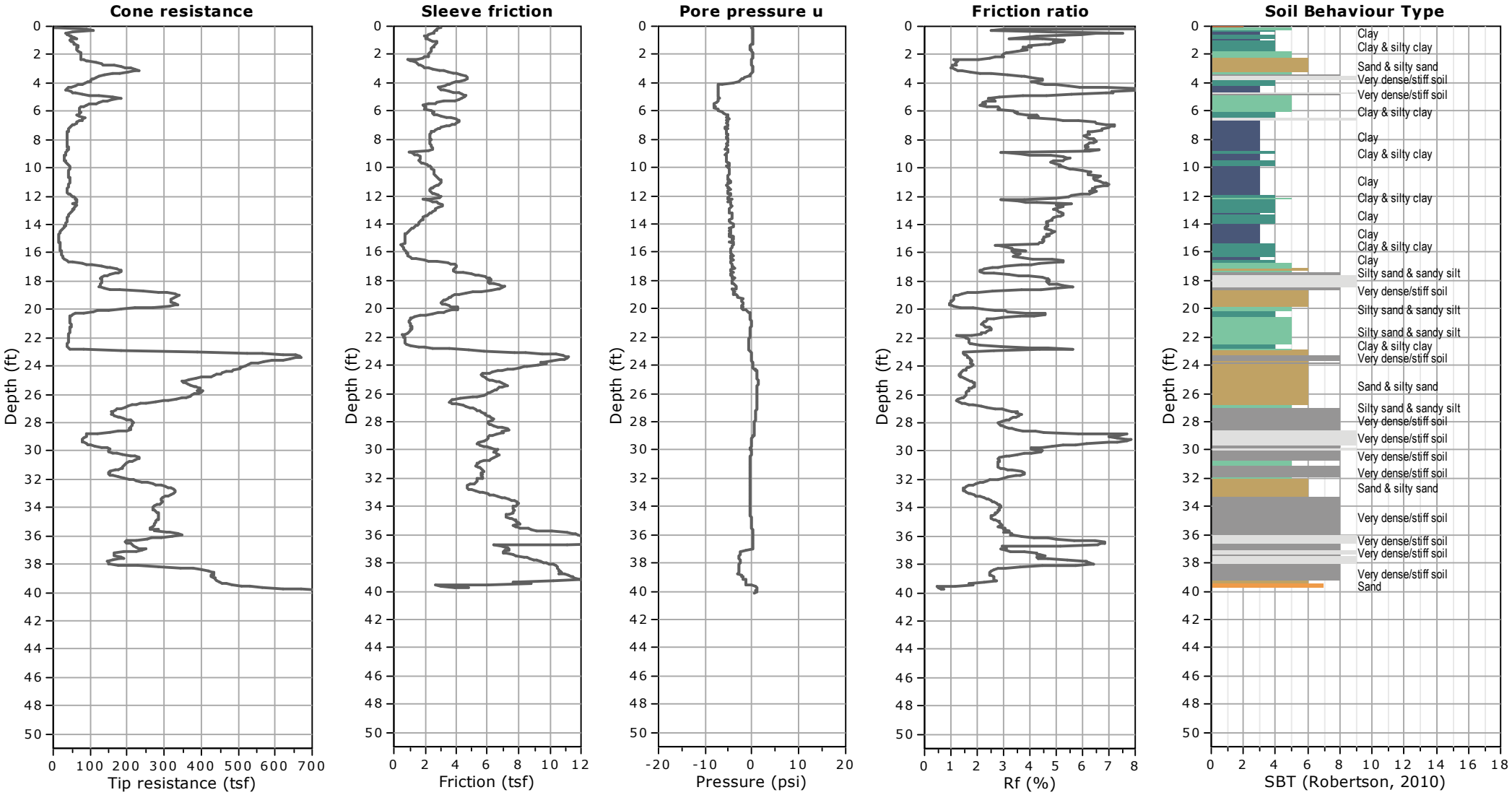
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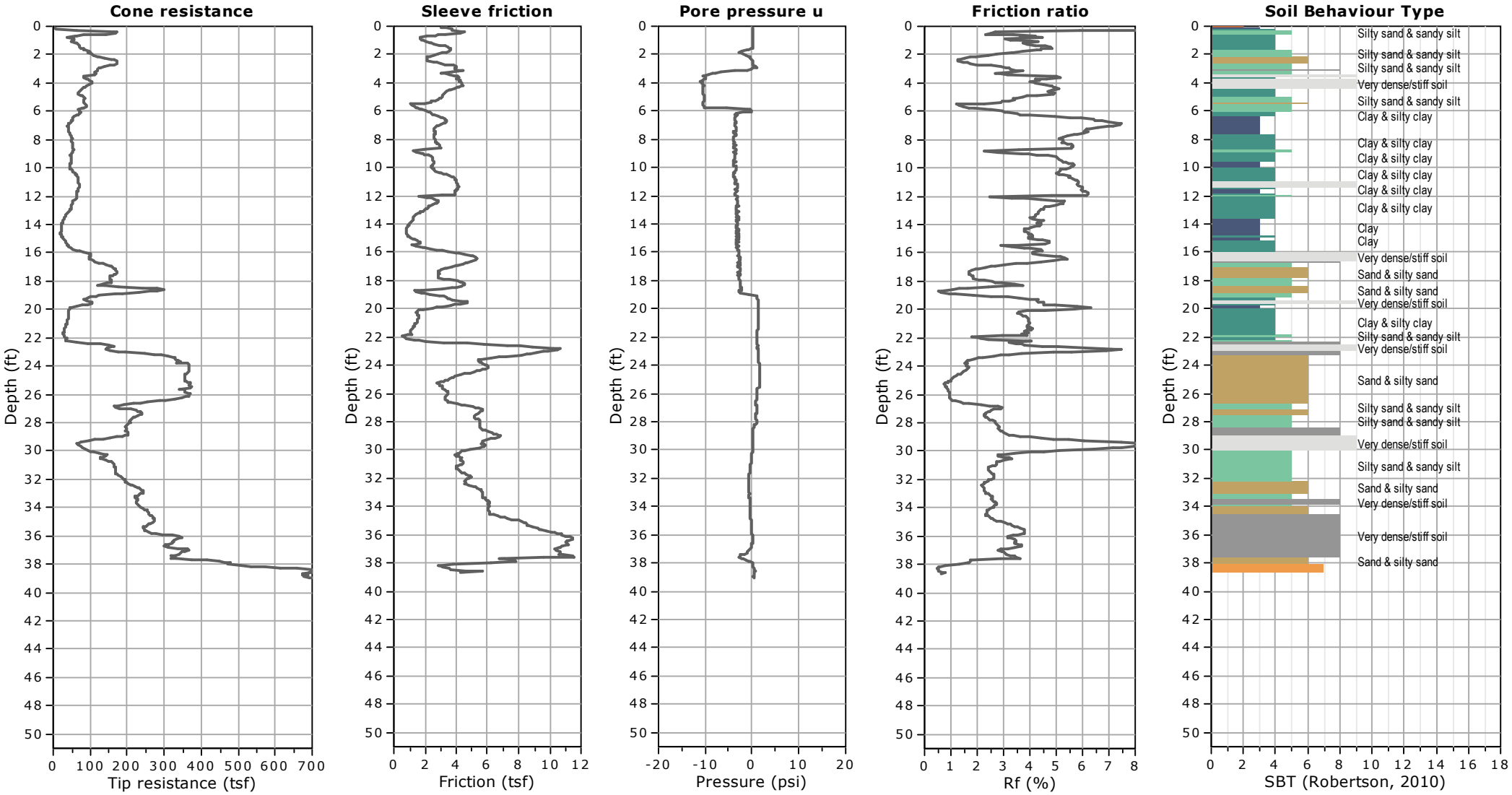
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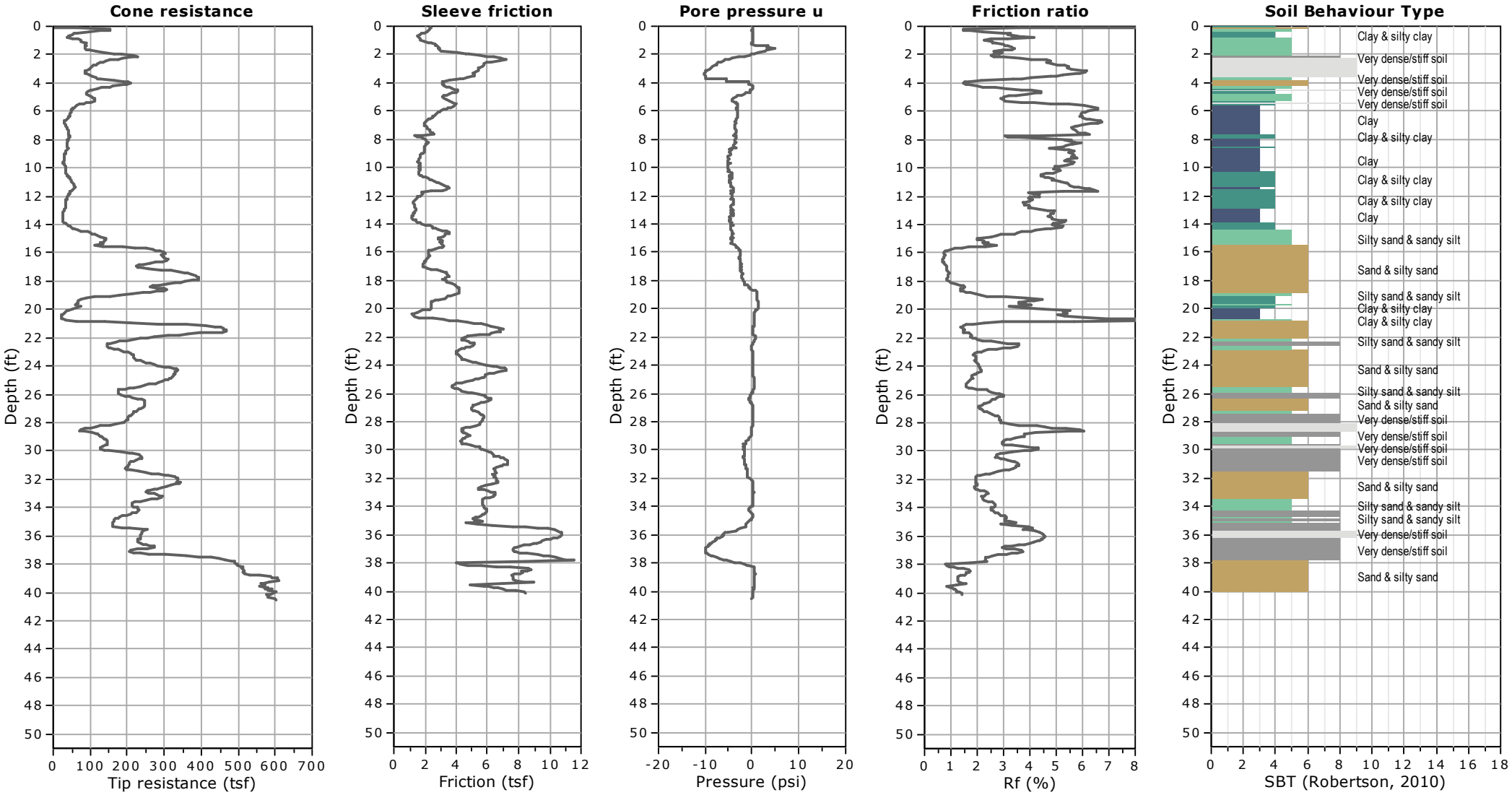
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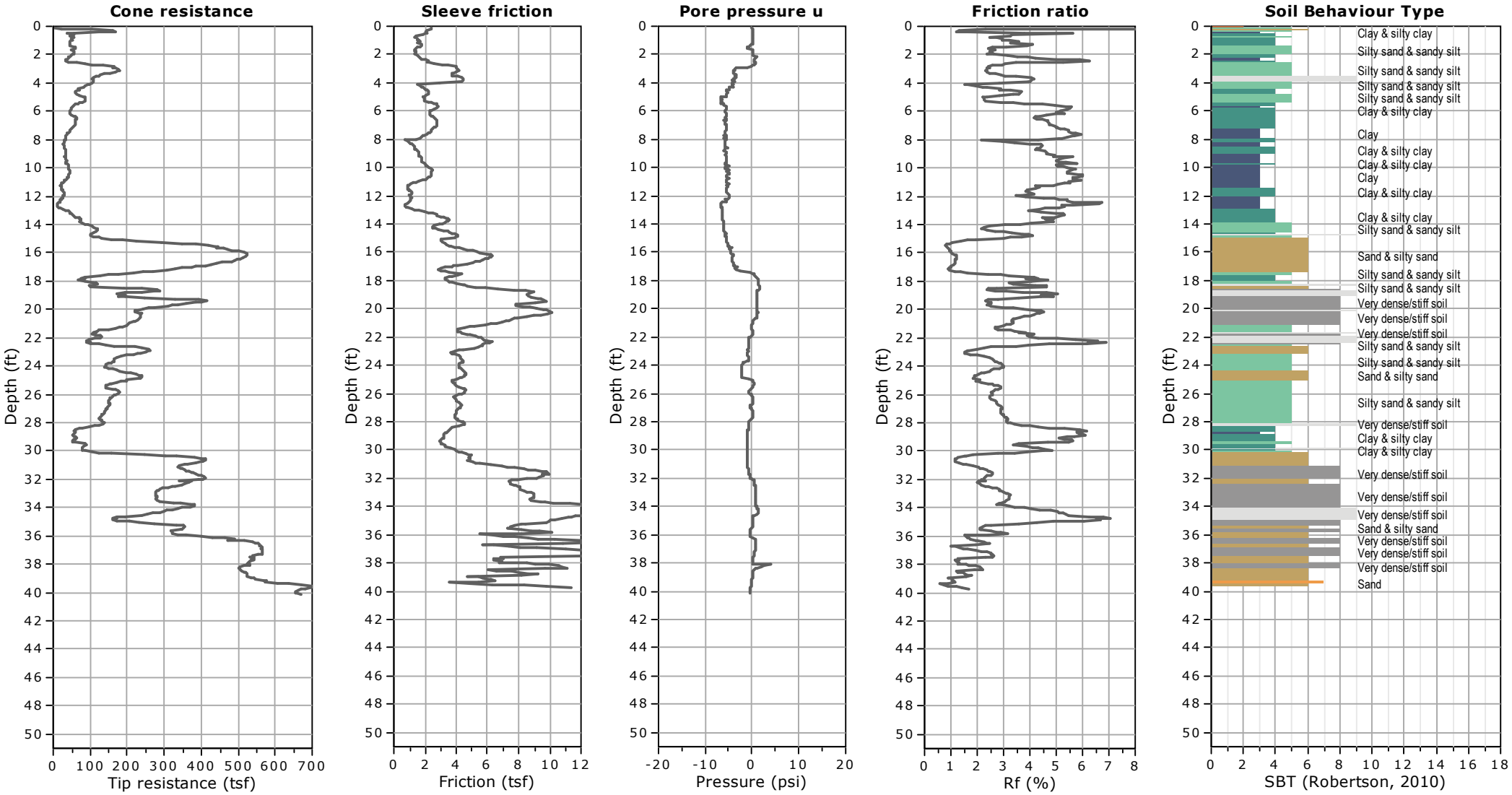
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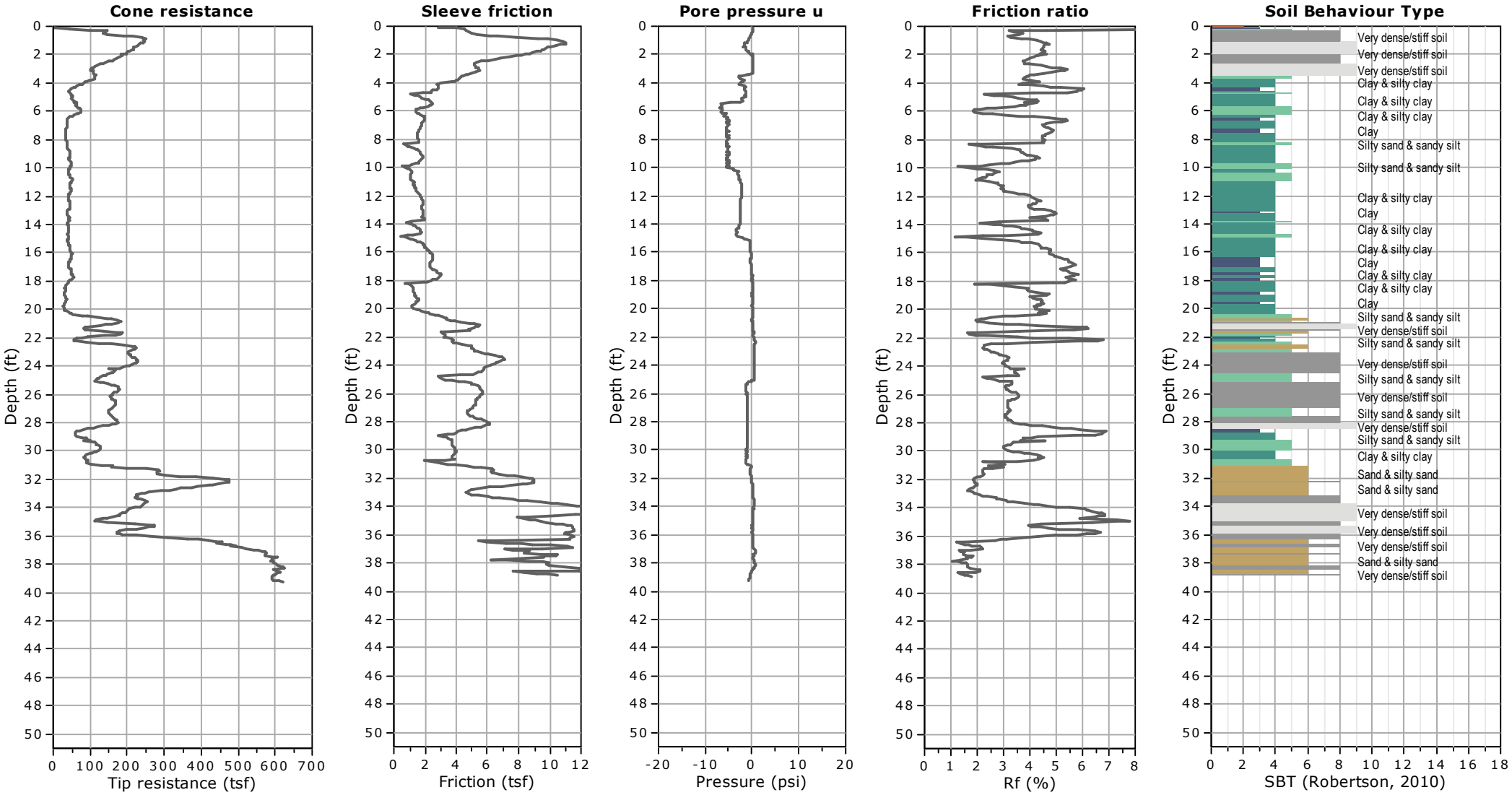
CPT-9
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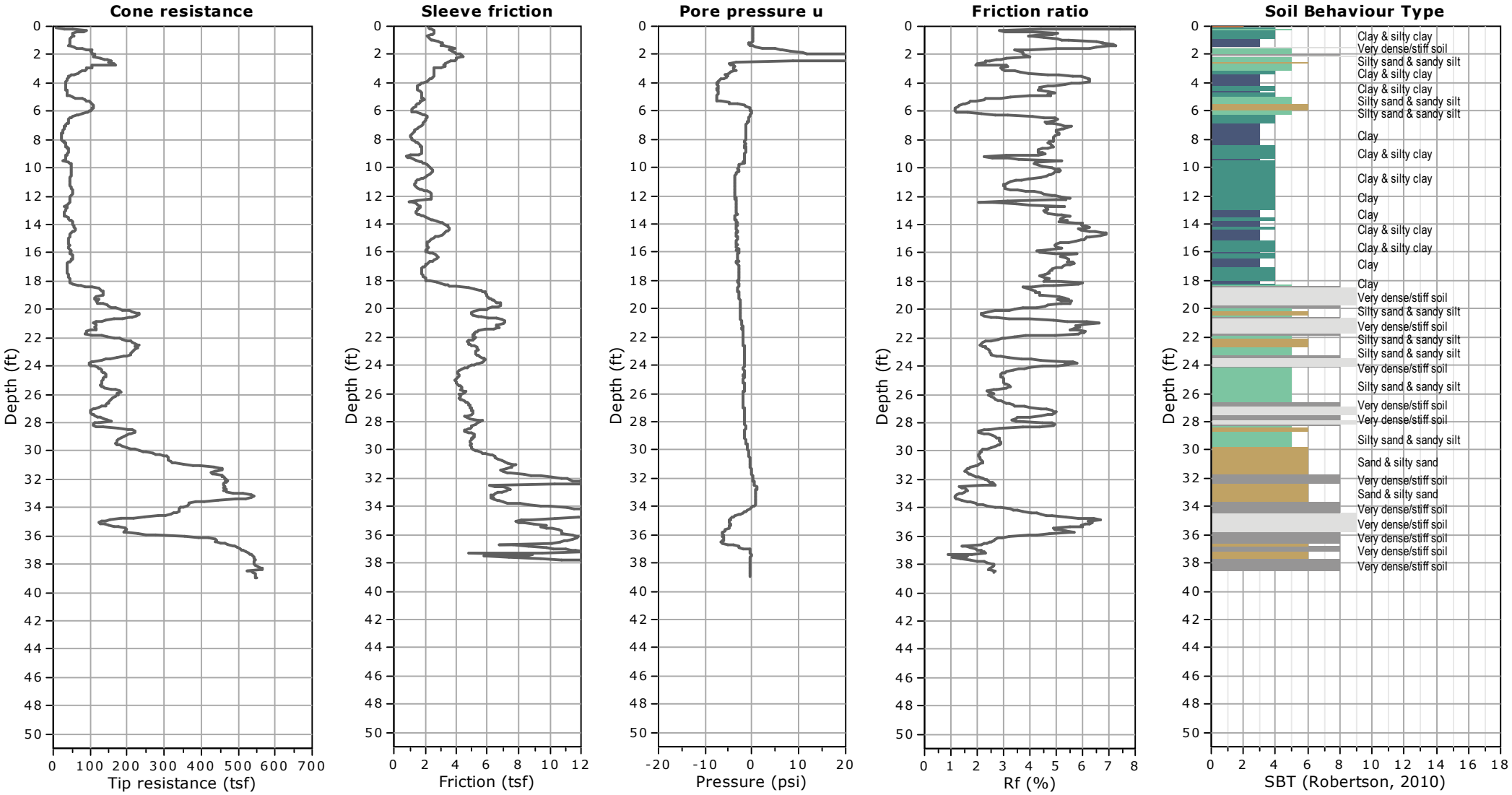
CPT-10
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Location: **1515 Walnut Grove Ave, Rosemead, CA**

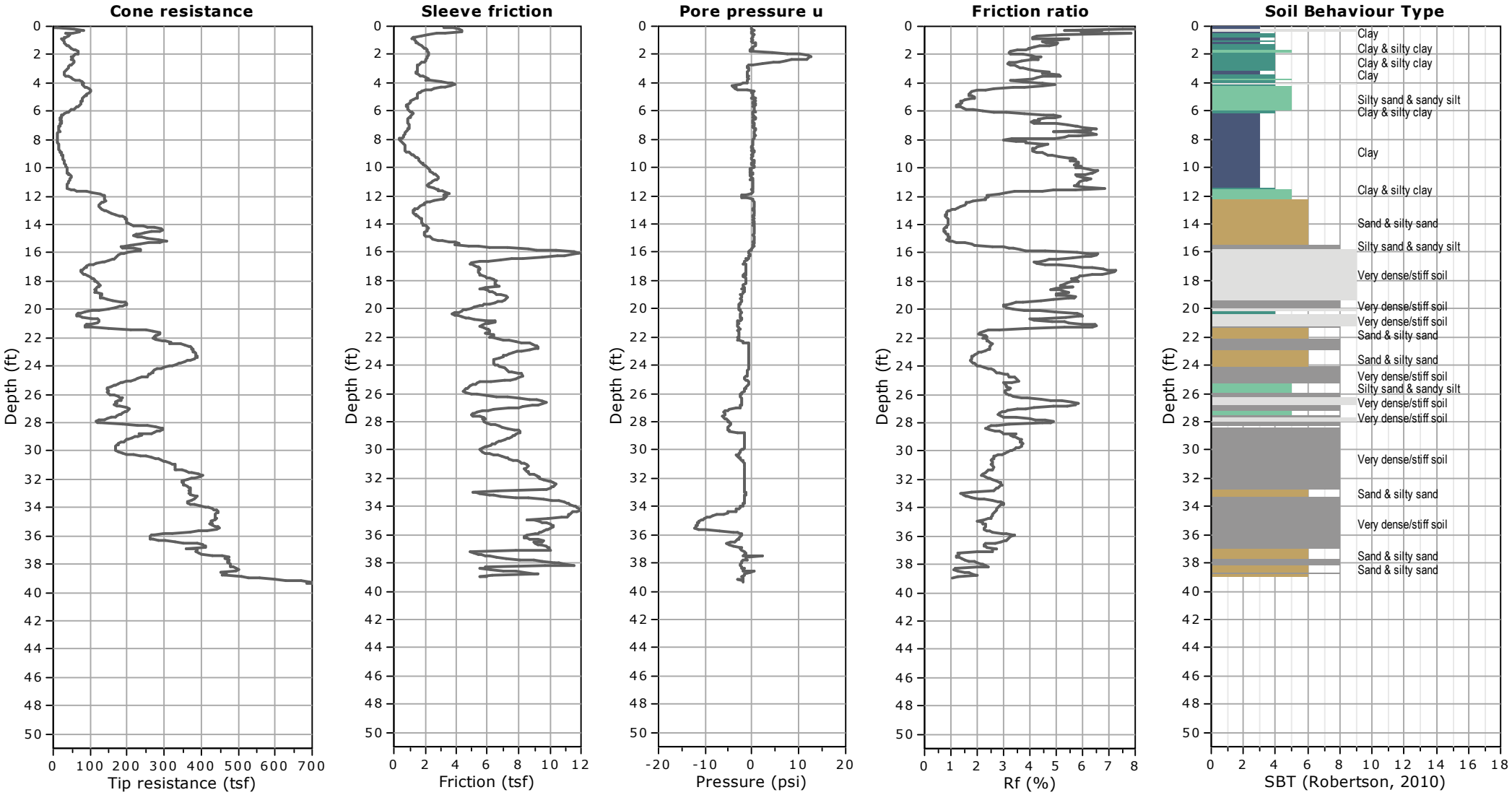
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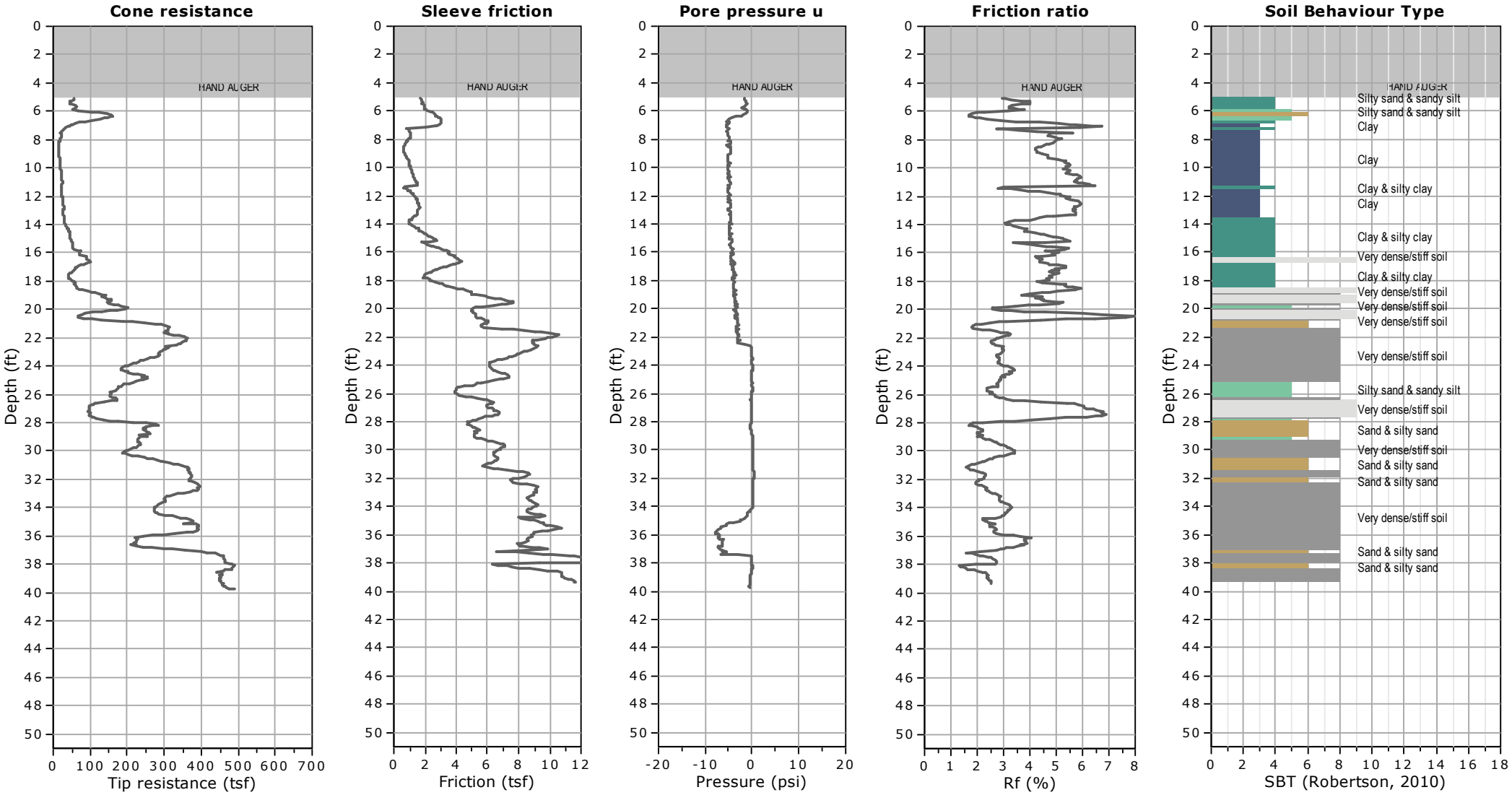
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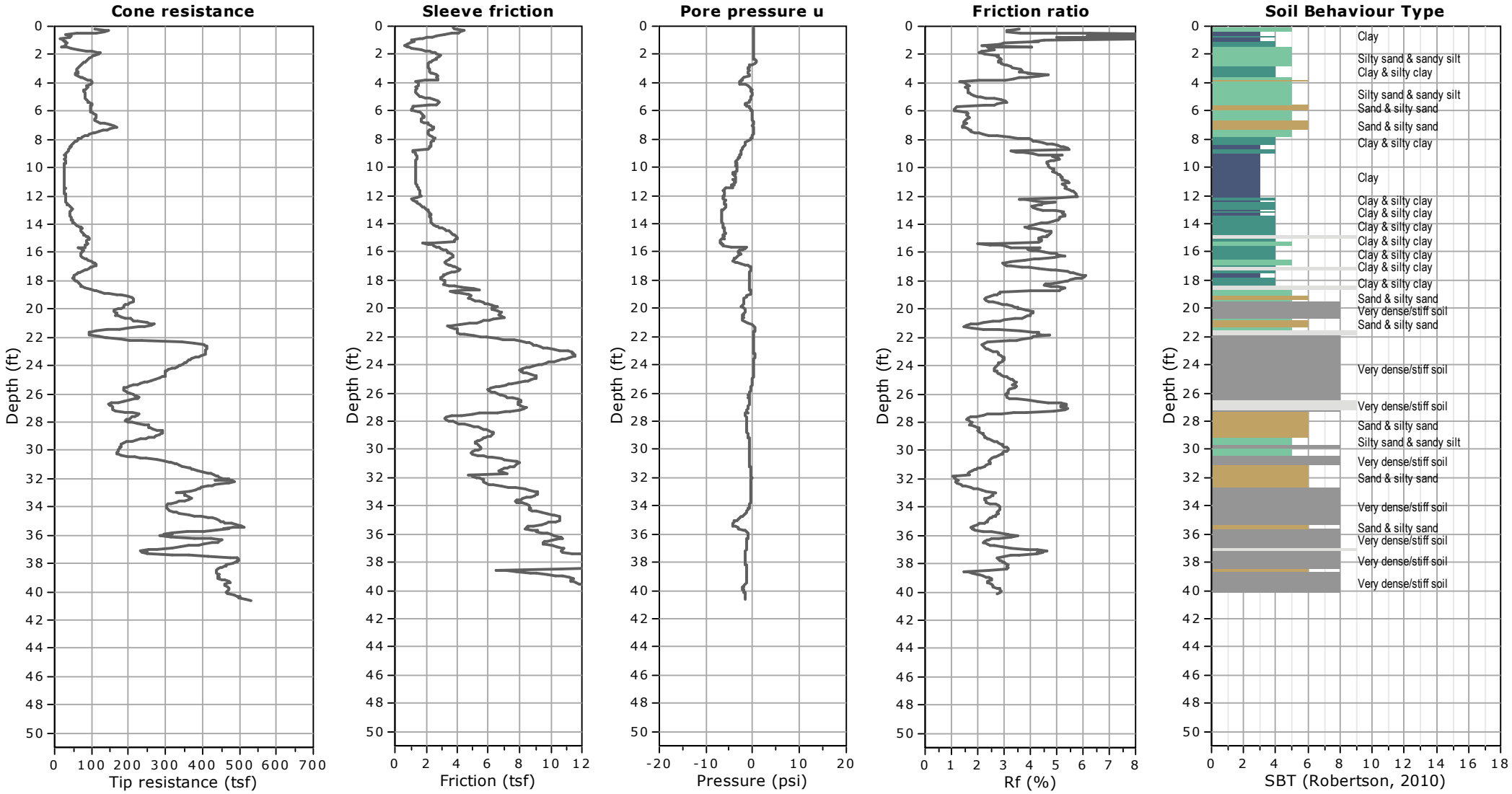
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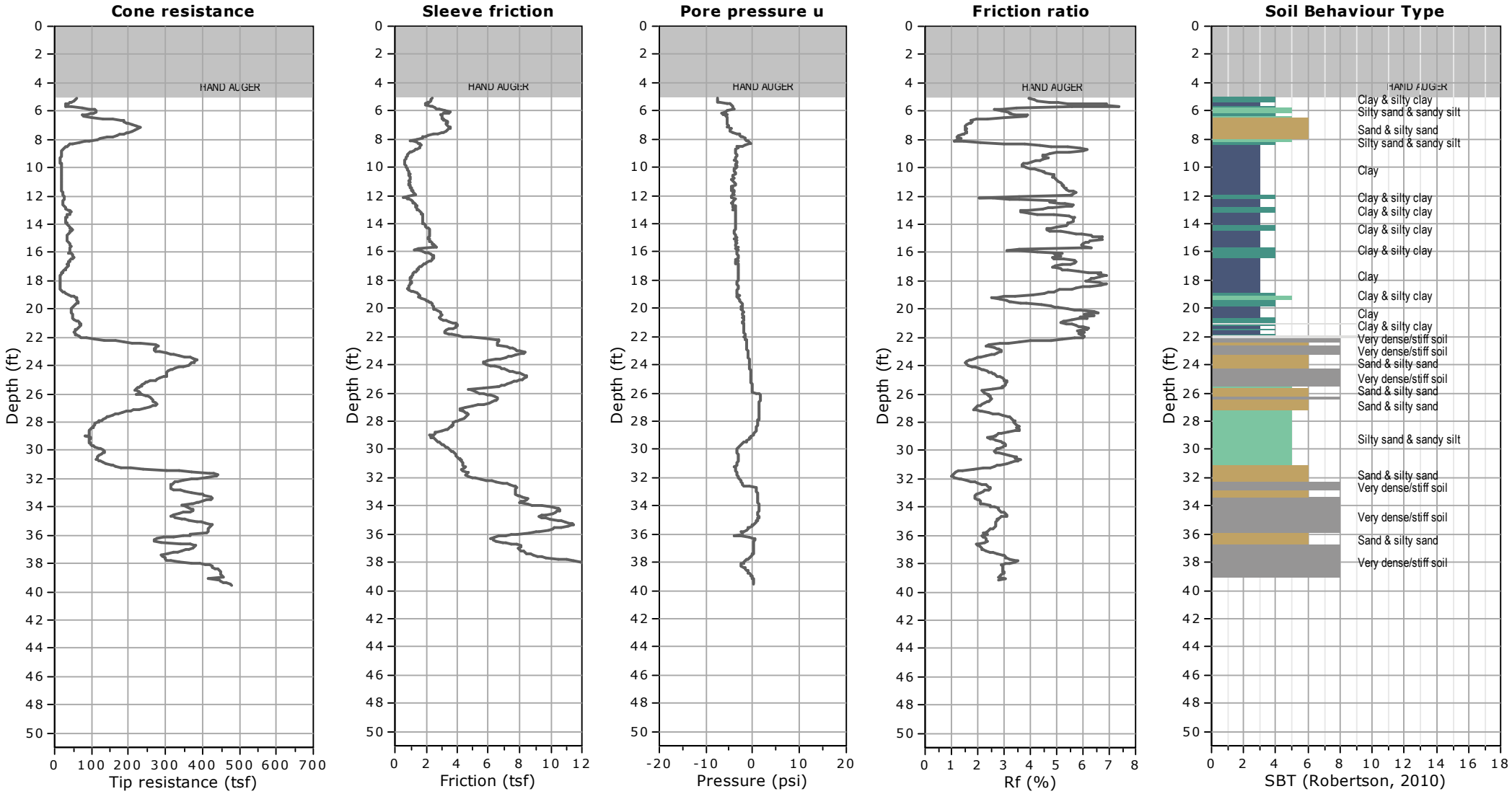
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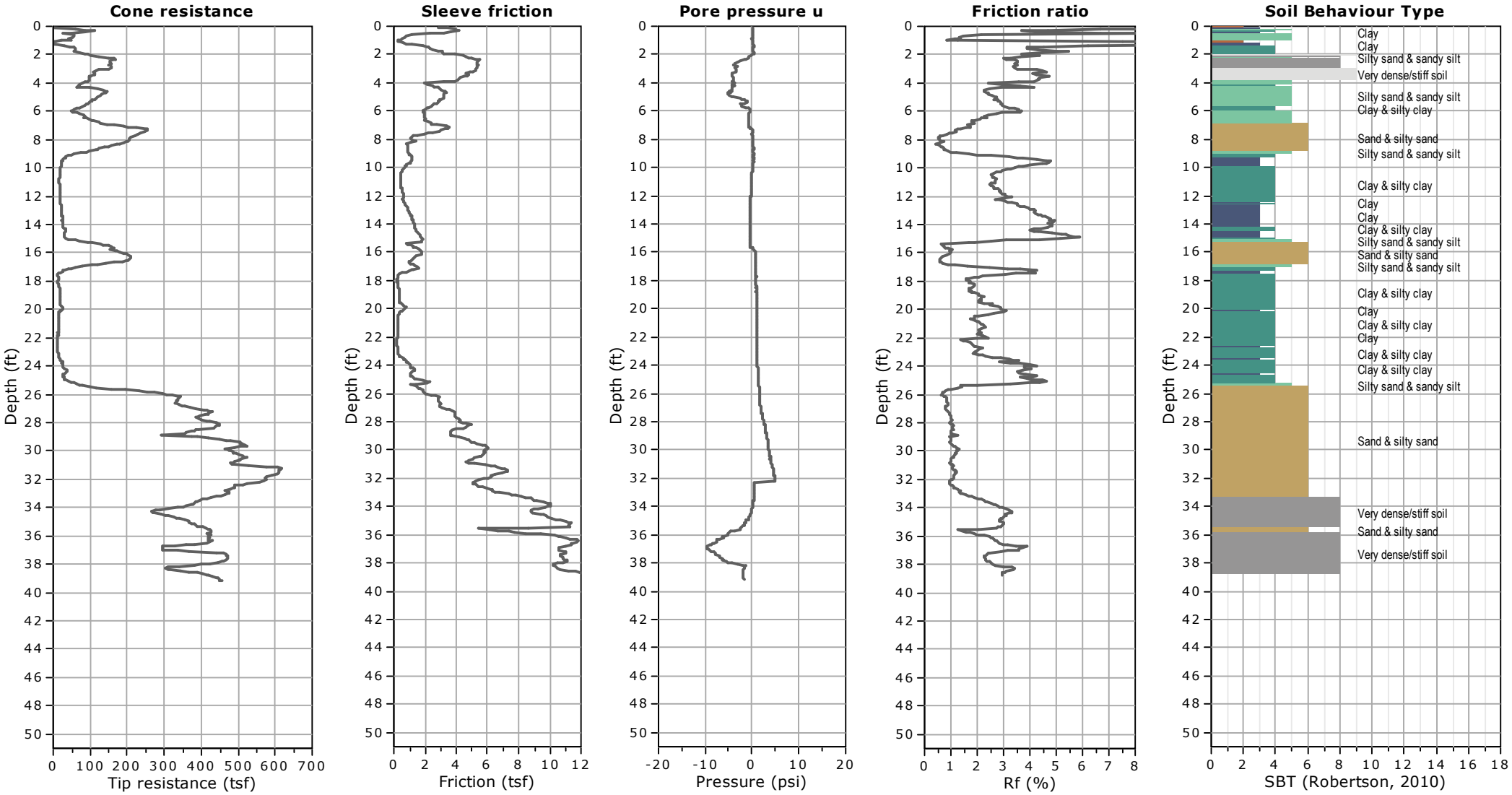
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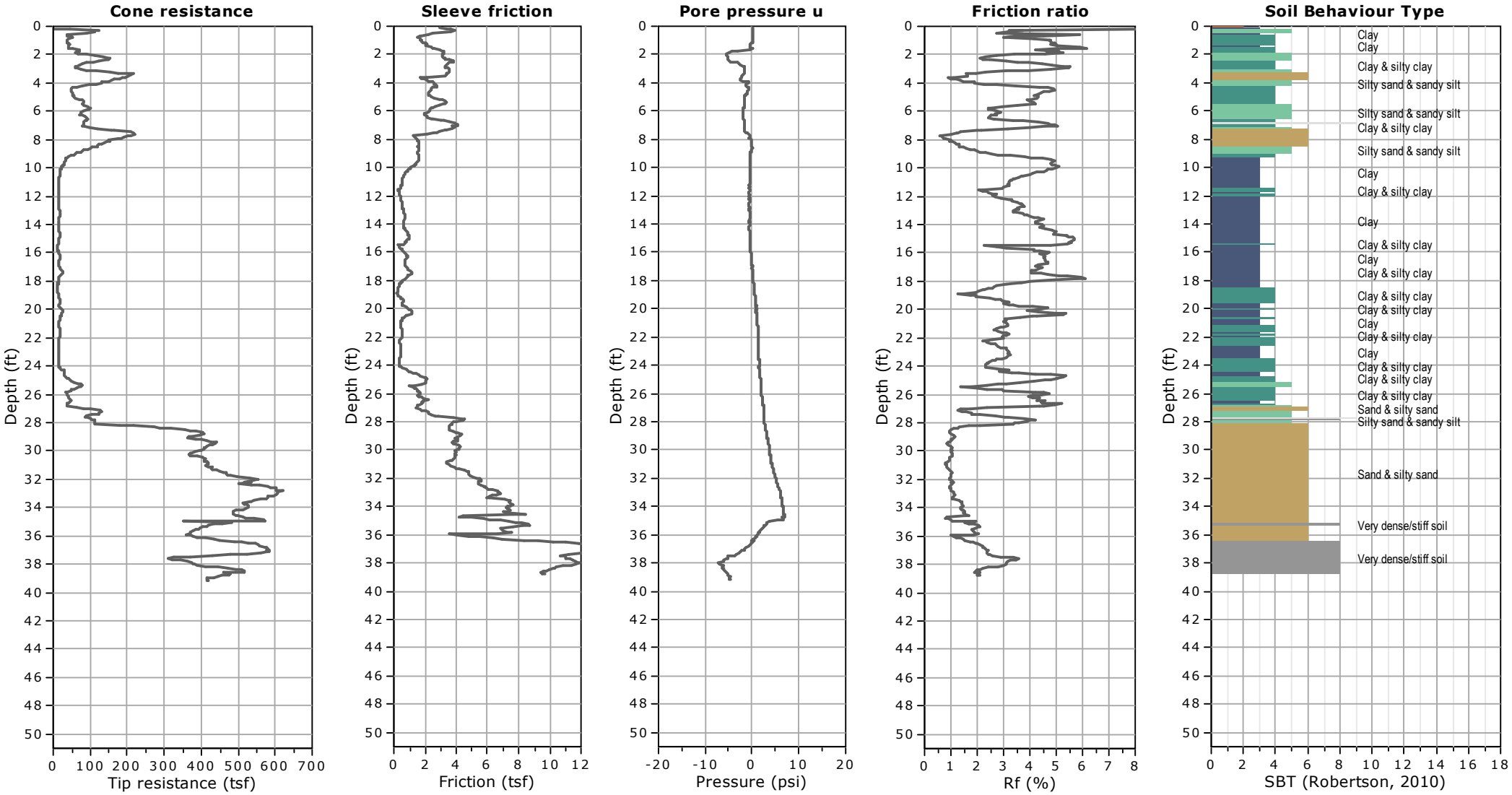
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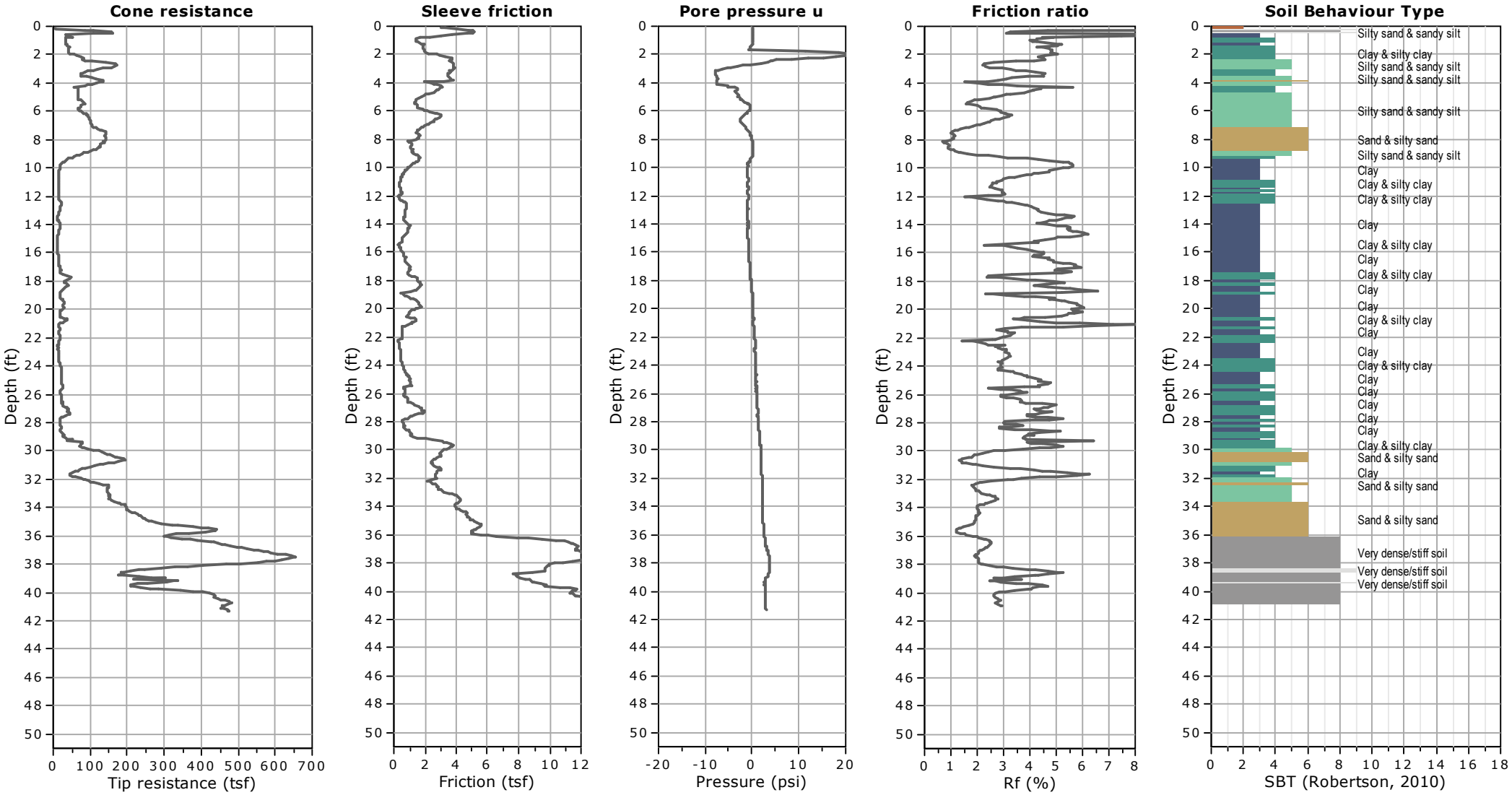
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Total depth: 39.19 ft, Date: 1/30/2024



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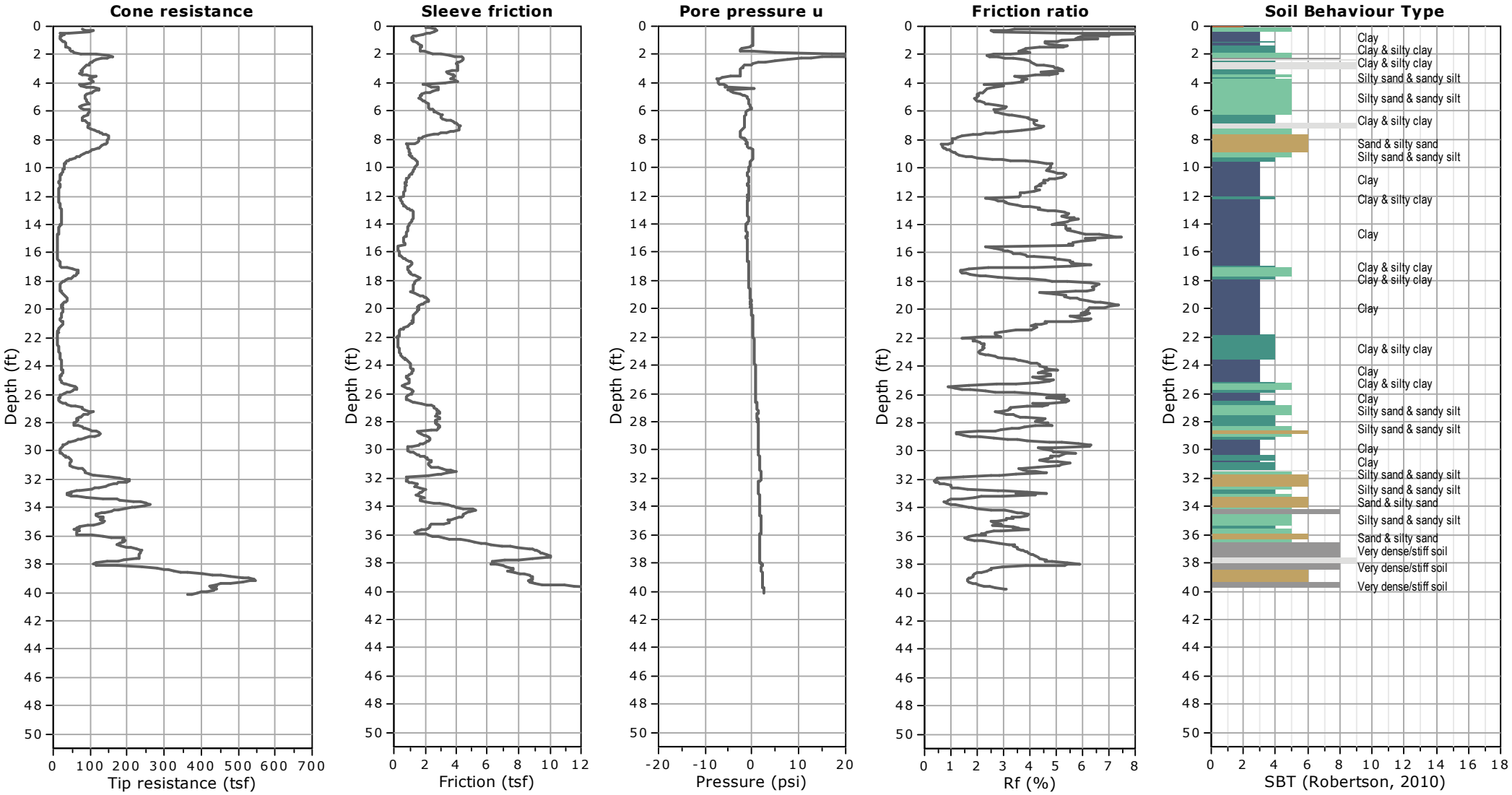
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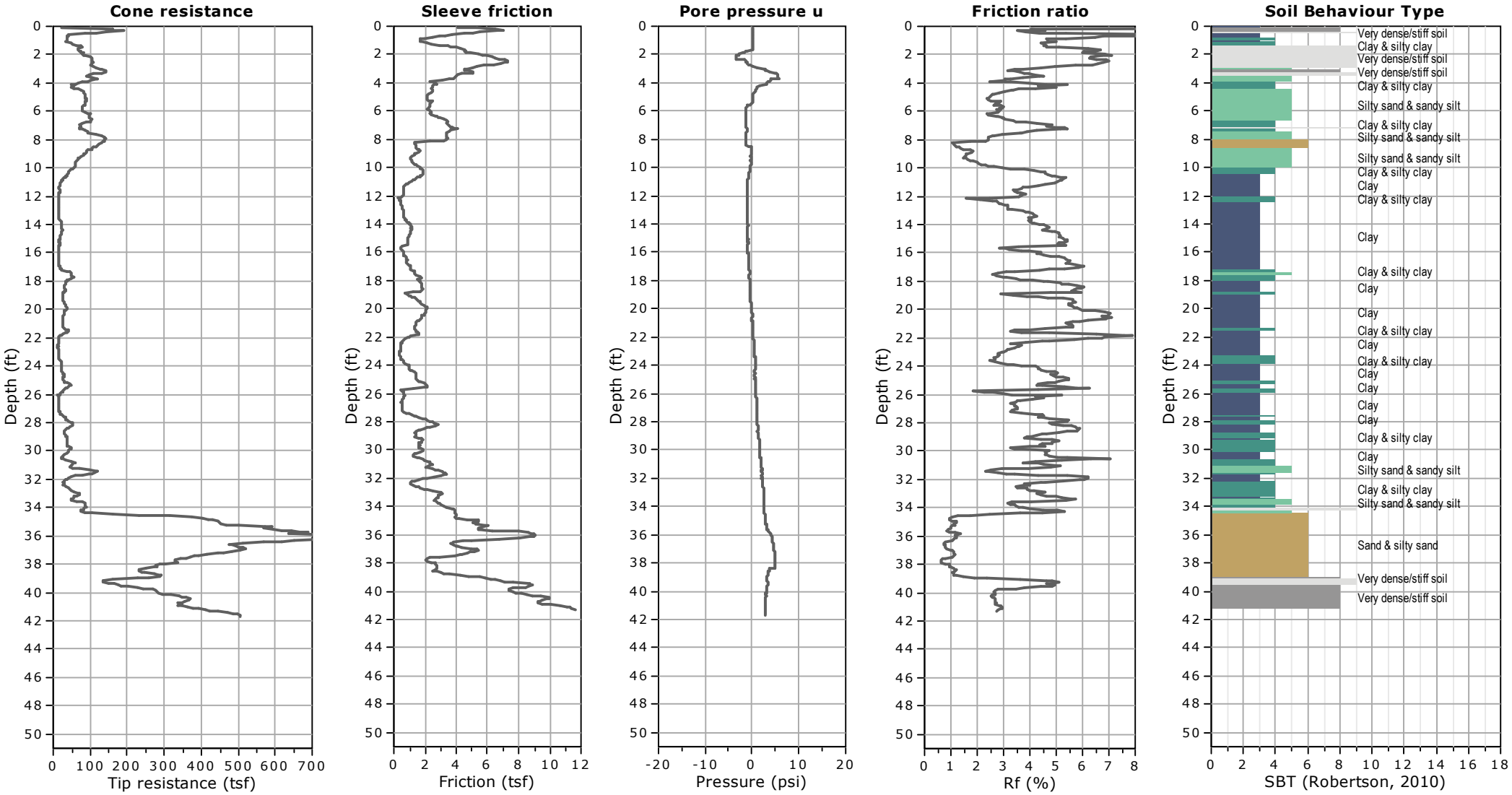
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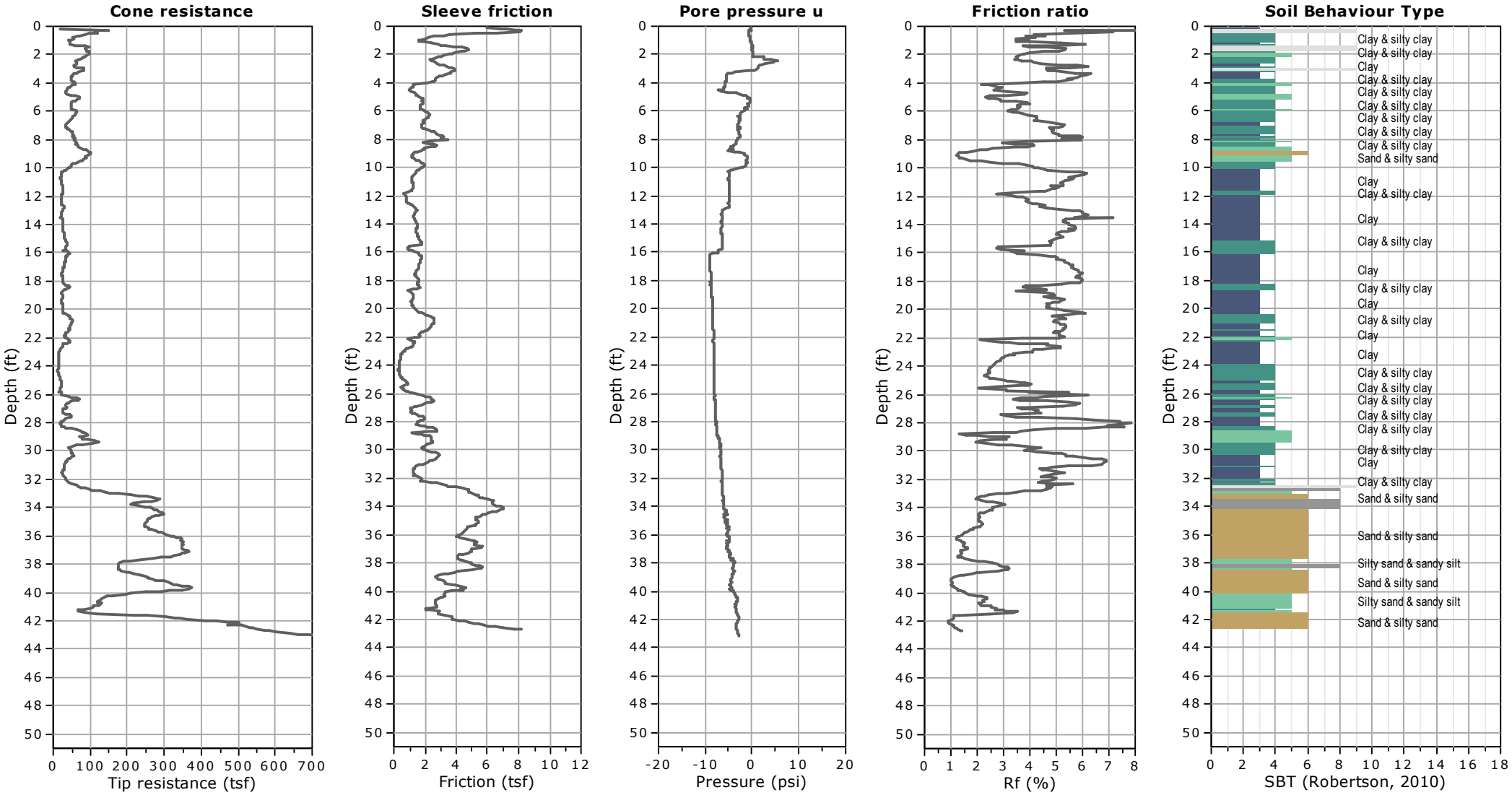
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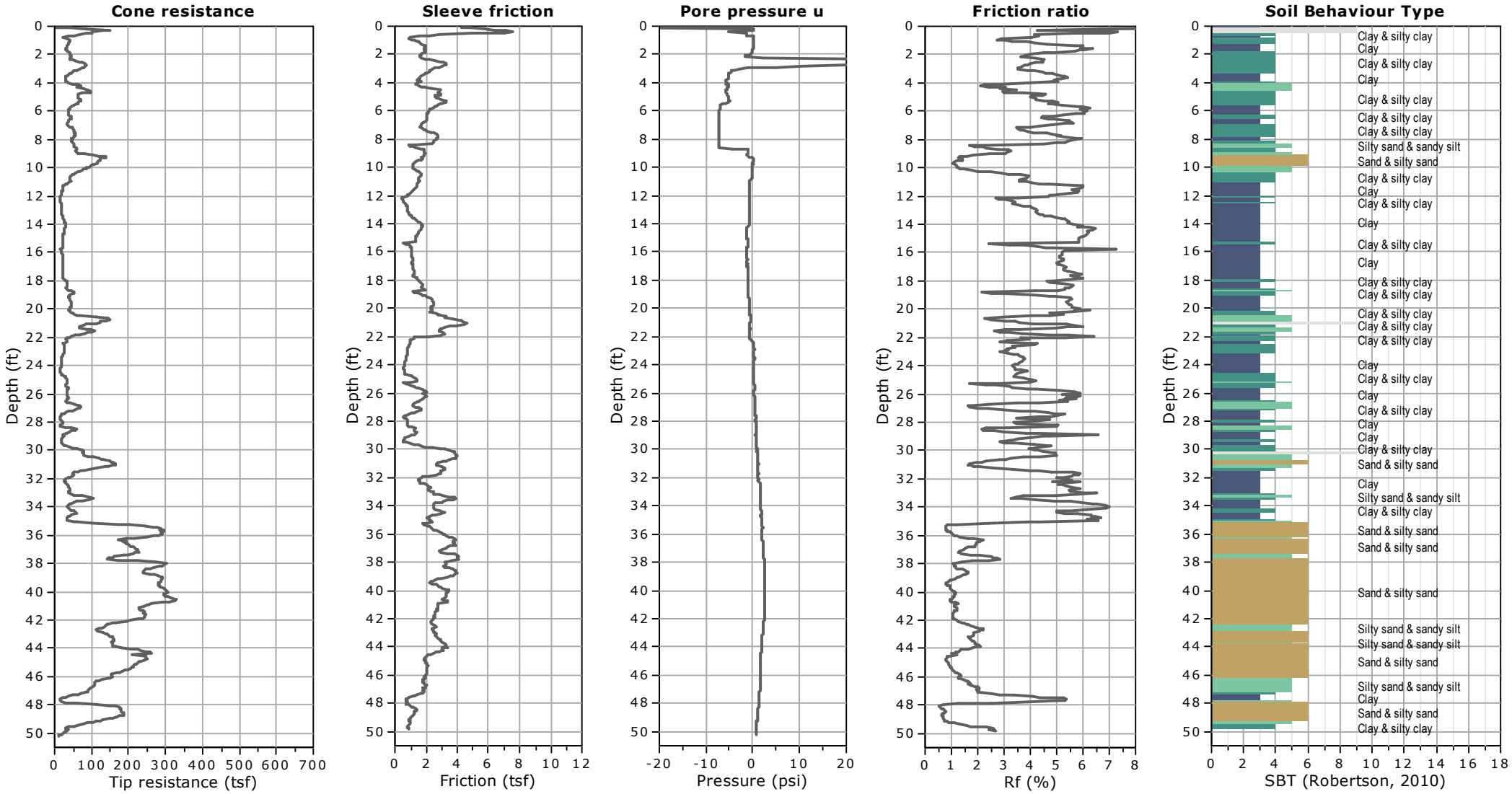
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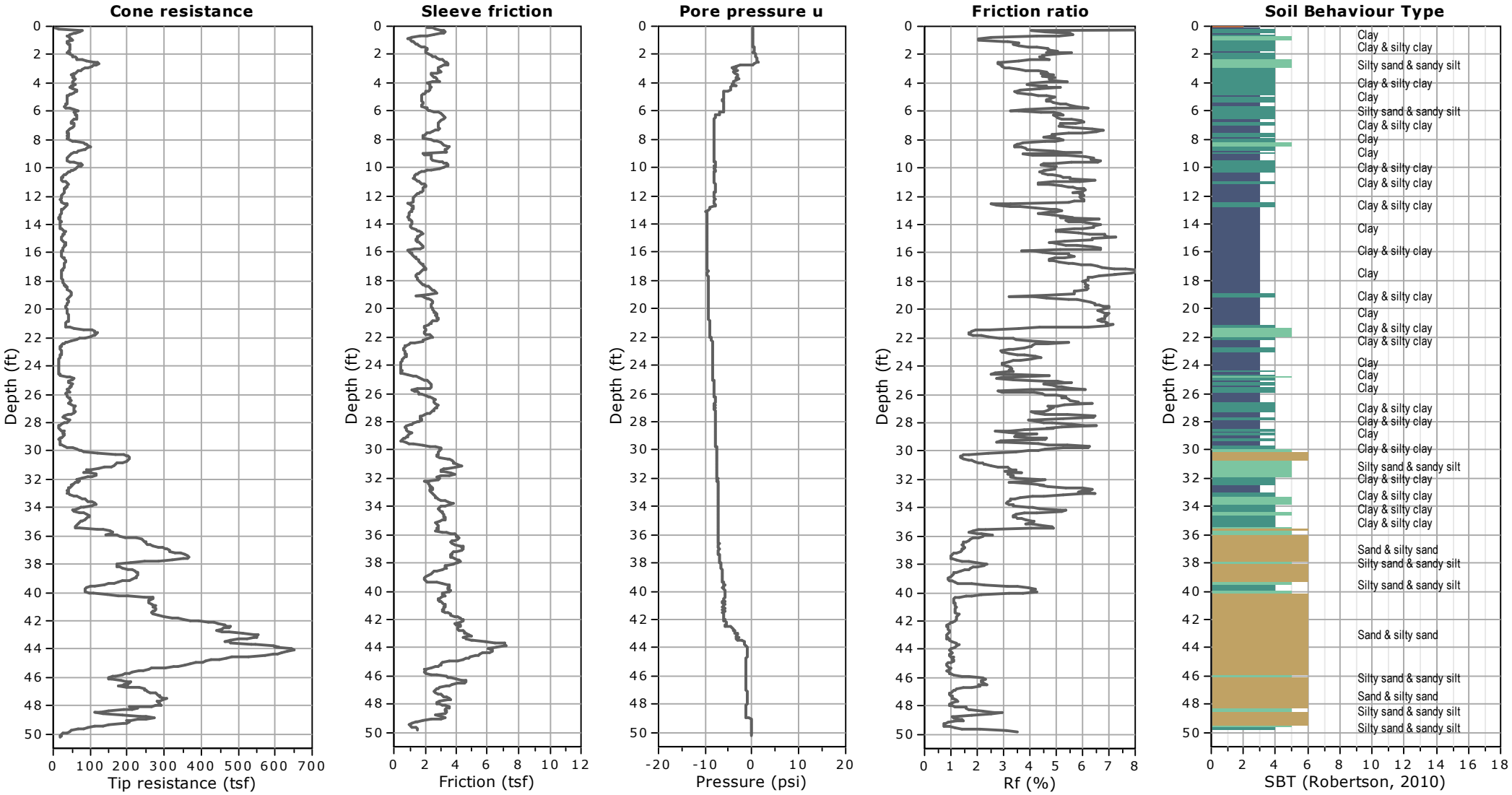
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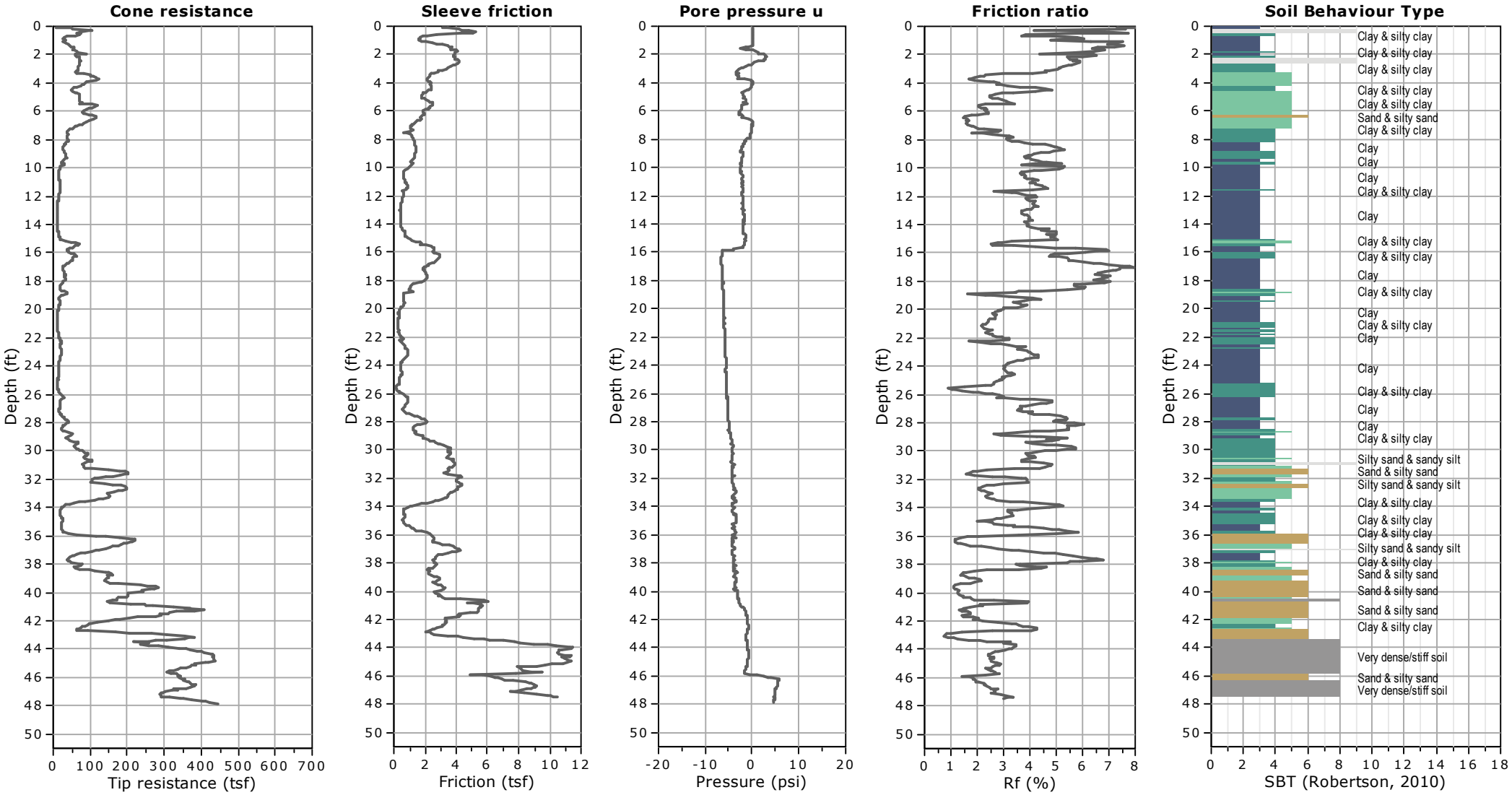
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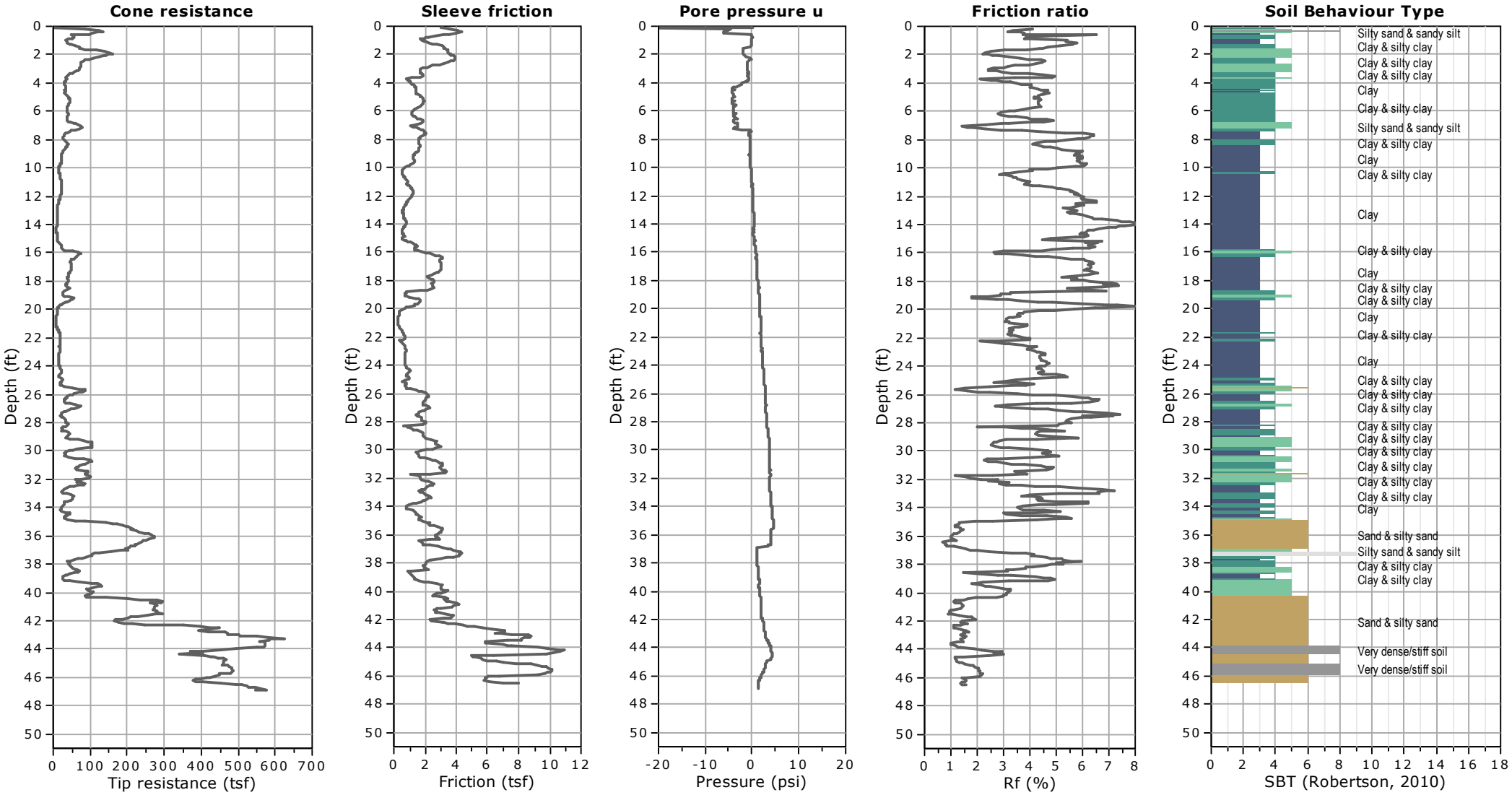
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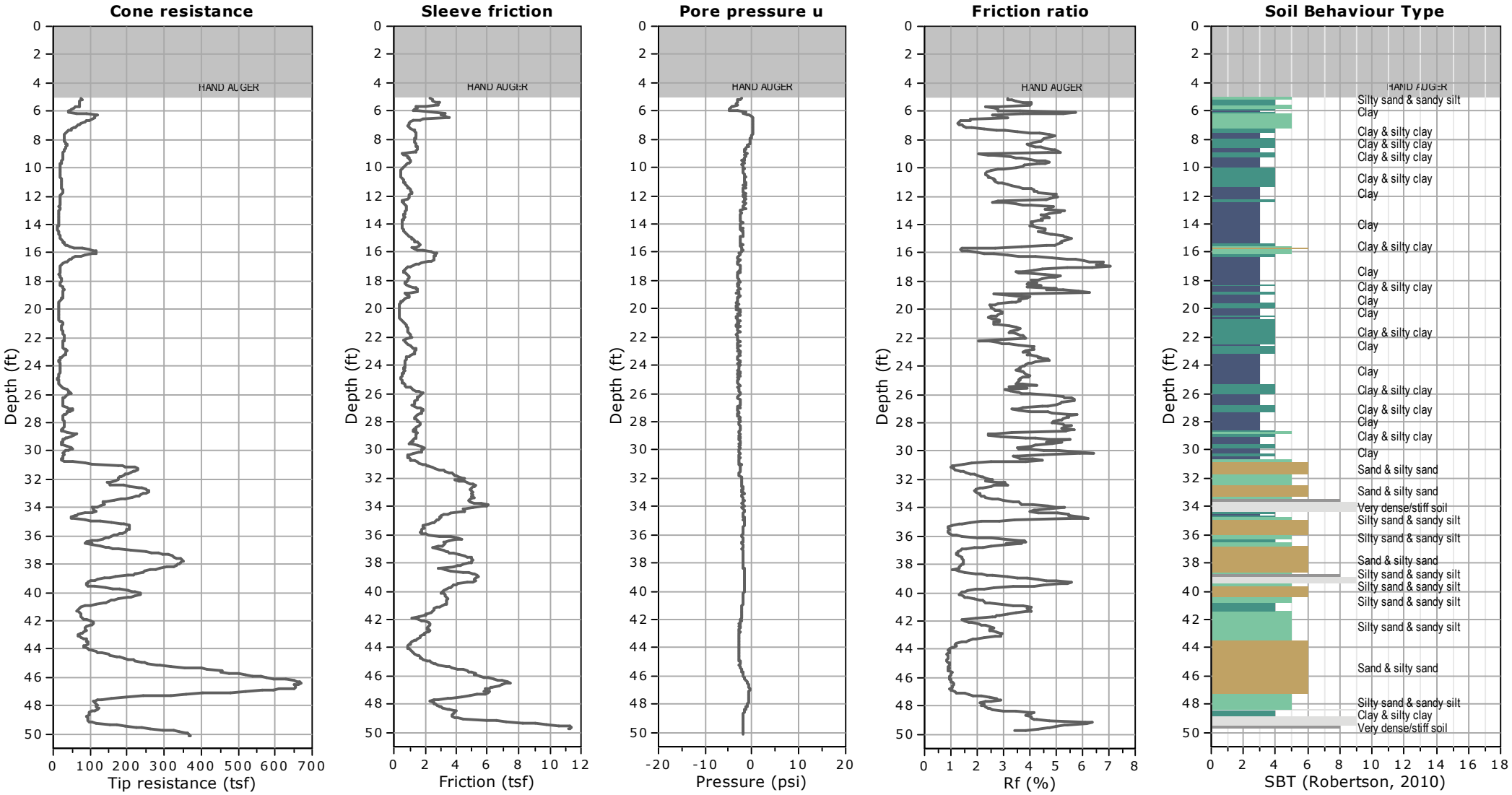
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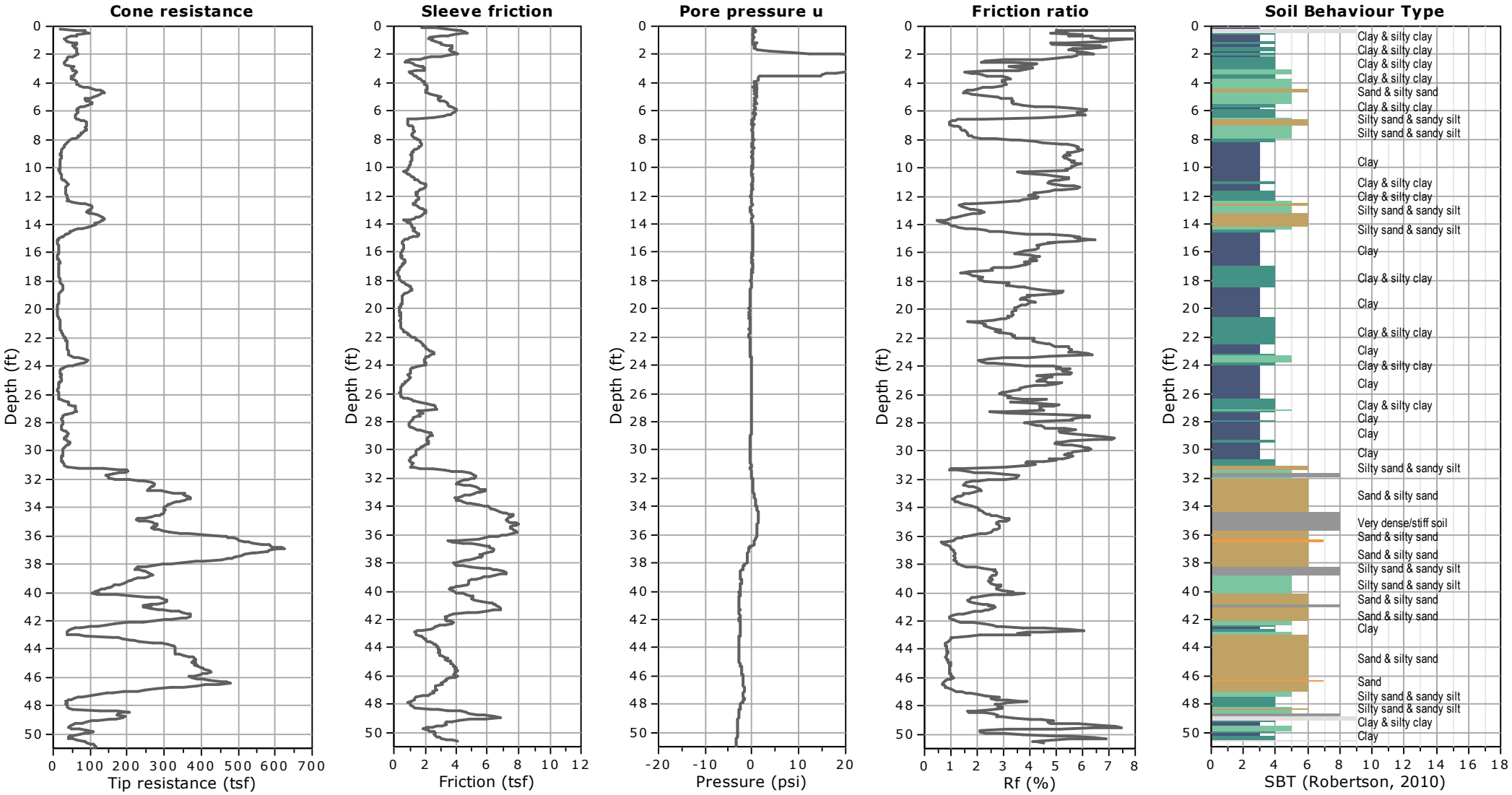
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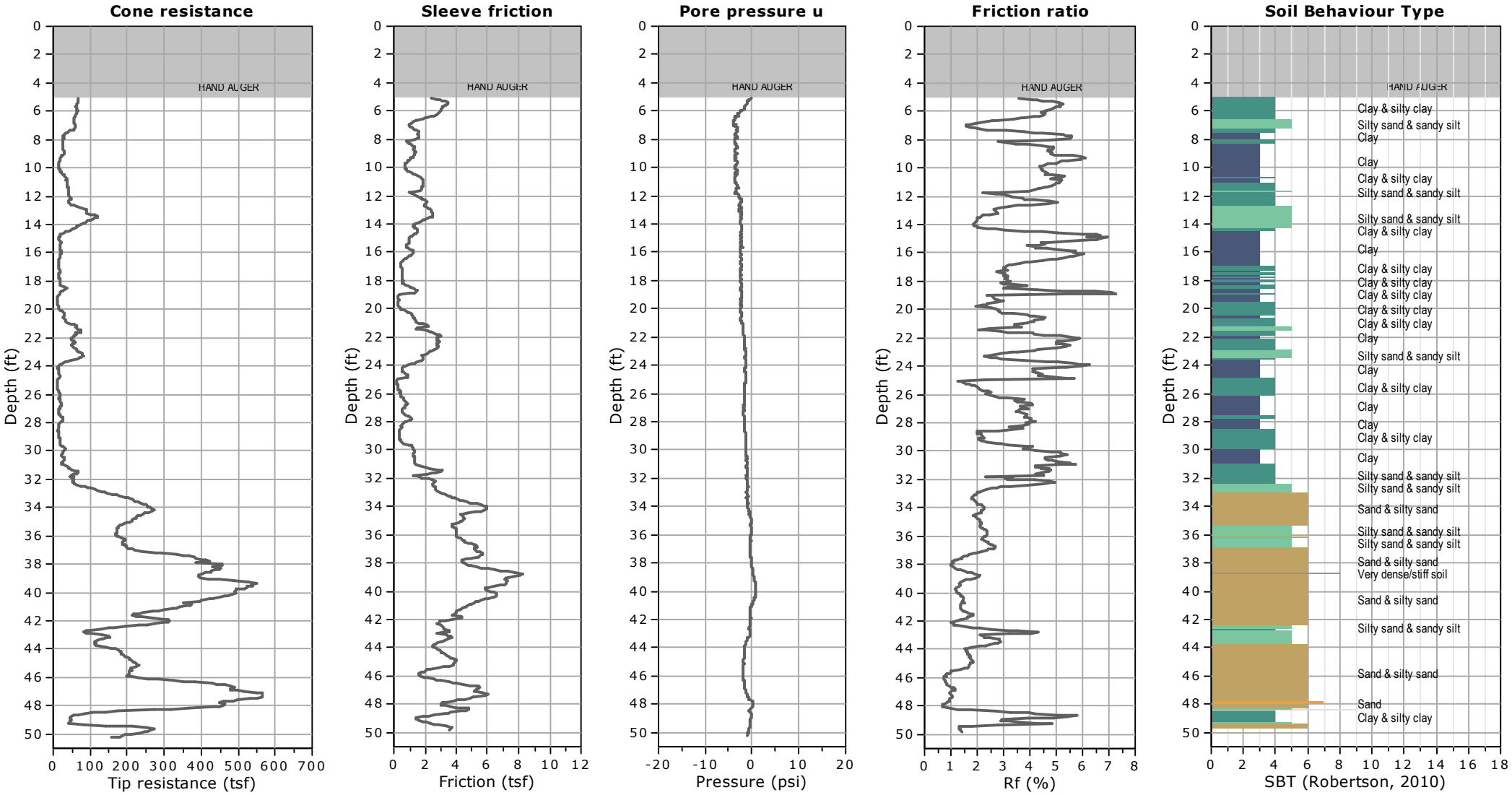
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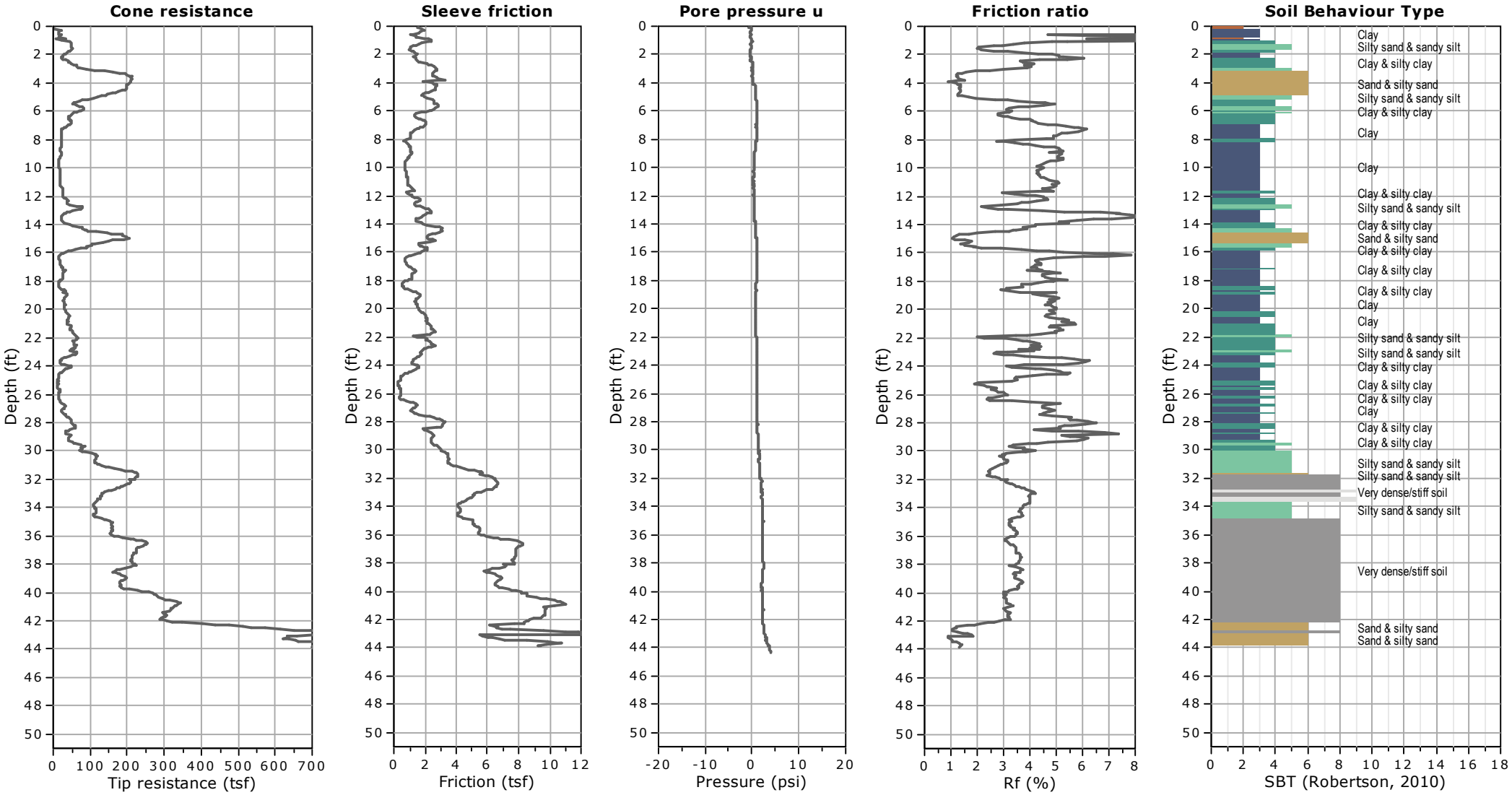
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Total depth: 50.20 ft, Date: 1/31/2024



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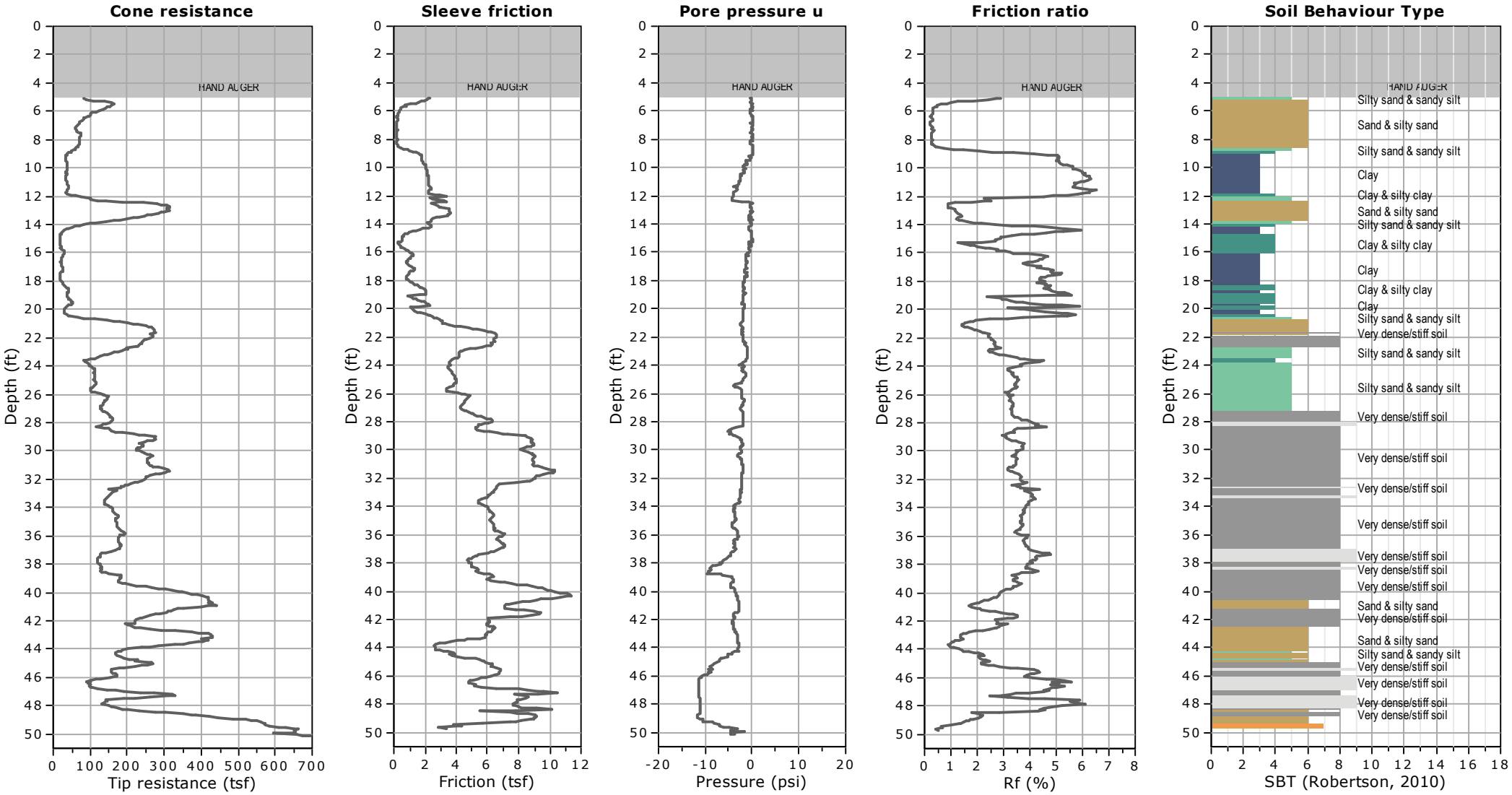
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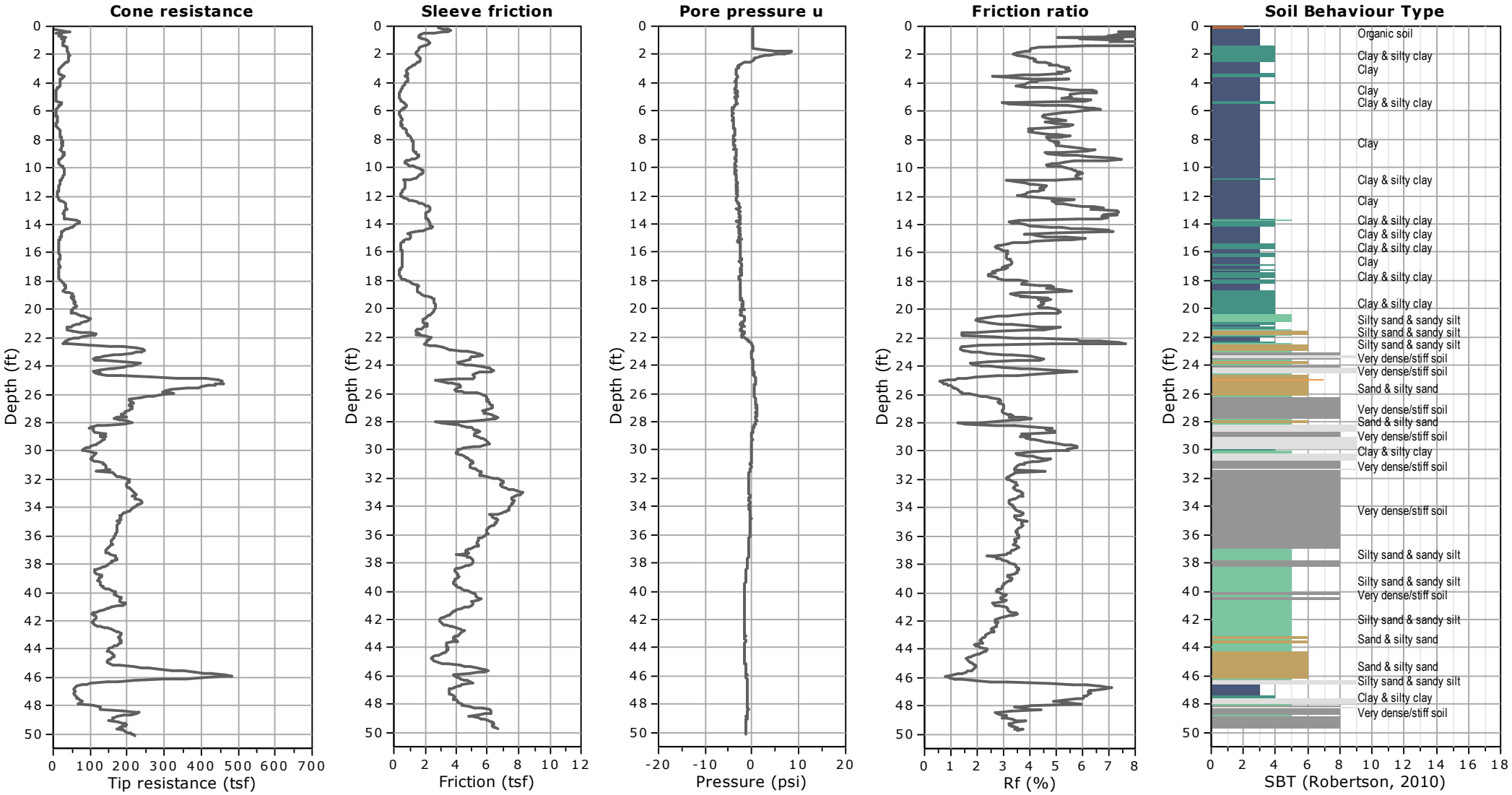
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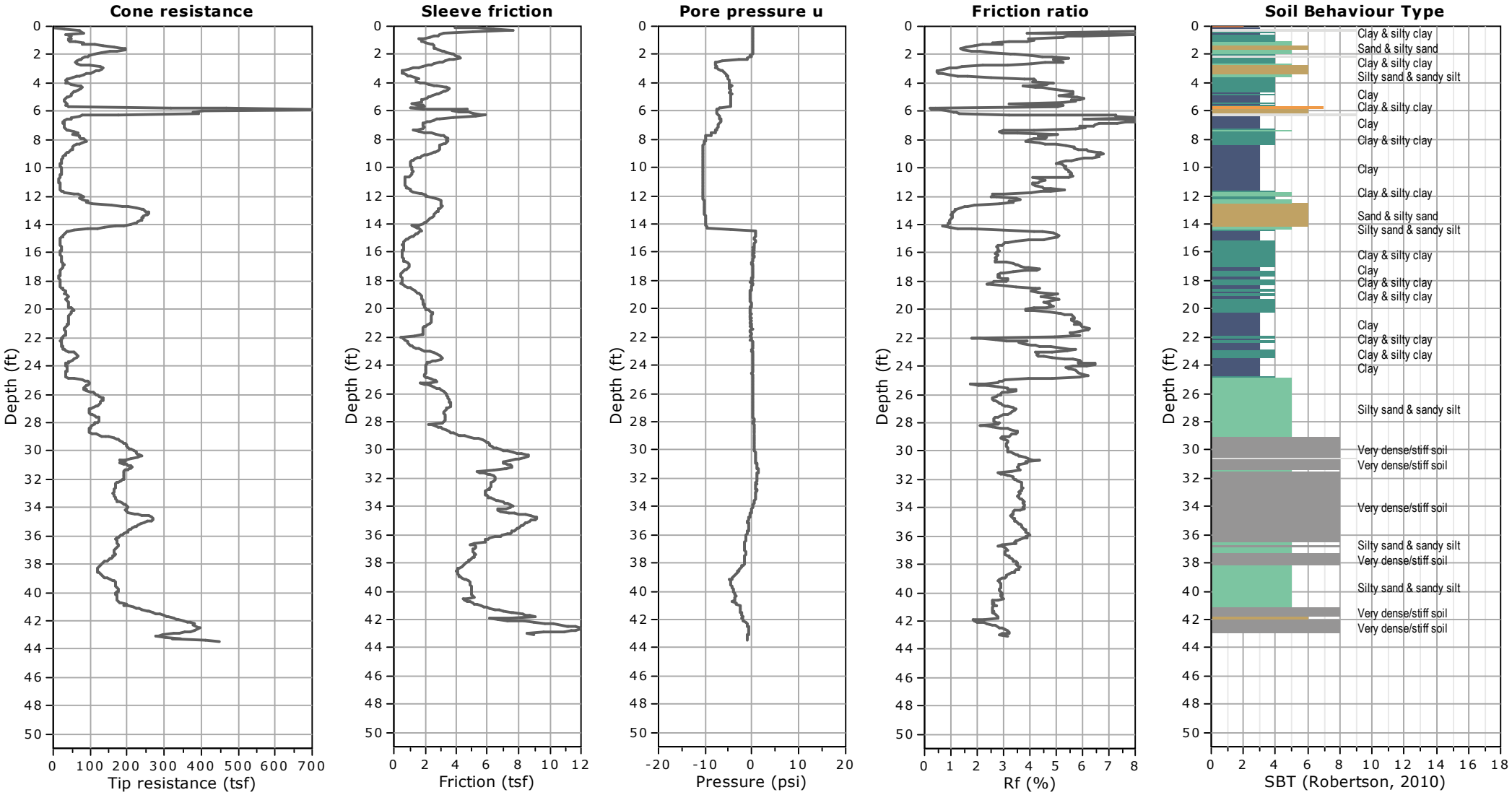
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Project: **Leighton Consulting / Lewis Rosemead Fault Investigation**
Location: **1515 Walnut Grove Ave, Rosemead, CA**

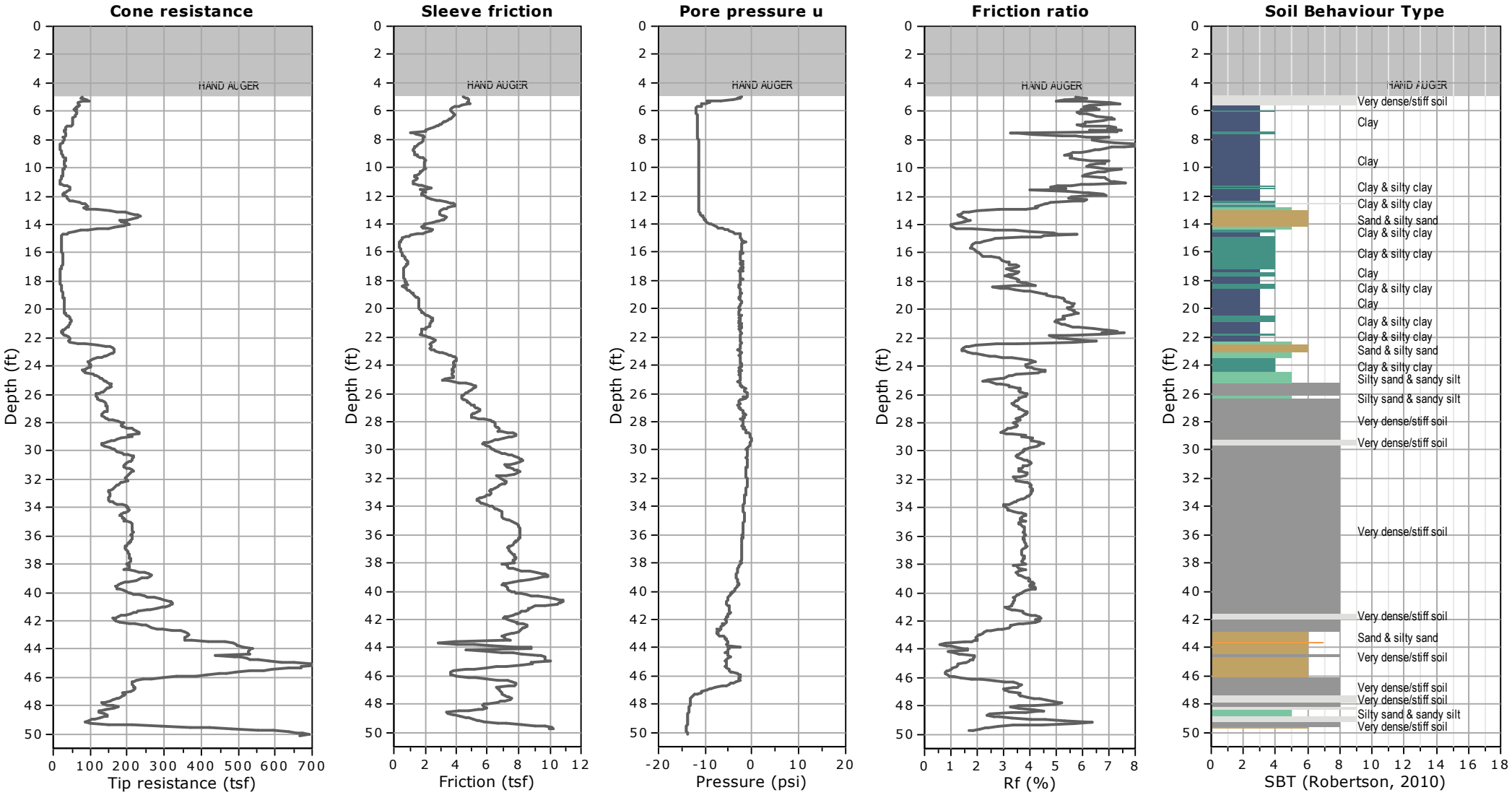
CPT-32
Total depth: 43.44 ft, Date: 2/1/2024



Kehoe Testing and Engineering
714-901-7270
steve@kehoetesting.com
www.kehoetesting.com

Project: **Leighton Consulting / Lewis Rosemead Fault Investigation**
Location: **1515 Walnut Grove Ave, Rosemead, CA**

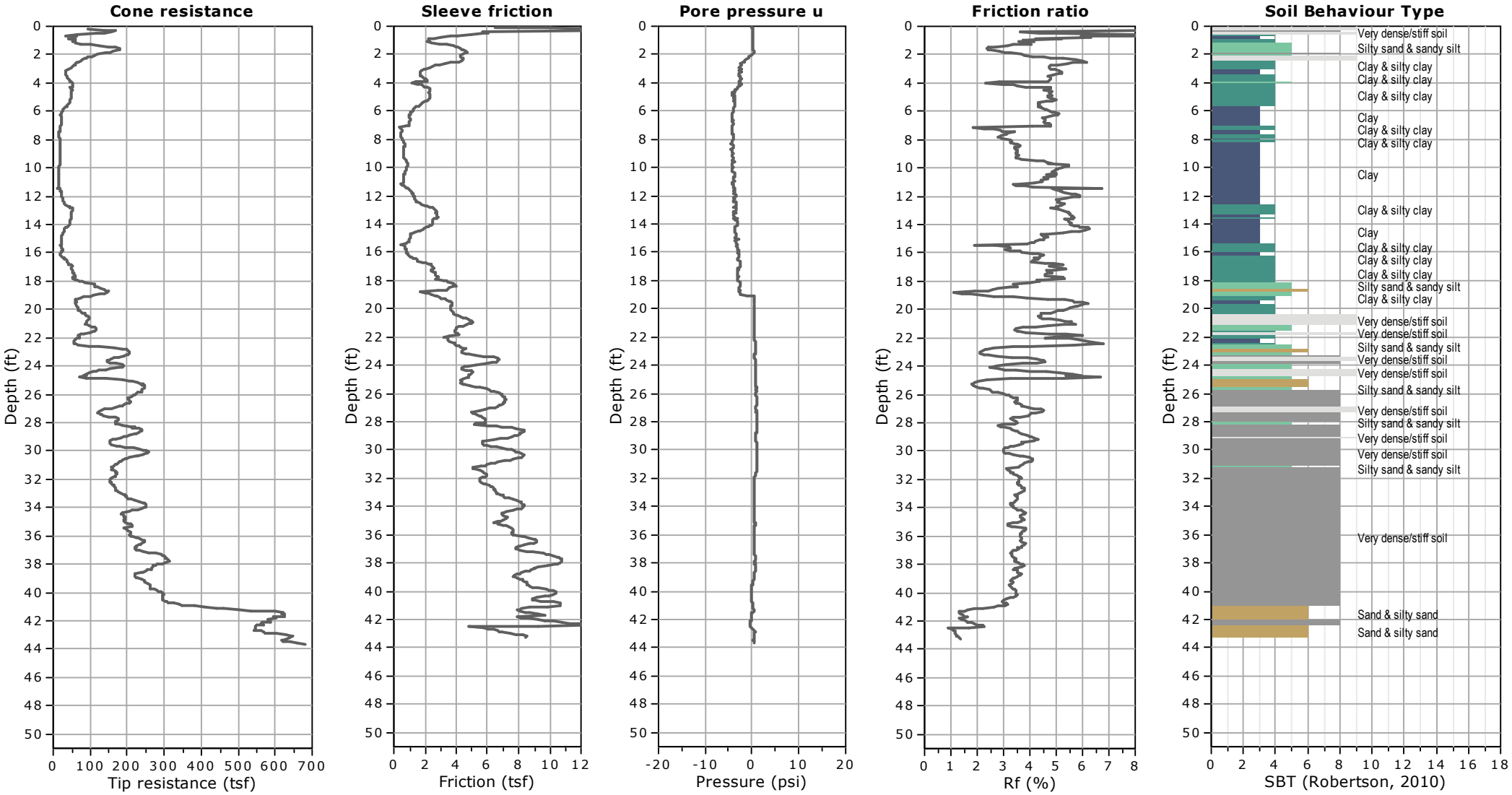
CPT-33
Total depth: 50.15 ft, Date: 2/2/2024



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714-901-7270
steve@kehoetesting.com
www.kehoetesting.com

Project: **Leighton Consulting / Lewis Rosemead Fault Investigation**
Location: **1515 Walnut Grove Ave, Rosemead, CA**

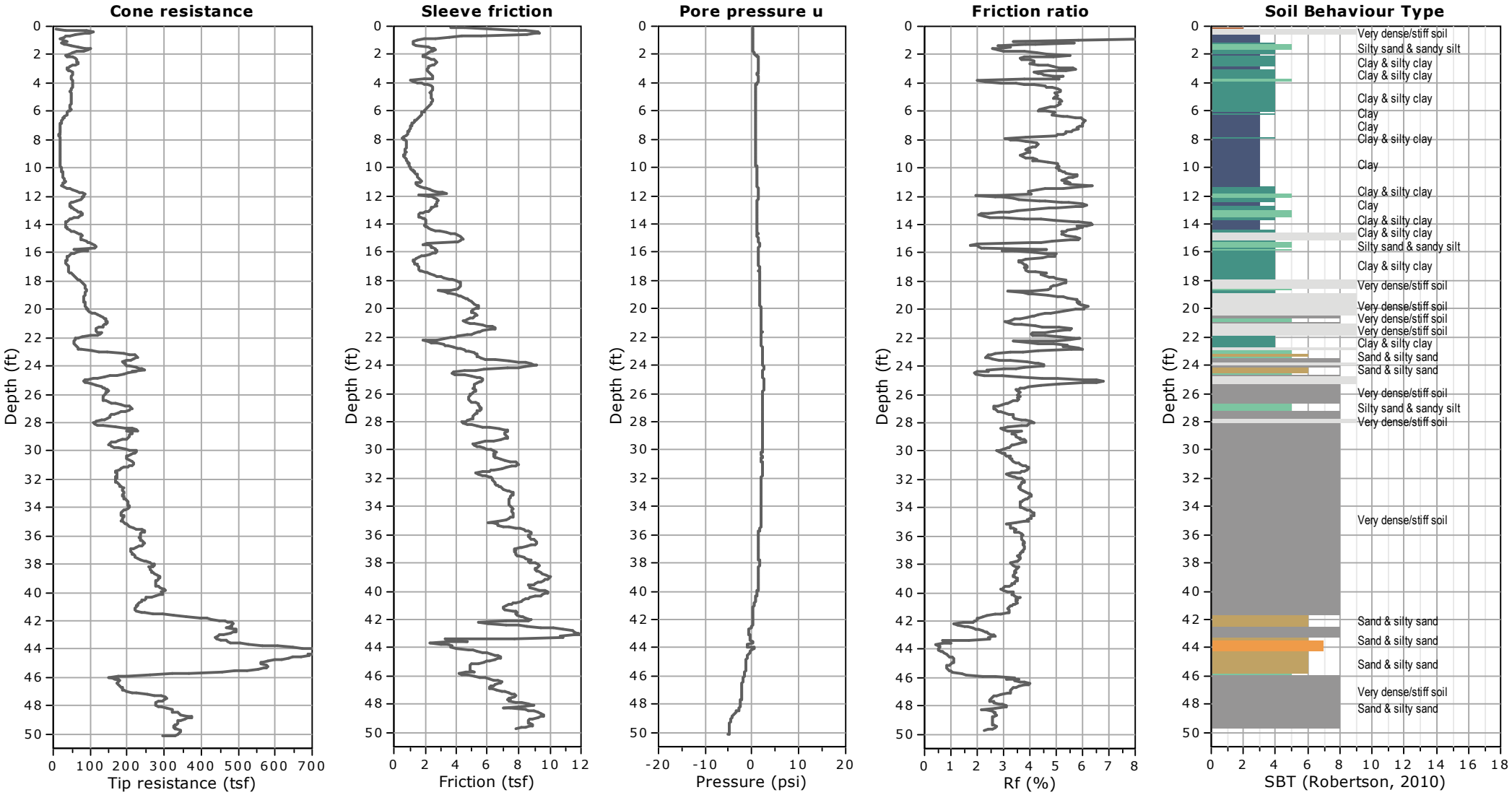
CPT-34
Total depth: 43.64 ft, Date: 2/1/2024



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Location: **1515 Walnut Grove Ave, Rosemead, CA**

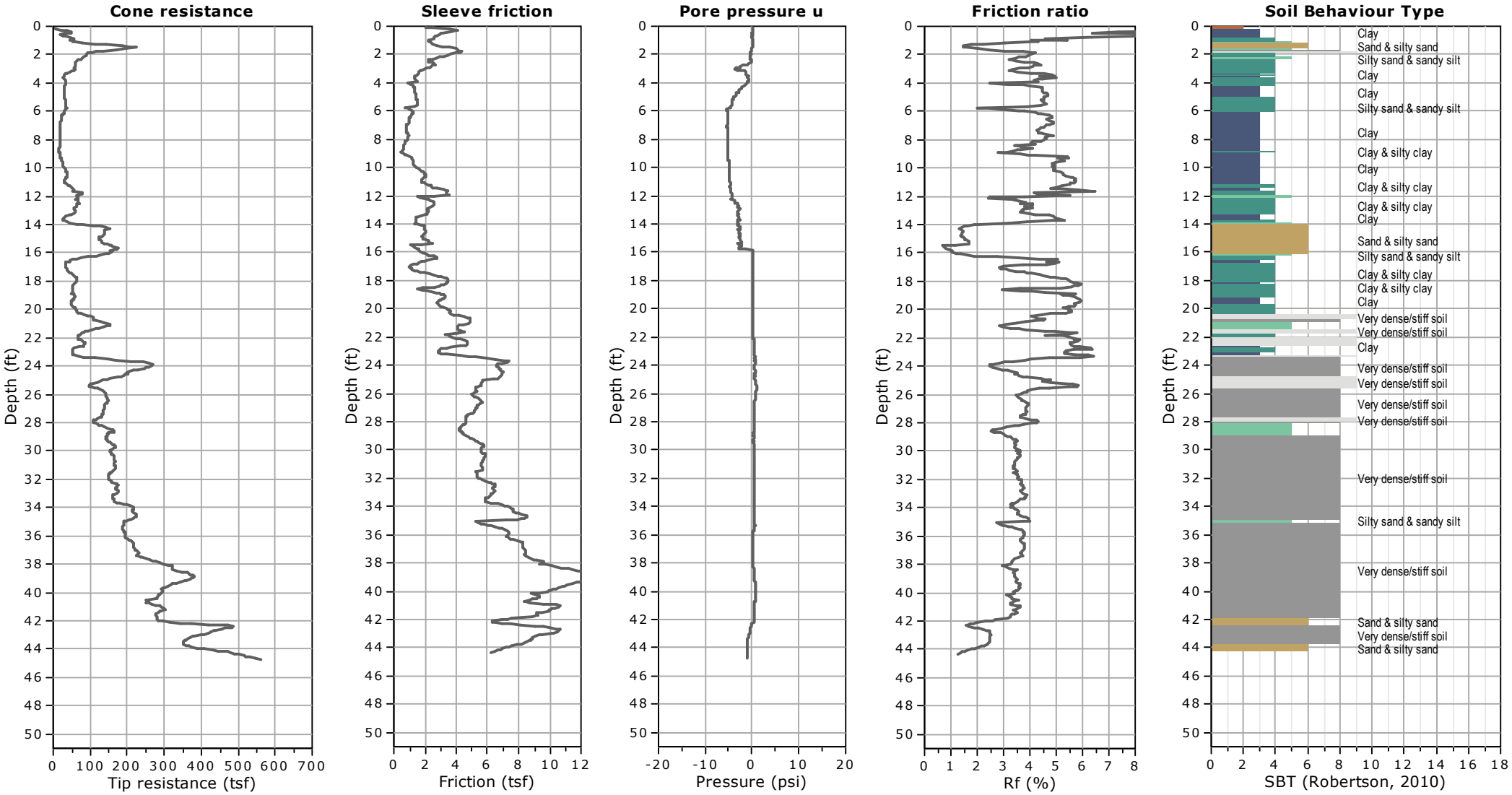
CPT-35
Total depth: 50.14 ft, Date: 2/1/2024



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Project: **Leighton Consulting / Lewis Rosemead Fault Investigation**
Location: **1515 Walnut Grove Ave, Rosemead, CA**

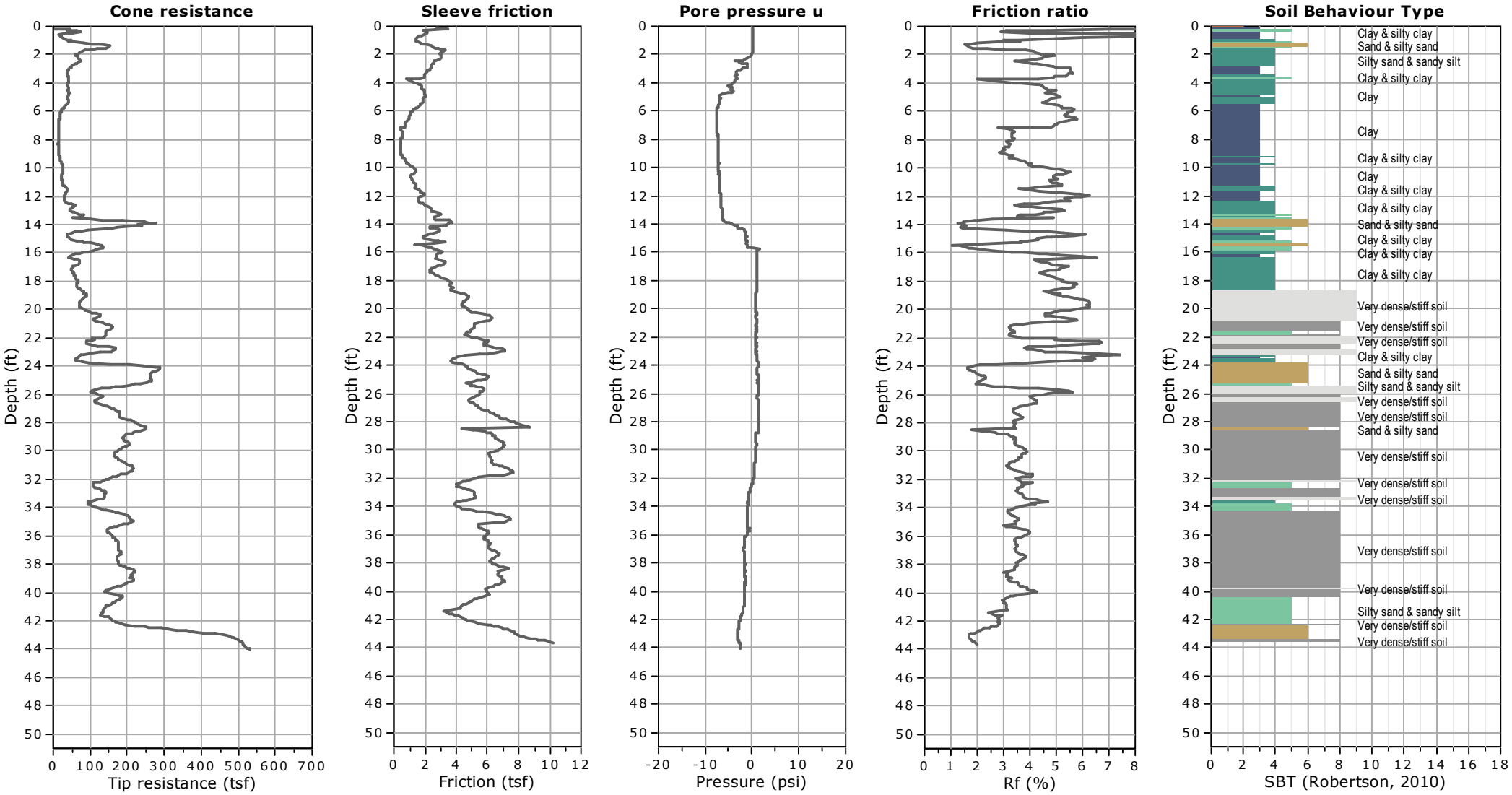
CPT-36
Total depth: 44.69 ft, Date: 2/1/2024



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714-901-7270
steve@kehoetesting.com
www.kehoetesting.com

Project: **Leighton Consulting / Lewis Rosemead Fault Investigation**
Location: **1515 Walnut Grove Ave, Rosemead, CA**

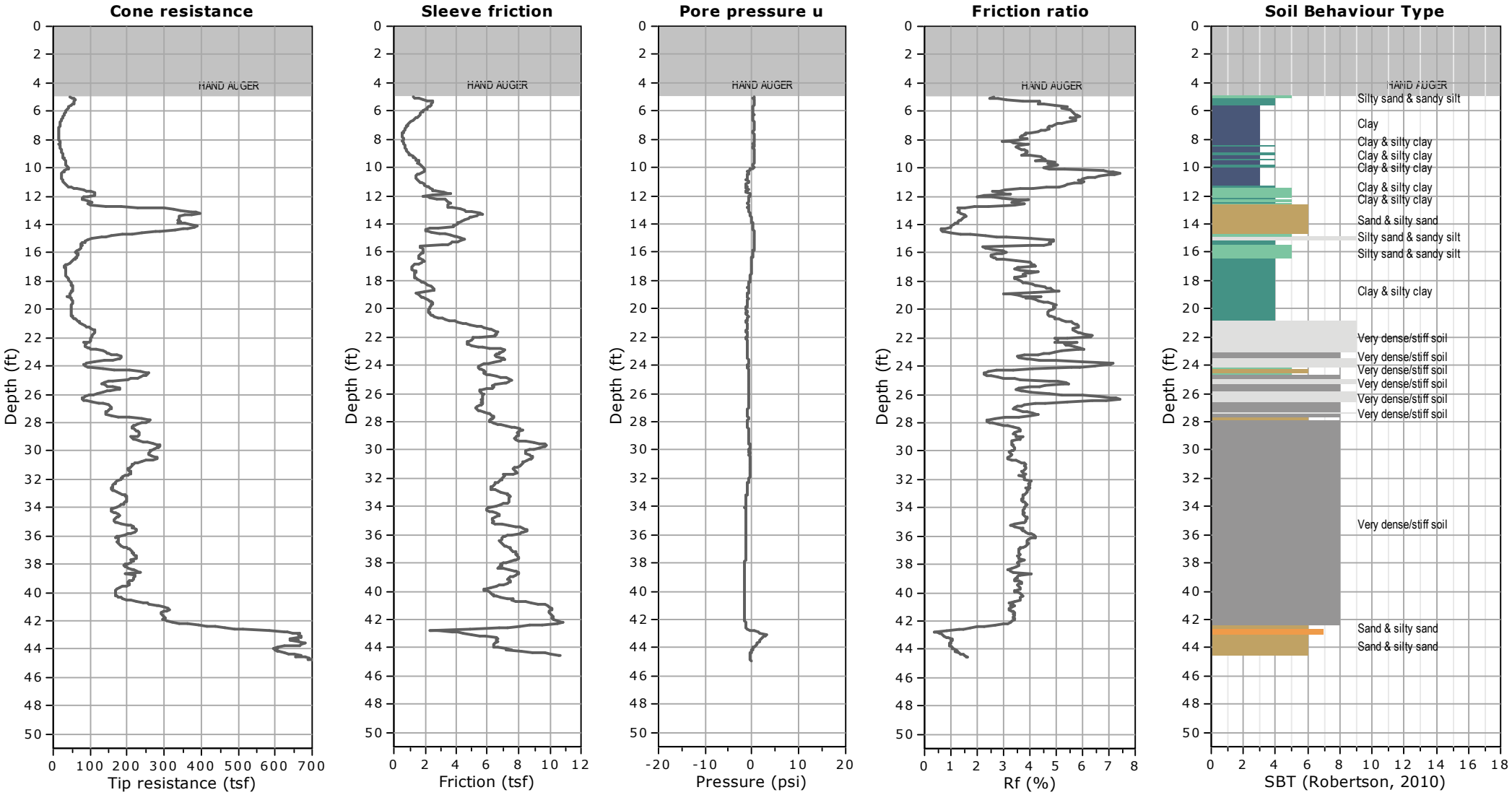
CPT-37
Total depth: 44.04 ft, Date: 2/1/2024



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steve@kehoetesting.com
www.kehoetesting.com

Project: **Leighton Consulting / Lewis Rosemead Fault Investigation**
Location: **1515 Walnut Grove Ave, Rosemead, CA**

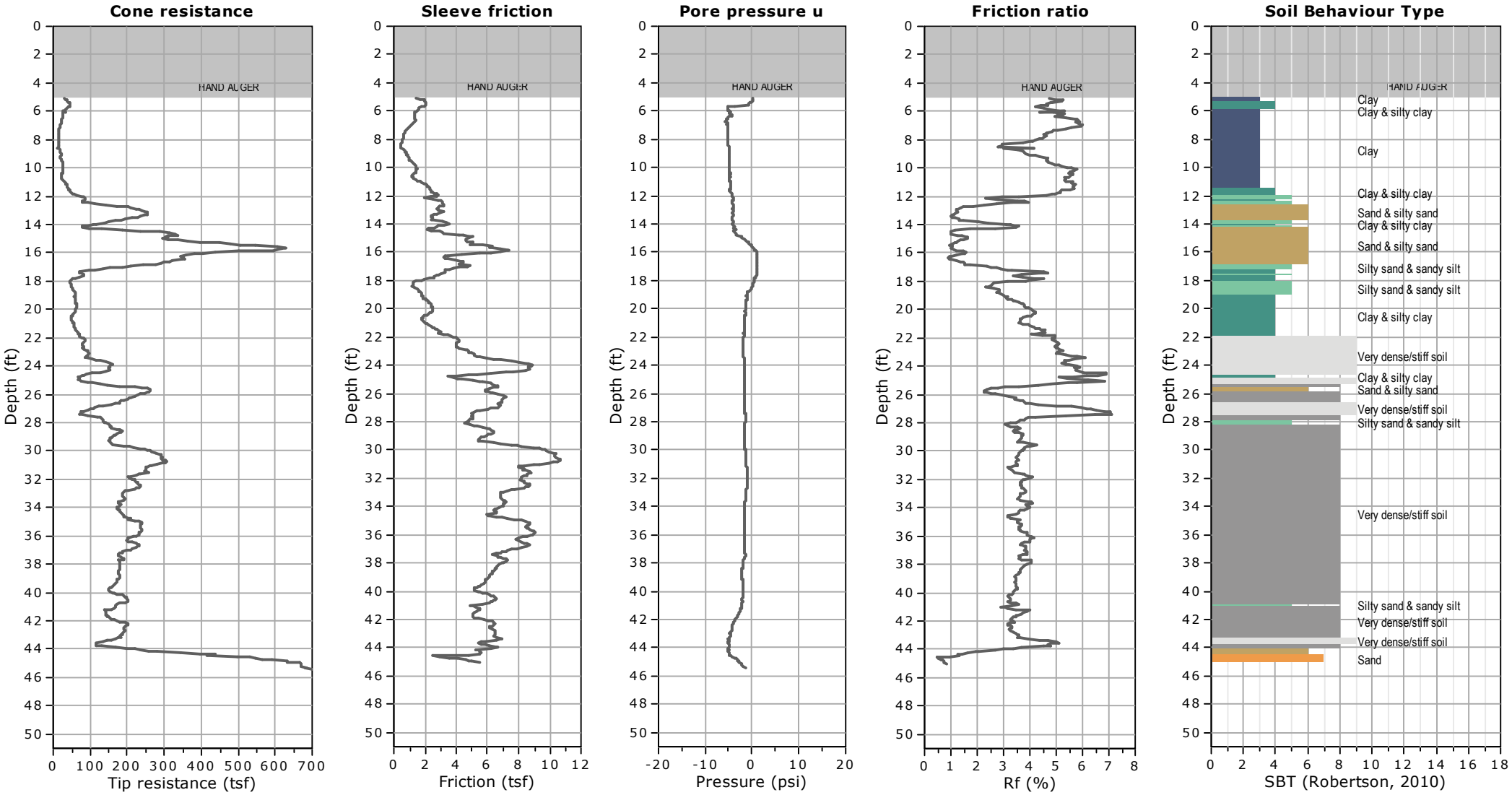
CPT-38
Total depth: 44.96 ft, Date: 2/2/2024



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steve@kehoetesting.com
www.kehoetesting.com

Project: **Leighton Consulting / Lewis Rosemead Fault Investigation**
Location: **1515 Walnut Grove Ave, Rosemead, CA**

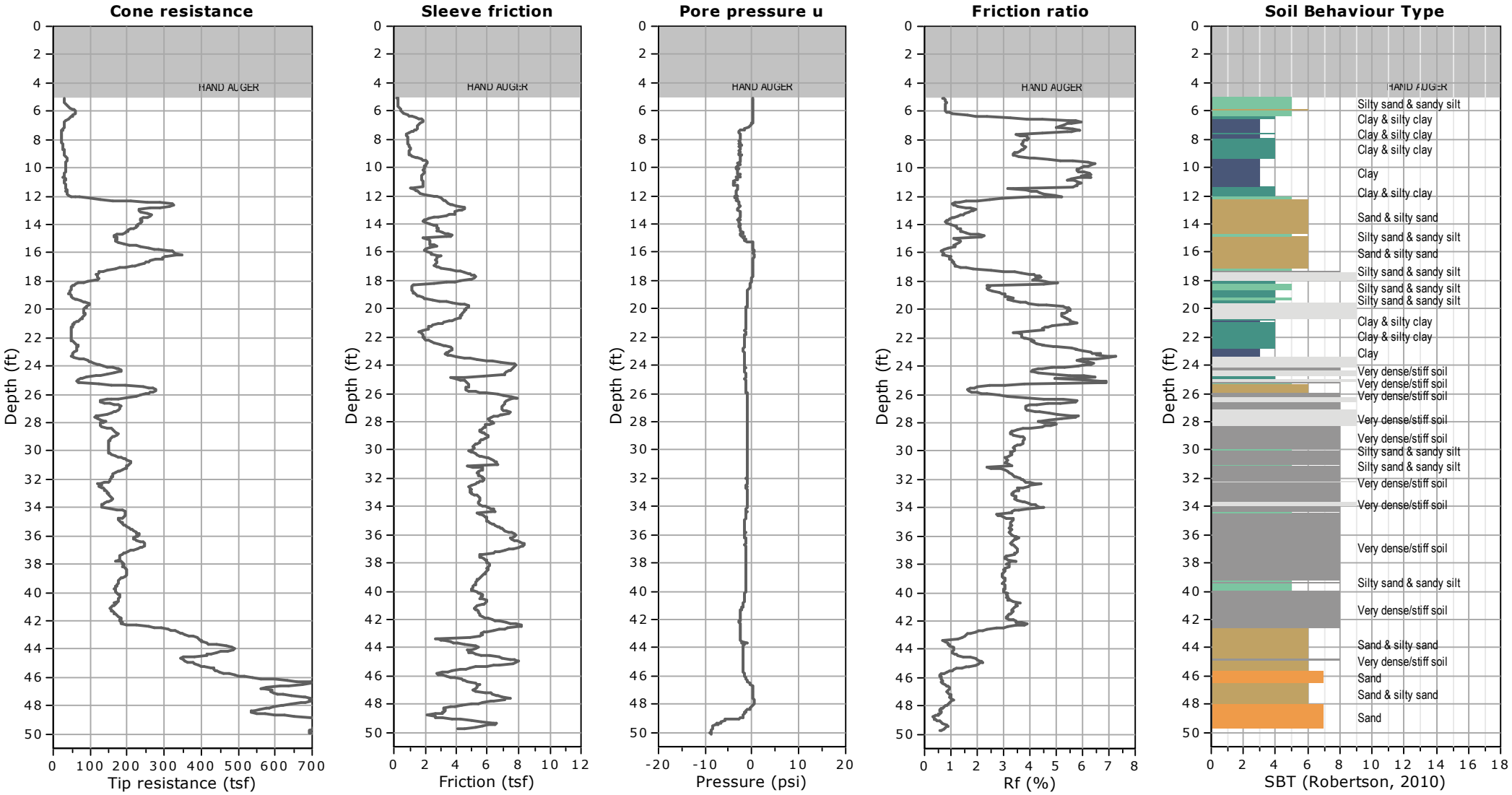
CPT-39
Total depth: 45.43 ft, Date: 2/2/2024



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www.kehoetesting.com

Project: **Leighton Consulting / Lewis Rosemead Fault Investigation**
Location: **1515 Walnut Grove Ave, Rosemead, CA**

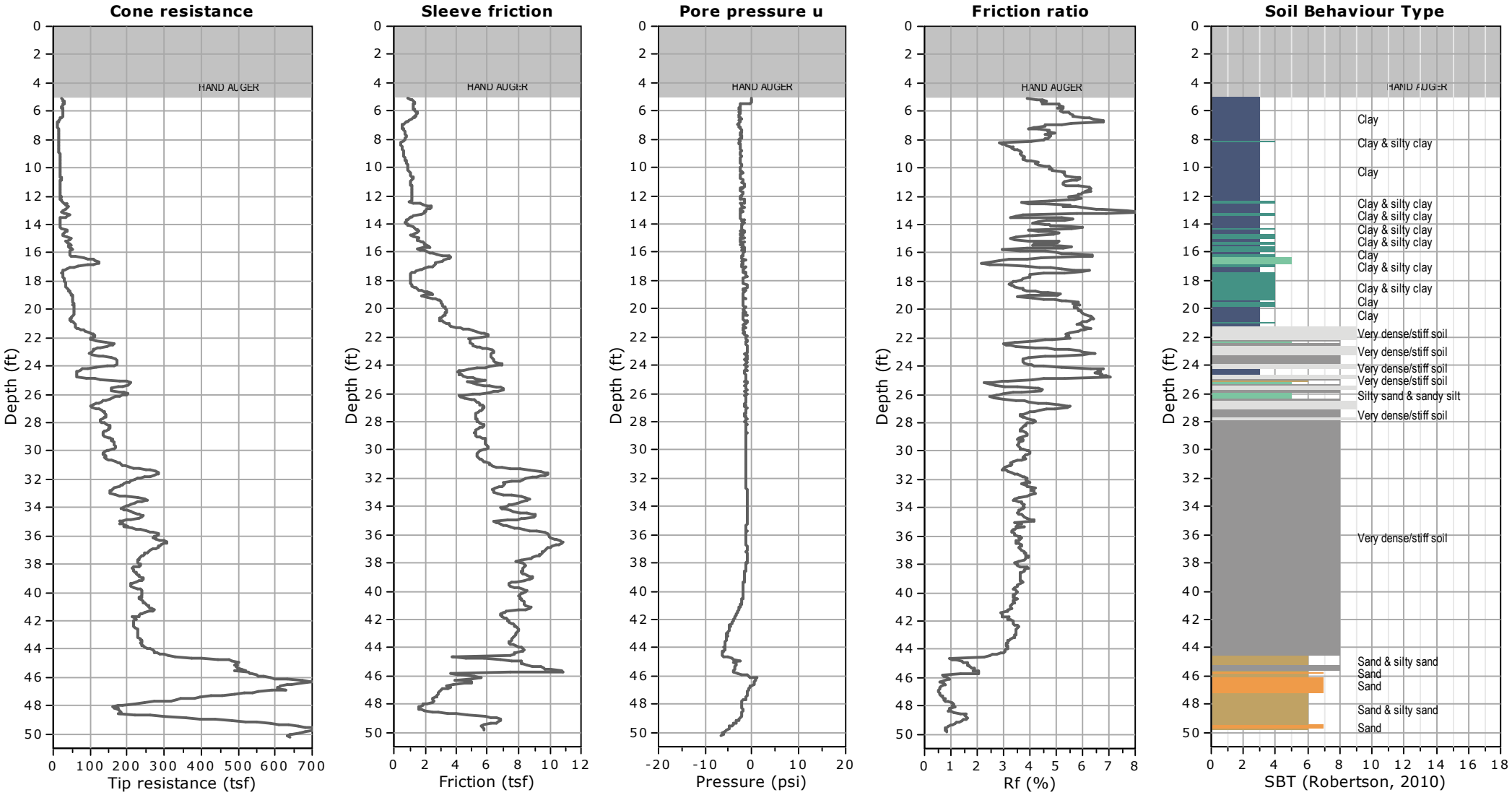
CPT-40
Total depth: 50.14 ft, Date: 1/31/2024



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Project: **Leighton Consulting / Lewis Rosemead Fault Investigation**
Location: **1515 Walnut Grove Ave, Rosemead, CA**

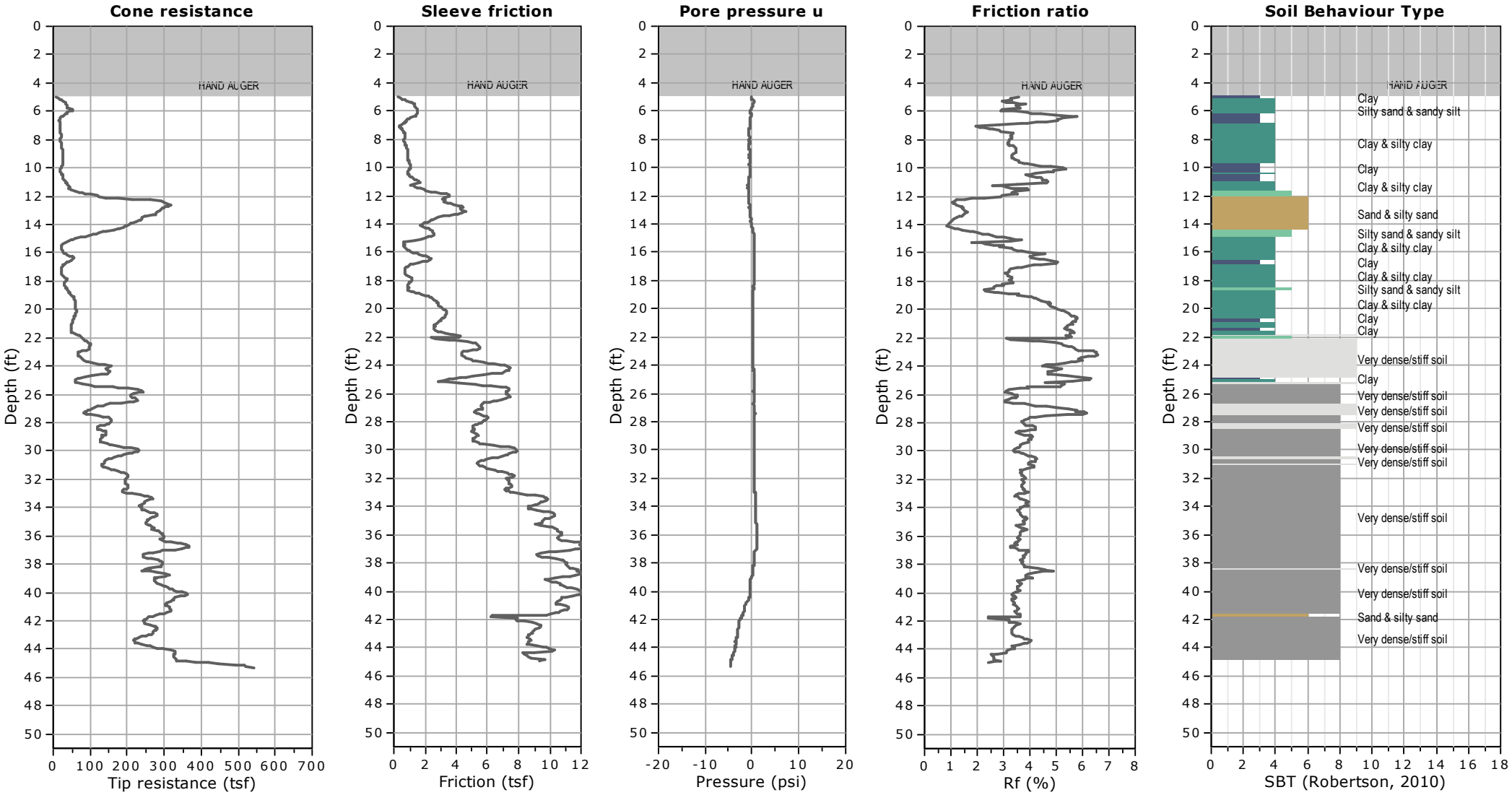
CPT-41
Total depth: 50.22 ft, Date: 2/2/2024



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steve@kehoetesting.com
www.kehoetesting.com

Project: **Leighton Consulting / Lewis Rosemead Fault Investigation**
Location: **1515 Walnut Grove Ave, Rosemead, CA**

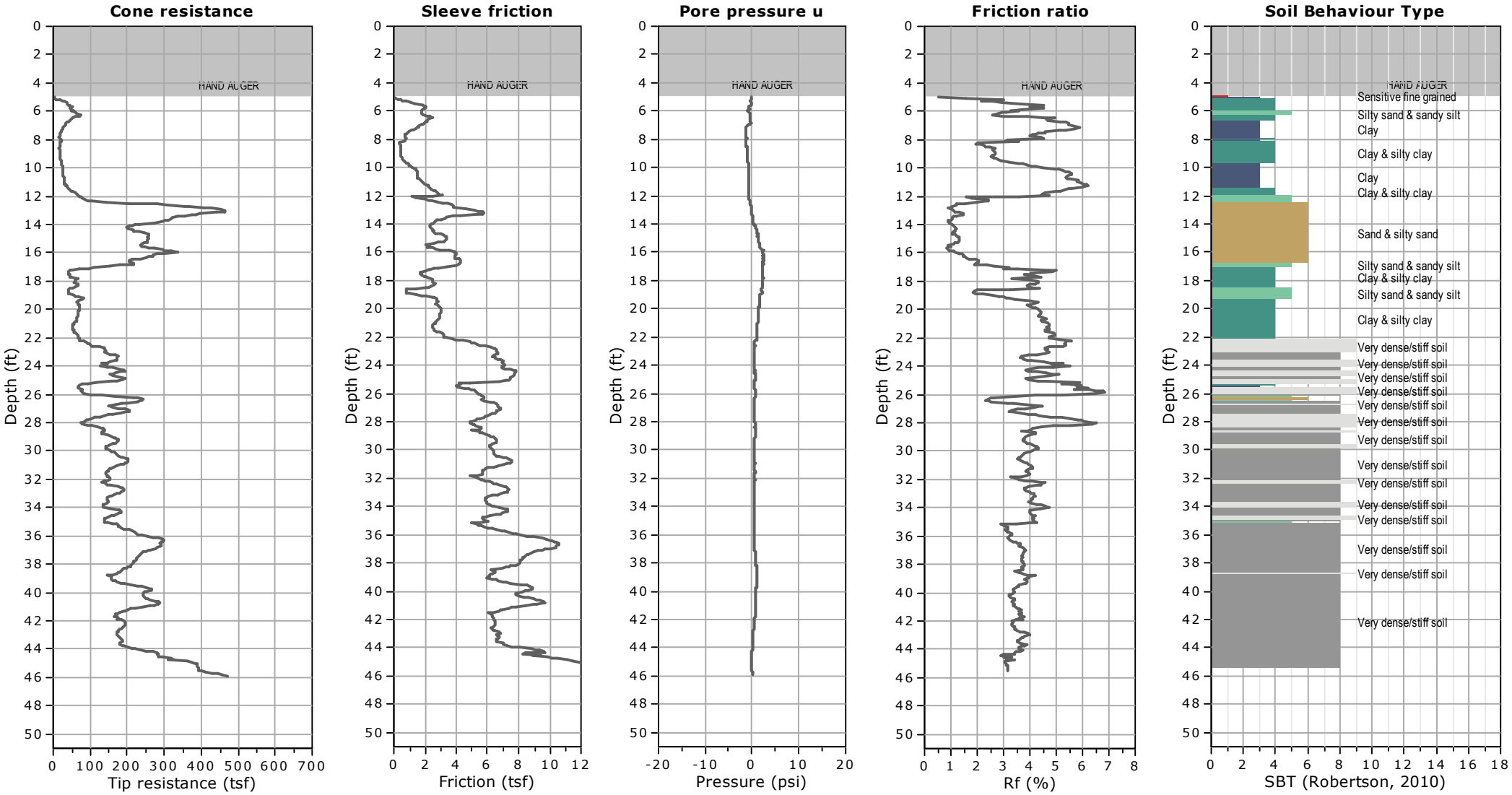
CPT-42
Total depth: 45.28 ft, Date: 2/2/2024



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steve@kehoetesting.com
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Project: **Leighton Consulting / Lewis Rosemead Fault Investigation**
Location: **1515 Walnut Grove Ave, Rosemead, CA**

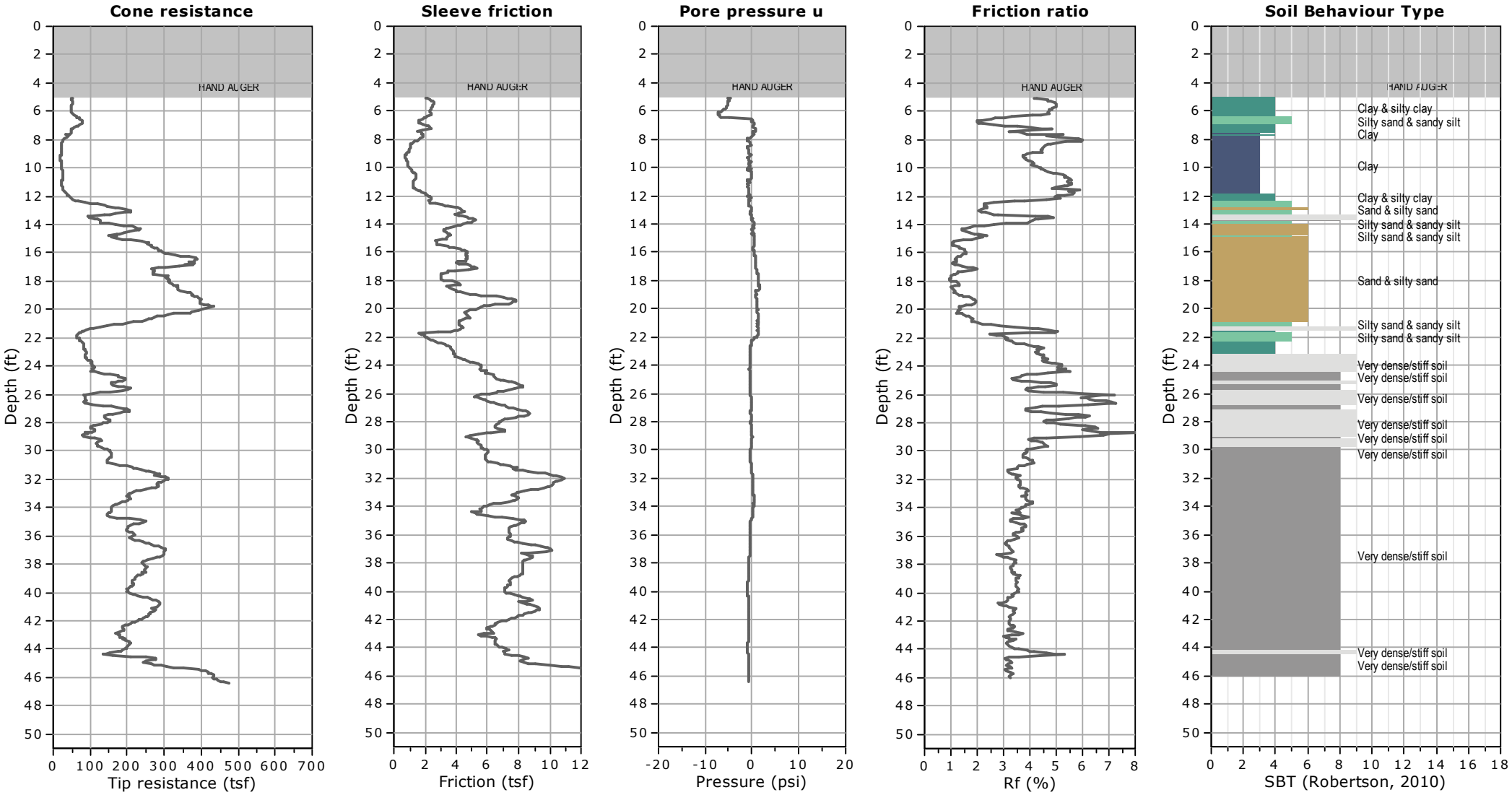
CPT-43
Total depth: 45.87 ft, Date: 2/2/2024



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steve@kehoetesting.com
www.kehoetesting.com

Project: **Leighton Consulting / Lewis Rosemead Fault Investigation**
Location: **1515 Walnut Grove Ave, Rosemead, CA**

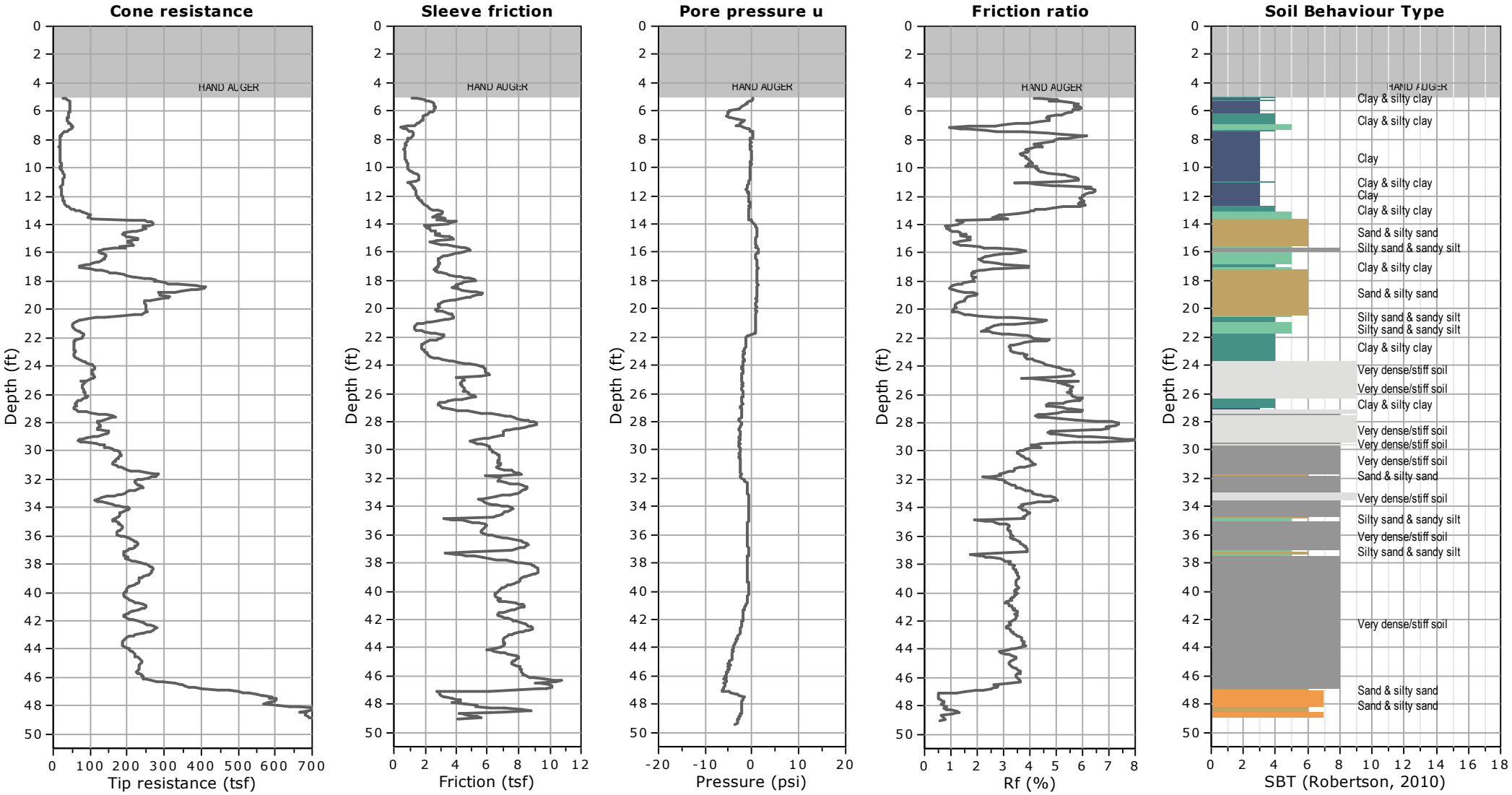
CPT-44
Total depth: 46.40 ft, Date: 2/1/2024



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steve@kehoetesting.com
www.kehoetesting.com

Project: **Leighton Consulting / Lewis Rosemead Fault Investigation**
Location: **1515 Walnut Grove Ave, Rosemead, CA**

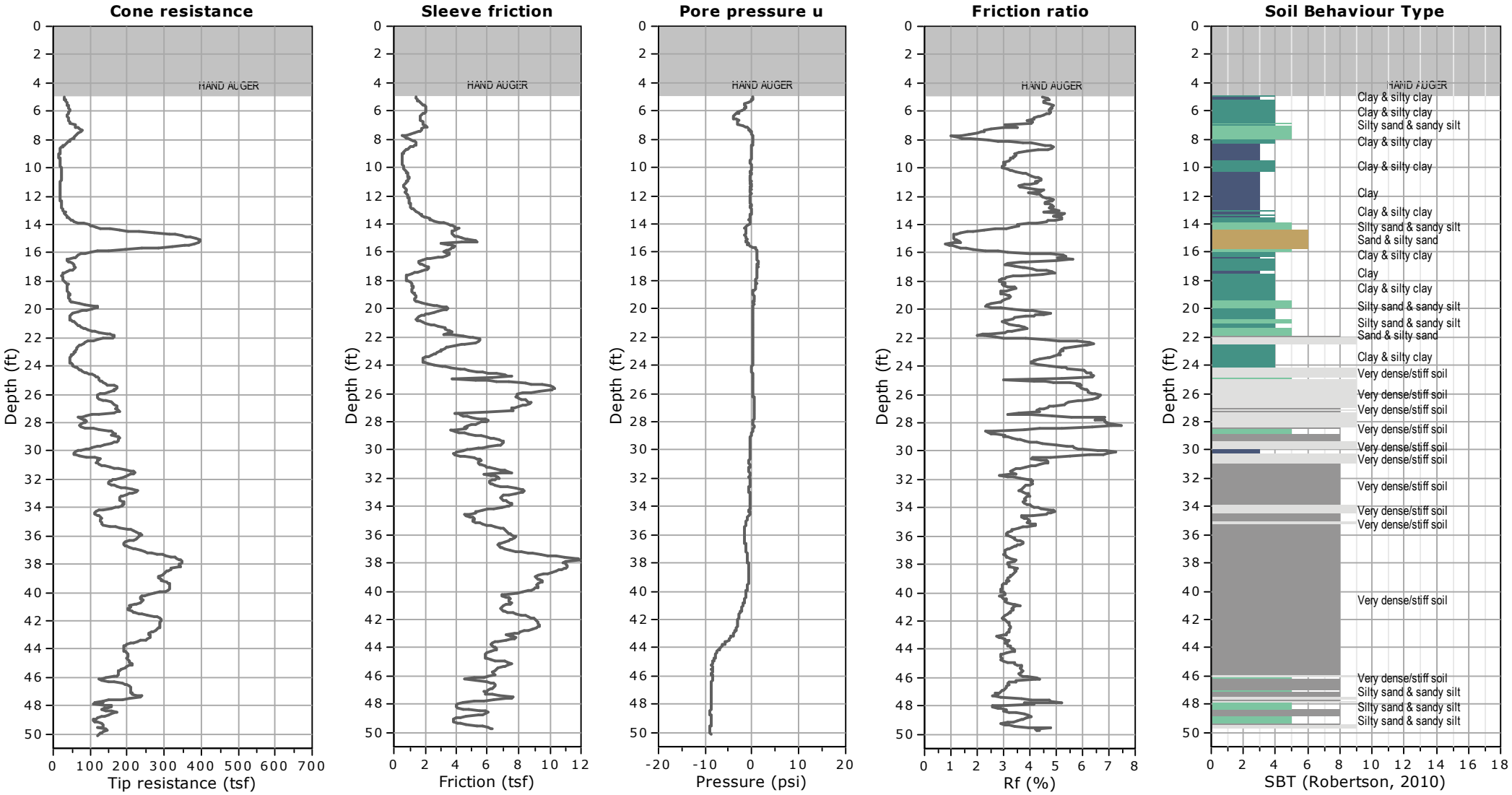
CPT-45
Total depth: 49.41 ft, Date: 2/2/2024



Kehoe Testing and Engineering
714-901-7270
steve@kehoetesting.com
www.kehoetesting.com

Project: **Leighton Consulting / Lewis Rosemead Fault Investigation**
Location: **1515 Walnut Grove Ave, Rosemead, CA**

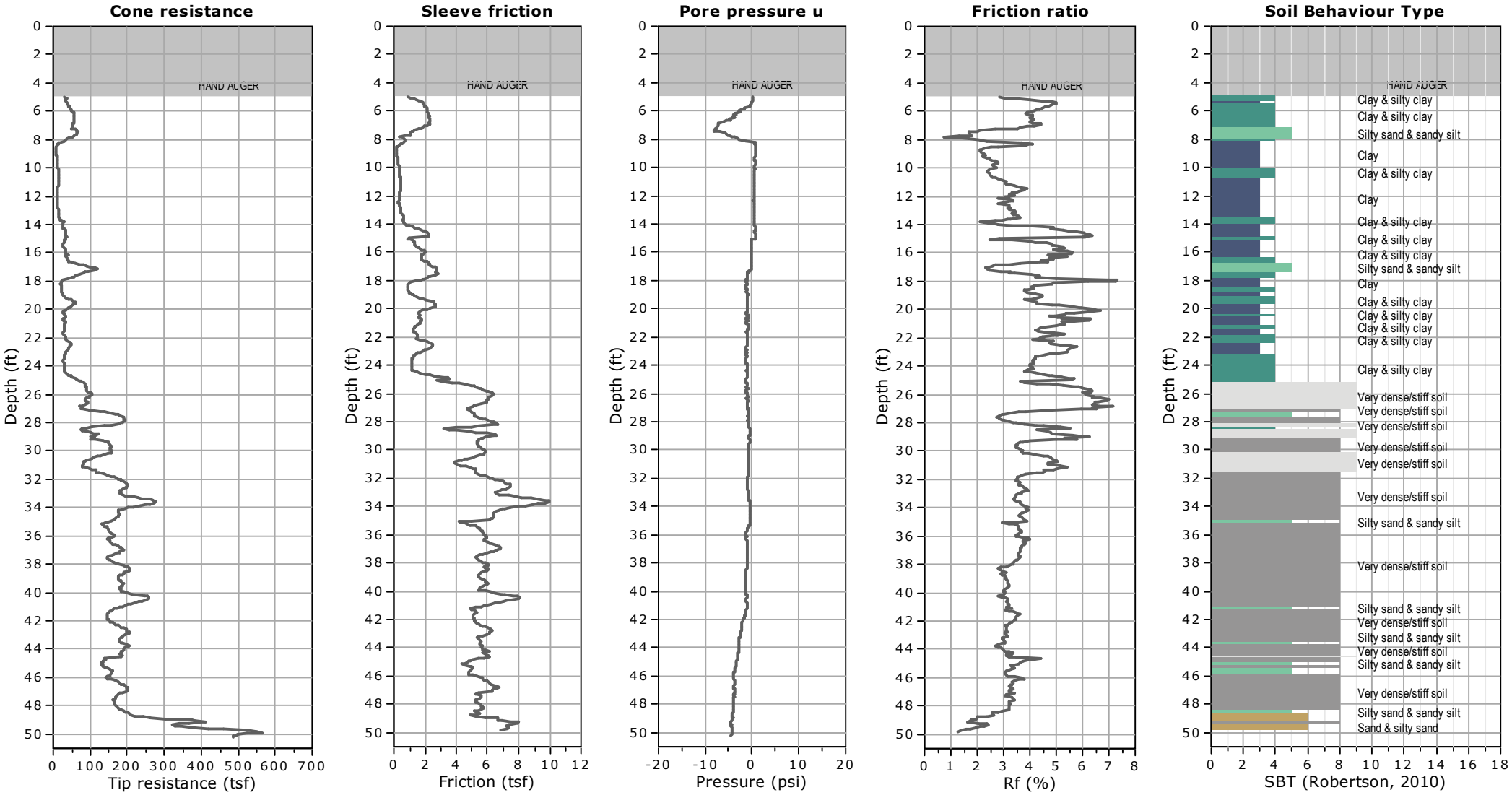
CPT-46
Total depth: 50.14 ft, Date: 2/2/2024



Kehoe Testing and Engineering
714-901-7270
steve@kehoetesting.com
www.kehoetesting.com

Project: **Leighton Consulting / Lewis Rosemead Fault Investigation**
Location: **1515 Walnut Grove Ave, Rosemead, CA**

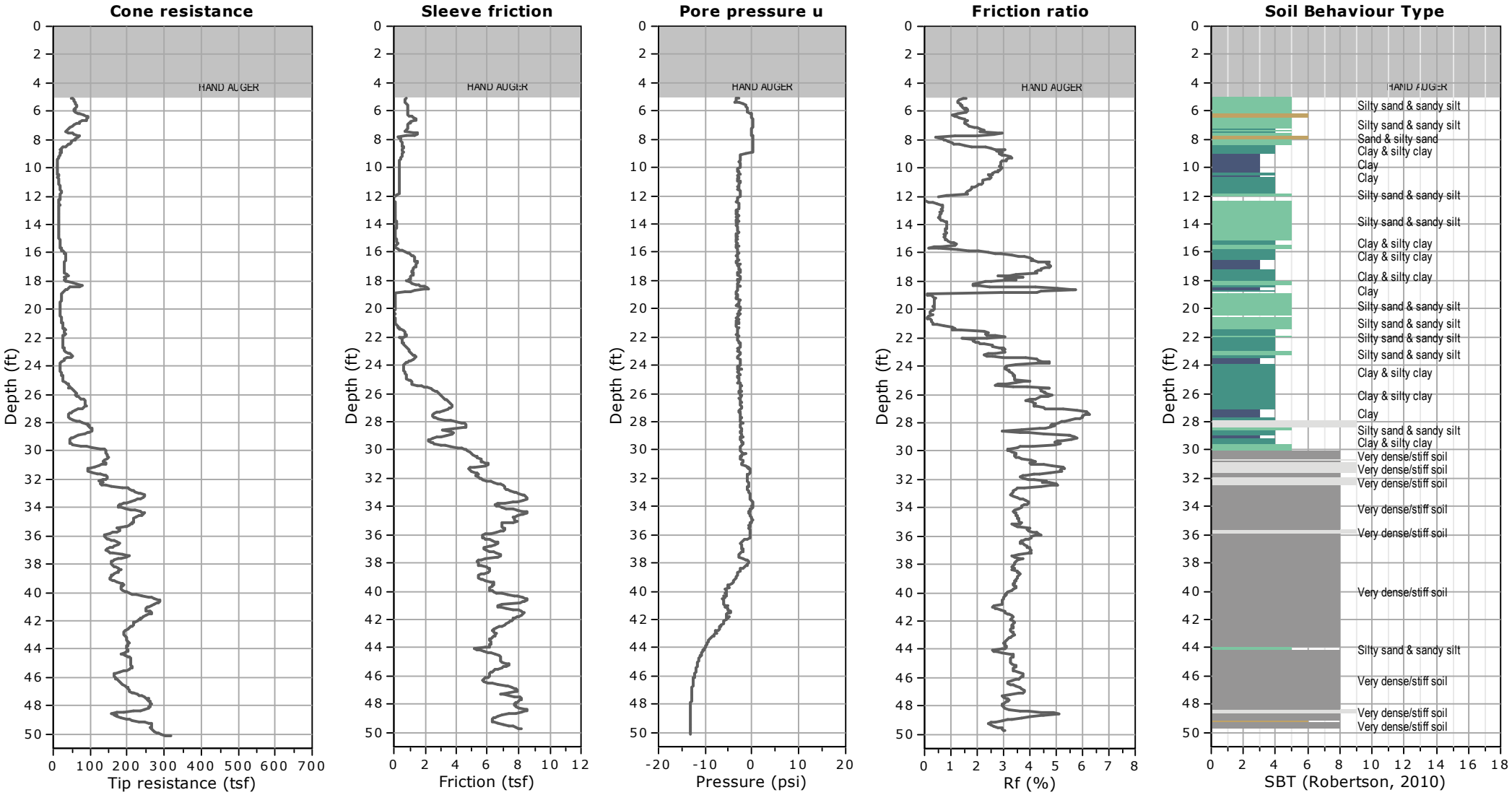
CPT-47
Total depth: 50.20 ft, Date: 2/2/2024



Kehoe Testing and Engineering
714-901-7270
steve@kehoetesting.com
www.kehoetesting.com

Project: **Leighton Consulting / Lewis Rosemead Fault Investigation**
Location: **1515 Walnut Grove Ave, Rosemead, CA**

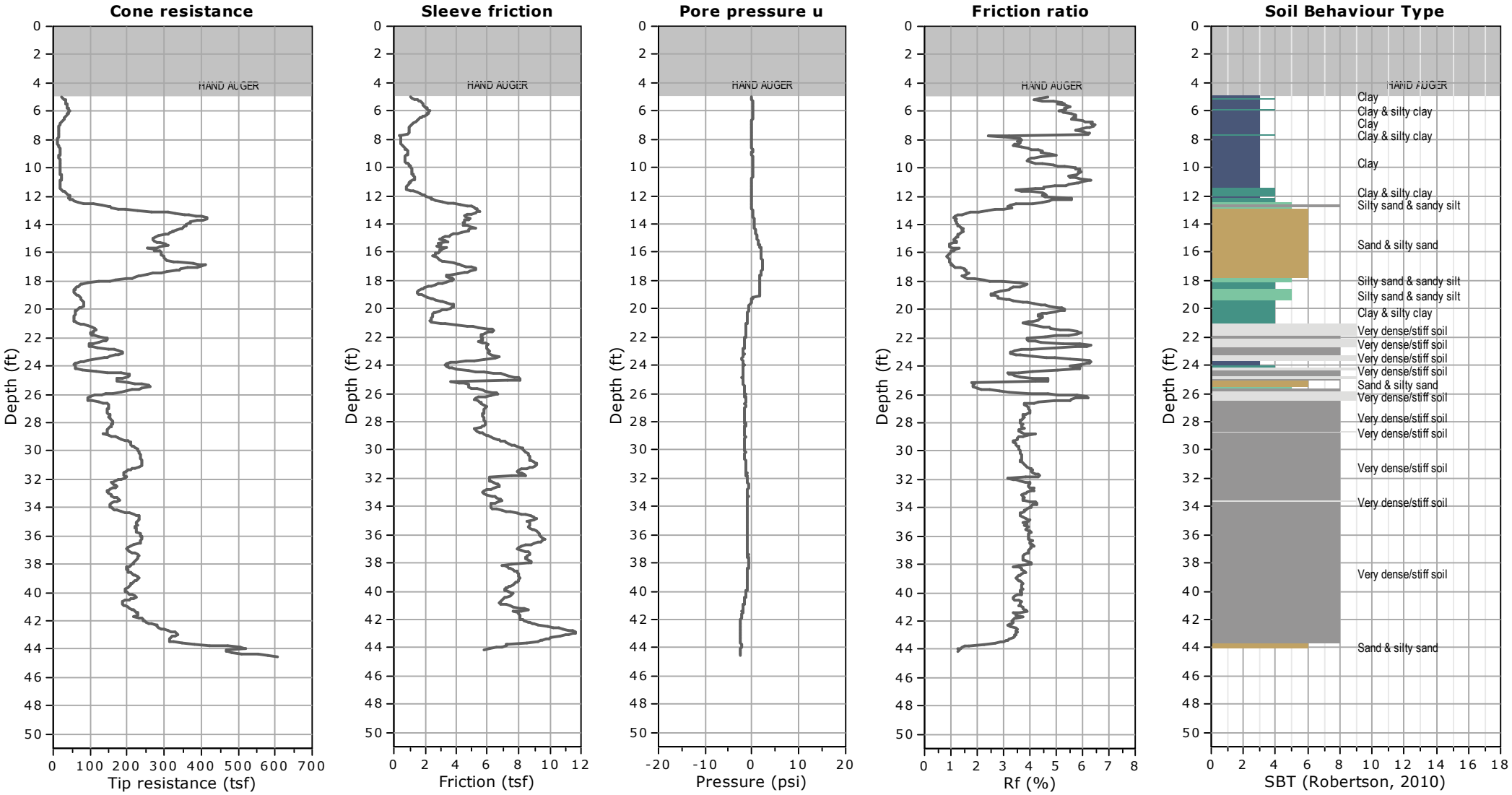
CPT-48
Total depth: 50.13 ft, Date: 2/2/2024



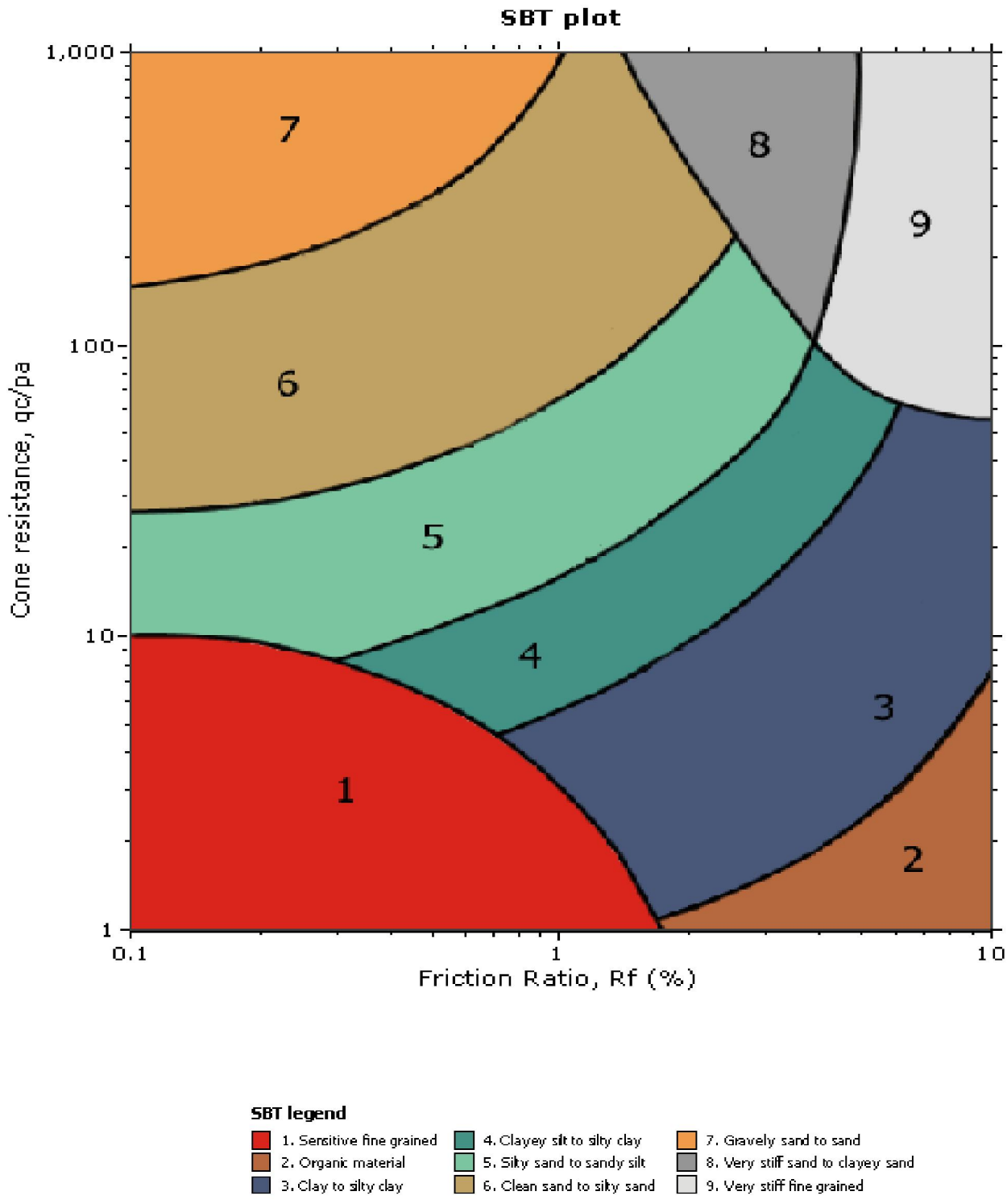
Kehoe Testing and Engineering
714-901-7270
steve@kehoetesting.com
www.kehoetesting.com

Project: **Leighton Consulting / Lewis Rosemead Fault Investigation**
Location: **1515 Walnut Grove Ave, Rosemead, CA**

CPT-49
Total depth: 44.49 ft, Date: 2/2/2024



Kehoe Testing and Engineering
714-901-7270
rich@kehoetesting.com
www.kehoetesting.com



Leighton & Associates
Lewis Rosemead Fault Investigation
Rosemead, CA

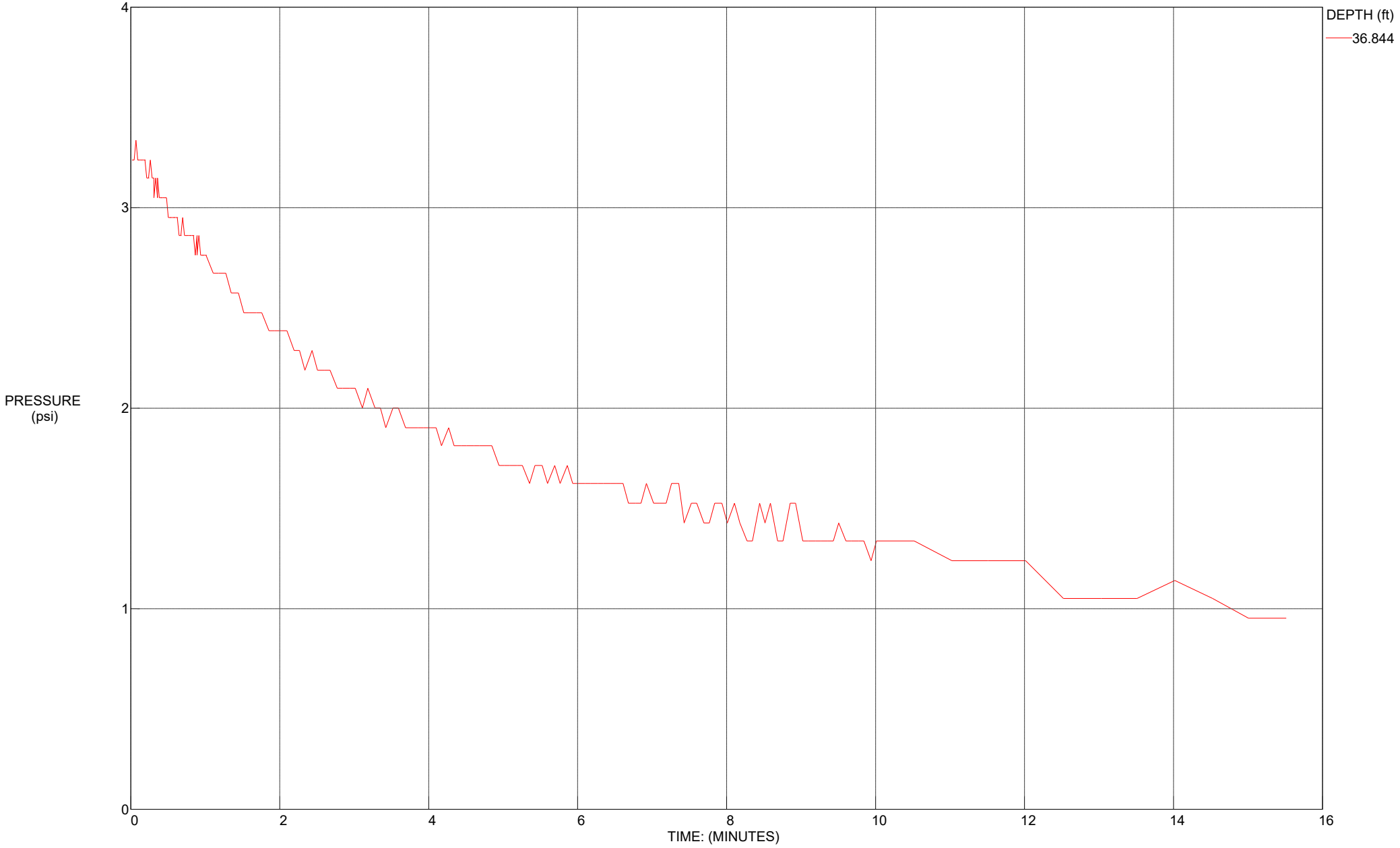
CPT Shear Wave Measurements

Location	Tip Depth (ft)	Geophone Depth (ft)	Travel Distance (ft)	S-Wave Arrival (msec)	S-Wave Velocity from Surface (ft/sec)	Interval S-Wave Velocity (ft/sec)
CPT-10	5.02	4.02	4.49	3.18	1412	
	10.01	9.01	9.23	10.18	907	677
	14.99	13.99	14.13	15.72	899	885
	20.05	19.05	19.15	19.90	963	1202
	25.03	24.03	24.11	24.40	988	1102
	30.02	29.02	29.09	29.00	1003	1082
	35.01	34.01	34.07	33.08	1030	1221

Shear Wave Source Offset - 2 ft

S-Wave Velocity from Surface = Travel Distance/S-Wave Arrival
Interval S-Wave Velocity = (Travel Dist2-Travel Dist1)/(Time2-Time1)

TEST ID: CPT-25



APPENDIX B

Continuous Core Boring Logs and Photographs

LEIGHTON

CORE BORING LOG

BORING NO. CCB-1
PAGE 1 OF 6

PROJECT: 1515 Walnut Grove Ave, Rosemead Fault Hazard Assessment - Proposed Multifamily Development
CLIENT: Lewis Management Corporation
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 14030.001
PAGE NO.: 1 of 6
ELEVATION: Feet
DATE START: 2/14/2024
DATE FINISH: 2/14/2024
DRILLER:
PREPARED BY: KMD
LOCATION:

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	BOX NUMBER	RECOVERY Feet	RECOVERY %	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
0						@0': 4-inches Asphalt Concrete (AC) over 6-inches Aggregate Base (AB)
						Artificial fill, undocumented: (Afu)
						UNIT 1
						@0.83' to 4.25': SAND, gray-brown, predominantly fine sand
						@1.40' to 1.70': Pebbly gravels
	0-5	1	4.17	83		@2.50' to 3.10': Wood fragments
						@4.25' to 5.10': Silty SAND, gray brown, moist, fine sand
5						@5.10' to 5.81': Clayey Silty SAND, dark gray, very moist, predominantly very fine sand, visible lifts of silty sand at 5.41' to 5.49' and at 5.60' to 5.71', concrete fragments between 6.35' to 7.05'
						@5.81' to 6.95': Pebbly quartz gravels, becoming scattered below, grading to Silty Sandy CLAY, dark gray, weak reaction with HCl
						@6.95' to 7.02': Hard $CaCO_3$-impacted zone, strong reaction to HCl
	5-10	1	5	100		@7.02' to 7.56': Silty Sandy CLAY, olive gray, with patchy FeO staining, scattered fine gravels
						@7.56' to 7.87': SILT with Clay, dark gray
						@7.87' to 8.24': Sandy CLAY, dark gray @7.87' to 7.96', becoming grey and orangish brown, thin lifts at 7.96 to 8.24'
						@8.24' to 8.46': Becomes Silty SAND
						Quaternary Older Alluvium (Qof):
						UNIT 8
10						@8.46' to 12.83': Sandy CLAY, dark yellowish brown (10YR 3/6), mostly fine sand, some scattered medium to coarse sand, massive, translocated patches of clay, some indistinct bedding starting at 10.59', increased soil development within beds at 12.20', thinly bedded to laminated, some pinhole pores, increased translocated clay with depth, clay films on ped faces, no reaction to HCl

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2012 14030.001 UPDATED LEWIS ROSEMEAD COTINUOUS CORES.GPJ ROCKLOG2012.GDT 7/25/24

* * * This log is a part of a report by Leighton and should not be used as a stand-alone document. * * *

LEIGHTON

CORE BORING LOG

BORING NO. CCB-1
PAGE 2 OF 6

PROJECT: 1515 Walnut Grove Ave, Rosemead Fault Hazard Assessment - Proposed Multifamily Development
CLIENT: Lewis Management Corporation
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 14030.001
PAGE NO.: 2 of 6
ELEVATION: Feet
DATE START: 2/14/2024
DATE FINISH: 2/14/2024
DRILLER:
PREPARED BY: KMD
LOCATION:

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	BOX NUMBER	RECOVERY Feet	RECOVERY %	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
10						**Quaternary Older Alluvium (Qof):**
						UNIT 8
						@8.46' to 12.83': Sandy CLAY, dark yellowish brown (10YR 3/6), mostly fine sand, some scattered medium to coarse sand, massive, translocated patches of clay, some indistinct bedding starting at 10.59', increased soil development within beds at 12.20', thinly bedded to laminated, some pinhole pores, increased translocated clay with depth, clay films on ped faces, no reaction to HCl
	10-15	2	5	100		
						UNIT 9
						@12.83' to 15.32': (SED. PACKAGE D) Sandy CLAY, dark yellowish brown (10YR 3/4), fine sand, some medium to coarse sand, abundant MnO spotting, gradational decrease in grain size and abundance at 13.55', some soil development (horizons) comprised of clay with sand from 14.63' to 14.76', depositional contact below
15						
						@15.32' to 15.55': Clayey SAND to Very Sandy CLAY, olive brown, fine sand, gradational contact below
						@15.55' to 16.14': Sandy CLAY, light olive brown (2.5Y 5/3), trace pinhole pores, translocated clay, non reactive to HCl, faint thin beds, gradational contact below
						@16.14' to 17.08': Sandy CLAY, light olive brown, fine sand, abundant MnO spotting, moderately cemented, trace fine subrounded gravels, gradational contact below
						@17.08' to 17.62': Clayey SAND, yellowish brown (10YR 5/6), predominantly fine to coarse sand, trace fine subrounded gravels, erosive contact below
	15-20	2	4.63	93		@17.62' to 18.11': Sandy CLAY, orangish brown, laminated, scattered coarse sand, oxidized very fine silty sand at 17.87' to 18.00', grades significantly more sandy at base, narrow gradational contact below
						@18.11' to 18.53': Clayey SAND, lighter orangish brown, fine to coarse sand, scattered fine gravels, grading clayey at base
						@18.53' to 19.09': Fining Upward Sequence of SAND, light brown, fine sand with some medium to coarse sand, few to some silt, grades coarser to fine to coarse sand, with scattered fine gravel
						@19.09' to 19.54': Fining Upward Sequence of Silty SAND, reddish brown, very fine sand, grading lighter brown, coarser, FeO-stained erosive contact below
20						@19.54' to 19.65': CLAY, olive brown, plastic

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2012 14030.001 UPDATED LEWIS ROSEMEAD COTINUOUS CORES.GPJ ROCKLOG2012.GDT 7/25/24

* * * This log is a part of a report by Leighton and should not be used as a stand-alone document. * * *

LEIGHTON

CORE BORING LOG

BORING NO. CCB-1
PAGE 3 OF 6

PROJECT: 1515 Walnut Grove Ave, Rosemead Fault Hazard Assessment - Proposed Multifamily Development
CLIENT: Lewis Management Corporation
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 14030.001
PAGE NO.: 3 of 6
ELEVATION: Feet
DATE START: 2/14/2024
DATE FINISH: 2/14/2024
DRILLER:
PREPARED BY: KMD
LOCATION:

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	BOX NUMBER	RECOVERY Feet	RECOVERY %	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
20						@19.65' to 20.00': No Recovery @20.00' to 20.20': Sandy CLAY, olive brown, predominantly fine sand, scattered medium to coarse sand, plastic, FeO and MnO spotting, erosional contact below @20.20' to 20.70': Becomes Silty Sandy CLAY, olive brown, mostly fine sand, some medium to coarse sand, strong FeO spotting, some MnO spotting @20.70' to 22.09': Sandy CLAY with Silt, olive brown, abundant translocated clays, grades to silty clayey sand at 20.83', interbedded with sandy clay and clayey sand throughout, irregular contact below
	20-25	3	5	100		@22.09' to 22.56': Sandy SILT to very fine Silty SAND, brown to grayish brown, with FeO bands and patches, scattered coarse sand and fine gravel, very fine grey sand at 22.10' to 22.13', at 22.33' grades sandier @22.56' to 23.07': Silty SAND with Clay, gray-brown, mostly very fine sand, scattered coarse subrounded sand, weak blocky structure, thinly bedded, strong orange brown oxidation, preferential parting on bedding planes, increased grain size and oxidation at 22.92' to 23.07', gradational contact below @23.07' to 23.24': Sandy CLAY, gray-brown with orange brown oxidation staining, laminated, scattered fine to coarse sand, clear contact below @23.24' to 23.42': Very fine Silty SAND, gray-brown, slightly oxidized, scattered fine to medium sand, depositional contact below @23.42' to 24.60': Silty SAND, banded gray and orange brown, angular contact below from 24.52' to 24.63' @24.60' to 26.73': SAND, pinkish brown, uncemented, weak bedding, predominantly fine sand, some medium sand, scattered subrounded coarse sand, oxidized horizons, fine to medium sand bed from 25.35' to 25.60'
25						
	25-30	3	4.24	85		@26.73' to 27.04': Silty SAND, light grayish brown, very fine, banded gray and orange brown @27.04' to 27.38': Silty CLAY, olive brown, with strong patchy to banded FeO stains, no reaction to HCl, gradational contact below @27.38' to 27.49': SILT, light gray brown, weak oxidation, fine MnO spots @27.49' to 27.51': Clayey SILT, light gray, laminated, oxidize contact below @27.51' to 28.45': Very fine Silty SAND grading to Sandy SILT at 27.64' to 28.35', then SILT from 28.35' to 28.45', light grey-brown, with FeO stains, thinly bedded to sandy silt laminations, increased clay content from 28.35' to base, clear contact below @28.45' to 28.92': Sandy CLAY, brown, massive, FeO stains, no reaction to HCl, trace coarse sand @28.92' to 29.29': Very fine Silty SAND, light brown @29.29' to 30.00': No Recovery
30						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2012 14030.001 UPDATED LEWIS ROSEMEAD COTINUOUS CORES.GPJ ROCKLOG2012.GDT 7/25/24

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CORE BORING LOG

BORING NO. CCB-1
PAGE 4 OF 6

PROJECT: 1515 Walnut Grove Ave, Rosemead Fault Hazard Assessment - Proposed Multifamily Development
CLIENT: Lewis Management Corporation
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):						
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE		ORIENTATION	CORE BARREL	
					X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 14030.001
PAGE NO.: 4 of 6
ELEVATION: Feet
DATE START: 2/14/2024
DATE FINISH: 2/14/2024
DRILLER:
PREPARED BY: KMD
LOCATION:

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	BOX NUMBER	RECOVERY Feet	RECOVERY %	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
30						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
	30-32.5	4	2.45	98		@30.00' to 30.60': Very fine Silty SAND to Sandy SILT, gray-brown with FeO stains, slightly micaceous, irregular contact below @30.60' to 30.88': Very fine to fine Silty SAND, heavier oxidation, increase in sand content and less cemented, increased oxidation, gradational contact below @30.88' to 31.10': SILT, gray-brown, oxidized orange brown bands, grades to gray silty clay, faintly laminated, clear angular contact from 31.10' to 31.19' @31.10' to 32.00': SILT with Sand, gray-brown, FeO staining, predominantly fine sand, scattered coarse subrounded to subangular sand, grades sandier with depth to very fine silty sand, increased cementation with depth, lightly cemented zone at 31.79' to 32.00', depositional contact below
	32.5-35	4	2.45	98		@32.00' to 32.35': Gravelly SAND, gray-brown, uncemented, fine to coarse sand, fine subrounded gravels @32.35' to 32.89': Silty SAND, reddish brown, uncemented, very fine sand, some micaceous silt, moderate cementation at basal contact, erosional contact below @32.89' to 32.99': Clayey SILT, light olive gray, heavy red oxidation, gradational contact below @32.99' to 33.65': Very fine Silty SAND, gray with oxidized banding, heavy FeO staining at 33.34' to 33.65', very fine and, very micaceous, moderately cemented, gradational contact below @33.65' to 34.30': (SED. PACKAGE F) SILT, gray-brown with strong red-brown oxidation banding, laminated, graded clayey at 34.13' @34.30' to 34.50': Silty CLAY, becomes darker brown/gray-brown @34.50' to 35.00': Clayey SAND to very Sandy CLAY, brown, massive, trace dark streaks, presumed charcoal
35						
	35-37.75	4	2.66	97		@35.00' to 36.04': Very fine Silty Clayey SAND, brown, some clay, weaker FeO staining, blocky structures, gradational contact below @36.04' to 36.42': SILT grading to Clayey SILT at 36.14' the Sandy CLAY at 36.32', brown, splotchy @36.42' to 36.54': Sandy SILT, olive gray, splotchy, some oxidized staining @36.54' to 37.00': Very fine Silty SAND, orangish brown and gray-brown, thinly bedded to laminated, clear contact below @37.00' to 37.35': Sandy SILT, olive gray brown, very fine sand, gradational contact below @37.35' to 37.47': Fine Sandy SILT, clear contact below
	37.75-40	4	2.27	101		@37.47' to 37.49': Very fine Silty SAND, orange brown, heavily oxidized, very fine sand, micaceous, clear sharp contact below @37.49' to 37.66': Silty Sandy CLAY, brown, very fine sand, massive @37.66' to 39.00': Silty SAND, light orangish brown, uncemented, predominantly very fine to fine sand, scattered medium to coarse sand and fine gravel, laminated, some weakly cemented zones, heavily oxidized at basal contact @39.00' to 40.00': Very fine Silty SAND, light orange brown, increased cementation, weakly laminated, scattered medium to coarse sand at 39.47', bed of gray sand at 39.59' to 39.63'
40						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2012 14030.001 UPDATED LEWIS ROSEMEAD COTINUOUS CORES.GPJ ROCKLOG2012.GDT 7/25/24

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CORE BORING LOG

BORING NO. CCB-1
PAGE 5 OF 6

PROJECT: 1515 Walnut Grove Ave, Rosemead Fault Hazard Assessment - Proposed Multifamily Development
CLIENT: Lewis Management Corporation
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 14030.001
PAGE NO.: 5 of 6
ELEVATION: Feet
DATE START: 2/14/2024
DATE FINISH: 2/14/2024
DRILLER:
PREPARED BY: KMD
LOCATION:

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	BOX NUMBER	RECOVERY Feet	RECOVERY %	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
40						
	40-42.5	5	2.4	96		@40.00' to 40.78': Fining upward sequence of Very fine gray-brown Silty SAND grading abruptly at 40.47' to fine to coarse SAND with fine subrounded gravels @40.78' to 41.22': Fining upward sequence of Fine SAND with medium sand grading to coarse to medium SAND with few subrounded gravels @41.22' to 41.93': Fining upward sequence of SAND with Silt, fine sand with trace fine to coarse subrounded gravels, laminated, grades less silt to fine SAND with some medium to coarse sand, some fine decomposing friable granitic gravel @41.93' to 42.84: Fining upward sequence of Fine SAND with Silt grading coarser (less silt) to fine to coarse SAND with fine subrounded gravel, gravel composition of igneous and metamorphic, some decomposed granitic gravels
	42.5-45	5	2.54	102		@42.84' to 43.95': Fining upward sequence of Fine SAND with some medium sand, thinly bedded to laminated, grades to fine subrounded gravel at base of contact @43.95' to 44.57': Fine SAND, thinly bedded, grades to fine SAND with some coarse sand and fine subrounded gravel @44.57' to 45.00': Very Silty SAND, light brown, predominantly fine sand, some medium to coarse sand
45						
	45-47.5	5	2.47	99		@45.00' to 45.45': SAND, light brown, uncemented, predominantly fine sand, with scattered medium to coarse sand, subrounded to subangular coarse sand at basal contact (fining upward sequence), erosional contact below @45.45' to 45.62': Very fine Silty SAND, grayish brown, faintly laminated, moderately cemented, few coarse sand near basal contact, irregular contact below @45.62' to 45.87': SAND, light grey-brown, fine to coarse sand with scattered fine gravels, no reaction to HCl, oxidized at basal contact @45.87' to 47.66': SAND, oxidized orange brown, predominantly very fine to fine sand, scattered medium to coarse sand, weakly bedded, poor cementation in majority of unit, well cemented at top of unit, micaceous, no reaction to HCl
	47.5-50	5	2.46	98		@47.66' to 47.79': Silty SAND, light gray-brown, consolidated, predominantly very fine sand, trace coarse sand, clear contact below @47.79' to 47.99': SAND, fine to coarse sand, gray-brown, uncemented @47.99' to 48.49': Very fine SAND, gray brown, light brown laminations, weak to moderately cemented @48.49' to 49.16': SAND, light orangish brown, predominately fine sand, scattered medium to coarse sand, strong reddish brown bed at 49.00' to 49.07', gradational contact below @49.16' to 49.48': Very fine Silty SAND, light gray with diffuse red orange oxidation, weakly cemented, gradational contact below @49.48' to 49.79': Interlaminated SILT and very fine Silty SAND, light brown
50						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2012 14030.001 UPDATED LEWIS ROSEMEAD COTINUOUS CORES.GPJ ROCKLOG2012.GDT 7/25/24

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CORE BORING LOG

BORING NO. CCB-1
PAGE 6 OF 6

PROJECT: 1515 Walnut Grove Ave, Rosemead Fault Hazard Assessment - Proposed Multifamily Development
CLIENT: Lewis Management Corporation
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 14030.001
PAGE NO.: 6 of 6
ELEVATION: Feet
DATE START: 2/14/2024
DATE FINISH: 2/14/2024
DRILLER:
PREPARED BY: KMD
LOCATION:

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	BOX NUMBER	RECOVERY Feet	RECOVERY %	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
50						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
						and gray brown, abundant FeO spotting @49.79' to 49.83': Silty CLAY bed, brown @49.83' to 50.00': Very fine Silty SAND, gray-brown, well-cemented, faintly laminated
						Total Depth of Continuous Core Boring: 50 feet **No groundwater encountered during drilling** **Boring backfilled with soil cuttings upon completion of drilling.**
						Notes: **"SOIL HORIZON" and "SED. PACKAGE" Designations from Core Borings, *shown on Plate 2*** **"UNIT" Designations from Fault Trench FT-1, *shown on Plate 3A***
55						
60						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2012 14030.001 UPDATED LEWIS ROSEMEAD COTINUOUS CORES.GPJ ROCKLOG2012.GDT 7/25/24

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LEIGHTON

CORE BORING LOG

BORING NO. **CCB-2**
PAGE 1 OF 6

PROJECT: **1515 Walnut Grove Ave, Rosemead Fault Hazard Assessment - Proposed Multifamily Development**
CLIENT: **Lewis Management Corporation**
CONTRACTOR: **Martini Drilling Corporation**
EQUIPMENT USED: **CME-75**

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: **14030.001**
PAGE NO.: **1 of 6**
ELEVATION: **Feet**
DATE START: **2/14/2024**
DATE FINISH: **2/14/2024**
DRILLER:
PREPARED BY: **KMD**
LOCATION:

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	BOX NUMBER	RECOVERY Feet	RECOVERY %	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
0						@0': 4-inches Asphalt Concrete (AC) over 6-inches Aggregate Base (AB)
	0-5	1	4.34	87		**Artificial fill, undocumented: (Afu)** @0.83' to 5.65': SAND with Gravel, grey-brown, subrounded gravels, predominantly fine sand
5						@5.65' to 7.13': Sandy Gravelly CLAY, brown, fine to coarse sand, fine subrounded gravels, moderate to strong reaction to HCl
	5-10	1	5	100		@7.13' to 8.07': Sandy CLAY, becomes banded dark brown and orangish brown, clear fill lifts, scattered gravels, concentrated gravels and sand from 7.74' to 8.00'
						@8.07' to 8.33': Sandy CLAY, banded dark brown and orange-brown, irregular contact below (zone of scarified material)
10						**Quaternary Older Alluvium (Qof):** @8.33' to 10.00': Sandy CLAY with Silt, dark yellowish brown (10YR 3/6), banded to thinly laminated, scattered coarse sand

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2012 14030.001 UPDATED LEWIS ROSEMEAD COTINUOUS CORES.GPJ ROCKLOG2012.GDT 7/25/24

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CORE BORING LOG

BORING NO. CCB-2
PAGE 2 OF 6

PROJECT: 1515 Walnut Grove Ave, Rosemead Fault Hazard Assessment - Proposed Multifamily Development
CLIENT: Lewis Management Corporation
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 14030.001
PAGE NO.: 2 of 6
ELEVATION: Feet
DATE START: 2/14/2024
DATE FINISH: 2/14/2024
DRILLER:
PREPARED BY: KMD
LOCATION:

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	BOX NUMBER	RECOVERY Feet	RECOVERY %	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
10						@10.00' to 11.78': Clayey SAND, dark yellowish brown (10YR 3/6), massive, predominantly fine sand
	10-15	2	5	100		@11.78' to 13.02': Grades more Silty and Sandy, increased grain size, becomes olive brown (2.5Y 4/4), faintly laminated, weak blocky structure, zones of translocated clay, few pinhole pores, some fine subrounded gravel, gradational contact below
						@13.02' to 15.27': ((SED. PACKAGE D) Sandy CLAY, dark yellowish brown (10YR 4/4), cemented, organic soil laminations, abundant MnO spotting, scattered coarse sand, clear contact below
15						@15.27' to 16.52': Sandy CLAY, grayish brown (2.5Y 5/2), predominantly fine sand scattered coarse sand, MnO spotting on more clayey surfaces, translocated clay, hackly structure, clay films along coarse sand boundaries, some subangular coarse sand grains
	15-20	2	5	100		@16.52' to 16.91': Sandy CLAY, grayish brown (2.5Y 5/2), hard, laminated, scattered coarse sand, weak blocky structure, abundant MnO spotting, coarse subangular sand concentrated towards base @16.91' to 17.51': Sandy CLAY, grayish brown (2.5Y 5/2), moist, predominantly fine sand, scattered medium to coarse sand, becoming more clayey with depth @17.51' to 19.50': Clayey SAND, brown (10YR 5/3), fine sand, decomposing fine granitic gravels, FeO staining, faintly laminated, laminations become stronger with depth, scattered coarse subangular sand, minor FeO staining on lamination planes, concentrated fine subrounded gravels from 19.48 to basal contact
20						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2012 14030.001 UPDATED LEWIS ROSEMEAD COTINUOUS CORES.GPJ ROCKLOG2012.GDT 7/25/24

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CORE BORING LOG

BORING NO. CCB-2
PAGE 3 OF 6

PROJECT: 1515 Walnut Grove Ave, Rosemead Fault Hazard Assessment - Proposed Multifamily Development
CLIENT: Lewis Management Corporation
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

JOB NO.: 14030.001
PAGE NO.: 3 of 6
ELEVATION: Feet
DATE START: 2/14/2024
DATE FINISH: 2/14/2024
DRILLER:
PREPARED BY: KMD
LOCATION:

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	
					0	ANG. FROM VERT.	Total (Feet)	

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	BOX NUMBER	RECOVERY Feet	RECOVERY %	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
20						@19.50' to 20.04': SAND, light olive brown (2.5Y 5/6) very fine to coarse, some subrounded gravel, uncemented to slightly cemented, weak bedding, some FeO staining on bedding planes @20.04' to 20.20': Fining upward sequence of very fine Silty SAND, laminated, grades to fine SAND, cemented, moderate to heavy FeO staining, heavier oxidation staining at basal contact erosional contact below @20.20' to 20.81': Very fine Silty SAND and Sandy SILT, gray-brown with heavily oxidized patches, faintly laminated, grades to silt at base, gradational contact @20.81' to 21.66': Interlaminated SILT and Sandy SILT, well laminated, grades to clayey silt with depth @21.66' to 22.41': SAND with Clay, olive brown (2.5Y 4/3), predominantly fine sand, scattered subangular coarse sand, grades to laminated gray-brown and orange brown Sandy CLAY at 22.66' to basal contact, no reaction to HCl, bed of very sandy clay at base, gradational contact @22.41' to 23.31': Clayey SAND, grayish brown, primarily fine sand, some subrounded to subangular coarse sand @23.31' to 23.92': increase in gravel composition
	20-25	3	5	100		
25						@23.92' to 25.60': ((SED. PACKAGE E) SILT with Sand and Clay, olive brown (2.5Y 4/4) with dark yellowish brown (10YR 4/6) banding, very fine sand, thinly bedded to laminated, grades to very silty sand, slightly cemented, gradational contact below @25.60 to 26.51: SAND, light gray-brown, massive, predominantly fine sand, some medium to coarse sand, uncemented
	25-30	3	4.49	90		@26.51' to 27.25': Fining upward sequence of Sandy SILT grading to Silty SAND and SAND, olive brown, some orange oxidation, basal sand comprised of fine to medium sand, some coarse sand, uncemented @27.25' to 27.93': Fining upward sequence of Silty SAND grading to SAND at 27.44', fine to coarse sand, trace fine subangular to subrounded gravel, uncemented, oxidized banding, subangular to subrounded coarse sand and fine gravel zone at 27.49' to 27.67', clear basal contact @27.93' to 28.04': Gradational change to Silty SAND, light gray, very fine to fine sand, FeO banding, gradational contact below @28.04' to 28.37': SILT with trace Sand, gray olive brown, strong FeO spotting, zone of heavy FeO from 28.12' to 28.22', well-laminated, grades to silty clay at 28.37', gradational contact below @28.37' to 28.84': Silty CLAY, finely banded olive gray/orange brown/light gray, hackly structure, wavy laminations, fine oxidized spotting, bed of very fine gray sand at 28.50' to 28.57', single coarse subrounded sand grain at 26.22', clear basal contact @28.84' to 29.49': Sandy CLAY, fine oxidation spotted zone at 28.84' to 28.97',
30						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2012 14030.001 UPDATED LEWIS ROSEMEAD COTINUOUS CORES.GPJ ROCKLOG2012.GDT 7/25/24

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CORE BORING LOG

BORING NO. CCB-2
PAGE 4 OF 6

PROJECT: 1515 Walnut Grove Ave, Rosemead Fault Hazard Assessment - Proposed Multifamily Development
CLIENT: Lewis Management Corporation
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 14030.001
PAGE NO.: 4 of 6
ELEVATION: Feet
DATE START: 2/14/2024
DATE FINISH: 2/14/2024
DRILLER:
PREPARED BY: KMD
LOCATION:

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	BOX NUMBER	RECOVERY Feet	RECOVERY %	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
30						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
						clayey sand layer at 28.97' to 29.04', predominantly fine sand, some coarse subrounded to rounded gravel, hard, massive
						@29.49' to 30.00': No Recovery
	30-32.5	4	2.47	99		@30.00' to 30.29': Clayey SAND, gray brown/orange brown, oxidation staining and spotting, diffuse staining, very fine to fine sand, vertical FeO veining, slight cementation, gradational contact below
						@30.29' to 30.82': Clayey Silty SAND, light gray-brown, poorly cemented, massive, gradational contact, primarily fine sand, some medium sand
						@30.82' to 31.24': Silty Sandy CLAY, gray-brown, well-bedded/laminated, silty sand layers at 30.87', heavily oxidized along sand bed @31.16', gradational contact below
						@31.24' to 31.60': SAND to Silty SAND to Sandy SILT, gradational, increases FeO banding with depth, primarily fine sand, grades to silt at 31.60'
	32.5-35	4	2.46	98		@31.60' to 32.28': Sandy SILT, grayish brown and oxidized banding, grades to clayey silt at 31.95' to 32.08', heavy FeO spotting at base
						@32.28' to 35.36': Silty SAND with Clay, gray-brown, variable zones of oxidation, poorly cemented significant reduction of FeO staining at 34.42', clayey silt bed at 34.61' to 34.68', increased cementation with depth, gradational contact below
35						
	35-37.5	4	2.49	100		@35.36' to 36.38': (SED. PACKAGE F) Very fine Silty SAND, dark yellowish brown (10YR 4/4), heavily oxidized, micaceous grades to sandy SILT at 35.40', olive brown (2.5Y 4/4), with oxidized zones and vertical veins, concentric rings of oxidization around gleyed zones, grades to clayey silt at 35.80' to 35.90 and 36.15' to 36.25', weak blocky structure in clayey beds, clear irregular contact below
						@36.38' to 37.34': Sandy Clayey SILT, light olive brown (2.5Y 5/3), becomes laminated at base, grades to sandy silty clay, clear contact below
						@37.34' to 37.91': Sandy SILT grading to SILT with Sand at 37.69', heavily oxidized, very fine sand, slightly cemented, gradational contact
						@37.91' to 38.32': Clayey SILT, grayish brown, weak blocky structure, heavily oxidized zone with above contact, gradational contact below
	37.5-40	4	2.44	98		@38.32' to 38.57': Sandy SILT, gray-brown, weak oxidiation staining, very fine sand, weak laminations, gradational contact below
						@38.57' to 40.00': Very fine Silty SAND, uncemented to weakly cemented, faintly bedded, very fine to fine sand
40						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2012 14030.001 UPDATED LEWIS ROSEMEAD COTINUOUS CORES.GPJ ROCKLOG2012.GDT 7/25/24

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CORE BORING LOG

BORING NO. CCB-2
PAGE 5 OF 6

PROJECT: 1515 Walnut Grove Ave, Rosemead Fault Hazard Assessment - Proposed Multifamily Development
CLIENT: Lewis Management Corporation
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 14030.001
PAGE NO.: 5 of 6
ELEVATION: Feet
DATE START: 2/14/2024
DATE FINISH: 2/14/2024
DRILLER:
PREPARED BY: KMD
LOCATION:

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	BOX NUMBER	RECOVERY Feet	RECOVERY %	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
40						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
						@40.00' to 41.06': SAND, dark yellowish brown (10YR 4/4), uncemented, primarily fine sand, some subrounded coarse sand and fine gravels, concentrated gravel zone at 40.61', heavily oxidized at base
	40-42.5	5	2.56	102		@41.06' to 41.54': ((SED. PACKAGE G) Very fine to fine Silty SAND, olive brown (2.5Y 4/3), diffuse FeO staining at top, slight cementation, faint cross bedding, grades less silty with depth, grades coarser from 41.28' to 41.42', fine subrounded gravel at base of contact, gradational contact below @41.54' to 42.00': Fining upward sequence of Very fine SAND, grades to SAND with subrounded gravel, oxidized at base @42.00' to 42.13': Fining upward sequence of Very fine to fine SAND, grades to coarse SAND @42.13' to 42.51': Fining upward sequence of Fine SAND grading to fine to coarse SAND and fine subrounded Gravel @42.51' to 42.62': Wood Spacer Block @42.62' to 43.07': Fining upward sequence of Very fine to fine SAND grading to fine to coarse SAND and fine subangular to subrounded Gravel @43.07' to 43.35': Fining upward sequence of Very fine to fine SAND grading to fine to coarse SAND and fine subangular to subrounded Gravel @43.35' to 43.61': Fining upward sequence of Very fine SAND grading to fine to coarse SAND and fine subrounded Gravel @43.61' to 43.84': Fining upward sequence of Very fine SAND grading to fine to medium and trace coarse SAND @43.84' to 43.98': Fining upward sequence of Very fine SAND grading to fine SAND with trace coarse Sand and fine subrounded Gravel
	42.5-45	5	2.37	95		
45						
	45-47.5	5	2.51	100		@43.98' to 44.15': Fining upward sequence of Fine laminated SAND grading to fine to medium SAND with trace coarse Sand and fine subrounded to rounded Gravel @44.15' to 44.44': Fining upward sequence of Very fine SAND grading to fine to medium SAND with subangular coarse Sand @44.44' to 44.72': Fining upward sequence of Very fine to fine SAND grading to coarse SAND and fine subrounded Gravel @44.72' to 45.00': Silty SAND, olive brown, very fine to fine sand, some fine subrounded gravels, some medium to coarse sand @45.00' to 45.41': Very fine to fine SAND, gray-brown, uncemented, slightly micaceous, some dark gray laminations, fine to medium sand at 45.32' and 45.41', conformable depositional contact below
	47.5-50	5	2.43	97		@45.41' to 47.39': SAND, light to medium grey-brown, predominantly fine sand, dark gray laminations, some oxidized zones along bedding planes, very fine to fine sand bed at 47.06' to 47.39', increasing medium to coarse sand and fine gravels at base (fining upward sequence) @47.39' to 47.65': Silty SAND, gray-brown, predominantly fine sand, some medium to coarse sand, weakly laminated, gradational contact below @47.65' to 47.91': Silty SAND, gray-brown, thinly bedded, predominantly fine sand, some medium sand beds, FeO banding throughout unit, strong FeO at basal contact, irregular/erosional contact below @47.91' to 48.07': Very fine Silty SAND, gray-brown, scattered fine sand, trace medium sand, slightly cemented, erosional contact below @48.07' to 48.41': Fining Upward Sequence of Fine-grained gray SAND grading coarser to medium to coarse SAND, some oxidation within basal
50						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2012 14030.001 UPDATED LEWIS ROSEMEAD COTINUOUS CORES.GPJ ROCKLOG2012.GDT 7/25/24

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CORE BORING LOG

BORING NO. CCB-2
PAGE 6 OF 6

PROJECT: 1515 Walnut Grove Ave, Rosemead Fault Hazard Assessment - Proposed Multifamily Development
CLIENT: Lewis Management Corporation
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 14030.001
PAGE NO.: 6 of 6
ELEVATION: Feet
DATE START: 2/14/2024
DATE FINISH: 2/14/2024
DRILLER:
PREPARED BY: KMD
LOCATION:

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	BOX NUMBER	RECOVERY Feet	RECOVERY %	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
50						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
						coarse sand @48.41' to 49.60': Fining Upward Sequence of gray-brown thinly bedded fine SAND with some medium sand, graded to fine to coarse SAND with subrounded coarse sand and gravels at base @49.60' to 50.00': Fining Upward Sequence of gray-brown, well-laminated, very fine Silty SAND to Sandy SILT, grading to fine Silty SAND, weak oxidation, slightly cemented
55						**Total Depth of Continuous Core Boring: 50 feet** **No groundwater encountered during drilling** **Boring backfilled with soil cuttings upon completion of drilling.**
60						**Notes:** **"SOIL HORIZON" and "SED. PACKAGE" Designations from Core Borings, *shown on Plate 2***

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2012 14030.001 UPDATED LEWIS ROSEMEAD COTINUOUS CORES.GPJ ROCKLOG2012.GDT 7/25/24

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CORE BORING LOG

BORING NO. CCB-3
PAGE 1 OF 6

PROJECT: 1515 Walnut Grove Ave, Rosemead Fault Hazard Assessment - Proposed Multifamily Development
CLIENT: Lewis Management Corporation
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):						
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE		ORIENTATION	CORE BARREL	
					X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 14030.001
PAGE NO.: 1 of 6
ELEVATION: Feet
DATE START: 2/15/2024
DATE FINISH: 2/15/2024
DRILLER:
PREPARED BY: KMD
LOCATION:

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	BOX NUMBER	RECOVERY Feet	RECOVERY %	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
0						@0': 4-inches Asphalt Concrete (AC) over 6-inches Aggregate Base (AB)
	0-5	1	4.17	83		**Artificial fill, undocumented: (Afu)** ***UNIT 1*** @0.83' to 1.48': Silty SAND, dark gray-brown, predominantly fine sand, some gravel (slate or hornfels) @1.48' to 4.14': Gravelly Silty SAND with Clay, brown, fine to coarse sand, fine subrounded gravel
						@4.14' to 5.00': Dark grey-brown Gravelly Silty SAND, subrounded to rounded metagranitic gravels
5						@5.00' to 5.20': With some Clay @5.20' to 5.63': Sandy Silty CLAY, mottled/banded brown and greenish-gray and olive brown, with scattered coarse sand and fine gravels, moderate reaction with HCl @5.63' to 6.59': Clayey Silty SAND, dark gray-brown, predominantly fine to very fine sand, scattered coarse sand and fine subrounded gravel, especially at top, mild to moderate reaction to HCl
	5-10	1	5	100		@6.59' to 6.73': Increased sand content and grain size to predominantly fine to medium sand, with some coarse sand @6.73' to 8.01': Sandy Silty CLAY, banded dark grey brown, reddish brown, light brown, with thin laminations or beds of clayey sand and clayey gravelly sand
						Quaternary Younger Alluvial Fan Deposits (Qyf): ***UNIT 4*** @8.01' to 9.09': Fining upward sequence of SAND, brown (10YR 4/3), fine to coarse sand with scattered gravels, grading coarser to gravelly sand with depth at 8.72', basal gravels of fine subrounded granitic composition, weathered mafic minerals on gravels @9.09' to 10.00': Fining upward sequence of SAND, grayish brown, moderately cemented, predominantly fine sand, grades to medium to coarse sand at 9.36', fine subrounded friable gravels from 9.60 to base
10						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2012 14030.001 UPDATED LEWIS ROSEMEAD COTINUOUS CORES.GPJ ROCKLOG2012.GDT 7/25/24

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CORE BORING LOG

BORING NO. CCB-3
PAGE 2 OF 6

PROJECT: 1515 Walnut Grove Ave, Rosemead Fault Hazard Assessment - Proposed Multifamily Development
CLIENT: Lewis Management Corporation
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

JOB NO.: 14030.001
PAGE NO.: 2 of 6
ELEVATION: Feet
DATE START: 2/15/2024
DATE FINISH: 2/15/2024
DRILLER:
PREPARED BY: KMD
LOCATION:

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	
					0	ANG. FROM VERT.	Total (Feet)	

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	BOX NUMBER	RECOVERY Feet	RECOVERY %	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
10						@10.00' to 12.20': (SOIL HORIZON A): A-Horizon at top; Sandy Silty CLAY, dark brown (10YR 3/3), weakly laminated, scattered coarse sand and fine gravel
	10-15	2	5	100		@12.20' to 14.84': Sandy CLAY, yellowish brown (10YR 5/4), less silt, more distinct dark laminations, increasingly sandy toward the base, to include some medium to coarse sand
15						@14.84' to 15.28': Interbedded Sandy CLAY and Clayey SAND, yellowish brown (10YR 5/4), fine to coarse sand, few to some fine gravels, especially in clayey sand (C-Horizon) @15.28' to 16.58': Fine Silty SAND with Clay, yellowish brown (10YR 5/4), grades fines to sandy silt with clay, some black spotting and banding, secondary oxidation, irregular contact below (C-Horizon)
	15-20	2	5	100		***UNIT 5*** @16.58' to 17.03': (SOIL HORIZON B): A-Horizon at top; Silty Clayey SAND with Gravel, dark yellowish brown (10YR 4/4), fine to coarse sand, fine rounded gravels at basal contact, clear contact below @17.03' to 18.00': Sandy CLAY, light brown, abundant sand at top, grades less sandy includes scattered coarse sand and fine gravels throughout, gradationally interbedded with sandy clay and clayey sand (C-Horizon) ***UNIT 6*** @18.00' to 21.59': Sandy CLAY, dark brown (10YR 3/3), predominantly fine sand, scattered medium to coarse sand and fine subrounded gravels, abundant MnO spotting, no reaction to HCl, clay films on ped faces, grades lighter olive brown by 20.75', increase in silt content and oxidation spotting by 21.00', gradational contact below
20						***Approximate Holocene/Pleistocene Boundary*** @19.5' to 20.5': ((SOIL HORIZON C): Cumulic A-Horizon **C-14 Age @ 20.5'= 12487-12705 yrs**

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2012 14030.001 UPDATED LEWIS ROSEMEAD COTINUOUS CORES.GPJ ROCKLOG2012.GDT 7/25/24

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CORE BORING LOG

BORING NO. CCB-3
PAGE 3 OF 6

PROJECT: 1515 Walnut Grove Ave, Rosemead Fault Hazard Assessment - Proposed Multifamily Development
CLIENT: Lewis Management Corporation
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 14030.001
PAGE NO.: 3 of 6
ELEVATION: Feet
DATE START: 2/15/2024
DATE FINISH: 2/15/2024
DRILLER:
PREPARED BY: KMD
LOCATION:

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	BOX NUMBER	RECOVERY Feet	RECOVERY %	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
20						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
	20-25	3	5	100		**Erosional Unconformity - Quaternary Older Alluvium (Qof):** ***UNIT 10*** @21.59' to 22.49': Sandy Silty CLAY, olive brown (2.5Y 4/4), very fine sand, hackly to weak blocky structure, scattered medium to coarse sand, gradational contact below (C-Horizon) @22.49' to 23.90': Fining upward sequence of very fine Silty SAND, light olive brown (2.5Y 5/4), strong orange oxidation-banded and diffuse, faintly laminated, some clayey zones, fine to coarse subrounded to rounded friable gravel at base (C-Horizon) @23.90' to 24.47': Fining upward sequence of Silty SAND grading to Sandy SILT, some clay, some medium to coarse sand, coarse rounded granitic gravels at base, gravels friable and breaks with hand pressure @24.47' to 24.69': Fining upward sequence of Silty SAND with some Clay, gray-brown, fine to coarse sand, indistinct bedding, fine subrounded gravels at base
25						@24.69' to 25.00': Fining upward sequence of Silty SAND with some clay, light olive brown (2.5Y 5/4), mild FeO spotting, coarse sand and fine subrounded gravels at base @25.00' to 25.79': Fining upward sequence of SAND, fine sand, scattered medium to coarse sand, moderate cementation, concentrated subrounded friable gravels at basal contact, gravels metagranitic and garnet-rich in composition @25.79' to 26.52': Fining upward sequence of fine SAND grading to fine to coarse sand, less cemented than unit above, concentrated subrounded friable gravels at basal contact, gravels metagranitic and garnet-rich in composition
	25-30	3	4.44	89		@26.52' to 28.25': SAND with Gravel to Gravelly SAND, orangish brown, fine to coarse sand, fine subrounded gravels, heavily oxidized, trace coarse gravel, dark grey zone at 27.31' to 27.50', cemented at bottom @28.25' to 29.44': SAND with gravel to Gravelly SAND, less oxidized , moderately cemented by 29.23'
30						@29.44' to 30.00': No Recovery

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2012 14030.001 UPDATED LEWIS ROSEMEAD COTINUOUS CORES.GPJ ROCKLOG2012.GDT 7/25/24

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CORE BORING LOG

BORING NO. CCB-3
PAGE 4 OF 6

PROJECT: 1515 Walnut Grove Ave, Rosemead Fault Hazard Assessment - Proposed Multifamily Development
CLIENT: Lewis Management Corporation
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):						
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE		ORIENTATION	CORE BARREL	
					X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 14030.001
PAGE NO.: 4 of 6
ELEVATION: Feet
DATE START: 2/15/2024
DATE FINISH: 2/15/2024
DRILLER:
PREPARED BY: KMD
LOCATION:

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	BOX NUMBER	RECOVERY Feet	RECOVERY %	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
30						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
	30-32.5	4	2.5	100		@30.00' to 30.44': Fining upward sequence of fine SAND grading to medium to coarse SAND, scattered medium to coarse sand, dark gray to black, abundant MnO at base, clear contact @30.44' to 30.96': Fining upward sequence of fine SAND, orange brown, scattered medium to coarse sand, grades to fine to coarse sand at 30.72', fine subrounded to rounded friable gravels, poorly cemented @30.96' to 31.30': Fining upward sequence of fine to coarse SAND grading to fine subrounded gravels at base, grayish brown, unconsolidated, metagranitic gravel composition, oxidized zone at base @31.30' to 31.67': Fining upward sequence of fine SAND, orange brown, some medium to coarse sand, coarsening downward to subrounded gravels, unconsolidated
	32.5-35	4	2.5	100		@31.67' to 32.36': Fining upward sequence of fine SAND, scattered medium to coarse sand, grades to fine to coarse sand and fine to coarse subrounded gravel at 32.10', metagranitic gravels @32.36' to 32.79': Fining upward sequence of fine SAND, dark orange brown, more oxidized than unit above, grades to fine to coarse sand and fine to coarse rounded gravel @32.79' to 33.88': Fining upward sequence of fine SAND, light gray-brown, slight cementation, weakly laminated, increased grain size at 33.70' to fine to medium sand with fine subrounded gravels @33.88' to 34.89': Fine to very fine SAND, light brown, with few white laminations, with some medium to coarse sand and trace fine rounded gravel, massive, gradual contact below
35						@34.85' to 35.22': becomes moderately cemented @35.22' to 35.85': ((SED. PACKAGE F) Sandy SILT, dark yellowish brown (10YR 4/6), FeO banding, coarser sand in banded zone, gradational contact below
	35-37.5	4	2.5	100		@35.85' to 37.65': Interlaminated SILT and Silty SAND, olive brown (2.5Y 4/4), weak FeO staining, increased clay content from 37.44 to basal contact
	37.5-40	4	2.5	100		@37.65' to 39.00': SAND, light orangish brown, very fine to fine sand, micaceous, thin gleyed bands at 38.37' and 38.65', uncemented, grades to reddish brown silty fine sand at 38.30', fine micas, sharp contact below @39.00' to 39.36': Sandy SILT, with variable Clay content, banded gray and dark orange brown (gleyed), micaceous, gradational contact below @39.36' to 40.62': SAND with Silt to Silty SAND, light orange brown, very fine sand, micaceous, slightly cemented, slightly laminated, less FeO from 40.25' to base, gradational contact below
40						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2012 14030.001 UPDATED LEWIS ROSEMEAD COTINUOUS CORES.GPJ ROCKLOG2012.GDT 7/25/24

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CORE BORING LOG

BORING NO. CCB-3
PAGE 5 OF 6

PROJECT: 1515 Walnut Grove Ave, Rosemead Fault Hazard Assessment - Proposed Multifamily Development
CLIENT: Lewis Management Corporation
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 14030.001
PAGE NO.: 5 of 6
ELEVATION: Feet
DATE START: 2/15/2024
DATE FINISH: 2/15/2024
DRILLER:
PREPARED BY: KMD
LOCATION:

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	BOX NUMBER	RECOVERY Feet	RECOVERY %	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
40						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
	40-42.5	5	2.5	100		@39.36' to 40.62': SAND with Silt to Silty SAND, light orange brown, very fine sand, micaceous, slightly cemented, slightly laminated, less FeO from 40.25' to base, gradational contact below @40.62' to 41.65': Very fine Silty SAND to Sandy SILT, gleyed grey and dark orange brown, massive, micaceous, krotovina filled with sand at 40.79' to 40.95' and 41.41' to 41.55' @41.65' to 42.83': Silty SAND to SAND with silt, yellowish brown (10YR 5/6), uncemented, predominantly fine sand, with some medium and coarse sand, patches of FeO staining, and of gleyed bands
	42.5-45	5	2.5	100		@42.83' to 44.73': ((SED. PACKAGE G) Fine SAND, olive brown (2.5Y 4/4), primarily uncemented, grades to cemented at 43.17' to 43.52 and 44.08' to 44.56'
45						@44.73' to 45.00': SILT with Sand, light olive brown, slight cementation, laminated @45.00' to 46.18': Silty SAND, banded orange brown and grey, predominantly fine sand, micaceous, laminations of clean sand, clear contact below
	45-47.5	5	2.5	100		@46.18' to 46.43': SAND, light brown, thin dark grey laminations, fine sand, truncates unit below @46.43' to 47.75': Silty SAND, banded/laminated dark gray and grey brown, very fine sand, fine cross bedding, grading to sand at base
	47.5-50	5	2.5	100		@47.75' to 47.83': Laminated SILT, dark gray, micaceous, FeO on laminated planes, sand laminations, clear contact below @47.83' to 48.39': SAND, light brown with gray laminations, strong yellow oxidation at top, very fine to fine sand, micaceous, slight cross bedding, erosional contact below @48.39' to 48.94': Laminated Sandy SILT, dark gray and brown, very fine sand, micaceous, thin gray sand laminations, gradational contact below @49.34' to 49.65': Laminated grey and brown SAND, grading downward to SAND then Gravelly SAND, strong yellow oxidation at base, coarse sand at basal contact, erosional contact below
50						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2012 14030.001 UPDATED LEWIS ROSEMEAD COTINUOUS CORES.GPJ ROCKLOG2012.GDT 7/25/24

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CORE BORING LOG

BORING NO. CCB-3
PAGE 6 OF 6

PROJECT: 1515 Walnut Grove Ave, Rosemead Fault Hazard Assessment - Proposed Multifamily Development
CLIENT: Lewis Management Corporation
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 14030.001
PAGE NO.: 6 of 6
ELEVATION: Feet
DATE START: 2/15/2024
DATE FINISH: 2/15/2024
DRILLER:
PREPARED BY: KMD
LOCATION:

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	BOX NUMBER	RECOVERY Feet	RECOVERY %	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
50						@49.65' to 49.77': SAND to SAND with silt, oxidized, faintly laminated, fine sand @49.77' to 49.82': Laminated gray-brown SILT @49.82' to 50.00': SAND, grey brown, micaceous, very fine to fine sand
						Total Depth of Continuous Core Boring: 50 feet **No groundwater encountered during drilling** **Boring backfilled with soil cuttings upon completion of drilling.**
						Notes: **"SOIL HORIZON" and "SED. PACKAGE" Designations from Core Borings, *shown on Plate 2*** **"UNIT" Designations from Fault Trench FT-3/FT-4, *shown on Plates 3C to 3E***
55						
60						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2012 14030.001 UPDATED LEWIS ROSEMEAD COTINUOUS CORES.GPJ ROCKLOG2012.GDT 7/25/24

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LEIGHTON

CORE BORING LOG

BORING NO. **CCB-4**
PAGE 1 OF 6

PROJECT: **1515 Walnut Grove Ave, Rosemead Fault Hazard Assessment - Proposed Multifamily Development**
CLIENT: **Lewis Management Corporation**
CONTRACTOR: **Martini Drilling Corporation**
EQUIPMENT USED: **CME-75**

GROUNDWATER:		DEPTH TO (Feet):				ORIENTATION	CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: **14030.001**
PAGE NO.: **1 of 6**
ELEVATION: **Feet**
DATE START: **2/15/2024**
DATE FINISH: **2/15/2024**
DRILLER:
PREPARED BY: **KMD**
LOCATION:

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	BOX NUMBER	RECOVERY Feet	RECOVERY %	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
0						@0': 4-inches Asphalt Concrete (AC) over 6-inches Aggregate Base (AB)
	0-5	1	4.17	83		**Artificial fill, undocumented: (Afu)** ***UNIT 1*** @0.83' to 3.05': Silty Gravelly SAND, dark gray, predominantly fine sand with some medium to coarse sand and fine subangular gravels, fiberglass at 2.77', slight reaction to HCl @3.05' to 5.00': Becomes more brown, less gravelly, strong to moderate reaction to HCl, especially finer grained fragments, becomes darker gray at 4.07'
5						@5.00' to 6.00': Sandy CLAY, dark gray brown, fine to coarse sand and scattered fine subrounded gravels, slight reaction to HCl from 5.65' to 5.90' @6.00' to 7.79': Visible lifts, fibrous gravel at 7.25' (possible asbestos), gravelly at base
	5-10	1	5	100		@7.79' to 7.95': Banded/laminated Sandy SILT, orange-brown and dark brown, very fine sand, no reaction to HCl, clear contact below **Quaternary Younger Alluvial Fan Deposits (Qyf):** ***UNIT 4*** @7.95' to 9.82': Sandy Gravelly CLAY, dark brown (10YR 3/3), massive, fine to coarse sand and fine subrounded gravels
10						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

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CORE BORING LOG

BORING NO. **CCB-4**
PAGE 2 OF 6

PROJECT: **1515 Walnut Grove Ave, Rosemead Fault Hazard Assessment - Proposed Multifamily Development**
CLIENT: **Lewis Management Corporation**
CONTRACTOR: **Martini Drilling Corporation**
EQUIPMENT USED: **CME-75**

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: **14030.001**
PAGE NO.: **2 of 6**
ELEVATION: **Feet**
DATE START: **2/15/2024**
DATE FINISH: **2/15/2024**
DRILLER:
PREPARED BY: **KMD**
LOCATION:

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	BOX NUMBER	RECOVERY Feet	RECOVERY %	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
10						@9.82' to 15.50': (**SOIL HORIZON A**): A-Horizon at top; Silty Sandy CLAY, brown (10YR 4/3), predominantly very fine sand, scattered coarse sand and fine granitic gravels, abundant thin black banding or laminations, coarsen in grain size at 11.00', grades to yellowish brown (10YR 5/3) by 13.05', grades more silty and less clay by 15.40', hackly soil structure, gradational contact below
	10-15	2	5	100		
15						***UNIT 5*** @15.50' to 18.48': Grades to SILT, dark yellowish brown (10YR 4/4), becomes more sandy at 17.95' to 18.48', grades finer and clayey at basal contact, gradational contact below
	15-20	2	5	100		
20						@18.48' to 19.71' Clayey Sandy SILT, dark yellowish brown (10YR 4/4), some blocky structure, clay films on gravels @19.53': (**SOIL HORIZON B**): A-Horizon, dark yellowish brown (10YR 3/4)

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2012 14030.001 UPDATED LEWIS ROSEMEAD COTINUOUS CORES.GPJ ROCKLOG2012.GDT 7/25/24

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LEIGHTON

CORE BORING LOG

BORING NO. CCB-4
PAGE 3 OF 6

PROJECT: 1515 Walnut Grove Ave, Rosemead Fault Hazard Assessment - Proposed Multifamily Development
CLIENT: Lewis Management Corporation
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 14030.001
PAGE NO.: 3 of 6
ELEVATION: Feet
DATE START: 2/15/2024
DATE FINISH: 2/15/2024
DRILLER:
PREPARED BY: KMD
LOCATION:

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	BOX NUMBER	RECOVERY Feet	RECOVERY %	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
20						**UNIT 6** @19.71' to 21.23': Sandy CLAY, dark brown (10YR 3/3), massive, fine to coarse sand, scattered fine subrounded gravels, grades lighter and less clayey at 20.27', MnO spotting from 20.50' to 21.20'
						@21.23' to 21.31': Clayey SAND lens, grey, fine to coarse sand, dipping ~20 to 25º, some MnO spots
						Approximate Holocene/Pleistocene Boundary @21.31' to 23.54': CLAY, dark brown (10YR 3/3), plastic, heavy MnO and FeO oxidation, fine to coarse sand zone from 22.15' to 22.64', gradational contact below @22.52':(**SOIL HORIZON C**): A-Horizon
	20-25	3	4.9	98		
						Erosional Unconformity - Quaternary Older Alluvium (Qof): **UNIT 10** @23.54' to 23.97': Clayey SILT, dark yellowish brown (10YR 4/4), clayey zones, very heavily oxidized from 23.81' to 23.92', gradational contact below
						@23.97' to 24.87': CLAY with Silt, heavy MnO and FeO staining, laminated
25						@24.87' to 25.00': No Recovery
						@25.00' to 25.22': Silty CLAY, olive brown (2.5Y 4/4) with heavy red-orange oxidation, very fine sand, blocky structure, clay films on ped faces
						@25.22' to 25.92': Silty SAND with Clay, light olive gray, heavily oxidized at top of unit, very fine sand, weakly bedded, weak FeO throughout, gradational contact below
						@25.92' to 26.13': Sandy CLAY, gray brown, fine sand, scattered medium to coarse sand, gradational contact below
						@26.13' to 26.31': Gray-brown Silty SAND, fine to medium sand, some coarse sand, slightly cemented, clear contact below
						@26.31' to 28.22': Silty CLAY, light grayish brown with abundant FeO oxidation bands, sandy zone, fine to coarse sand at 26.94' to 26.96', grades to sandy silty clay by 27.61', coarse subrounded sand at base of unit
	25-30	3	5	100		
						@28.22' to 28.38': Sandy SILT, light brown, fine sand, some FeO staining
						@28.38' to 30.41': Sandy SILT, some clay, olive gray, some FeO banding increasing with depth, predominantly fine sand, some medium to coarse sand, some fine subrounded gravels, coarse sandy zones at 28.96' to 29.17' and 29.67' to 29.75', faintly bedded, some heavily weathered and decomposing gravels, grades less sandy and more clayey from 30.13' to 30.41'
30						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2012 14030.001 UPDATED LEWIS ROSEMEAD COTINUOUS CORES.GPJ ROCKLOG2012.GDT 9/17/24

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LEIGHTON

CORE BORING LOG

BORING NO. CCB-4
PAGE 4 OF 6

PROJECT: 1515 Walnut Grove Ave, Rosemead Fault Hazard Assessment - Proposed Multifamily Development
CLIENT: Lewis Management Corporation
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):				ORIENTATION	CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 14030.001
PAGE NO.: 4 of 6
ELEVATION: Feet
DATE START: 2/15/2024
DATE FINISH: 2/15/2024
DRILLER:
PREPARED BY: KMD
LOCATION:

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	BOX NUMBER	RECOVERY Feet	RECOVERY %	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
30						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
	30-32.5	4	2.5	100		@30.41' to 33.01': Clayey SAND with zones of gravels, gray-brown with orange brown FeO staining, fine to coarse sand, fine subrounded to rounded gravels concentrated at 32.70' to 33.01'
	32.5-35	4	2.5	100		@33.01' to 33.41': Clayey SAND, gray-brown, thinly bedded to laminated, fine sand predominates, areas with medium to coarse sand, some scattered fine gravels, sandy laminations, grades to sandy clay to fine silty sand at the base, gradational contact @34.82' to 35.00': Sandy CLAY cap from 33.41' to 33.60' followed by a series of thin fining upward sequences of laminated Silty SAND with interbeds of gravel and coarse sand, light orangish brown, fine sand, with some medium to coarse sand and fine subrounded gravel, minor oxidation rind on gravels
35						
	35-37.5	4	2.5	100		@35.00' to 36.04': SAND, light gray brown, uncemented, predominantly fine sand, some medium to coarse sand, faintly bedded, thin FeO stained bed at 35.52', black minerals at basal contact, fine gravels at base, erosional contact from 36.04' to 36.17' @36.04' to 36.96': ((SED. PACKAGE F) Very fine Silty SAND, olive brown (2.5Y 4/4) with abundant FeO staining, diffuse, very fine sand, trace coarse sand at base, faintly bedded @36.96' to 37.41': SAND, olive brown (2.5Y 4/3), slight cementation, fine sand, scattered medium to coarse sand, clear contact below
	37.5-40	4	2.5	100		@37.41' to 37.81': SAND with Silt, grey-brown, predominantly fine sand, some medium to coarse sand, gradational contact below @37.81' to 38.24': Silty SAND, gray brown, massive, very fine sand, grades coarser at base to medium sand @38.24' to 39.10': Fining upward sequence, SAND, light brown, fine sand, with few medium sand, grading to fine to coarse sand, oxidation staining increasing with depth and along bedding planes, erosional contact below @39.10' to 39.81': Grades from Sandy SILT to SILT, gray, interbeds, gradational, sharp to diffuse FeO staining on laminations, strong oxidation on contact below
40						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2012 14030.001 UPDATED LEWIS ROSEMEAD COTINUOUS CORES.GPJ ROCKLOG2012.GDT 7/25/24

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LEIGHTON

CORE BORING LOG

BORING NO. CCB-4
PAGE 5 OF 6

PROJECT: 1515 Walnut Grove Ave, Rosemead Fault Hazard Assessment - Proposed Multifamily Development
CLIENT: Lewis Management Corporation
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 14030.001
PAGE NO.: 5 of 6
ELEVATION: Feet
DATE START: 2/15/2024
DATE FINISH: 2/15/2024
DRILLER:
PREPARED BY: KMD
LOCATION:

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	BOX NUMBER	RECOVERY Feet	RECOVERY %	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
40	40-42.5	5	2.5	100		The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual. @39.81' to 40.10': SAND with Silt, grading to very fine silty sand with depth, olive brown with orange-brown FeO stains, moderately consolidated, micaceous @40.10' to 40.15': SILT with Clay, olive gray, oxidized at upper and lower contact @40.15' to 40.84': Laminated SAND, olive gray, oxidized laminations, slight cementation @40.84' to 40.97': SAND bed, light orangish brown, very fine to fine sand, unconsolidated @40.97' to 41.14': Laminated Silty SAND, olive gray with strong orange banding, very fine sand, gradational contact below @41.14' to 41.37': Very fine SAND, orange brown, unconsolidated, scattered medium to coarse sand, no reaction to HCl, micaceous @41.37' to 41.99': Laminated Silty SAND, gray and orangish brown, very fine sand, consolidated, no reaction to HCl, gradational contact below @41.99' to 43.14': Fining upward sequence: SAND with Silt, light gray/orange brown, uncemented/unconsolidated, fine to medium sand, coarsens with depth, no reaction to HCl, faintly bedded, fine to coarse sand with fine subrounded gravels at base, gradational contact @43.14' to 43.35': Fining upward sequence of fine to very fine laminated SAND, orange brown, few medium to coarse sand, grades to gray sand, predominantly fine sand, grades coarser with depth to medium sand, oxidized at base, erosional contact @43.35' to 43.53': ((SED. PACKAGE G) Silty SAND, olive brown (2.5Y 4/4), predominantly fine sand, some medium sand, few coarse sand, moderate consolidation, no reaction to HCl, weak gleyed zones @43.53' to 43.64': Silty SAND, grey-brown, very fine to fine sand, consolidated, no reaction to HCl @43.64' to 45.41': SAND with Silt to Silty SAND, light grey-brown, predominantly fine sand, zones with significant medium to coarse sand, unconsolidated except @43.95' to 44.19' weakly cemented, no reaction to HCl, angular contact below @45.41' to 46.06': Fining upward sequence of very fine Silty SAND, olive brown with patchy FeO, weakly laminated, no reaction to HCl, grades coarser and less fines with depth to a light tan sand, clear contact at base @46.06' to 46.65': Interlaminated SAND and Sandy SILT, orange brown and gray, heavy FeO especially at laminated contacts, erosional contact below @46.65' to 46.80': Fine SAND bed, light orangish brown with black bands, no reaction to HCl, faintly laminated, oxidized, erosional contact below @46.80' to 50.00': Gradationally interbedded Silty SAND and Sandy SILT, banded dark grey brown with yellowish to orangish brown bands, weak oxidation, very fine to fine sand, few thin laminations of sand, no reaction to HCl, faint cross bedding
45	42.5-45	5	2.5	100		
	45-47.5	5	2.5	100		
	47.5-50	5	2.5	100		
50						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2012 14030.001 UPDATED LEWIS ROSEMEAD COTINUOUS CORES.GPJ ROCKLOG2012.GDT 7/25/24

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LEIGHTON

CORE BORING LOG

BORING NO. **CCB-4**
PAGE 6 OF 6

PROJECT: **1515 Walnut Grove Ave, Rosemead Fault Hazard Assessment - Proposed Multifamily Development**
CLIENT: **Lewis Management Corporation**
CONTRACTOR: **Martini Drilling Corporation**
EQUIPMENT USED: **CME-75**

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: **14030.001**
PAGE NO.: **6 of 6**
ELEVATION: **Feet**
DATE START: **2/15/2024**
DATE FINISH: **2/15/2024**
DRILLER:
PREPARED BY: **KMD**
LOCATION:

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	BOX NUMBER	RECOVERY Feet	RECOVERY %	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
50						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
						Total Depth of Continuous Core Boring: 50 feet **No groundwater encountered during drilling** **Boring backfilled with soil cuttings upon completion of drilling.** **Notes:** **"SOIL HORIZON" and "SED. PACKAGE" Designations from Core Borings, *shown on Plate 2*** **"UNIT" Designations from Fault Trench FT-3/FT-4, *shown on Plates 3C to 3E***
55						
60						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2012 14030.001 UPDATED LEWIS ROSEMEAD COTINUOUS CORES.GPJ ROCKLOG2012.GDT 7/25/24

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CORE BORING LOG

BORING NO. CCB-5
PAGE 1 OF 6

PROJECT: 1515 Walnut Grove Ave, Rosemead Fault Hazard Assessment - Proposed Multifamily Development
CLIENT: Lewis Management Corporation
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 14030.001
PAGE NO.: 1 of 6
ELEVATION: Feet
DATE START: 2/16/2024
DATE FINISH: 2/16/2024
DRILLER:
PREPARED BY: KMD
LOCATION:

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	BOX NUMBER	RECOVERY Feet	RECOVERY %	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
0						@0': 4-inches Asphalt Concrete (AC) over 6-inches Aggregate Base (AB)
						Artificial fill, undocumented: (Afu) @0.83' to 1.75': SAND with Clay, orange-brown, fine to medium sand, some coarse sand and subrounded fine gravel, no reaction to HCl
	0-5	1	4.17	83		@1.75' to 5.00': Silty SAND with Clay and Gravel, grayish brown, predominantly fine sand, scattered fine gravels, becomes lighter-colored by 3.55', strong reaction to HCl from 1.75' to 3.30', mild reaction to HCl from 3.30' to 3.55'
5						@5.00' to 5.14': Silty SAND with Clay and Gravel, dark brown, predominantly fine sand, some medium to coarse sand and fine subrounded to rounded gravel, moderate reaction to HCl @5.14' to 6.49': Sandy Silty CLAY, dark brown with brown sandy thin beds that react strongly to HCl, predominantly fine sand, some medium to coarse sand
	5-10	1	5	100		@6.49' to 7.15': Sandy CLAY with silt, orangish brown, sandy bed from 6.49' to 6.54', sandy-gravelly bed from 6.64' to 6.71', moderate reaction to HCl, gradational contact below @7.15' to 7.75': Sandy CLAY, grading to Clayey SAND, light brown, fine to coarse sand, scattered fine subrounded to rounded gravels, gravelly at base, moderate reaction to HCl
						Quaternary Younger Alluvial Fan Deposits (Qyf): @7.75' to 10.84': Sandy Silty CLAY, brown (10YR 4/3) with diffuse darker grey-brown banding, predominantly fine sand, with some medium to coarse sand, scattered fine subrounded to rounded gravels, massive to weakly bedded, slightly reactive to HCl from 7.75' to 8.04' gradational contact below @10.00': (SOIL HORIZON A): A-Horizon, brown (10YR 3/3)
10						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2012 14030.001 UPDATED LEWIS ROSEMEAD COTINUOUS CORES.GPJ ROCKLOG2012.GDT 7/25/24

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CORE BORING LOG

BORING NO. **CCB-5**
PAGE 2 OF 6

PROJECT: **1515 Walnut Grove Ave, Rosemead Fault Hazard Assessment - Proposed Multifamily Development**
CLIENT: **Lewis Management Corporation**
CONTRACTOR: **Martini Drilling Corporation**
EQUIPMENT USED: **CME-75**

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: **14030.001**
PAGE NO.: **2 of 6**
ELEVATION: **Feet**
DATE START: **2/16/2024**
DATE FINISH: **2/16/2024**
DRILLER:
PREPARED BY: **KMD**
LOCATION:

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	BOX NUMBER	RECOVERY Feet	RECOVERY %	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
10						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
						@10.84' to 12.28': Brown (10YR 4/3), increased clay content, better consolidation, more distinct banding, gradational contact below, minor translocated ped faces, BT soil horizon to contact below
	10-15	2	5	100		@12.28' to 16.08': Silty Sandy CLAY, light orangish brown, very fine sand throughout, scattered, with zones of coarse sand and fine gravel, scattered individual coarse sand and fine gravels, some concentrated zones of coarse sand and fine gravels, weak clay films on gravels, no reaction to HCl
15						
						@16.08' to 16.52': Very Silty SAND, fine to coarse sand and fine subrounded gravels, grading to sandy silt with very fine sand and scattered coarse sand and fine gravel, fine subrounded gravels at base of contact, fining upward sequence
						@16.52' to 17.09': Sandy SILT, light orange brown, scattered coarse sand, gradational contact below
						@17.09' to 17.55': Transitional zone Sandy Silty CLAY, brown, gradationally interbedded, thin beds of fine to coarse sand
	15-20	2	5	100		@17.55' to 20.00': (**SOIL HORIZON B**): A-Horizon at top; Sandy Silty CLAY, dark yellowish brown (10YR 3/4), massive, with fine to coarse sand and scattered fine gravels, decreased sand content from 18.16 ' to 18.77'
20						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2012 14030.001 UPDATED LEWIS ROSEMEAD COTINUOUS CORES.GPJ ROCKLOG2012.GDT 7/25/24

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CORE BORING LOG

BORING NO. CCB-5
PAGE 3 OF 6

PROJECT: 1515 Walnut Grove Ave, Rosemead Fault Hazard Assessment - Proposed Multifamily Development
CLIENT: Lewis Management Corporation
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 14030.001
PAGE NO.: 3 of 6
ELEVATION: Feet
DATE START: 2/16/2024
DATE FINISH: 2/16/2024
DRILLER:
PREPARED BY: KMD
LOCATION:

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	BOX NUMBER	RECOVERY Feet	RECOVERY %	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
20						@20.00' to 21.09': Sandy CLAY, dark brown (10YR 3/3), fine sand with pockets of fine to coarse sand from 20.00' to 20.20', highly oxidized FeO nodules at top of unit, laminations throughout, decreased sand content with depth and grades darker, gradational contact below
						Approximate Holocene/Pleistocene Boundary
						@21.09' to 21.33': (**SOIL HORIZON C**): A-Horizon at 21.19', very dark grayish brown (10YR 3/2); CLAY, dark brown, very plastic, abundant FeO spots and veins, some black spotting (presumed charcoal)
						@21.33' to 21.79': Sandy CLAY with Silt, grey-brown, predominantly fine sand, with scattered coarse sand, oxidized FeO nodules, very heavy black oxidation from 21.59' to 21.64'
	20-25	3	5	100		**Erosional Unconformity - Quaternary Older Alluvium (Qof):**
						@21.79' to 21.95': Very Silty SAND, olive brown (2.5Y 4/4), very fine sand, heavy black oxidation clots, angular contact below
25						@21.95' to 30.24': CLAY with Silt, light olive brown (2.5Y 5/3), thinly laminated, abundant FeO veins, decrease in clay content with depth, grades to silt
	25-30	3	5	100		
30						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2012 14030.001 UPDATED LEWIS ROSEMEAD COTINUOUS CORES.GPJ ROCKLOG2012.GDT 7/25/24

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LEIGHTON

CORE BORING LOG

BORING NO. CCB-5
PAGE 4 OF 6

PROJECT: 1515 Walnut Grove Ave, Rosemead Fault Hazard Assessment - Proposed Multifamily Development
CLIENT: Lewis Management Corporation
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 14030.001
PAGE NO.: 4 of 6
ELEVATION: Feet
DATE START: 2/16/2024
DATE FINISH: 2/16/2024
DRILLER:
PREPARED BY: KMD
LOCATION:

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	BOX NUMBER	RECOVERY Feet	RECOVERY %	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
30						@30.24' to 31.28': Sandy SILT with Clay, olive brown, diffuse FeO stains, very fine sand, irregular contact below
	30-35	4	3.84	77		@31.28' to 31.53': Sandy CLAY, incised by gravelly sand at steep angle, dark grayish brown, fine to coarse sand, fine oxidized banding, fine subrounded gravel at basal contact @31.53' to 31.77': Sandy CLAY, grayish brown, fine to coarse sand, slightly cemented, FeO oxidation, grades to Sandy Silty CLAY with fine subrounded basal gravels @31.77' to 32.15': Gravelly SAND, gray-brown, grades finer @32.15' to 32.6': SAND, gray-brown, fine sand, weakly bedded to laminated, slightly cemented, grades slightly coarser with depth @32.6' to 33.84': SAND with interbeds of Silty SAND and Sandy SILT, laminated to thinly bedded, fine sand, FeO stains, some black laminations, series of fining upward sequences from 32.60'-33.08', 33.08'-33.40', 33.40'-33.84'
						@33.84' to 35.00': No Recovery
35						@35.00' to 35.87': Silty CLAY with Sand, grey-brown, massive, FeO stains, diffuse, gradational contact below
	35-37.5	4	2.5	100		@35.87' to 36.02': SAND, light brown, fine sand, unconsolidated, fining upward sequence @36.02' to 36.60': Interlaminated SAND, light brown, and Silty CLAY, gray, fine sand, scattered coarse sand and fine gravels @36.60' to 39.01': Gravelly SAND with Silt, light grey-brown, fine to coarse sand, fine subrounded to rounded gravels, some coarse (2.25-inch diameter) metagranitic gravel from 36.63' to 37.79', some friable gravels, heavily oxidized mafic minerals, grades finer towards basal contact
	37.5-40	4	2.5	100		@39.01' to 39.66': Silty SAND, gray-brown, predominantly fine sand, with scattered medium to coarse sand, clear contact below
40						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2012 14030.001 UPDATED LEWIS ROSEMEAD COTINUOUS CORES.GPJ ROCKLOG2012.GDT 7/25/24

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CORE BORING LOG

BORING NO. **CCB-5**
PAGE 5 OF 6

PROJECT: **1515 Walnut Grove Ave, Rosemead Fault Hazard Assessment - Proposed Multifamily Development**
CLIENT: **Lewis Management Corporation**
CONTRACTOR: **Martini Drilling Corporation**
EQUIPMENT USED: **CME-75**

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: **14030.001**
PAGE NO.: **5 of 6**
ELEVATION: **Feet**
DATE START: **2/16/2024**
DATE FINISH: **2/16/2024**
DRILLER:
PREPARED BY: **KMD**
LOCATION:

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	BOX NUMBER	RECOVERY Feet	RECOVERY %	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
40						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
	40-42.5	5	2.5	100		@39.66' to 40.67': Clayey GRAVEL, gray, matrix-supported, fine to coarse sand and fine subrounded gravels @40.67' to 41.40': Sandy GRAVEL, light gray brown, uncemented, fine to coarse sand and fine subangular to subrounded gravel, cobble at base @41.40' to 42.14': Fining upward sequence, Sandy SILT, banded gray and orange brown, grading to laminated Silty SAND to SAND, coarsening to gravelly sand @42.14' to 42.48': Fining upward sequence, Silty SAND, predominantly fine sand, scattered medium sand
	42.5-45	5	2.5	100		@42.48' to 42.90': Fine Silty SAND, fining upward sequence, grading coarser with depth, coarse gravel at erosional contact below @42.90' to 45.80': Capped by very fine Sandy SILT, gray-brown, diffuse oxidation banding on bedding horizons
45						
	45-47.5	5	2.5	100		@45.80' to 46.06': SAND with Silt, predominantly fine sand, scattered medium to coarse sand, light cementation, gradational contact below @46.06' to 47.16': SAND to SAND with Gravel, gray-brown, fine to coarse sand, fine subrounded gravel, lightly cemented, weak gradational bedding, clear contact below @47.16' to 50.00': Clayey Sandy SILT, olive brown with orange-brown and dark brown bands, sandy silt beds and laminations, scattered coarse sand
	47.5-50	5	2.5	100		
50						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2012 14030.001 UPDATED LEWIS ROSEMEAD COTINUOUS CORES.GPJ ROCKLOG2012.GDT 7/25/24

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CORE BORING LOG

BORING NO. **CCB-5**
PAGE 6 OF 6

PROJECT: **1515 Walnut Grove Ave, Rosemead Fault Hazard Assessment - Proposed Multifamily Development**
CLIENT: **Lewis Management Corporation**
CONTRACTOR: **Martini Drilling Corporation**
EQUIPMENT USED: **CME-75**

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: **14030.001**
PAGE NO.: **6 of 6**
ELEVATION: **Feet**
DATE START: **2/16/2024**
DATE FINISH: **2/16/2024**
DRILLER:
PREPARED BY: **KMD**
LOCATION:

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	BOX NUMBER	RECOVERY Feet	RECOVERY %	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
50						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
						Total Depth of Continuous Core Boring: 50 feet **No groundwater encountered during drilling** **Boring backfilled with soil cuttings upon completion of drilling.** **Notes:** **"SOIL HORIZON" Designations from Core Borings, *shown on Plate 2***
55						
60						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2012 14030.001 UPDATED LEWIS ROSEMEAD COTINUOUS CORES.GPJ ROCKLOG2012.GDT 7/25/24

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CORE BORING LOG

BORING NO. CCB-6
PAGE 1 OF 6

PROJECT: 1515 Walnut Grove Ave, Rosemead Fault Hazard Assessment - Proposed Multifamily Development
CLIENT: Lewis Management Corporation
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):				ORIENTATION	CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 14030.001
PAGE NO.: 1 of 6
ELEVATION: Feet
DATE START: 2/16/2024
DATE FINISH: 2/16/2024
DRILLER:
PREPARED BY: KMD
LOCATION:

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	BOX NUMBER	RECOVERY Feet	RECOVERY %	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
0						@0': 4-inches Asphalt Concrete (AC) over 6-inches Aggregate Base (AB)
	0-5	1	4.17	83		**Artificial fill, undocumented: (Afu)** @0.83' to 2.91': Clayey Silty SAND with gravel, mottled gray-brown and orange brown, predominantly very fine to fine sand, scattered coarse sand, mild reaction to HCl @2.91' to 3.53': Sandy SILT, light gray-brown, very fine sand, micaceous, fine subrounded gravels at 3.44' to 3.53', high reaction to HCl @3.53' to 5.00': Sandy SILT, dark gray-brown, strong reaction to HCl, CaCO3-lined pockets
5						@5.00' to 5.81': Silty SAND, light gray-brown, fine sand, some scattered medium to coarse sand, massive, subrounded to subangular gravels, strong reaction to HCl @5.81' to 7.46': Sandy SILT, gray-brown, massive, predominantly fine sand, some fine to coarse sand, scattered fine to medium subrounded to subangular gravels, concentrated gravels at 7.27' to 7.46'
	5-10	1	5	100		@7.46' to 7.92': Sandy SILT, light brown to gray-brown, massive, fine sand, scattered medium to coarse sand and fine subrounded gravel, no reaction to HCl @7.92' to 8.04': Silty SAND, light gray-brown, very fine sand, scattered coarse sand, fine subrounded to rounded gravel **Quaternary Younger Alluvial Fan Deposits (Qyf):** @8.04' to 8.37': Sandy SILT, dark yellowish brown (10YR 4/4), very fine to fine sand, subrounded gravels at base, faint FeO laminations at upper contact @8.37' to 8.98': Sandy SILT with Clay, dark yellowish brown (10YR 3/4), predominantly very fine sand, weakly laminated, MnO along bedding planes, minor FeO stained laminations, scattered coarse sand and fine subrounded gravel, concentrated gravel at base of unit, no reaction to HCl
10						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2012 14030.001 UPDATED LEWIS ROSEMEAD COTINUOUS CORES.GPJ ROCKLOG2012.GDT 7/25/24

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CORE BORING LOG

BORING NO. CCB-6
PAGE 2 OF 6

PROJECT: 1515 Walnut Grove Ave, Rosemead Fault Hazard Assessment - Proposed Multifamily Development
CLIENT: Lewis Management Corporation
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):						
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE		ORIENTATION	CORE BARREL	
					X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 14030.001
PAGE NO.: 2 of 6
ELEVATION: Feet
DATE START: 2/16/2024
DATE FINISH: 2/16/2024
DRILLER:
PREPARED BY: KMD
LOCATION:

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	BOX NUMBER	RECOVERY Feet	RECOVERY %	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
10						@8.98' to 9.27': Increased fine sand and gravel, decreased clay content. @9.27' to 10.34': (**SOIL HORIZON A**): A-Horizon at top; Sandy Silty CLAY, brown (10YR 4/3), predominantly very fine sand, weakly laminated, MnO spotting along bedding planes, grades sandier with depth
						@10.34' to 11.13': Clayey Silty SAND, dark brown to brown, predominantly fine sand, some medium to coarse sand, fine subrounded gravel, few pockets of CaCO3 that react mildly to HCl, gradational contact below
						@11.13' to 12.02': Grades slightly lighter brown, increased coarser sand and fine subrounded gravels
	10-15	2	5	100		@12.02' - 12.47': Clayey SAND, brown, predominantly fine sand, some medium to coarse sand, scattered fine subrounded gravels
						@12.47' to 13.03': Sandy CLAY, brown and dark brown, thinly bedded, fine sand, scattered medium to coarse sand, gradational contact below
						@13.03' to 14.06': Silty SAND with Clay, orange brown, fine to medium sand, some coarse sand, scattered fine subrounded gravels, angular contact below
						@14.06' to 14.61': Clayey SILT with Sand, light brown, very fine sand, grades coarser with depth (fining upward sequence), grading to scattered fine to medium sand, scattered fine subrounded gravels from 14.54' to 14.61', dark brown clayey laminations from 14.40' to 14.45'
15						@14.61' to 15.29': Sandy CLAY, orange brown, fine sand, massive, scattered coarse sand and fine subrounded to subangular granitic gravel, fining upward sequence
						@15.29' to 15.61': Silty Sandy CLAY, orange brown, graded gravelly at 15.49', fining upward sequence, gradational contact below
						@15.61' to 17.52': Clayey SILT with Sand, orange brown, faintly laminated, MnO spots along bedding planes, fine micas, clear contact below
	15-20	2	5	100		@17.52' to 20.00': (**SOIL HORIZON B**): A-Horizon at top; Silty CLAY with Sand, dark brown (10YR 3/3), light brown sandy laminations, scattered coarse sand in upper 1-inch, fine gravel from 17.72' to 17.77', fine gravels and coarse sand from 19.98' to 20.00'
20						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2012 14030.001 UPDATED LEWIS ROSEMEAD COTINUOUS CORES.GPJ ROCKLOG2012.GDT 7/25/24

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CORE BORING LOG

BORING NO. CCB-6
PAGE 3 OF 6

PROJECT: 1515 Walnut Grove Ave, Rosemead Fault Hazard Assessment - Proposed Multifamily Development
CLIENT: Lewis Management Corporation
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 14030.001
PAGE NO.: 3 of 6
ELEVATION: Feet
DATE START: 2/16/2024
DATE FINISH: 2/16/2024
DRILLER:
PREPARED BY: KMD
LOCATION:

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	BOX NUMBER	RECOVERY Feet	RECOVERY %	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
20						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
						@20.00' to 20.57': Silty Sandy CLAY, fine to coarse sand, fine subrounded to rounded gravel layer at 20.47' to 20.57', with heavy black oxidation, some very fine sand
						Approximate Holocene/Pleistocene Boundary
						@20.57' to 21.21': (SOIL HORIZON C): A-Horizon at top, dark brown (10YR 3/3), increased sand and heavier oxidation, fine sand grading to fine to coarse sand, few gravels at base, sand pocket @20.63'
						Erosional Unconformity - Quaternary Older Alluvium (Qof):
						@21.21' to 21.90': Sandy Silty CLAY, olive brown (2.5Y 4/4), massive, FeO spotting, scattered fine gravel, concentrated fine gravel at 21.61'
	20-25	3	5	100		@21.90' to 22.38': Gravelly Sandy CLAY, olive brown (2.5Y 4/4), fine to coarse sand, fine subrounded gravels, concentrated rounded gravel from 21.90' to 22.00', FeO spotting
						@22.38' to 22.79': Silty Sandy CLAY, olive brown (2.5Y 4/4), with FeO banding, sandy layer @22.59'
						@22.79' to 22.94': Sandy SILT with Clay, olive brown (2.5Y 4/4), with FeO stains, mostly fine sand, some coarse sand and subrounded gravels, gradational contact below
						@22.94' to 23.99': Sandy SILT, olive brown (2.5Y 4/4), strong FeO banding throughout, scattered coarse sand and fine gravels, increased clay at base from 23.85' to 23.99', clear contact below
						@23.99' to 24.30': Gravelly SAND, gray, fine to coarse sand, uncemented, fine subangular granitic gravels, friable oxidized gravels
25						@24.30' to 25.00': Interbedded Sandy SILT and Silty SAND, gray sand and gray brown silt, sandy layers are uncemented, with fine to coarse sand and few fine subrounded gravels, no reaction to HCl
						@25.00' to 25.09': Sandy CLAY, brown, fine sand, heavily oxidized wavy contact, black
						@25.09' to 25.18': Sandy CLAY, gray-brown, very fine sand, micaceous, basal sand and subrounded to rounded gravels, oxidized contact below
	25-30	3	5	100		@25.18' to 25.68': SILT with Clay, light olive gray, some very fine sand, FeO banding, lamination of silt at 25.28', gradational contact below
						@25.68' to 31.30': Clayey SILT, olive gray with strong orange brown FeO banding, black clay banding ar 28.05' to 28.10', weak blocky structure, micaceous, sandy silt bed from 30.37' to 30.50'
30						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2012 14030.001 UPDATED LEWIS ROSEMEAD COTINUOUS CORES.GPJ ROCKLOG2012.GDT 7/25/24

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CORE BORING LOG

BORING NO. CCB-6
PAGE 4 OF 6

PROJECT: 1515 Walnut Grove Ave, Rosemead Fault Hazard Assessment - Proposed Multifamily Development
CLIENT: Lewis Management Corporation
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 14030.001
PAGE NO.: 4 of 6
ELEVATION: Feet
DATE START: 2/16/2024
DATE FINISH: 2/16/2024
DRILLER:
PREPARED BY: KMD
LOCATION:

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	BOX NUMBER	RECOVERY Feet	RECOVERY %	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
30						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
						@25.68' to 31.30': Clayey SILT, olive gray with strong orange brown FeO banding, black clay banding ar 28.05' to 28.10', weak blocky structure, micaceous, sandy silt bed from 30.37' to 30.50'
						@31.30' to 31.35': Thin bed of SAND, light gray brown, fine grained, FeO staining, clear contact below
						@31.35' to 31.86': SILT grading to Silty CLAY, very micaceous
						@31.86' to 32.06': Silty SAND, light brown, very fine, consolidated, bedded, clear contact below
	30-35	4	5	100		@32.06' to 32.64': Sandy SILT with interbeds of Silty SAND, grey-brown, very fine to fine sand, slightly micaceous, laminated, fine FeO spotting in sandy layers, clear contact below
						@32.64' to 32.94': SAND with Silt, light brown, fine sand, uncemented, slightly micaceous, gradational contact below
						@32.94' to 33.13': SAND with Silt, gray-brown, very fine sand, laminated, erosional contact below
						@33.13' to 33.45': Diffuse FeO banding, clear contact below
						@33.45' to 34.35': SAND with Silt, fining upward sequence with fine sand to fine to coarse sand, light gray-brown, heavily oxidized, uncemented
35						@34.35' to 40.70': ((SED. PACKAGE F) SAND with Silt, interbedded with fine sand and fine to coarse sand, strong brown(7.5YR 4/6) and light olive brown (2.5Y 5/4), heavily oxidized, uncemented, a series of fining upward sequences from 34.35' to 34.64', 34.64' to 34.81', 34.81' to 36.15', 36.15' to 36.55', 36.55' to 36.93', 36.93' to 37.21', 37.21' to 37.51', 37.51' to 38.07', 38.07' to 39.65', 39.65' to 40.27', and 40.26' to 40.70'
	35-37.5	4	2.5	100		
	37.5-40	4	2.5	100		
40						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2012 14030.001 UPDATED LEWIS ROSEMEAD COTINUOUS CORES.GPJ ROCKLOG2012.GDT 7/25/24

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CORE BORING LOG

BORING NO. CCB-6
PAGE 5 OF 6

PROJECT: 1515 Walnut Grove Ave, Rosemead Fault Hazard Assessment - Proposed Multifamily Development
CLIENT: Lewis Management Corporation
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):						
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE		ORIENTATION	CORE BARREL	
					X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 14030.001
PAGE NO.: 5 of 6
ELEVATION: Feet
DATE START: 2/16/2024
DATE FINISH: 2/16/2024
DRILLER:
PREPARED BY: KMD
LOCATION:

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	BOX NUMBER	RECOVERY Feet	RECOVERY %	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
40						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
	40-42.5	5	2.5	100		@40.70' to 41.67': SAND, light gray, fine sand, lightly cemented, rip up clasts, inclusions of dark gray brown clayey silt (approx 2-3-inches in longest dimension), strong FeO boundaries around inclusions, dark red oxidation at 41.64' @41.67' to 42.00': SAND with Gravel, light grey-brown, uncemented, fine to coarse sand, some fine subrounded to rounded gravels, larger gravel at basal contact, heavy FeO staining at contact, gravel embedded in unit below
	42.5-45	5	2.5	100		@42.00' to 47.60': Interbedded Sandy SILT and very fine Silty SAND, overall olive gray (5Y 5/2) with yellow-brown oxidation, light gray sand beds at 42.58' to 43.06', 43.44' to 43.62', 44.30' to 44.43', 46.21' to 46.33', 46.45' to 46.52', yellow oxidation between sand and silt bedding contacts, black organic rich layers, especially between 45.07' and 46.40', with visible charcoal fragments, fine subrounded gravels at 46.72', slightly micaceous, laminated
45						
	45-47.5	5	2.5	100		
	47.5-50	5	2.5	100		@47.60' to 48.00': Grades to Sandy SILT, gray-brown with strong orange oxidation, predominantly fine sand, some medium to coarse sand, fine subrounded gravels at base of unit, gradational contact below @48.00' to 49.04': Gravelly SAND, light gray-brown, fine to coarse sand, fine subrounded to rounded gravels, heavily weathered/friable gravels, little fines, grades coarser and more oxidized at base, erosional and heavily oxidized basal contact @49.04' to 50.00': Hard CLAY, thickly bedded, grey brown and light yellowish brown, fine FeO bands, heavy oxidation pockets, silty gray bands and oxidized silty laminations, no reaction to HCl
50						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2012 14030.001 UPDATED LEWIS ROSEMEAD COTINUOUS CORES.GPJ ROCKLOG2012.GDT 7/25/24

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CORE BORING LOG

BORING NO. **CCB-6**
PAGE 6 OF 6

PROJECT: **1515 Walnut Grove Ave, Rosemead Fault Hazard Assessment - Proposed Multifamily Development**
CLIENT: **Lewis Management Corporation**
CONTRACTOR: **Martini Drilling Corporation**
EQUIPMENT USED: **CME-75**

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: **14030.001**
PAGE NO.: **6 of 6**
ELEVATION: **Feet**
DATE START: **2/16/2024**
DATE FINISH: **2/16/2024**
DRILLER:
PREPARED BY: **KMD**
LOCATION:

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	BOX NUMBER	RECOVERY Feet	RECOVERY %	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
50						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
						Total Depth of Continuous Core Boring: 50 feet **No groundwater encountered during drilling** **Boring backfilled with soil cuttings upon completion of drilling.** **Notes:** **"SOIL HORIZON" and "SED. PACKAGE" Designations from Core Borings, *shown on Plate 2***
55						
60						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2012 14030.001 UPDATED LEWIS ROSEMEAD COTINUOUS CORES.GPJ ROCKLOG2012.GDT 7/25/24

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CORE BORING LOG

BORING NO. CCB-7
PAGE 1 OF 6

PROJECT: 1515 Walnut Grove Ave, Rosemead Fault Hazard Assessment - Proposed Multifamily Development
CLIENT: Lewis Management Corporation
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 14030.001
PAGE NO.: 1 of 6
ELEVATION: Feet
DATE START: 3/18/2024
DATE FINISH: 3/18/2024
DRILLER:
PREPARED BY: KMD
LOCATION:

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	BOX NUMBER	RECOVERY Feet	RECOVERY %	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
0						@0': 5-inches Asphalt Concrete (AC) over 2-feet Aggregate Base (AB)
	0-5	1	3	60		**Artificial fill, undocumented: (Afu)** @2.42' to 3.65': Sandy CLAY with gravel, brown, fine sand, plastic, granitic subangular to subrounded gravels @3.65' to 5.00': SAND, light brown, fine sand with few medium to coarse sand, few fine gravels
5						@5.00' to 5.25': Sandy GRAVEL, brown, fine to coarse sand, few subround gravels granitic, mechanically broken @5.25' to 5.41': Clayey SAND, brown, fine sand, few subrounded gravels, gradual change/transition @5.41' to 5.56': SAND, light brown, predominantly fine sand, few medium to coarse sand, gradual transition @5.56' to 5.84': Grader silty, finer @5.84' to 7.30': Sandy CLAY, brown, mottled with orangish patches and black streaks, predominantly fine sand, scattered medium to coarse sand and few gravels
	5-10	1	5	100		**Quaternary Younger Alluvial Fan Deposits (Qyf):** @7.30' to 8.05': Silty Sandy CLAY, dark yellowish brown (10YR 4/4), predominantly fine sand, scattered medium to coarse sand, subrounded sand grains, fine subrounded gravels at base @8.05' to 8.38': Silty Sandy CLAY, brown, predominantly fine sand, scattered medium to coarse sand, subrounded sand grains @8.38' to 10.00': Sandy CLAY, brown, predominantly fine sand, black banding (organic soil or MnO), scattered gravel @9.70': (SOIL HORIZON A): A-Horizon, dark brown (10YR 3/3)
10						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2012 14030.001 UPDATED LEWIS ROSEMEAD COTINUOUS CORES.GPJ ROCKLOG2012.GDT 7/25/24

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CORE BORING LOG

BORING NO. CCB-7
PAGE 2 OF 6

PROJECT: 1515 Walnut Grove Ave, Rosemead Fault Hazard Assessment - Proposed Multifamily Development
CLIENT: Lewis Management Corporation
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 14030.001
PAGE NO.: 2 of 6
ELEVATION: Feet
DATE START: 3/18/2024
DATE FINISH: 3/18/2024
DRILLER:
PREPARED BY: KMD
LOCATION:

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	BOX NUMBER	RECOVERY Feet	RECOVERY %	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
10						@10.00' to 11.02': Sandy CLAY, brown, massive, fine to coarse sand, scattered fine subrounded gravel, clay films in coarse sand and gravel, pockets of organic soils at 10.08', 10.31' and 10.76', increase gravel and slight color change toward base, gradational change below
						@11.02' to 11.68': massive Sandy CLAY, brown, MnO absent, increase sand content toward base, increasing grain size from coarse sand to fine subrounded sand and gravel, scattered coarse sand, finer pockets of organic soils, grades siltier/sandier towards base
	10-15	2	5	100		@11.68' to 13.45': Sandy CLAY grading by 12.35 to Clayey SAND, orangish, brown, predominantly very fine to fine sand, scattered coarse sand, strong FeO veins (thin) weak laminations of cleaner sand, fine gravels at 13.25', scattered fine gravel at 12.47', 12.60', and 13.21', gradational contact below
						@13.45' to 13.62': Silty SAND with some clay, orange brown, very fine to fine sand, scattered coarse sand, gradational contact
						@13.62' to 14.64': Sandy CLAY, orange brown, predominantly fine sand with scattered gravel, black, grey, and orange laminations at base, trace subrounded gravel at base
						@14.64' to 15.00': Sandy CLAY, orange brown, weak laminations, fine to medium sand
15						@15.00' to 15.22': Gravelly Clayey SAND, orange brown, fine to coarse sand to fine subrounded gravels, irregular contact, granitic gravels
						@15.22' to 15.53': Sandy CLAY with gravel, orange brown, fine sand, increase grain size toward base, gravelly at base, granitic gravels
						@15.53' to 16.03': Silty Clayey SAND, orange brown, predominantly fine to medium sand, some coarse sand, scattered gravels at base, erosive contact
						@16.03' to 16.43': Sandy CLAY, orangish brown, massive to weakly laminated, fine sand, sandier oxidized contact below (angular), more strongly laminated at base
						@16.43': to 16.48': Silty CLAY, olive brown, laminated, fine sand at base
	15-20	2	5	100		@16.48' to 18.80': (SOIL HORIZON B): A-Horizon at top; CLAY with sand, grading to Sandy CLAY, dark brown (10YR 3/3), very fine to fine sand, with laminations to thin beds, fine to coarse sand, scattered fine gravels, gravel at base, gravel line at 16.80' to 16.86', Sandy CLAY at 16.86', few subrounded gravels, sharp increase in sand content at 18.35', granitic gravels.
						@18.80' to 19.43': Sandy CLAY, brown to dark brown with fine black and orange banding (weak), very fine to fine sand, scattered medium sand, trace coarse sand, gradational contact
						Approximate Holocene/Pleistocene Boundary
20						@19.43' to 20.00': (SOIL HORIZON C): A-Horizon at top; Sandy CLAY, dark brown (10YR 3/3), thin beds of medium to coarse sand, some fine subrounded

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2012 14030.001 UPDATED LEWIS ROSEMEAD COTINUOUS CORES.GPJ ROCKLOG2012.GDT 7/25/24

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CORE BORING LOG

BORING NO. CCB-7
PAGE 3 OF 6

PROJECT: 1515 Walnut Grove Ave, Rosemead Fault Hazard Assessment - Proposed Multifamily Development
CLIENT: Lewis Management Corporation
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 14030.001
PAGE NO.: 3 of 6
ELEVATION: Feet
DATE START: 3/18/2024
DATE FINISH: 3/18/2024
DRILLER:
PREPARED BY: KMD
LOCATION:

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	BOX NUMBER	RECOVERY Feet	RECOVERY %	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
20						gravel, heavy oxidation
						Erosional Unconformity - Quaternary Older Alluvium (Qof):
						@20.00' to 20.59': Sandy CLAY with gravel, olive brown (2.5Y 4/4), massive, fine to coarse sand and fine subrounded gravels, very heavy FeO and MnO oxidation, increased gravel content from 20.41' to base.
						@20.59' to 21.22': Sharp increase in sand content and oxidation, oxidized nodules
						@21.22' to 22.53': Clayey SAND, patchy to banded olive brown with strong orange to brown oxidized zones, predominantly fine sand, gravelly beds at 21.61', 22.28', and 21.32', heavy oxidized rinds on gravels, increase sand and decrease clay content at 21.80'
	20-25	3	4.72	94		@22.53' to 22.80': Very fine Silty Clayey SAND, olive brown with FeO patches and nodules, gradational contact
						@22.80' to 23.35': Coarse SAND, grey brown, fine to coarse sand to fine gravel, subrounded coarse grains, erosive contact below
						@23.35' to 24.03': interbedded Sandy CLAY and interlaminated Clayey SAND and SAND, olive brown, very fine sand in dry zones, fine to coarse sand in sandy zones, heavy oxidation (FeO), cross bedded, sand bed at 23.55', 23.59', and 23.68', Clayey SAND from 23.82 to base, clear contact below
						@24.03' to 24.78': Silty CLAY with sand, banded grey, orange brown and black, grades sandier from 24.64' to base, laminated very fine sand, fine to medium sand
25						@24.78' to 25.00': No recovery
						@25.00' to 28.25': Silty CLAY, olive brown with orange banding, weakly laminated, organic soil zones at 25.00'-25.09', 25.52'-25.59', 25.80'-25.91', 26.60'-27.19' (diffuse), orange FeO angled banding.
	25-30	3	5	100		@28.25' to 28.75'': Silty CLAY, dark gray brown, clear change in oxidation pattern (more patchy and zoned), grades silty and increase very fine sand, weakly laminated, charcoal at 28.45' and 28.49' (A Horizon)
						@28.75' to 30.88': Silty CLAY with sand, gray/olive brown, scattered coarse sand, becomes banded at 30.57' to base, SILT with sand bed with orange FeO banding at 28.91'-29.12', overall increase in oxidation from 30.48' to base, moderate blocky structure.
30						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

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CORE BORING LOG

BORING NO. CCB-7
PAGE 4 OF 6

PROJECT: 1515 Walnut Grove Ave, Rosemead Fault Hazard Assessment - Proposed Multifamily Development
CLIENT: Lewis Management Corporation
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 14030.001
PAGE NO.: 4 of 6
ELEVATION: Feet
DATE START: 3/18/2024
DATE FINISH: 3/18/2024
DRILLER:
PREPARED BY: KMD
LOCATION:

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	BOX NUMBER	RECOVERY Feet	RECOVERY %	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
30						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
	30-35	4	5	100		@28.75' to 30.88': Silty CLAY with sand, gray/olive brown, scattered coarse sand, becomes banded at 30.57' to base, SILT with sand bed with orange FeO banding at 28.91'-29.12', overall increase in oxidation from 30.48' to base, moderate blocky structure. @30.88' to 31.81': Fine Silty SAND to Sandy SILT, olive brown, diffuse orange banding, very fine sand, few clayey beds, very heavily oxidized pocket at 31.65' to 31.81', black with FeO rind on outer zone, burnt soil zone @31.81' to 33.23': Very fine Sandy SILT, orange brown, very fine sand, FeO banding @33.23' to 35.73': Silty Sandy CLAY, olive brown with orange and few black bands, grades less sandy, black laminations from 33.32' to 33.42', increase in oxidation from 33.75' to 35.00', sharp decrease in oxidation from 35.00' to base
35						
	35-38	4	3	100		@35.73' to 36.35': ((SED. PACKAGE F) Very fine Silty SAND to Sandy SILT, light olive brown (2.5 Y 5/3) with strong brown (7.5YR 4/6) FeO oxidation, fine subrounded to rounded gravels at base @36.35' to 36.65': Silty CLAY, olive gray, weaker oxidation, decrease in sand content, coarse sand at base, micaceous, clear contact below @36.65' to 37.35': Very Sandy CLAY, banded gray/olive brown, thin beds of coarse sand and fine gravel at 36.81', 37.00', 37.16' and 37.25', predominantly very fine sand with scattered coarse sand and fine gravel, grades more clayey, increased grain size from 37.25' to base @37.35' to 37.88': Sandy CLAY, FeO banding, coarse sand, fine gravel beds at 37.43' and 37.68' @37.88' to 38.59': Very fine Silty SAND to Sandy SILT, grayish brown, FeO spotting, micaceous, Silty Sandy GRAVEL from 38.40' to base (fine to coarse gravel, granitic), erosional contact below
	38-40	4	2	100		@38.59' to 40.00': Sandy SILT to very fine Silty SAND, olive brown with red-orange FeO banding along lamination planes, scattered coarse sand and fine gravel
40						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2012 14030.001 UPDATED LEWIS ROSEMEAD COTINUOUS CORES.GPJ ROCKLOG2012.GDT 7/25/24

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CORE BORING LOG

BORING NO. CCB-7
PAGE 5 OF 6

PROJECT: 1515 Walnut Grove Ave, Rosemead Fault Hazard Assessment - Proposed Multifamily Development
CLIENT: Lewis Management Corporation
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

JOB NO.: 14030.001
PAGE NO.: 5 of 6
ELEVATION: Feet
DATE START: 3/18/2024
DATE FINISH: 3/18/2024
DRILLER:
PREPARED BY: KMD
LOCATION:

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	
					0	ANG. FROM VERT.	Total (Feet)	

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	BOX NUMBER	RECOVERY Feet	RECOVERY %	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
40						
	40-42.5	5	2.5	100		@40' to 40.43': Sandy SILT with Clay, olive brown, weak FeO staining, very fine sand, micaceous, gradational contact below @40.89' to 41.83': Sandy SILT with laminations of Silty SAND, grey brown, gravelly metagranitic beds at 41.00' and 41.64', cemented @41.83' to 42.47': Interbedded Sandy SILT and SAND, grey brown and grey, weak FeO oxidation at contacts, Sandy SILT is micaceous, coarse sand at 42.21', fine to coarse sand from 42.34' to 42.47'
	42.5-45	5	2.5	100		@42.47' to 42.74': Clayey Sandy SILT, olive brown, predominately fine sand, scattered medium sand, defined silt laminations at base, cemented, clear depositional contact below @42.74' to 43.76': Fining Upward Sequence of Laminated Silty SAND, grey brown with black laminations, scattered coarse sand, grades to SAND, weaker laminations, slightly cemented from 42.74' to 43.07' @43.76' to 45.18': Fining Upward Sequence of SAND, (gleyed) heavily oxidized orange with thin grey bands, becomes gravelly, 44.73 to base, fine subrounded gravels, oxidation rinds on the majority of gravel, weakly cemented above gravelly zone
45						
	45-47.5	5	2.41	96		@45.18' to 45.36': SAND, heavily oxidized orange, predominantly fine sand, some medium to coarse sand, erosive contact below, heavy oxidation @45.36' to 46.40': Sandy SILT with Clay, brown, weakly laminated, grades sandier, gradational contact @46.40' to 47.27': Fining Upward Sequence of Silty SAND, grey brown, very fine sand, thin beds of SAND, gravel at 46.73, fine to coarse sand at base, weathered metagranitic, erosional contact below @47.27' to 47.65': Silty CLAY, grey brown, very fine to fine sand, massive
	47.5-50	5	1.20	48		@47.65' to 48.07': Gravelly SAND, grey brown, massive, fine to coarse sand, fine subround to round gravel (granitic), oxidation rinds on some gravels, little matrix @48.67' to 50.00': No Recovery
50						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2012 14030.001 UPDATED LEWIS ROSEMEAD COTINUOUS CORES.GPJ ROCKLOG2012.GDT 7/25/24

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CORE BORING LOG

BORING NO. CCB-7
PAGE 6 OF 6

PROJECT: 1515 Walnut Grove Ave, Rosemead Fault Hazard Assessment - Proposed Multifamily Development
CLIENT: Lewis Management Corporation
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 14030.001
PAGE NO.: 6 of 6
ELEVATION: Feet
DATE START: 3/18/2024
DATE FINISH: 3/18/2024
DRILLER:
PREPARED BY: KMD
LOCATION:

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	BOX NUMBER	RECOVERY Feet	RECOVERY %	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
50						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
						Total Depth of Continuous Core Boring: 50 feet **Groundwater measured at 45.6 feet bgs during drilling** **Boring backfilled with soil cuttings upon completion of drilling.** **Notes:** **"SOIL HORIZON" and "SED. PACKAGE" Designations from Core Borings, *shown on Plate 2***
55						
60						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2012 14030.001 UPDATED LEWIS ROSEMEAD COTINUOUS CORES.GPJ ROCKLOG2012.GDT 7/25/24

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CORE BORING LOG

BORING NO. CCB-8
PAGE 1 OF 6

PROJECT: 1515 Walnut Grove Ave, Rosemead Fault Hazard Assessment - Proposed Multifamily Development
CLIENT: Lewis Management Corporation
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 14030.001
PAGE NO.: 1 of 6
ELEVATION: Feet
DATE START: 3/18/2024
DATE FINISH: 3/18/2024
DRILLER:
PREPARED BY: KMD
LOCATION:

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	BOX NUMBER	RECOVERY Feet	RECOVERY %	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
0						@0': 5-inches Asphalt Concrete (AC) over 4-inches Aggregate Base (AB)
						Artificial fill, undocumented: (Afu) @0.96' to 1.52': Sandy CLAY, brown, fine to coarse sand, fine gravels
						@1.52' to 2.20': SILT, strong orange to brown, very fine sand
	0-5	1	4.04	81		@2.20' to 2.96': Sandy CLAY, grey brown, fine sand with scattered medium to coarse sand
						@2.96' to 5.70': SAND, grey brown, fine sand, scattered coarse sand, lift of silty clay at 5' to 5.22'
5						
						@5.70' to 7.12': Sandy CLAY, mottled dark brown and orange, fine to coarse sand, grades more sandy to clayey sand with gravel
	5-10	1	5	100		**Quaternary Younger Alluvial Fan Deposits (Qyf):** @7.15' to 9.15': Sandy CLAY with scattered gravel, dark brown (10YR 3/3), predominantly fine sand, subrounded fine gravels (granitic), thin black bands (horizontal), clear contact
						@9.15' to 10.00': grades sandier, lighter orangish brown, thicker black bands at a steeply inclined angle, predominantly fine sand, medium to coarse sand, fine subangular gravel at base @9.65': (SOIL HORIZON A): A-Horizon, dark yellowish brown (10YR 3/4)
10						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

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CORE BORING LOG

BORING NO. CCB-8
PAGE 2 OF 6

PROJECT: 1515 Walnut Grove Ave, Rosemead Fault Hazard Assessment - Proposed Multifamily Development
CLIENT: Lewis Management Corporation
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 14030.001
PAGE NO.: 2 of 6
ELEVATION: Feet
DATE START: 3/18/2024
DATE FINISH: 3/18/2024
DRILLER:
PREPARED BY: KMD
LOCATION:

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	BOX NUMBER	RECOVERY Feet	RECOVERY %	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
10						@10.00' to 11.12': Sandy CLAY, dark brown, faint black bands, fine sand, few medium to coarse sand, abundant fine root hairs at 10.48' to 10.63', possible charcoal at 10.63', trace fine gravel, subrounded to round, gradational contact
						@11.12' to 11.96': Sandy CLAY, orangish brown, some silt, very fine to fine sand, scattered medium sand, trace fine subrounded gravel at base
	10-15	2	5	100		@11.96' to 13.67': Silty Sandy CLAY, orange brown, faint black banding, very fine sand, scattered coarse sand, thin laminations of grey very fine sand, translocated clay, bridging grains, MnO spotting and banding at 12.61' and 13.00'
						@13.67' to 14.42': Sandy CLAY with gravel, light orangish brown, fine subrounded metagranitic and metasedimentary gravels, weathered
15						@14.42' to 14.67': Gravelly CLAY, light orangish brown, subrounded metagranitic gravels, weathered, fine to coarse gravels to fine cobbles, clay film coating
	15-17.55	2	2.54	100		@14.67' to 16.23': Gravelly SAND to SAND with gravel, grey brown, some clay, black oxidation coating on some gravel, fine to coarse sand, fine subrounded to rounded, massive, slightly cemented, clear contact
						@16.23' to 18.73': Sandy CLAY, dark brown, very fine sand, thin black bands, scattered coarse sand and fine metagranitic gravel, grades to sandy clay by 18.05'
						@16.30': (SOIL HORIZON B): A-Horizon, dark brown (10 YR 3/3)
	17.55-20	2	2.42	99		***Approximate Holocene/Pleistocene Boundary***
						@18.73' to 19.06': (SOIL HORIZON C): A-Horizon at top; Sandy CLAY, very dark greyish brown (10YR 3/2), fine to coarse sand, scattered gravels, grades lighter brown
20						@19.06' to 19.71': Grades dark grayish brown (10YR 4/2) and sandier, oxidation spotting

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2012 14030.001 UPDATED LEWIS ROSEMEAD COTINUOUS CORES.GPJ ROCKLOG2012.GDT 7/25/24

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CORE BORING LOG

BORING NO. CCB-8
PAGE 3 OF 6

PROJECT: 1515 Walnut Grove Ave, Rosemead Fault Hazard Assessment - Proposed Multifamily Development
CLIENT: Lewis Management Corporation
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):				ORIENTATION	CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 14030.001
PAGE NO.: 3 of 6
ELEVATION: Feet
DATE START: 3/18/2024
DATE FINISH: 3/18/2024
DRILLER:
PREPARED BY: KMD
LOCATION:

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	BOX NUMBER	RECOVERY Feet	RECOVERY %	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
20						@19.71' to 20.00': Sandy CLAY, dark grayish brown, hackly structure, fine to medium sand, trace scattered coarse sand, massive, black FeO staining
						Erosional Unconformity - Quaternary Older Alluvium (Qof):
						@20.00' to 20.67': Sandy CLAY, olive brown (2.5Y 4/4), fine sand, scattered medium to coarse sand, grades to Clayey SAND by 20.32', oxidation (FeO) increases
						@20.67' to 22.17': Fining Upward Sequence of very fine Clayey SAND to SAND, banded orangish brown to olive brown, heavily oxidized laminations, laminations of fine to coarse sand at base, some cross bedding
	20-25	3	5	100		@22.16' to 22.86': CLAY with Sand to Sandy CLAY, banded olive brown and orangish brown, predominantly very fine to fine sand, scattered coarse sand and fine gravel, thin bed of clayey sand at 22.50', thin laminations of Clayey SAND
						@22.17' to 22.16': Gravelly Sandy CLAY, grey brown, fine to coarse sand, fine subrounded to subangular gravels, subrounded, granitic
						@22.86' to 23.02': Gravelly SAND, grey brown, uncemented, fine to coarse sand, fine subrounded gravels, granitic, erosional contact below
						@23.02' to 23.12': Sandy CLAY, gray brown, fine sand, depositional contact
						@23.12' to 23.36': Gravelly SAND with Silt, fine to coarse sand, some fine subrounded to subangular metagranitic gravels, clear contact
						@23.36' to 23.51': Sandy CLAY, fine sand, some coarse sand to fine gravel, sharp increase in silt content at 23.43'
25						@23.51' to 23.70': Silty SAND with Gravel, gray brown, fine to coarse sand, fine subrounded and subangular gravel
						@23.70' to 23.89': SAND with Clay, orangish brown, fine sand, oxidized, thinly bedded to laminated, oxidized erosional contact below
						@23.89' to 24.24': CLAY, banded reddish brown, laminated, blocky structure, fine black laminations, irregular contact below
						@24.24' to 24.55': Clayey SILT with Sand, banded grey brown and orangish brown, laminated, very fine sand, blocky structure
						@24.55' to 24.66': Clayey SAND, tan, fine sand, scattered medium to coarse sand, oxidized irregular contact
						@24.66' to 24.88': Silty CLAY, brown, few orange and black bands
						@24.88' to 25.00': Sandy CLAY, brown, fine to coarse sand
	25-30	3	5	100		@25.00' to 28.10': Silty CLAY, light brown, heavy FeO staining and veining, paleosol at 25.93'-26.20', becomes sandy and gravelly at 26.89', blocky structure, some clay films on ped faces, slighly micaceous, @26.89' increases in grain size to include fine to coarse sand, metagranitic gravel with epidote on fracture face, some FeO rind
						@28.10' to 29.43': Silty Sandy CLAY, grey brown, dark grey and orange banding, fine sand, scattered coarse sand and fine gravel, FeO
						@29.43' to 30.00': Clayey SILT, orangish brown, laminated, very micaceous, very fine sand, scattered fine gravels, weak to moderate blocky structure
30						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

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CORE BORING LOG

BORING NO. CCB-8
PAGE 4 OF 6

PROJECT: 1515 Walnut Grove Ave, Rosemead Fault Hazard Assessment - Proposed Multifamily Development
CLIENT: Lewis Management Corporation
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 14030.001
PAGE NO.: 4 of 6
ELEVATION: Feet
DATE START: 3/18/2024
DATE FINISH: 3/18/2024
DRILLER:
PREPARED BY: KMD
LOCATION:

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	BOX NUMBER	RECOVERY Feet	RECOVERY %	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
30						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
	30-35	4	5	100		@30.00' to 34.71': Silty SAND, orangish brown and grey banded, very fine sand, fine micas, beds of Sandy SILT at 30.45'-30.75' and 34.07'-34.14', diffuse iron oxidation concentrated in sand beds, weakly cemented, micaceous in sandier zones, FeO banding from 32.22'-32.56' and 33.44'-33.77', thin silt laminated from 34.13'-34.35', clear contact
35						@34.71' to 35.16': SILT, grey brown, laminated, some very fine sand, weak iron on laminatins, narrow gradational contact @35.16' to 35.60': ((SED. PACKAGE F): Very fine Silty SAND, dark yellowish brown (10YR 4/6), uncemented, micaceous, clear contact below @35.60' to 36.27': SILT grading to very fine Sandy SILT, light olive brown (2.5Y 5/4), massive, micaceous
	35-40	4	5	100		@36.27' to 36.60': Very fine Silty SAND, light orange brown, thinly bedded to thinly laminated, FeO stained, weakly cemented, gradational contact below @36.60' to 37.52': Very fine SAND with Silt, orange brown, thin gray bands, uncemented, slighly micaceous @37.53' to 38.63': Very fine Silty SAND, light gray with diffuse FeO staining, laminated, slightly cemented, some dark gray laminations, few laminated of fine sand @38.63' to 39.04': Very fine SAND with Silt, light tan, uncemented, very fine sand, laminated @39.04' to 39.32': Sandy SILT, light gray with dark gray and white laminations, very fine sand, gradational contact below @39.32' to 39.60': Very fine Silty SAND, thinly laminated orange/gray/dark gray, weakly cemented, gradational contact below
40						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2012 14030.001 UPDATED LEWIS ROSEMEAD COTINUOUS CORES.GPJ ROCKLOG2012.GDT 7/25/24

* * * This log is a part of a report by Leighton and should not be used as a stand-alone document. * * *

LEIGHTON

CORE BORING LOG

BORING NO. CCB-8
PAGE 5 OF 6

PROJECT: 1515 Walnut Grove Ave, Rosemead Fault Hazard Assessment - Proposed Multifamily Development
CLIENT: Lewis Management Corporation
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 14030.001
PAGE NO.: 5 of 6
ELEVATION: Feet
DATE START: 3/18/2024
DATE FINISH: 3/18/2024
DRILLER:
PREPARED BY: KMD
LOCATION:

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	BOX NUMBER	RECOVERY Feet	RECOVERY %	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
40	40-43	5	3	100		@39.60' to 40.00': Thinly laminated to cross bedded Sandy SILT and SILT, tan/gray/white, very fine sand, cemented @40.00' to 40.32': Laminated Silty SAND, light grayish brown, very fine sand, clear contact below @40.32' to 40.71': Fine SAND, light orange brown, weakly to uncemented, FeO content increases towards base @40.71' to 41.25': Very fine SIlty SAND, grayish brown, FeO laminations, very fine sand, moderately cemented @41.25' to 42.79': Very fine Silty SAND, few thin beds of Sandy SILT, fine to coarse sand and single fine subrounded gravel at base
	43-45	5	2	100		@42.79' to 43.43': SAND with gravel, gray brown, uncemented, heavily weathered gravels (decomposing), predominately fine sand with osme medium to coarse sand, grades coarser to fine to medium sand and fine gravels (granitic) @43.43' to 45.57': Fining upward sequence of SAND, gray, predominantly fine sand, some medium to coarse sand, grades coarser and more oxidized to fine to coarse sands and fine gravels, coarse gravels at 45.38' to base
45	45-47.5	5	2.5	100		@45.57' to 45.95': SAND, greyish brown with dark grey laminations of heavily FeO oxidation at base, predominantly fine sand, some medium to coarse sand, uncemented, erosional contact below @45.95' to 46.71': Clayey SILT, grey with some heavily oxidized beds, laminated, very micaceous, grades to Silty CLAY, clear contact, increased well developed blocky structure at base @46.71' to 49.08': Very fine Clayey SAND, orangish brown to grey brown, grades to Silty SAND, well cemented, thin laminations of silt, oxidized laminations, micaceous, clear contact below
	47.5-50	5	2.5	100		@49.08' to 50.00': SAND, grey brown, laminated to thinly bedded, weakly cemented, fine rounded gravel at 49.75'
50						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2012 14030.001 UPDATED LEWIS ROSEMEAD COTINUOUS CORES.GPJ ROCKLOG2012.GDT 7/25/24

* * * This log is a part of a report by Leighton and should not be used as a stand-alone document. * * *

LEIGHTON

CORE BORING LOG

BORING NO. **CCB-8**
PAGE 6 OF 6

PROJECT: **1515 Walnut Grove Ave, Rosemead Fault Hazard Assessment - Proposed Multifamily Development**
CLIENT: **Lewis Management Corporation**
CONTRACTOR: **Martini Drilling Corporation**
EQUIPMENT USED: **CME-75**

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	
					0	ANG. FROM VERT.	Total (Feet)	

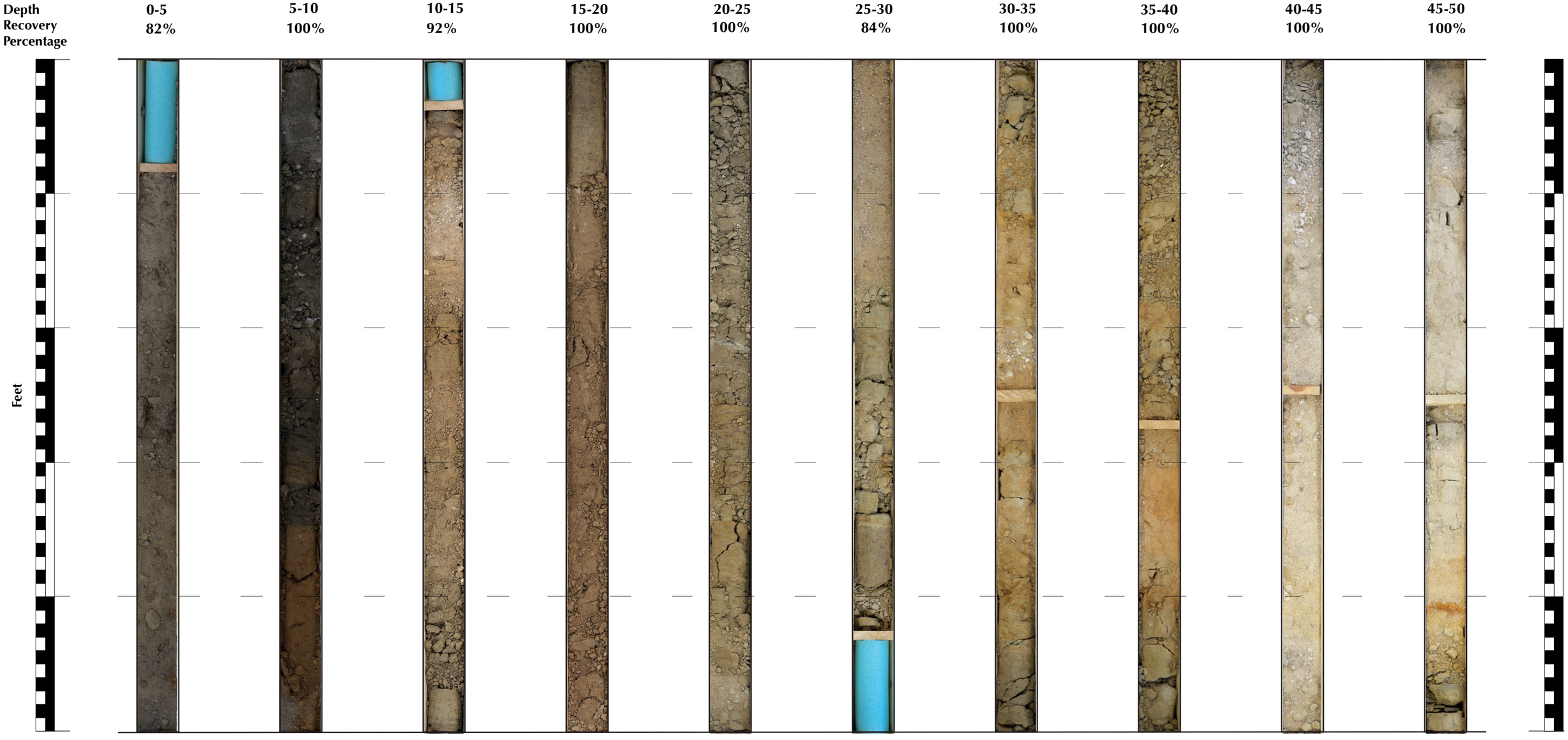
JOB NO.: **14030.001**
PAGE NO.: **6 of 6**
ELEVATION: **Feet**
DATE START: **3/18/2024**
DATE FINISH: **3/18/2024**
DRILLER:
PREPARED BY: **KMD**
LOCATION:

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	BOX NUMBER	RECOVERY Feet	RECOVERY %	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
50						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
						Total Depth of Continuous Core Boring: 50 feet **Groundwater measured at 45.7 feet bgs during drilling** **Boring backfilled with soil cuttings upon completion of drilling.** **Notes:** **"SOIL HORIZON" and "SED. PACKAGE" Designations from Core Borings, *shown on Plate 2***
55						
60						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2012 14030.001 UPDATED LEWIS ROSEMEAD COTINUOUS CORES.GPJ ROCKLOG2012.GDT 7/25/24

*** * * This log is a part of a report by Leighton and should not be used as a stand-alone document. * * ***



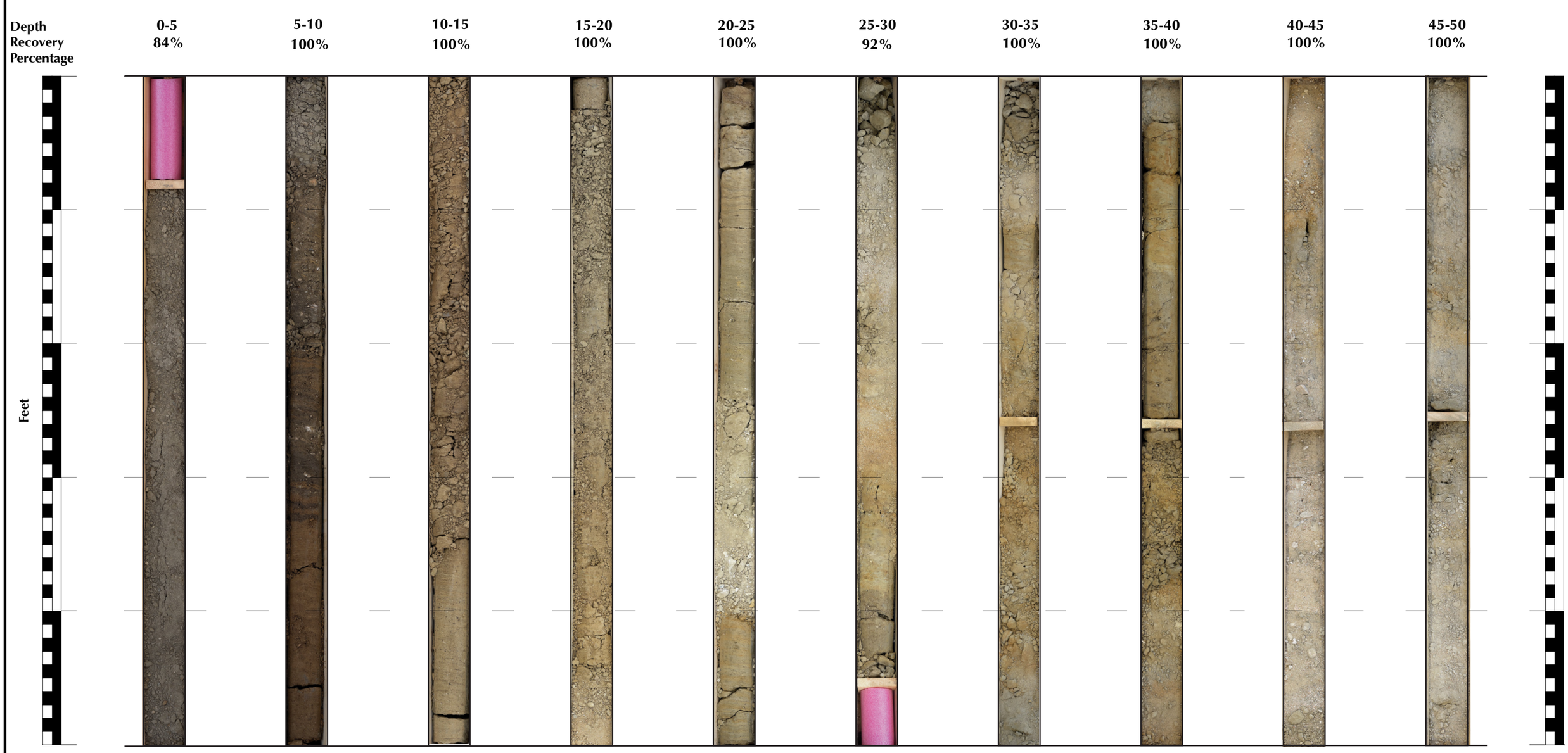
Leighton

Project Number:
Date: May 2024

Compiled Core Photographs of Boring CCB-1

Rosemead

Appendix B



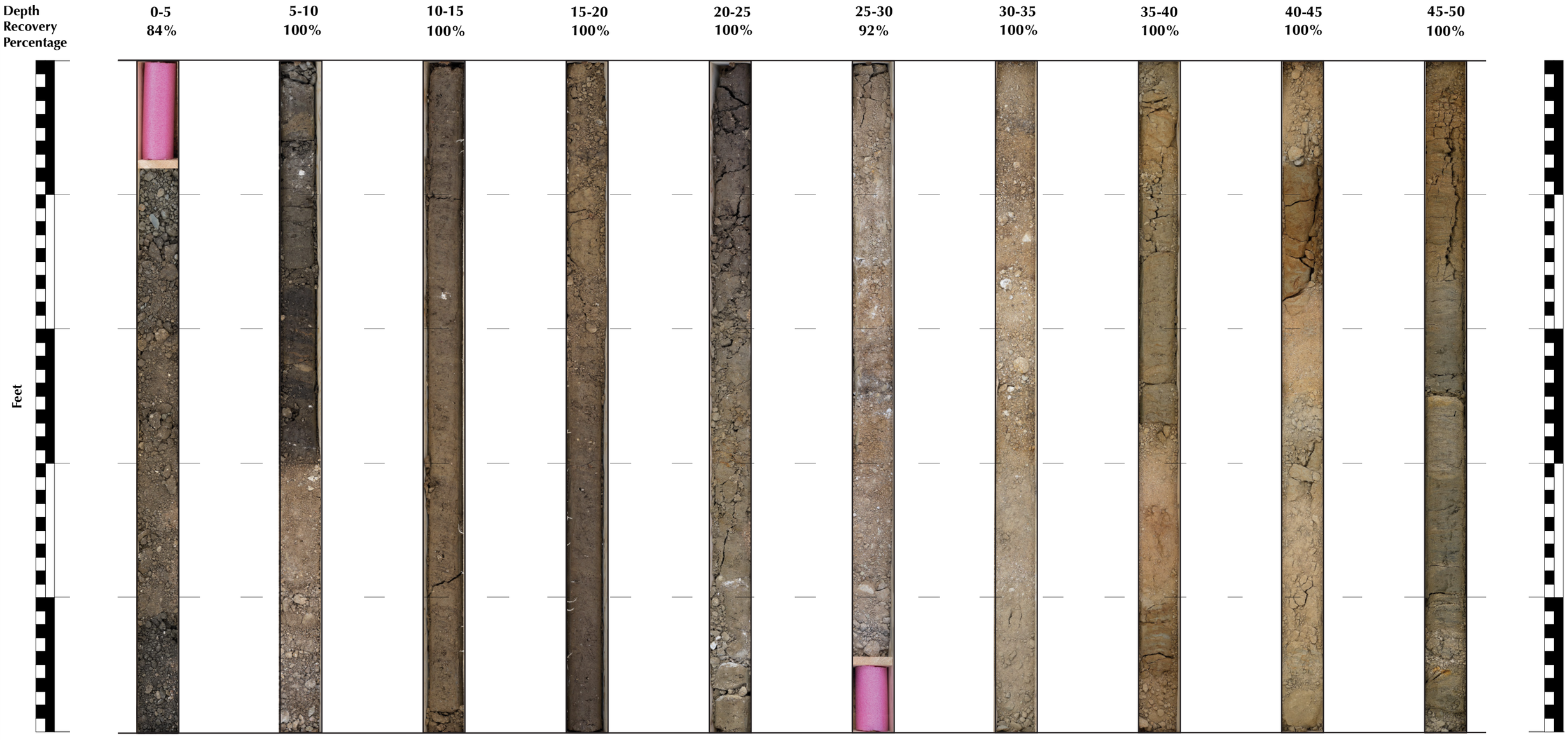
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Project Number:
Date: May 2024

Compiled Core Photographs of Boring CCB-2

Rosemead

Appendix B



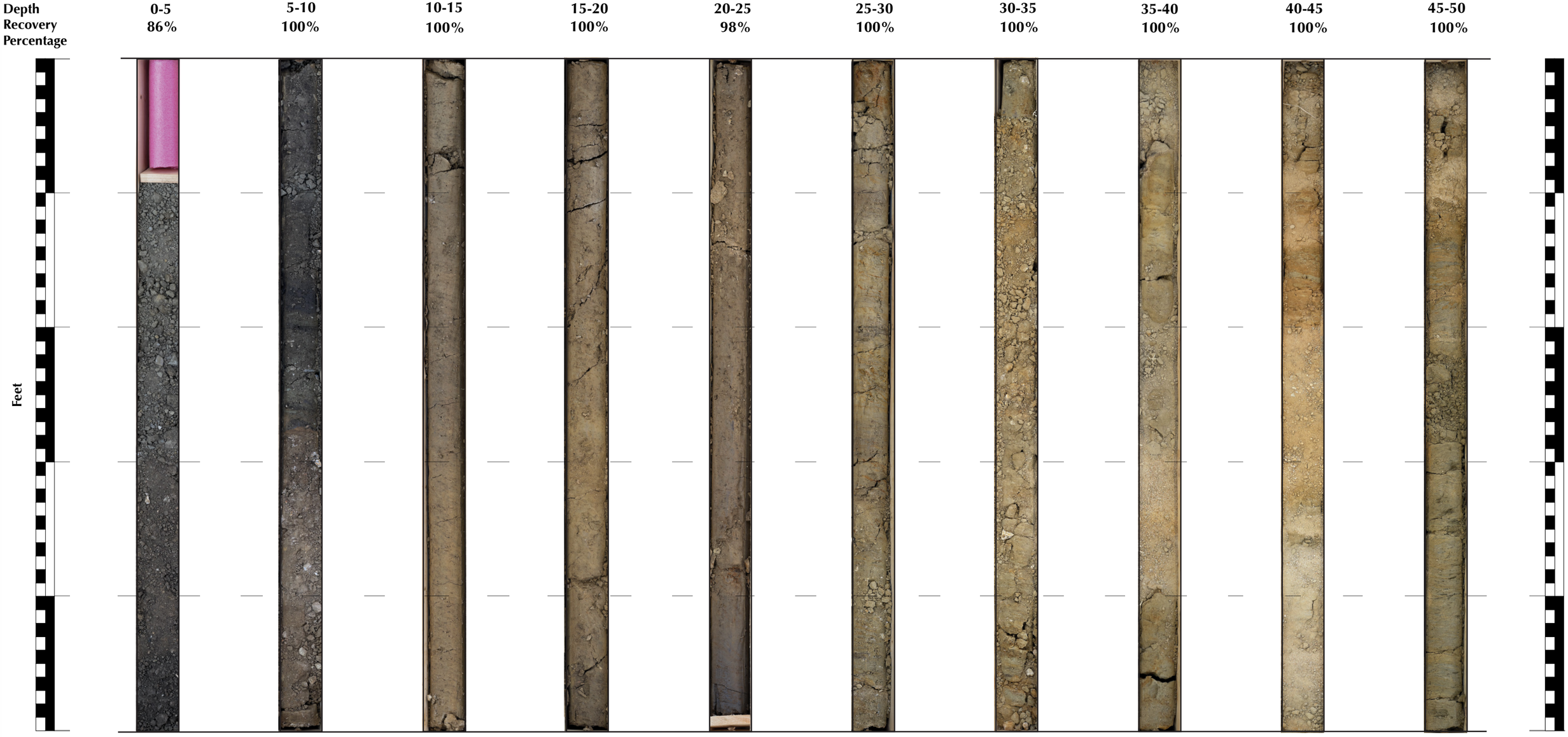
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Project Number:
Date: May 2024

Compiled Core Photographs of Boring CCB-3

Rosemead

Appendix B



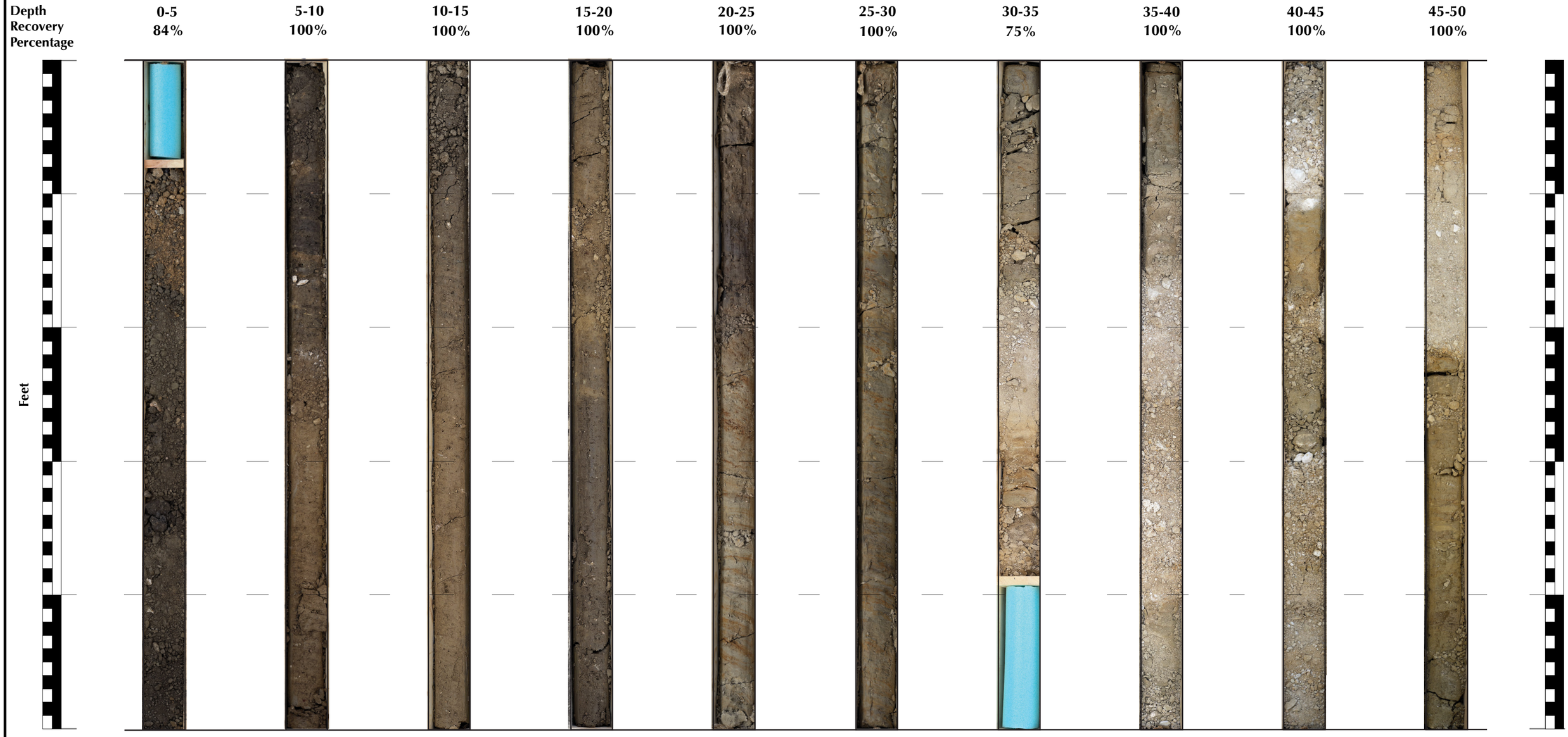
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Project Number:
Date: May 2024

Compiled Core Photographs of Boring CCB-4

Rosemead

Appendix B



Leighton

Project Number:
Date: May 2024

Compiled Core Photographs of Boring CCB-5

Rosemead

Appendix B

Depth	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50
Recovery Percentage	86%	100%	100%	100%	100%	100%	100%	100%	100%	100%



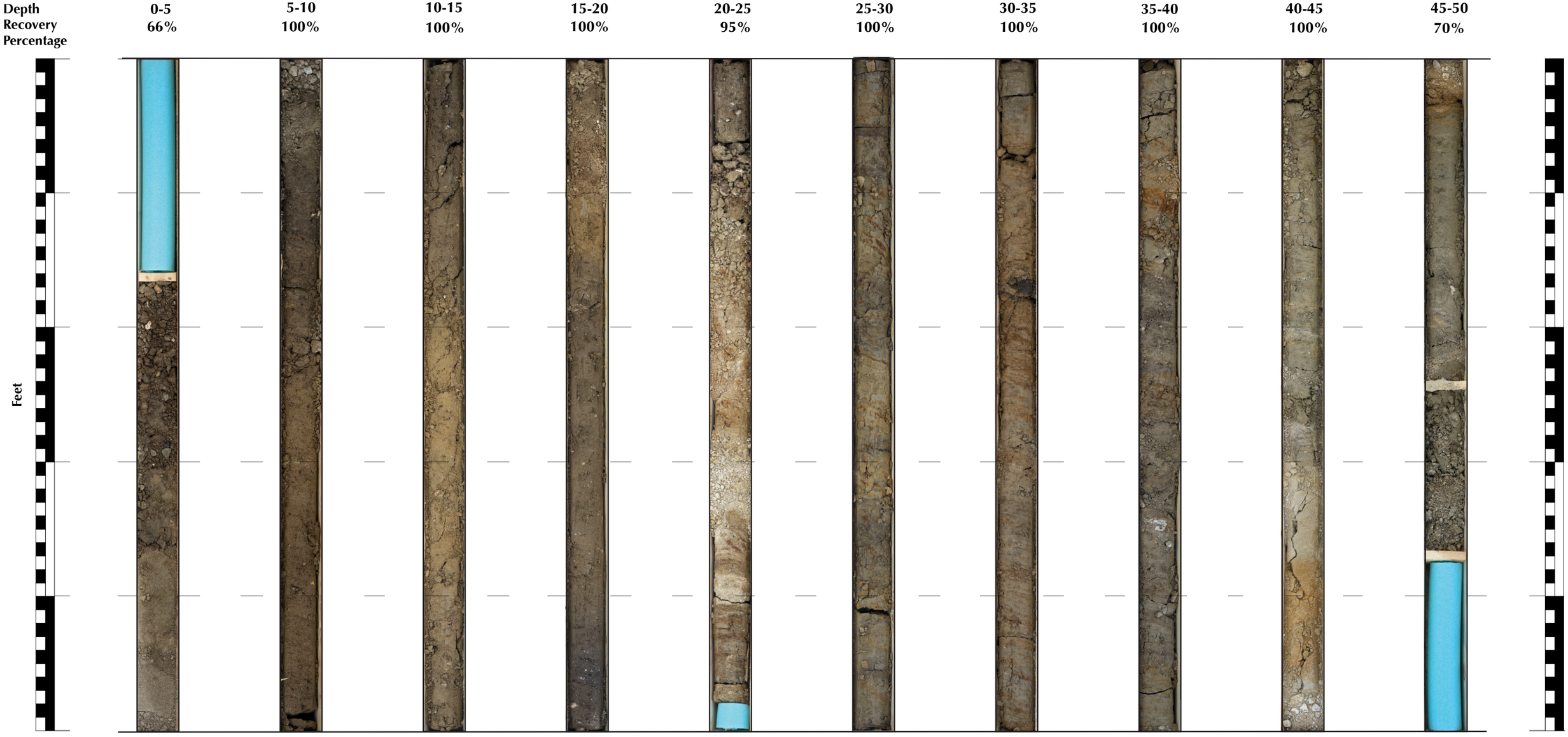
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Project Number:
Date: May 2024

Compiled Core Photographs of Boring CCB-6

Rosemead

Appendix B



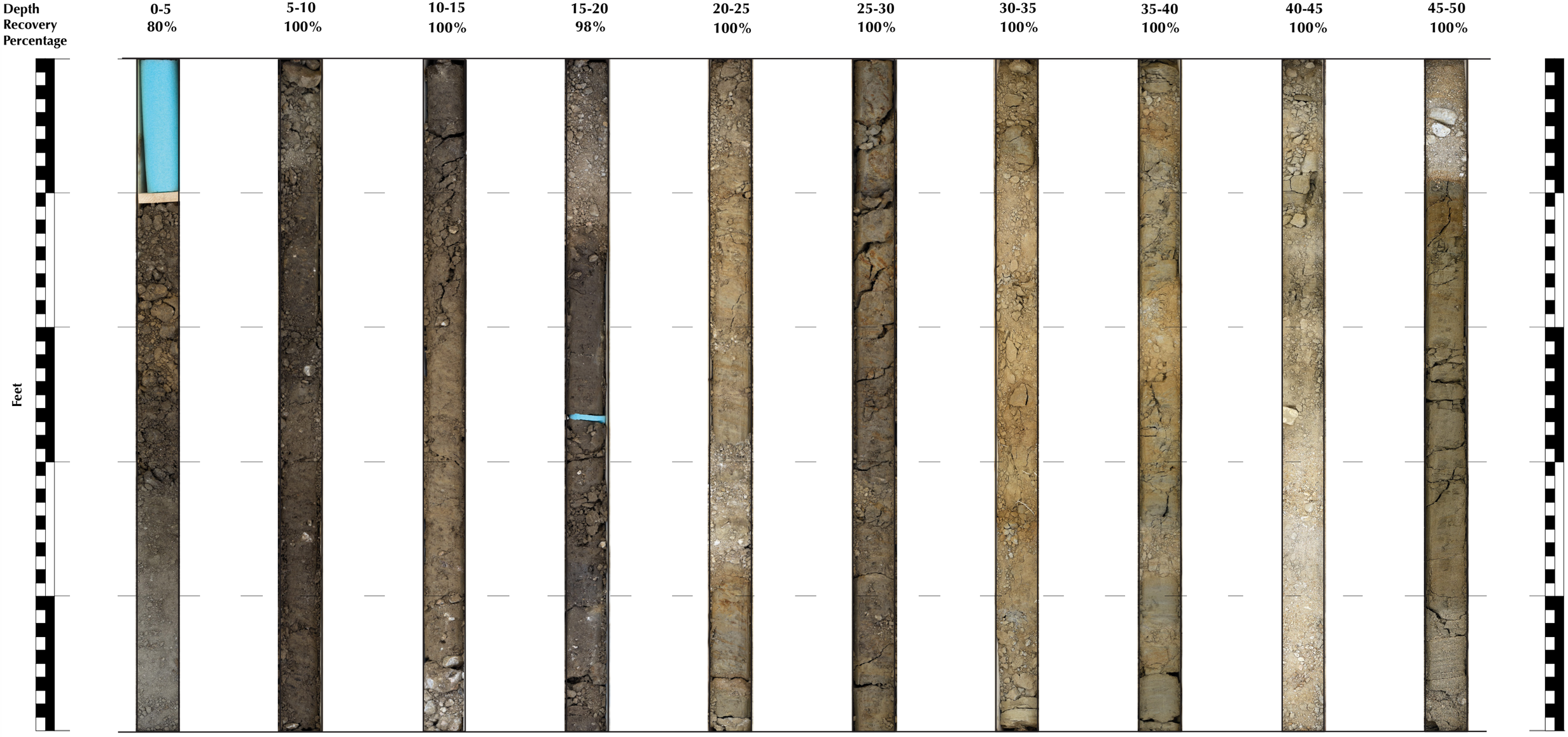
Leighton

Project Number:
Date: May 2024

Compiled Core Photographs of Boring CCB-7

Rosemead

Appendix B



Leighton

Compiled Core Photographs of Boring CCB-8

Rosemead

Appendix B

Project Number:
Date: May 2024

APPENDIX C

Radiocarbon Age Dating (Beta Analytic)

Beta Analytic, Inc.
4985 SW 74th Court
Miami, FL 33155 USA
Tel: 305-667-5167
Fax: 305-663-0964
info@betalabservices.com

ISO/IEC 17025:2017-Accredited Testing Laboratory

March 01, 2024

Mr. Eldon Gath
Earth Consultants International
1642 East 4th Street
Santa Ana, CA 92701
United States

RE: Radiocarbon Dating Results

Dear Mr. Gath,

Enclosed are the radiocarbon dating results for two samples recently sent to us. As usual, the method of analysis is listed on the report with the results and calibration data is provided where applicable. The Conventional Radiocarbon Ages have all been corrected for total fractionation effects and where applicable, calibration was performed using 2020 calibration databases (cited on the graph pages).

The web directory containing the table of results and PDF download also contains pictures, a cvs spreadsheet download option and a quality assurance report containing expected vs. measured values for 3-5 working standards analyzed simultaneously with your samples.

Reported results are accredited to ISO/IEC 17025:2017 Testing Accreditation PJLA #59423 standards and all chemistry was performed here in our laboratory and counted in our own accelerators here. Since Beta is not a teaching laboratory, only graduates trained to strict protocols of the ISO/IEC 17025:2017 Testing Accreditation PJLA #59423 program participated in the analyses.

As always Conventional Radiocarbon Ages and sigmas are rounded to the nearest 10 years per the conventions of the 1977 International Radiocarbon Conference. When counting statistics produce sigmas lower than +/- 30 years, a conservative +/- 30 BP is cited for the result unless otherwise requested. The reported d13C values were measured separately in an IRMS (isotope ratio mass spectrometer). They are NOT the AMS d13C which would include fractionation effects from natural, chemistry and AMS induced sources.

When interpreting the results, please consider any communications you may have had with us regarding the samples.

Thank you for prepaying the analyses. As always, if you have any questions or would like to discuss the results, don't hesitate to contact us.

Sincerely,



Ronald E. Hatfield President

Beta Analytic, Inc.
4985 SW 74th Court
Miami, FL 33155 USA
Tel: 305-667-5167
Fax: 305-663-0964
info@betalabservices.com

ISO/IEC 17025:2017-Accredited Testing Laboratory

REPORT OF RADIOCARBON DATING ANALYSES

Eldon Gath

Earth Consultants International

Report Date: March 01, 2024

Material Received: February 26, 2024

Laboratory Number	Sample Code Number	Conventional Radiocarbon Age (BP) or Percent Modern Carbon (pMC) & Stable Isotopes	
Beta - 690766	**CCB-6 @45.85**	**13390 +/- 50 BP**	IRMS δ13C: -26.5 o/oo

(95.4%) 14349 - 13996 cal BC (16298 - 15945 cal BP)

Submitter Material: Charcoal
Pretreatment: (charred material) acid/alkali/acid
Analyzed Material: Charred material
Analysis Service: AMS-PRIORITY delivery
Percent Modern Carbon: 18.88 +/- 0.12 pMC
Fraction Modern Carbon: 0.1888 +/- 0.0012
D14C: -811.17 +/- 1.18 o/oo
Δ14C: -812.85 +/- 1.18 o/oo (1950:2024)
Measured Radiocarbon Age: (without d13C correction): 13410 +/- 50 BP
Calibration: BetaCal5.0: HPD method: INTCAL20

Results are ISO/IEC-17025:2017 accredited. No sub-contracting or student labor was used in the analyses. All work was done at Beta in 4 in-house NEC accelerator mass spectrometers and 4 Thermo IRMSs. The "Conventional Radiocarbon Age" was calculated using the Libby half-life (5568 years), is corrected for total isotopic fraction and was used for calendar calibration where applicable. The Age is rounded to the nearest 10 years and is reported as radiocarbon years before present (BP), "present" = AD 1950. Results greater than the modern reference are reported as percent modern carbon (pMC). The modern reference standard was 95% the 14C signature of NIST SRM-4990C (oxalic acid). Quoted errors are 1 sigma counting statistics. Calculated sigmas less than 30 BP on the Conventional Radiocarbon Age are conservatively rounded up to 30. d13C values are on the material itself (not the AMS d13C). d13C and d15N values are relative to VPDB. References for calendar calibrations are cited at the bottom of calibration graph pages.

Beta Analytic, Inc.
4985 SW 74th Court
Miami, FL 33155 USA
Tel: 305-667-5167
Fax: 305-663-0964
info@betalabservices.com

ISO/IEC 17025:2017-Accredited Testing Laboratory

REPORT OF RADIOCARBON DATING ANALYSES

Eldon Gath

Earth Consultants International

Report Date: March 01, 2024

Material Received: February 26, 2024

Laboratory Number	Sample Code Number	Conventional Radiocarbon Age (BP) or Percent Modern Carbon (pMC) & Stable Isotopes	
Beta - 690768	**CCB-3 @ 20.5**	**10580 +/- 40 BP**	IRMS δ13C: -25.1 o/oo

(64.7%) 10756 - 10641 cal BC (12705 - 12590 cal BP)
(30.7%) 10597 - 10538 cal BC (12546 - 12487 cal BP)

Submitter Material: Charcoal
Pretreatment: (organic sediment) acid washes
Analyzed Material: Organic sediment
Analysis Service: AMS-PRIORITY delivery
Percent Modern Carbon: 26.79 +/- 0.13 pMC
Fraction Modern Carbon: 0.2679 +/- 0.0013
D14C: -732.08 +/- 1.33 o/oo
Δ14C: -734.47 +/- 1.33 o/oo (1950:2024)
Measured Radiocarbon Age: (without d13C correction): 10580 +/- 40 BP
Calibration: BetaCal5.0: HPD method: INTCAL20

Results are ISO/IEC-17025:2017 accredited. No sub-contracting or student labor was used in the analyses. All work was done at Beta in 4 in-house NEC accelerator mass spectrometers and 4 Thermo IRMSs. The "Conventional Radiocarbon Age" was calculated using the Libby half-life (5568 years), is corrected for total isotopic fraction and was used for calendar calibration where applicable. The Age is rounded to the nearest 10 years and is reported as radiocarbon years before present (BP), "present" = AD 1950. Results greater than the modern reference are reported as percent modern carbon (pMC). The modern reference standard was 95% the 14C signature of NIST SRM-4990C (oxalic acid). Quoted errors are 1 sigma counting statistics. Calculated sigmas less than 30 BP on the Conventional Radiocarbon Age are conservatively rounded up to 30. d13C values are on the material itself (not the AMS d13C). d13C and d15N values are relative to VPDB. References for calendar calibrations are cited at the bottom of calibration graph pages.

Calibration of Radiocarbon Age to Calendar Years

(High Probability Density Range Method (HPD): INTCAL20)

(Variables: d13C = -26.5 o/oo)

Laboratory number **Beta-690766**

Conventional radiocarbon age **13390 ± 50 BP**

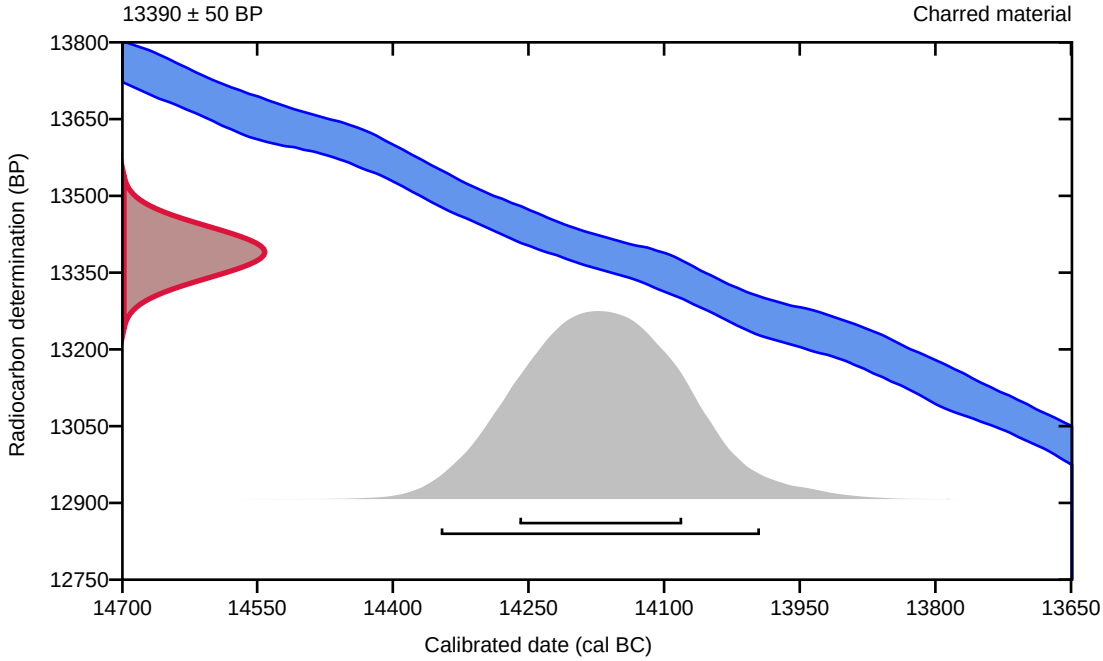
95.4% probability

(95.4%) 14349 - 13996 cal BC (16298 - 15945 cal BP)

68.2% probability

(68.2%) 14262 - 14082 cal BC (16211 - 16031 cal BP)

CCB-6 @45.85



Database used

INTCAL20

References

References to Probability Method

Bronk Ramsey, C. (2009). Bayesian analysis of radiocarbon dates. Radiocarbon, 51(1), 337-360.

References to Database INTCAL20

Reimer, et al., 2020, Radiocarbon 62(4):725-757.

Beta Analytic Radiocarbon Dating Laboratory

4985 S.W. 74th Court, Miami, Florida 33155 • Tel: (305)667-5167 • Fax: (305)663-0964 • Email: beta@radiocarbon.com

BetaCal 5.0

Calibration of Radiocarbon Age to Calendar Years

(High Probability Density Range Method (HPD): INTCAL20)

(Variables: d13C = -25.1 o/oo)

Laboratory number **Beta-690768**

Conventional radiocarbon age **10580 ± 40 BP**

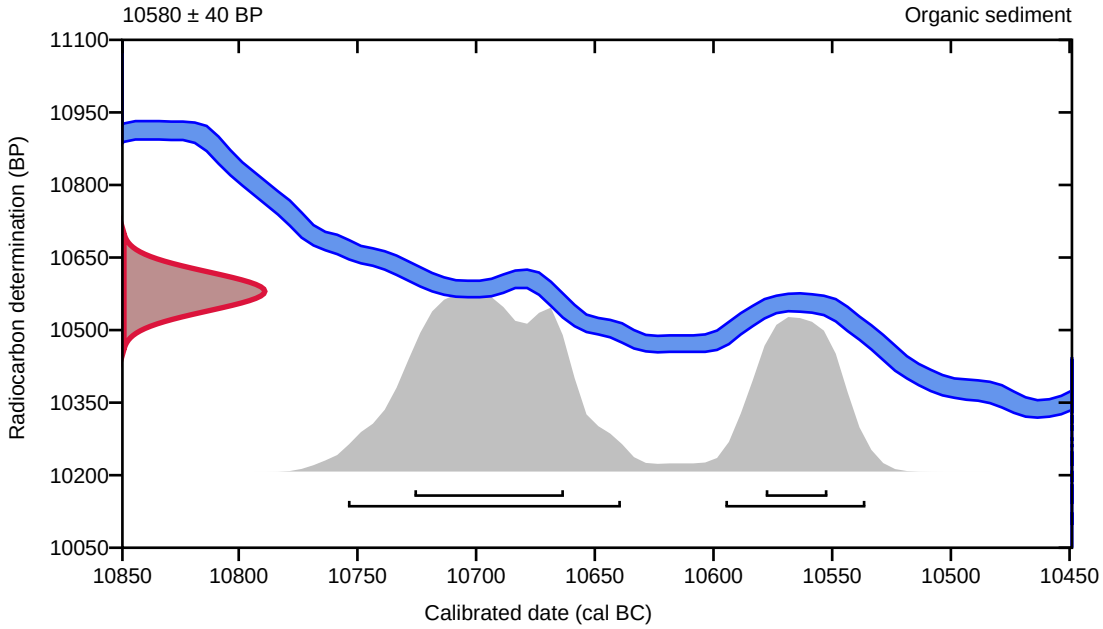
95.4% probability

(64.7%)	10756 - 10641 cal BC	(12705 - 12590 cal BP)
(30.7%)	10597 - 10538 cal BC	(12546 - 12487 cal BP)

68.2% probability

(49.4%)	10728 - 10665 cal BC	(12677 - 12614 cal BP)
(18.8%)	10580 - 10554 cal BC	(12529 - 12503 cal BP)

CCB-3 @ 20.5



Database used

INTCAL20

References

References to Probability Method

Bronk Ramsey, C. (2009). Bayesian analysis of radiocarbon dates. Radiocarbon, 51(1), 337-360.

References to Database INTCAL20

Reimer, et al., 2020, Radiocarbon 62(4):725-757.

Beta Analytic Radiocarbon Dating Laboratory
4985 S.W. 74th Court, Miami, Florida 33155 • Tel: (305)667-5167 • Fax: (305)663-0964 • Email: beta@radiocarbon.com

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4985 SW 74th Court
Miami, FL 33155 USA
Tel: 305-667-5167
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info@betalabservices.com

ISO/IEC 17025:2017-Accredited Testing Laboratory

Quality Assurance Report

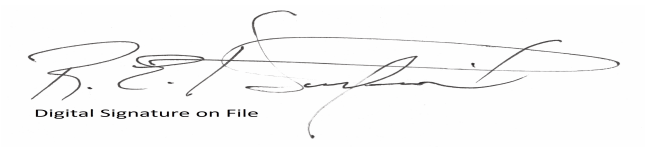
This report provides the results of reference materials used to validate radiocarbon analyses prior to reporting. Known-value reference materials were analyzed quasi-simultaneously with the unknowns. Results are reported as expected values vs measured values. Reported values are calculated relative to NIST SRM-4990C and corrected for isotopic fractionation. Results are reported using the direct analytical measure percent modern carbon (pMC) with one relative standard deviation. Agreement between expected and measured values is taken as being within 2 sigma agreement (error x 2) to account for total laboratory error.

Report Date: March 01, 2024
Submitter: Mr. Eldon Gath

QA MEASUREMENTS

Reference 1	
Expected Value:	0.44 +/- 0.04 pMC
Measured Value:	0.44 +/- 0.04 pMC
Agreement:	Accepted
Reference 2	
Expected Value:	96.69 +/- 0.50 pMC
Measured Value:	96.48 +/- 0.30 pMC
Agreement:	Accepted
Reference 3	
Expected Value:	129.41 +/- 0.06 pMC
Measured Value:	129.37 +/- 0.39 pMC
Agreement:	Accepted

COMMENT: All measurements passed acceptance tests.

Validation: 

Date: March 01, 2024

APPENDIX D

Field Density Test Results

Leighton and Associates, Inc.

Irvine Office
2600 Michelson Dr, Suite 400
Irvine, CA 92612
Phone: (949) 250-1421 | Fax: (949) 250-1114

Soil Nuclear Gauge

Report Date: 09/12/2024
Test Method: ASTM D 6938

Client:
Lewis Management Corp.
1156 N. Mountain Avenue
Upland, CA 91786

Project:
14030.001
Lewis/Rosemead Condos SCE Parcel/HSP
1515 Walnut Grove
Rosemead, CA

Test Results

Test #	Retest Of	Test Date	Proctor ID	Method	Soil Classification	Optimum Moisture (%)	Maximum Dry Density (pcf)	In Place Moisture (%)	In Place Dry Density (pcf)	In Place Wet Density (pcf)	Probe Depth (in)	Percent Compaction	Min/Max Comp. (%)	Remark
1		04/02/24	03-28-24, #1, Backfill, Stockpile T2	A	CL	9.1	124.3	11.9	114.8	128.5	8	92	90 / 100	DP/MP
2		04/02/24	03-28-24, #1, Backfill, Stockpile T2	A	CL	9.1	124.3	11.6	111.3	124.2	8	90	90 / 100	DP/MP
3		04/02/24	03-28-24, #1, Backfill, Stockpile T2	A	CL	9.1	124.3	11.9	114.5	128.1	8	92	90 / 100	DP/MP
4		04/02/24	03-28-24, #1, Backfill, Stockpile T2	A	CL	9.1	124.3	10.8	115.0	127.4	8	93	90 / 100	DP/MP
5		04/02/24	03-28-24, #1, Backfill, Stockpile T2	A	CL	9.1	124.3	12.1	118.3	132.6	8	95	90 / 100	DP/MP
6		04/02/24	03-28-24, #1, Backfill, Stockpile T2	A	CL	9.1	124.3	11.8	116.2	129.9	8	93	90 / 100	DP/MP
7		04/03/24	03-28-24, #1, Backfill, Stockpile T2	A	CL	9.1	124.3	12.0	115.4	129.2	8	93	90 / 100	DP/MP
8		04/03/24	03-28-24, #1, Backfill, Stockpile T2	A	CL	9.1	124.3	11.6	113.8	127.0	8	92	90 / 100	DP/MP

Test Information

Test #	Test Location	Elevation	Reference	Gauge Make / Model / SN / Calibrated	Field Technician
1	Compacted Fill (CF): Northern portion of T2 pit		SG-20'	CPN / MC3-Elite / 31122 / 04/12/2023	Kendall, Guy
2	Compacted Fill (CF): Northern portion of T2 pit		SG-18'	CPN / MC3-Elite / 31122 / 04/12/2023	Kendall, Guy
3	Compacted Fill (CF): Northern portion of T2 pit		SG-16'	CPN / MC3-Elite / 31122 / 04/12/2023	Kendall, Guy
4	Compacted Fill (CF): Northern portion of T2 pit		SG-14'	CPN / MC3-Elite / 31122 / 04/12/2023	Kendall, Guy
5	Compacted Fill (CF): Northern portion of T2 pit		SG-12'	CPN / MC3-Elite / 31122 / 04/12/2023	Kendall, Guy
6	Compacted Fill (CF): Northern portion of T2 pit		SG-10"	CPN / MC3-Elite / 31122 / 04/12/2023	Kendall, Guy
7	Compacted Fill (CF): Middle portion of pit/trench T2		SG-19'	CPN / MC3-Elite / 31122 / 04/12/2023	Kendall, Guy
8	Compacted Fill (CF): Middle portion of pit/trench T2		SG-17'	CPN / MC3-Elite / 31122 / 04/12/2023	Kendall, Guy

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Soil Nuclear Gauge

Report Date: 09/12/2024
Test Method: ASTM D 6938

Client:
Lewis Management Corp.
1156 N. Mountain Avenue
Upland, CA 91786

Project:
14030.001
Lewis/Rosemead Condos SCE Parcel/HSP
1515 Walnut Grove
Rosemead, CA

Remarks	Comments
DP/MP: Density Pass / Moisture Pass	Tests are "Direct Transmission" (Method A) unless probe depth is noted as "Backscatter". Gauge calibration data on file with the testing agency.

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Project:
14030.001
Lewis/Rosemead Condos SCE Parcel/HSP
1515 Walnut Grove
Rosemead, CA

Test Results

Test #	Retest Of	Test Date	Proctor ID	Method	Soil Classification	Optimum Moisture (%)	Maximum Dry Density (pcf)	In Place Moisture (%)	In Place Dry Density (pcf)	In Place Wet Density (pcf)	Probe Depth (in)	Percent Compaction	Min/Max Comp. (%)	Remark
9		04/03/24	03-28-24, #1, Backfill, Stockpile T2	A	CL	9.1	124.3	12.1	117.7	131.9	8	95	90 / 100	DP/MP
10		04/03/24	03-28-24, #1, Backfill, Stockpile T2	A	CL	9.1	124.3	11.9	111.4	124.7	8	90	90 / 100	DP/MP
11		04/04/24	03-28-24, #1, Backfill, Stockpile T2	A	CL	9.1	124.3	11.5	113.6	126.7	8	91	90 / 100	DP/MP
12		04/04/24	03-28-24, #1, Backfill, Stockpile T2	A	CL	9.1	124.3	14.8	114.9	131.9	8	92	90 / 100	DP
13		04/04/24	03-28-24, #1, Backfill, Stockpile T2	A	CL	9.1	124.3	15.4	114.9	132.6	8	92	90 / 100	DP
14		04/04/24	03-28-24, #1, Backfill, Stockpile T2	A	CL	9.1	124.3	15.0	112.0	128.8	8	90	90 / 100	DP
15		04/04/24	03-28-24, #1, Backfill, Stockpile T2	A	CL	9.1	124.3	14.7	114.5	131.3	8	92	90 / 100	DP
16		04/04/24	03-28-24, #1, Backfill, Stockpile T2	A	CL	9.1	124.3	14.8	113.0	129.7	8	91	90 / 100	DP

Test Information

Test #	Test Location	Elevation	Reference	Gauge Make / Model / SN / Calibrated	Field Technician
9	Compacted Fill (CF): Middle portion of pit/trench T2		SG-14'	CPN / MC3-Elite / 31122 / 04/12/2023	Kendall, Guy
10	Compacted Fill (CF): Middle portion of pit/trench T2		SG-11'	CPN / MC3-Elite / 31122 / 04/12/2023	Kendall, Guy
11	Compacted Fill (CF): Pit/trench T2 north 22°	-5.0	Existing Grade	CPN / MC3 / M370308650 / 09/01/2023	Crawford, Eric
12	Compacted Fill (CF): Pit/trench T2 north 22°	-5.0	Existing Grade	CPN / MC3 / M370308650 / 09/01/2023	Crawford, Eric
13	Compacted Fill (CF): Pit/trench T2 north 22°	-3.0	Existing Grade	CPN / MC3 / M370308650 / 09/01/2023	Crawford, Eric
14	Compacted Fill (CF): Pit/trench T1 ctr.	-11.0	Existing Grade	CPN / MC3 / M370308650 / 09/01/2023	Crawford, Eric
15	Compacted Fill (CF): Pit/trench T1 ctr.	-10.0	Existing Grade	CPN / MC3 / M370308650 / 09/01/2023	Crawford, Eric
16	Compacted Fill (CF): Pit/trench T1 ctr.	-8.0	Existing Grade	CPN / MC3 / M370308650 / 09/01/2023	Crawford, Eric

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Soil Nuclear Gauge

Report Date: 09/12/2024
Test Method: ASTM D 6938

Client:
Lewis Management Corp.
1156 N. Mountain Avenue
Upland, CA 91786

Project:
14030.001
Lewis/Rosemead Condos SCE Parcel/HSP
1515 Walnut Grove
Rosemead, CA

Remarks	Comments
DP/MP: Density Pass / Moisture Pass **DP:** Density Pass	Tests are "Direct Transmission" (Method A) unless probe depth is noted as "Backscatter". Gauge calibration data on file with the testing agency.

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Project:
14030.001
Lewis/Rosemead Condos SCE Parcel/HSP
1515 Walnut Grove
Rosemead, CA

Test Results

Test #	Retest Of	Test Date	Proctor ID	Method	Soil Classification	Optimum Moisture (%)	Maximum Dry Density (pcf)	In Place Moisture (%)	In Place Dry Density (pcf)	In Place Wet Density (pcf)	Probe Depth (in)	Percent Compaction	Min/Max Comp. (%)	Remark
17		04/08/24	03-28-24, #1, Backfill, Stockpile T2	A	CL	9.1	124.3	13.4	113.4	128.6	8	91	90 / 100	DP
18		04/09/24	03-28-24, #1, Backfill, Stockpile T2	A	CL	9.1	124.3	14.6	113.1	129.6	8	91	90 / 100	DP
19		04/10/24	03-28-24, #1, Backfill, Stockpile T2	A	CL	9.1	124.3	11.0	112.4	124.8	8	90	90 / 100	DP
20		04/23/24	03-28-24, #1, Backfill, Stockpile T2	A	CL	9.1	124.3	14.5	113.5	130.0	8	91	90 / 100	DP
21		04/23/24	03-28-24, #1, Backfill, Stockpile T2	A	CL	9.1	124.3	15.6	113.8	131.6	8	92	90 / 100	DP
22		04/23/24	03-28-24, #1, Backfill, Stockpile T2	A	CL	9.1	124.3	16.7	114.9	134.1	8	92	90 / 100	DP
23		04/23/24	03-28-24, #1, Backfill, Stockpile T2	A	CL	9.1	124.3	14.9	113.1	129.9	8	91	90 / 100	DP
24		04/23/24	03-28-24, #1, Backfill, Stockpile T2	A	CL	9.1	124.3	17.1	111.5	130.6	8	90	90 / 100	DP

Test Information

Test #	Test Location	Elevation	Reference	Gauge Make / Model / SN / Calibrated	Field Technician
17	Compacted Fill (CF): Pit/trench T1 south end	-15.0	Existing Grade	CPN / MC1-DRP / MD60308225 / 09/14/2023	Crawford, Eric
18	Compacted Fill (CF): Pit/trench T1 south end	-12.0	Existing Grade	CPN / MC3 / M370308650 / 09/01/2023	Crawford, Eric
19	Compacted Fill (CF): Pit/trench T1 south end	-10.0	Existing Grade	CPN / MC3 / M370308650 / 09/01/2023	Crawford, Eric
20	Compacted Fill (CF): Exploretory pit T1 southwest corner of site		SG -13'	CPN / MC1-Elite / 31081 / 02/15/2024	Guevara, Anthony
21	Compacted Fill (CF): Exploretory pit T1 southwest corner of site		SG -10'	CPN / MC1-Elite / 31081 / 02/15/2024	Guevara, Anthony
22	Compacted Fill (CF): Exploretory pit T1 southwest corner of site		SG -7'	CPN / MC1-Elite / 31081 / 02/15/2024	Guevara, Anthony
23	Compacted Fill (CF): Exploretory pit T1 southwest corner of site		SG -4'	CPN / MC1-Elite / 31081 / 02/15/2024	Guevara, Anthony

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Rosemead, CA

24	Compacted Fill (CF): Exploretory pit T1 southwest corner of site		SG -2'	CPN / MC1-Elite / 31081 / 02/15/2024	Guevara, Anthony

Remarks	Comments
DP: Density Pass	Tests are "Direct Transmission" (Method A) unless probe depth is noted as "Backscatter". Gauge calibration data on file with the testing agency.

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14030.001
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1515 Walnut Grove
Rosemead, CA

Test Results

Test #	Retest Of	Test Date	Proctor ID	Method	Soil Classification	Optimum Moisture (%)	Maximum Dry Density (pcf)	In Place Moisture (%)	In Place Dry Density (pcf)	In Place Wet Density (pcf)	Probe Depth (in)	Percent Compaction	Min/Max Comp. (%)	Remark
25		04/23/24	03-28-24, #1, Backfill, Stockpile T2	A	CL	9.1	124.3	15.9	113.1	131.1	8	91	90 / 100	DP
26		05/02/24	03-28-24, #2, Backfill, Stockpile T2	A	CL	8.6	125.5	10.6	122.0	134.9	8	97	90 / 100	DP/MP
27		05/02/24	03-28-24, #2, Backfill, Stockpile T2	A	CL	8.6	125.5	11.6	117.0	130.6	8	93	90 / 100	DP/MP
28		05/02/24	03-28-24, #2, Backfill, Stockpile T2	A	CL	8.6	125.5	10.8	119.5	132.4	8	95	90 / 100	DP/MP
29		05/02/24	03-28-24, #2, Backfill, Stockpile T2	A	CL	8.6	125.5	11.2	120.0	133.4	8	96	90 / 100	DP/MP
30		05/02/24	03-28-24, #2, Backfill, Stockpile T2	A	CL	8.6	125.5	11.4	118.4	131.9	8	94	90 / 100	DP/MP
31		05/03/24	03-28-24, #2, Backfill, Stockpile T2	A	CL	8.6	125.5	11.2	119.8	133.2	8	95	90 / 100	DP/MP
32		05/03/24	03-28-24, #2, Backfill, Stockpile T2	A	CL	8.6	125.5	10.9	121.8	135.1	8	97	90 / 100	DP

Test Information

Test #	Test Location	Elevation	Reference	Gauge Make / Model / SN / Calibrated	Field Technician
25	Compacted Fill (CF): Exploretory pit T1 southwest corner of site		SG	CPN / MC1-Elite / 31081 / 02/15/2024	Guevara, Anthony
26	Compacted Fill (CF): South ramp part of trench		SG-13.5'	CPN / MC1-Elite / 31191 / 08/01/2023	Conell, Richard
27	Compacted Fill (CF): Southern ramp of trench T3		SG-15.5'	CPN / MC1-Elite / 31191 / 08/01/2023	Conell, Richard
28	Compacted Fill (CF): Most Northern part of T3		SG-17.5'	CPN / MC1-Elite / 31191 / 08/01/2023	Conell, Richard
29	Compacted Fill (CF): Most Northern part of T3		SG-19.5'	CPN / MC1-Elite / 31191 / 08/01/2023	Conell, Richard
30	Compacted Fill (CF): Most Northern part of T3		SG-19.5'	CPN / MC1-Elite / 31191 / 08/01/2023	Conell, Richard
31	Compacted Fill (CF): North corner of T3		SG-13.5'	CPN / MC1-Elite / 31191 / 08/01/2023	Conell, Richard
32	Compacted Fill (CF): Middle of T3		SG-13.5'	CPN / MC1-Elite / 31191 / 08/01/2023	Conell, Richard

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Soil Nuclear Gauge

Report Date: 09/12/2024
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Client:
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Upland, CA 91786

Project:
14030.001
Lewis/Rosemead Condos SCE Parcel/HSP
1515 Walnut Grove
Rosemead, CA

Remarks	Comments
DP: Density Pass **DP/MP:** Density Pass / Moisture Pass	Tests are "Direct Transmission" (Method A) unless probe depth is noted as "Backscatter". Gauge calibration data on file with the testing agency.

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Rosemead, CA

Test Results

Test #	Retest Of	Test Date	Proctor ID	Method	Soil Classification	Optimum Moisture (%)	Maximum Dry Density (pcf)	In Place Moisture (%)	In Place Dry Density (pcf)	In Place Wet Density (pcf)	Probe Depth (in)	Percent Compaction	Min/Max Comp. (%)	Remark
33		05/06/24	03-28-24, #2, Backfill, Stockpile T2	A	CL	8.6	125.5	11.3	119.0	132.5	8	95	90 / 100	DP/MP
34		05/06/24	03-28-24, #2, Backfill, Stockpile T2	A	CL	8.6	125.5	11.4	115.9	129.1	8	92	90 / 100	DP
35		05/07/24	03-28-24, #2, Backfill, Stockpile T2	A	CL	8.6	125.5	11.5	121.1	135.0	8	96	90 / 100	DP
36		05/07/24	03-28-24, #2, Backfill, Stockpile T2	A	CL	8.6	125.5	13.1	117.6	133.0	8	94	90 / 100	DP
37		05/07/24	03-28-24, #2, Backfill, Stockpile T2	A	CL	8.6	125.5	10.5	121.1	133.8	8	96	90 / 100	DP
38		05/08/24	03-28-24, #2, Backfill, Stockpile T2	A	CL	8.6	125.5	10.6	122.9	135.9	8	98	90 / 100	DP
39		05/09/24	03-28-24, #2, Backfill, Stockpile T2	A	CL	8.6	125.5	12.3	119.8	134.5	8	95	90 / 100	DP
40		05/09/24	03-28-24, #2, Backfill, Stockpile T2	A	CL	8.6	125.5	10.6	120.6	133.4	8	96	90 / 100	DP

Test Information

Test #	Test Location	Elevation	Reference	Gauge Make / Model / SN / Calibrated	Field Technician
33	Compacted Fill (CF): North section of T3		SG-11.5'	CPN / MC1-Elite / 31191 / 08/01/2023	Conell, Richard
34	Compacted Fill (CF): South section of T3		SG-11.5'	CPN / MC1-Elite / 31191 / 08/01/2023	Conell, Richard
35	Compacted Fill (CF): Middle section of T3		SG-9.5'	CPN / MC1-Elite / 31191 / 08/01/2023	Conell, Richard
36	Compacted Fill (CF): Middle section of T3		SG-9.5'	CPN / MC1-Elite / 31191 / 08/01/2023	Conell, Richard
37	Compacted Fill (CF): Northeast section of T3		SG-11.5'	CPN / MC1-Elite / 31191 / 08/01/2023	Conell, Richard
38	Compacted Fill (CF): Middle section of T3		SG-9.5'	CPN / MC1-Elite / 31191 / 08/01/2023	Conell, Richard
39	Compacted Fill (CF): Northern section of T3		SG-8.0'	CPN / MC1-Elite / 31191 / 08/01/2023	Conell, Richard
40	Compacted Fill (CF): Northwest section of T3		SG-8.0'	CPN / MC1-Elite / 31191 / 08/01/2023	Conell, Richard

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